

mbóti 'ash'; 7 Mofu *bà-bèd-ès*; C 10 Log *guu-fīr*, 11 Mnj *avədiy*; 12 Ma
le Olga V. Stolbova Peve *bwut*, BM *but-na*, Bnn *put-nà* (regressi
voicing of *b-*), ZB (S) *būt*; E **but/a* 'ashes, flour': 1 Kera *kóráy* (m.) (?
-w- < **k-br-*), Mobu (J) *da-rwə* (< *da-rbV*, metath.); 2 **tí-br-* (-br-
): Lele *tí-brè*, Kbl (Cp) *təri*; 3 **dV-brV* (-br- < **-bt-*): Sum
-brí-ny 'ashes', *də-bríny* 'dust', Tum *də-bər* (< *dəbrV*) 'ashes', Ndam (o
-bri-ny 'ashes, dust'; 4 Sok *bità-n* 'flour'; 5 Bid *bütò*, Mig *bítí* 'ashe
ttá 'flour'; 6 Mok *bití-ké* 'tison'; 7 Jegu *bút* 'flour', *bút ko ɔɔk* 'ash' ('flo
the fire'), Brg (J) *bütà* 'flour', *bütà ko ɔɔk* 'ash', Mubi (J) *büt* 'ash'.
-f- is reconstructed on the basis of -t- in W 4 (see table 11) and -d- in W
era. If not for medial -w-, Ch **bVt-* should yield *bVt-*. On pref. in ECh s
2. / IS **bVdV*, Nm **bətu*, Jgll **STUDIES** Eg (Med) *wbd* (*d* < HS **b*
rennen; Russ' (1:297) // Cp. AA N 61 **bəd* 'ashes'. Cp. Nile Nub *obur*
illuk *bur*, Bert *iblə* (in, ...), ... *bubuda*, ...
e dealing with an ancient HS loan.
**-bur-odí* (> **-bu/ard-* > *-bu/ad-*), the suffix is still preserved only in C
G) 'night': W 2 Sura *par*, Ang *paar*, Mnt (J) *payi* (< **bar* < **bura*, Ch **CV*
angas *CVt*); Grk (JgIb) *pwɔt* (< **bur-od*); 3 **ba/udí*: Bol *bođi*, Krkr *bee*
era (J) *bəri*, Ngm *beđi*, Maha *bođi*, Krf *búđi*, Glm *bəryi*, Gera *bír-bí*, Grm *U*
badí]; 5 **ka-bud-*: Bgh (Go) *vod*, (Sm) Kir *fūt*, Tala *ká-fūr*, Zaar *gù-vù*
nt (Go) *bauru*; 6 Ngz *də-víd*; 7 Df *fulul* (< **furur* < **furuđ*), Kul *má-f*
ok *fivɔ*; C **da/ka-burođi*: 1 **fuđi* (< **buruđi*): Tera (N) *vid-ki*, (Kr) Hv
di-ra, Boka *fiđi-ktə*; 2 (Kr) **-vuđi* > Chb *virí*, Bura *virí*, Mrg *vi'i*, Wr
vù'i, WM *anvwù'yi*; 3 (Kr) **fur-đi* > FG *virđi*, FK *vulè*, HF *viđi*, HG *fi*
ap *viđi*, HB *vili*, HN *vure*; 4 (Kr) **ka/da-vuđi* > FB *kjđi*, FM *vùđi*, FJ *v*
udu *věit*, Mwl *vùđó*, Nzn *viđe*, Gude (JgIb) *da-vid*, (Kr) *da-vùđ(a)*, N
Io) *dá-vəden*, Bata (Mo) *kááde*; 5 Glv (Rp) *áávəđà*, (JgIb): Gdf *viđe*, D
lè, Lmn *viđi*, (Kr) Nak *viđeya*, Dxw *vuđi*, Gava *viđiyà*, Mnd *vò'iya*; 6 S
I) *vət*; 7 Mofu *tà-váđ*, Gis *du-wudu*, Mkt (JgIb) *vəđ*; 9 Gdr *də-fda* (Mo);
ng *vəđe*, Glf *fəđe*, Kus *mvəđe*; 11 Mba *dì-viđáy*. Initial pref. in Southe
uchi and CCh languages triggerred a -b- > -v/- shift. /IS **bVdV*, Nm **bə*
lb *bđ*, Soq *bó'or* 'voyager la nuit', libb *ba'r* (Ls:92), Kush 'Afar *t*
ight' // AA N 95 **b'r* 'night'.
**budVH-* 'pour': W 1 Hs *búđà* 'sprinkle generously', 4 Wrj *bə-bəd*, P
... *bə-bəd* 'sprinkle generously'; 7 Mofu *bəd* 'sprinkle (on liquid)'; 12 ZB *b*

To Alan
from Olga
Moscow - Houston

Olga V. Stolbova

STUDIES
IN CHADIC COMPARATIVE
PHONOLOGY

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“I do not claim to know the truth. I have
presented the linguistic facts, trying to take
care of all the facts and to show what is
significant about them.”

Erica Reiner,
“A Linguistic Analysis of Akkadian”.

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Introduction

The Chadic family, which includes more than 130 languages, constitutes the largest branch of the Hamito-Semitic phylum. Chadic-speaking peoples live in Nigeria, Cameroon and Chad. Their neighbours speak Kanuri, Fula, Yoruba, Igbo and other languages of the Nilo-Saharan and Niger-Congo families.

About 150 years of Chadic comparative and field studies (the starting point being F.Schön's Hausa ~ Hebrew comparison and S.W.Kölle's "Polyglotta Africana") has made it possible to initiate a new stage of global diachronical investigations into Chadic based on the totality of data collected previously¹.

An example of such a work is presented by H.Jungraithmayr and D.Ibriszimow's 2-volume fundamental research "Chadic Lexical Roots". The authors formulated their aims in the following terms: "To enlarge and deepen the foundation for the internal reconstruction of Chadic; to uncover the different non-Hamitosemitic strata worked into individual Chadic languages; to present a realistic picture of the complex nature of the lexicon of present-day Chadic languages" (v.1:XIV, XVI). The glosses selected for the research mostly represent basic or cultural vocabulary.

The present investigation's objectives are not quite identical with the last-quoted ones, so we hope that both will complement each other and will serve a common objective.

We aim, on the basis of regular phonetic correspondences, at reconstructing the Proto-Chadic phonological system, at the same time presenting, as precisely as possible, its evolution down to each language under investigation. Thus, we rather follow P.Newman's 'Chadic Classification and Reconstruction' published about twenty years ago, using the total of the data now available. The choice of glosses in the present research is a purely phonetical one and the two core vocabularies (that of Jungraithmayr and Ibriszimow and ours) have no more than 1/3 roots in common.

The consensus is that the most reliable method of reconstructing a large family of non-literary languages is the stage-by-stage research, where the intermediate Proto-language (as reconstructed) compensates for the data of an ancient, textually attested, language. We used this method when reconstructing the ancestor system of the Western branch of Chadic [Stolbova, 1987]. However, it could not be applied to the Central and Eastern branches because of the dearth of material. Thus, in the present case, the reconstruction on all three levels: 1. Common Chadic, 2. Central and Eastern Chadic, 3. on the level of individual groups, has had to be carried out simultaneously. During the first stage of the work we used as a basis the

¹On the comparative studies of groups of Chadic languages see P.Newman (1970), V.Porkhomovsky (1972), N.Skinner (1977), E.Wolf (1983a), R.Shuh (1984), C.Hoffmann (1988), D.Barreteau (1990a), for an overview see D.Ibriszimow (1990:9-33), H.Jungraithmayr, D.Ibriszimow (v.1:XI-XII).

Western Chadic roots with parallels in the other two branches while also making use of Common Chadic roots. As a rule, at this stage of the research were being established correspondences between languages for which good descriptions were available (CCh: Gude, Mafa, Mofu, Logone, Zime, ECh: Kera, Tumak, Migama, Bidiya, Mokilko). After that correspondences thus obtained were checked against the data of all the Proto-Chadic roots attested at least in two branches. Usually, the result was that it became possible to establish correspondences for the rest of the languages. Finally, roots attested only in two (or even in a single) branches were analysed – those, of course, which were not obvious borrowings. It is remarkable that some of them turned out to have reliable external (non-Chadic) parallels. In course of the last two stages special attention was paid to positional phonological changes.

During the whole process of investigating the Chadic phonology we had continual recourse to the data of related languages, mainly to Egyptian and Semitic, for the purpose of verifying and interpreting our results. Many of the etymologies connecting Chadic with Semitic with Egyptian had been worked out during research for two comparative dictionaries: *Sravnitel'no-istoricheskij slovar' afrazijskix jazykov.*, Moskva 1982–1986 and *Hamito-Semitic Etymological Dictionary. Materials for a Reconstruction.* Leiden, 1995, the rest were obtained while working on the present investigation. But it should be observed that a search for new etymologies was not our proper task.

The present work consists of three chapters. They treat, respectively, of consonants in word initial and medial positions, and of the vowel system. The reconstructed consonantal system includes labials, dentals, sibilants and sibilant affricates, laterals, uvulars, laryngeals, sonorants, and semivowels (sections 1 to 8). Each section is introduced by a table containing the reflexes of the Proto-Chadic phonemes under investigation in the Western, Central, and Eastern branches, as well as those in every group. Chapters 1 and 2 are concluded by tables presenting correspondences within groups (Appendices I and II). After a short treatment of the regular reflexes and of the positional variants we adduce 10 to 15 roots that illustrate the reconstruction of a particular phoneme, including all of its positional modifications. Since almost all of the obstruents are rather infrequent in inlaut, it is quite often that in chapter II almost all of the material available is adduced, i.e., every available root containing a certain phoneme in the word medial position, including those roots which are attested only in a handful of languages.

The present material is organised along the following lines: first, an asterisked reconstructed form, then its suggested meaning; if the semantics on the branch or group level is identical with the common one, the meaning is not repeated. Then the lexical items are arranged according to the branches, and within the branches – according to groups. When necessary, intermediate reconstructions of both levels are also given. Names of individual languages are written with a capital initial, while the names of the respective subgroups – with a small one; thus, the Bura language, but bura – the bura group of languages. After the name of the language, in round brackets, the sources are quoted (see "Source abbreviations"). If no source is explicitly quoted it means that the words

of a given language are always taken from one and the same source (see the list of "Basic sources").

The whole commentary, pertaining to a particular reconstruction, is either contained within the entry (if it concerns a group of languages), or is appended to it (if it is of a general character). After a single slash (/) genetically related roots of other Hamito-Semitic languages and Ch reconstructions proposed by P.Newman (1966) and Jungraithmayr, Ibrizsimow (1994), are cited. After a double slash (//) we list Hamito-Semitic etymologies. Reconstructions proposed by R.Shuh (1984) are given in square brackets: [**baka*].

Since the lexicon of the majority of the Chadic languages is still not satisfactorily and exhaustively described, we do not classify the reconstructed Chadic roots as Common Chadic, Proto-Chadic, etc. As one knows from practice, any new dictionary or a word-list adds something to the existing etymologies or even permits to discover new ones. On the other hand, there are numerous examples when a root, attested in a single branch or even in one or two groups, has reliable external parallels. E.g., the root *dam- 'blood' has been preserved only in angas, bolewa groups, in Ngizim and in Tera, while it undoubtedly belongs to the common HS word stock, since it is amply represented in Semitic, Berber, and Omotic. A root which is attested, at least, in two branches is considered to be of a potentially Proto-Chadic origin and is provided with an asterisk (*).

Regular correspondences for the following Chadic languages are established in the present investigation:

West Chadic

1. hausa group – Hausa
2. sura group – Sura
 - Mupun
 - Angas
 - Ankwe
 - Chip, Montol, Gerka
3. bole group – Bolewa
 - Karekare
 - Dera
 - Maha, Ngamo
 - Tangale
 - Kirfi, Bele, Galambu, Gera, Geruma
4. Northn bauchi group – Warji, Kariya, Diri, Paa, Mburku, Miya, Siri, Cagu, Jimbin
6. Ngizim
7. ron group – Fyer, Bokkos, Dafo, Sha, Kulere

Central Chadic:

1. tera group – Tera, Hwona, Gaanda, Gabin, Boka
2. bura group – Bura, Chibak, Kilba, West Margi, Hildi, Wamdiu, Margi
3. higi group – Higi Nkafa, Hifi Baza, Kapsiki, Higi Ghye, Higi Futu, Fali Kiriya, Fali Gili

List of basic sources:

- Bargery, 1937
- Jungraithmayr, 1968
- Frajzyngier, 1991
- Foulks, 1911
- Jungraithmayr, 1964
- Lukas, 1971, 1971b
- Lukas, 1966
- Newman, 1970
- Newman, 1965
- Jungraithmayr, 1991
- Shuh, 1978, 1984
- N.Skinner, 1977
- Shuh, 1981
- Jungraithmayr, 1970

4. bata group – Fali Jilvu, Fali Bwagiru, Fali Mucella,
Gudu, Mwulyen, Bachama, Gude, Nzangi
5. mandara group – Mandara, Gava, Glavda, Dgxwede,
Nakaci

7. matakam group – Mofu
Mafa
Gisiga
10. kotoko group – Logone
Buduma
11. musgu group – Musgu
12. masa group – Zime Batna
Masa, Banana, Lame, Peve

East Chadic:

1. kera group – Kera
Kwang
2. lai group – Lele, Kabalai
3. sumrai group – Tumak
Sumrai, Ndam,
4. sokoro group – Sokoro
5. dangla group – Dangla
Migama
Bidiya
6. mokilko – Mokilko
7. mubi group – Mubi

Basic sources for non-Chadic languages:

Arabic – Biberstein-Kazimirsky, 1846; Egyptian – Erman, Grapov, 1937
Hebrew – Koehler, 1958; Jibbali – Jonston, 1981; Kanury – Cyffer, 1990
Oromo – Gragg, 1982; Tubu – Lukas, 1953.

Our research includes data on some more Chadic languages, namely
West Chadic : 3. Pero (Frajzyngier, 1985), 5. Southern bauchi group –
Boghom, Kir, Tala, Guruntum, Jimi, Geji, Buli, Tule, Wangday, Zaar, Polchi
Mbaru, Zul, Zaar, Jimi (Shimizu, 1974, 1978), Dwot (Kraft); Central Chadic
5a. Lamang, 6. Sukur, 8. Daba, Musgoy; 7 Balda (Seignobos, Tourneux, 1984);
9. Gidar, 11. Mbara (Tourneux, 1986), Munjuk (Tourneux, 1987); East
Chadic: 2. Gabri, Nanchere, Dormo (Lukas, 1937), Tobanga (dialect of
Gabri, Caprile, 1978); 3. Sibine (dialect of Sumrai, Jungrathmayr, Caprile,
1987); 7. Jegu, Birgit.

Our reconstruction of bura, higi and masa (with the exception of Zime
Batna) groups is based mostly on Kraft's data (Kraft, 1981).

Source abbreviations:

(A) Gelb, 1957	(Hoh) Hohenwart, 1979	(Muk) Mukarovsky
(AA) Djakonoff, 1982-86	(HS) Orel, Stolbova, 1994	1995
(Arm) Armbruster	(IS) Illich-Svitych 1966	(Mz) Meizel, 1983
(By) Bouny, 1975	(J) Jungrathmayr, 1973	(Mo) Mouchet, 1950
(Cp) Caprile, 1972	(Ja) Jaggar, 1988	(N) Newman, 1964
(dJ) Jungrathmayr, 1973	(Jglb) (Nm) Newman, 1977	

(Dig) Dolgopolsky, 1976	(KB) Koeller 1958	(RL) Lukas R., 1976
(DW) De Wolf, 1971	(KI) Koelle, 1954	(Rn) Reinish, 1889
(E) Ehret, 1980	(Kr) Kraft, 1981	(Rp) Rapp, 1969
(EN) Ehret, 1989	(L) Lukas, 1937	(S) Sachnine, 1982
(Fp) Fitzpatrick, 1910	(Ls) Leslau, 1938	(Sa) Sasse, 1979
(Go) Gowers, 1907	(Lsl) Leslau, 1987	(Sd) Soden, 1965
(Grn) Greenberg, 1966	(M) Meek, 1931	(Sh) Shuh, 1978, 1984
(Grg) Garrigues, 1972	(Mi) Mirt, 1964	(Sk) Skinner N., 1995
(Gt) Guthrie, 1967	(MiS) Militarev, Stolbova, 1990	(Skn) Skinner, 1996
(H) Hoskinson, 1983	(Mo) Mouchet, 1950	(Sm) Shimizu, 1974, 1978
(Ho) Hoffmann 1963	(MS) Skinner M., 1979	(Stl) Stolbova, 1987
		(Vn) Venberg, 1975
		(W) Wolf, 1983

Abbreviations

Gbn	Gabin	AA	Afrasian	Mnj	Munjuk
Gbr	Gabri	Akk	Akkadian	Mnt	Montol
Gdf	Guduf	Ang	Angas	Mok	Mokilko
Gdr	Gidar	Ank	Ankwe	Mpn	Mupun
Glm	Galambu	Arab	Arabic	Mrg	Margi
Gis	Gisiga	Aram	Aramaic	Msg	Musgu
Glv	Glavda	B	Bantu	Mtk	Matakam
Grk	Gerka	BC	Benue Congo	Mwl	Mwulyen
Grn	Geruma	Bch	Bachama	Nak	Nakatca
Grnt	Guruntum	Bgh	Boghom	Nan	Nanchere
Gz	Ge'ez	Bid	Bidiya	Ngm	Ngamo
Hbr	Hebrew	Bir	Birgit	Ngw	Ngwahi
HB	Higi Baza	Bld	Balda	Ngz	Ngizim
HF	Higi Futu	Bnn	Banana	Nub	Old Nubian
HG	Higi Ghye	BM	Banana (Musey)	NS	Nilo Saharan
Hld	Hildi	Bok	Bokkos	Nzn	Nzangi
HN	Higi Nkafa	Bol	Bolewa	Pol	Polchi
HS	Hamito-Semitic	Bud	Buduma	Sar	South Arabian
Hs	Hausa	C	Central	Sem	Semitic
Jibb	Jibbali	Ch	Chadic	Sib	Sibine
Jmb	Jimbin	Chb	Chibak	Sok	Sokoro
Kap	Kapsiki	ChN	Chari Nile	Sud	Sudanic
Kar	Kariya	Df	Dafo	Sum	Sumray
Kbl	Kabalay	Dng	Dangla	TP	Tera Piizimdi
Klb	Kilba	Drm	Dormo	Tng	Tangale
Krkr	Karekare	Dxw	Dgxwede	Tum	Tumak
Krf	Kirfi	E	East	Ug	Ugaritic
Kwn	Kwang	Eg	Egyptian	W	West
Lmn	Lamang	FB	Fali Bwagira	Wmd	Wamdiu
Log	Logone	FG	Fali Gili	Wng	Wangday
Mba	Mbara	FJ	Fali Jilvu	Wrj	Warji
Mbu	Mburku	FK	Fali Kiriya	WM	West Margi
Mig	Migama	FM	Fali Mucella	ZB	Zime Batna
Mnd	Mandara	Gaa	Gaanda		

assim.	assimilation	contr.	contraction	idf.	ifeofon
ireg.	irregular	metath.	metathesis	pref.	prefix
		suff.	suffix		

Conventional signs:

1. Glottalisation and injective character are denoted by a dot over or under character (b, p̣).
2. Sibilant affricates are transcribed as c, ɕ, ʒ; palatal ones as č, ɟ, ʝ; later ones – as š, ʃ, ʂ.
3. The laryngeal similar to the Arabic as h.
4. The Proto-Chadic uvulars are denoted by the signs ɮ, q, ɠ.
5. The 'crossed i' (or the front shwa) is transcribed as i̯.
6. The sign V denotes a vowel of unknown quality, and C – a consonant of unknown character.
7. The characters P, T, S, K, Q, H denote respectively a labial, dental, etc. of further unspecified character.
8. The sign / ('slash') separates two variants of a reconstruction, within reconstructed form it means 'or' (e.g., a/u).
9. In case the reconstruction seems doubtful the phoneme is put into square brackets (e.g. [a]).
10. The tones are denoted as á 'high', à 'low', â 'contour tones'. The 'middle' tone has no special designation. When Kraft is quoted, his own system of notation is used, that is, the 'high' tone lacks any special designation.

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Chapter I. Consonants in word initial position.

I.1 Labials.

The labial series includes **p*, **p̥*, **b* and **f* (see tables 9 – 19 on. pp. 93 – 99 for regular reflexes in individual languages).

Opposition *p* : *f* for Chadic and Afroasiatic was reconstructed by J. Greenberg (1954) on the basis of one-to-one correspondence between Egyptian and W Chadic sura languages. Further research has proved that it is relevant also to Northern bauchi, bata, matakam, Zime and Kera. In other CCh languages (probably also in Bolewa, Kerekare, Sokoro and in Mubi) *p* is being ousted by *f* in specific environments. PCh **p*– and **f*– yielded *f*– in Hausa and in ron languages but *p*– in ECh lai, sumray, dangla, Mokilko. ECh **p*– > –*b*– (> –*w*–) when preceded by a prefix; *b*– is a regular reflex of initial ECh **p*– in Sumray. Examples:

pas*[a] ‘break’: W 1 Hs *fāsā* ‘break’, 3 Tng *pas* idf. describing sound of smth breaking; 6 Ngz *pə–psú* ‘rendre into small pieces’; C 4 Gude (H) *puši* idf. ‘breaking of a falling object’; 5 Glv (Rp) *pās–pāša* ‘crumbs, broken pieces’; 7 Mofu –*pá–pəs*– ‘émietter’; E 5 **pese* (<pase*, vowel assim.): Dng *pèssé* ‘casser avec la main’.

**pVk*– ‘wait’: W 1 Hs *fākaa* ‘lie in wait for’; C 1 (Kr) Gaa *ipiki*, Boka *pwi’i*, Gbn *pūk–tə’ənči*; 5 Glv (Rp) *pak*; 10 Bud *fuga*.

**p[a]t*– ‘pluck’: W 4 Paa (MS) *pitāā* (–*i*– < **a/u/i*– due to the long vowel in the next syllable), Diri *fəta* (irreg. reflex) ‘pluck’; 6 Ngz *pətú*, *fətú* ‘extract’; C 12 ZB (S) *pát* ‘plumer, épiler’; E 1 Ngam (Ln) *patí*.

puri*– ‘untie’: C 1 Tera (N) *pərí*; 2 (Kr) WM *mpili*, *piri*, Chb *mpili*, Bura *pili*, Mrg *pil–nà*, Hld *pul–na*; 3 (Kr) HB *pil–undə*, HN *pil–unte*; 4 (Kr) Gudu *pur–gič*, Mwl *ùpùr–án*, FB *pir*, FM *piri*, FJ *pila–bi*, Gude (H) *pəra*; 5 **pul* (irreg. –*l* in a cluster and in the auslaut): Dxw (Kr) *pul–naya*, Glv (Rp) *pəl*; 7 Mafa *pər*–; 10 Log *vel–he*, Bud *fəlu* ‘loosen’; 11 Mnj *pili*; E **apir*–/pVwir*–: 1 Kwn (J) *əpre*, Kera *fěré* ‘losmachten’ (*f*– < **Vp*–?); 2 Lele *póór*, Kbl *púwer* (Cp); 3 Sum (J) *‘əwə̀r*, 5 Dng *ipirè*, Mig *‘ipiró*, 6 Mok *‘əppirè* Nm **pəra*, Eg *prw.t* (Pyr) ‘Fesseln’ (1:531), Bebrer Qabyle *ə–fru*, Kush Oromo *furra* ‘untie’// AA N 33 **pr* ‘fettens’, HS N 2013 **pur*– ‘untie’.

**pilu*– ‘pay, exchange’: W 1 Hs *fälle* (Katsina *fille*) ‘enforcing very early payment of taxes by a district head or a minor chief who may be hard up’; 3 Pero *pílù* ‘buy’; 4 **pul*– ‘pay, ransom’: Wtj *pəl*–, Mbu, Kar *pul*–; C 5

[illegible]

Dxw (Fr) *pə́lā* 'pay' (Glv (Rp) *pəl* 'change'); 7 Mofu *pəl-*, *pil-* 'pay', Mafa *-púl*- 'rembourser'; 11 Mba *púl* 'pay'; cp. 12 Masa (Kr) *fula-no* 'give' (hardly goes back to Ch **-bar-* 'give'); E **pilk-* 'pay back, exchange': 5 Mig *pil-kò* 'pay (back)'; 6 Mok *pél-kè*, *bil-kè* 'exchange, deliver'.

**poku* 'peel, skin' (v.): Ang *pok* 'peel'; 6 Ngz *pà-pkú* 'scrape (bark)'; C 7 Mofu *-pokw-* 'peel', *to-pokw* 'husk' (n.); E **pok-*: 1 Kera *póké* 'shell, pluck feathers'; 3 Tum *pəg hum*, 'to skin'; 5 Dng *pòkkiye* 'décapsuler' / Arab *faq'* 'coiffe, membrane très-délicate qui enveloppe la tête du fœtus', Dahalo *pak'o*, Kwadza *pa'uko* 'bark' (E:143), Aram *pq'* 'peel, shell' (v.) / IgIb **pkt* 'skin', AA N 18 **pəḵ* 'husk, shell' (n.), HS N 1935 *paḵV-* 'bark, skin' (n.), N 1996 **pok-* 'peel, skin' (v.).

**patu-* 'go out, go in': W 2 Sura, Mpn, Ang *put*, Ank (Grn) *pet* 'go out'; 3 cp. Bol (Kl) *pete* 'go'; C 4 Gude (H) *pát* 'go out'; 5 (Kr) Mnd *apcāpca* 'return'; 7 Mofu *pát* 'sortir brusquemant'; 8 (Kr) Daba *pəd* Musgoy *put* 'go' / IS **pVtV*, Nm **pəta*, JgIb **pt* 'go out', Eg *ptpt* (Pyr) 'auf etw treten' (1:563).

*po' – 'sweep': W 4 Paa *pei*, *peyíí*; C 12 ZB (S) *pó'ó* 'brush' (v.); E 1 Kera *pó'e*, *pé'e* 'abstauben'.

**paHid*- ‘fall, lie down’: W **paHid*- > 1 Hs *fāādī* ‘fall’; 2 Chip (Kr) *pit*- ‘lie down’, Ank (Fp) *petta* ‘fall’; C 2 (Kr) **payid*- < **paHid* > *pi* ‘lie down’: Mrg *pida*, Hld *pidā*, Wmd *pidā*, Klb *ápíyā*, WM, Chb *pi* / cp. Eg *pḥd* (Med) ‘Schulter erabhängen, Gesicht niederbeugen’ (1:544).

piis*/č- 'spit' (v.): W 1 Hs *fěésá* 'spurt water from mouth'; 3 Krf *fiš-*, Gera *fiiši*, Glm *pəs*[fəs*u]; 4 Paa (MS) *pjśuù*, Kar *pəcə*, Diri *pəʒa*, Cagu *pəč*, Jmb *fəs* (irreg. reflex); 5 Wng (Jglb) *pyas*, Zaar (Jglb) *piyácó*, C 1 (N) Tera *pəšə* 'splash' (v.); 4 Bch (Sk) *fiisə* 'splash' (irreg. reflex of **p-*); 7 Mofu *-pəs-*, Mafa *piš-* 'cracher'; E 'spit' (v.): 2 Kbl (Cp) *úwəsə*, 3 Sum (J) *bəsə*; 5 Bid *pič*, Mig *písáw*/Nm **pəšə*, Jglb **ps-*, Arab, Ug *nft* // AA N 11 **pəč*.

**pata* 'skin' (n.): W 1 Hs *faata*; 4 Wrj *patai*; C 3 (Kr) HB, HF *pta*, Kap HG *pta*, w(p)*ta*. Derived from this root is **pa-pit*- 'peel, skin' (v.): C 5 Mofu *pápət*- 'eplucher', Mafa *pit*- 'decortiquer'; 8 Musgoy (Mo) *pəd* 'to skin'; E 2 Kera *pété* 'schälen (Baum), entfedern' /Ometo *faata* 'skin'// HS N 1964 **pat*- 'skin'. Malinke *fata* is probably a Ch loan.

Note one more example of the same lenition (**pt-* > *wt-* > *t-*): C 3 **pVt-* 'scorpion': HG *pti*, *wti*, HF *ptù*, FK *ti*, Kap *pitè*, HN *tè*, HB *wto* /cp. Eg (t) *ptt* Name eines Skorpions (1.566)//HS N 2028 **pVt-* 'scorpion'.

**puču* 'plait, sew': W 2 (?) Ang *pus* 'spin'; C 1 Gbn, Gaa *pèšẽ-nɛ́i*, Boka

pwěša-da 'plait' (Kr); E 3 Ndam (dJ) *pəsā*, Som (J) *busə* 'sew'.

**puḍ-* 'hide': W 4 Paa (MS) *pəḍú* 'sneak fast, conceal oneself'; E 3 Sum (J) *budə*, Ndam (dJ) *pùdà*.

In roots with a medial sibilant or affricate Ch **p-* often yields *f* (especially – in CCh). See **piis-č-* 'spit' (v.) and the following examples:

**puçi/a* 'ashes': W 4 Cagu *púsən* (*pus* < *puç-*), Siri *vəcə-ki*; C 1 (Kr) **fuši*: TP *pizì-dì*, Gbn *fiče*, Boka *fūši*, Hwo *fīšē*, Gaa *fīžā*, Tera (N) *pəžit*; 2 (Kr) **puçi-nu* > **pincu*: Klb *púci-rú*, Bura *pinžù*, Chb *pinzù*, Mrg *pinsu-ḍu*; 3 (Kr) **pcu-ḍi*: HF *psīḍi*, HG *wsuri*, HN *pcu-ri*, Kap *psu-ḍi* 'ashes' (cp. Kap *psa-kē*, FK *wčā*, FG *psa-ti*, HG *wsa-žē*, HF *psa-šō*, 5 Mnd *pšapša* 'roast'); 5 **afca-* > **fīca* (syncope of the medial vowel): Glv (Rp) 'ááfcā, Gdf (Jglb) *fīcā*, (Kr) Gava *fīcā*, Nak *fīcā*, Dxw *f(i)cu-ḍē* (< **afcu-* < **afuca-*); 7 Gis 'afco, Mkt (Jglb) *fē-kál*, Bld *fūču* (Mofu *be-beḍ-es* < Ch **buwuḥ-* 'ashes' see below) /cp. W 4 Siri *mbiicə-nni*, Cagu *pača-han* 'white' ~ Akk *pešū* 'weiss, (hell)grau sein, werden' (Sd:857).

**pa/uçi* (? **poçi*) 'sun': W 2 **puyus* (< **pa/uHuç*, note an epenthetic laryngeal in a root with an emphatic consonant): Mpn, Angas, Sura *puus*, Mnt *pəyəs*; C 2 (Kr) **puçi* (metath. of emphasis): Klb *pīci*, Hld *pučii*, Mrg *biči*, Wm *piči*, WM *biži*, Mrg (Jglb) *bəči*; 3 (Kr) **fuči*: HF, HN, FG, FK *vīči*, HB *viči*, HG *fūži*; 6 Sukur (Jglb) *pis*; 7 **pac*: Mafa *pác*, Gis, Bld *pas*. Derived from this root is **pačar-* 'sun, heat of the sun': W 1 Hs *fāčār-fāčār* 'noonday heat of the sun', 4 Cagu *šarafēē* (metath.) 'sun'; C 10 Log *fāzár* 'morning' / cp. Arab *fšh* IV stem 'apparaitre, briller (se dit de l'aurore)', Eg *pḏ.t* Bezeichnung für den Himmel (Pyr) (1:569), Rift **pac-* 'sky' Sk (1993:21). Cp. Ch **fawVt-* 'sun, God'.

When preceded by a prefix Ch **p-* > *b-* in a number of ECh languages; *b-*, *f-* or *v-* in W and CChadic.

**k/tV-pirac-* 'mosquito': W 4 Cagu *véés-ən* (*v-* < **p-*, contraction: **-pirac-* > *viyas-* > *vees-*); C (Kr) **pinzu* < **pincu* < **pic-un-* < **pirc-un-* (though Pr-bura **pinz-* < **pirz-* < **pirVc-* is also possible, the last *-u* rather speaks in favour of a metath., note that both sonorants are preserved in 4 Gudu): 2 Bura *pinžù*, Chb *pinzù*; 3 **figVnz-* (metath. < **ka-priž-un-*, *-pr-* > *-f-*): HB *viginzəw*, Kap, HN *vinze*, HG *fiyənzi* (< **figanzi*), HF *vinzo*, FK *vinzum*, FG *vünzum*, 4 **ka-brīzan-* (> **ka-vžan-*): (Kr) Gudu *vřínzù*, Gude *ka-žīna*, Nzn *kī-vžənye*, *ka-vžūḇə*, FJ *ka-vžāni*, Nzn (Mo) *ká-bženi*; 7 cp. Mofu *perer*, 10 **/ēlači* < **ka-pirac-*): Log *vélásēn*, (By) *fələsə*, Bud *həlači*, also *balasi*,

pelače, Glf *felei*; E **ta-pis-* (< **ta-pirs-*): 1 **tawVs* > *tos* > Mobu (J) *tóosi*, Kera *tosì*; 2 **tV-bVs-*: Kbl (Cp) *tə-səbə* (metath.), Lele (Grg) *tə-msé* (< **tebse*); 5 **bis-* < **piyas-* < **piras-*: Dng *bísā*, Bid *biisa*, Mig *biisē*, 7 **biš-* (< **-pis-* < **piyas-* < **piras-*): Mubi (L) *bis*, (Jglb) Jegu *bíísó*, Brg *bísiyó*, 6 Mok *péssò* (< **perso*). Cp. Ch **mV-fit-ud* 'mosquito' / IS **bVIV/s/V*, Jglb **brt*.

**[i]puki-* 'monkey': W **ipVki* 'baboon': 3 Krkr (Kr) *yifki* (*fk* < **pk*); 4 Cagu *yipək-ən*, C **[i]Vpuki* (Kr) 'monkey': 1 Boka *fūši*, Gaa *fīcā*, Gbn *fīcē*; 2 Mr *pčū*; 3 HB *pikə*, HN *pikē*, FK *bəki*, Kap *pši* 'monkey', *pši-nirē* 'baboon'; 4 FM *viži*; 5 Nak *vikey*, Gava *vič-xadəya* 'monkey'. Laryngeal, which can still be traced in W Ch, caused a **p* > *f* > *v* shift in CCh languages / Eg (Pyr) *p'tt* 'Bezeichnung für Pavian' (1:500). C (Kr) 4 FJ *ḥwaku* 'monkey', 12 Lame *bukwā-mó* 'baboon' may have an areal nature, cp. PBC **-bogu* 'monkey'.

Ha-paš-* > **pa-paš-* > 'shoulder': W 5 Buli (Kr) *gə-puš*, C **pa-paš-*: 2 (Kr) **pa-paš-* / **paš-k-* (metath. < **Ha-paš-*, voicing of *-š-* in the *CVCVš-* position): Wmd *pa-pažu*, WM *pa-pašù*, Chb *bə-bəžā*, Bura *paša-ha*, Ngw *paši-ka*, Klb *pási-kù*, Mr *paš-ku*; 3 (Kr) **ba/m-baža* (mp-* > *mb-* is regular, regressive voicing of *-š-*): HN, HF, HG *bəžā*, Kap *m-bažā*, FK *bə-bəžā*, FG *baži*; 4 (Kr) Gude *paši-kən*, FJ *bə-bəžā*, 5 Nak *šapa*, Glv (Kr) 'axyepe', Mnd (L) *áxēpē-xēpē* (metath.); 7 Mtk (Kr) *pə-péš*, Mafa *peše-peše*, 11 Msg *kér-peš* / ? Eg *ḥpš* (MK) 'Arm; Kraft' (1:268).

When preceded by a body-parts prefix, initial **p-* yields *p-* in Northern bauchi languages (**ḥapVC-* > **ḥpVC-* > **pVC-*), for example:

**-pura-* 'blood': W **ḥa-pura-m* > 4 **pVra-m-*: Mbu *pəran*, Miya *pəram*, Siri *pərami*, Jmb *ḥəramá*; 5 (Sm) 'blood' Kir *pirən*, Tala *prá*, Grnt *bəran*, Geji *xulan* (< **H-pur-an*), Buli *brān*, Tule *vūrāni*, Zaar *virāān*, (cp. (Kr) Dira *būrāni* 'blood', *tī-būrāni* 'vein'); C 1 (Kr) TP *vər*, Gbn *fēre*, Gaa *fēra*, Hwn *farā*, Boka *fwura*, 9 Gdr (Mo) *mbéli* 'blood', *bélet na mbéli* 'vein'; 11 Msg *fel*, Mnj *fēl* (*f-* < **p-*); 12 cp. ZB (S) *vūr-zù*; E **ku-bara*: 1 **ko-war-* > Kera *kor*, Mobu (J) *kowaar*; 2 Kbl (Cp) *kā-bərə*, Lele (Grg) *kū-bərə*; 3 Sum (J) *bāre*, Ndam (dJ) *baar*, Tum *bā*; 5 **bar-* < **par-*: Dng *baari*, Mig *báará*; 7 **bar-* < **par-*: (Jglb) Jegu *bar*, Bir *bārā*, Mubi *òbòr*. The root may be related to **pVr-* 'red': W 3 Tng *porol* 'redness'; 5 (Kr) Buli *pirin*, *mə-pirin*; E 3 Tum *pāri* 'red', Sib *bwārā* 'rougir' (note that E 3 reflects initial Ch **p-*). Derived from this root is **m/H-pura-t-* 'vein' (cp. W 5 Zul): W 2 Ang *pər*, Chip *pār*, Mpn *pār*; C (Kr) 2 Mrg *pur-da*, WM *pur-daa*, Bura *pur-dā*, Chb, Ngw *bir-da*, Wmd *bilā-tu*, Hld *bula-tu*, Klb *bilā-tù*, 3 FG *bir-či*, FK *būr-tù*, HF *būr-ta*, HG

pùr-de, Kap *bùr-te*, HB *bili-to*; 4 Gude *bùr-də*, FM *bùr-din*, FB *bùr-din*, FI *m-bur-žin*; 5 Mnd *purda*. Contamination with **'abul-/bu'al-* 'tendon, vein' (see below). Note, that Ch **b-* never yields *p-* in Northern bauchi, cp. WCh **ha-bir-um* 'knee' (Stl:156) /Nm **bar*, Jglb **br*, Kush **bVI-* (Dlg:192) /Cp. Gz *ferā* 'pestilence, plague, blood' (Lsl:165).

Sem and Eg parallels show that in roots with a medial laryngeal Ch **p-* usually has a specific reflex in a number of languages (Northern bauchi *p-*, Hausa, Ngzim *b-*, tera *f-*, Sumray *p-*). To account for this correspondence PCh **p* is reconstructed (cp. reflexes of Ch **p* in IS:32). Note that *p* is a Proto Ch, not a Proto HS phoneme (as in Djakonov (1987:14). All the roots with initial **p-* so far reconstructed are listed below.

**puHar-* (< **puHar-*) 'to jump': W 1 Hs *bùraa* 'hop, jump'; 2 Ang *pyaar*, Ank (Fp) *parr*, (Gr) *p'aar*, Mpn *paar*; C 7 Mofu *-pá/ér-* 'envol d'oiseaux'; 8 Daba (Jglb) *mbir*, 10 Bud *fer*; 11 Msg (Jglb) *p'r'*, (Mo) *bara*, Mnj *piri* 'bondir'; E **p₁ar-*: 1 Mobu (Ln) *béré*, pl. *pere*, 3 Sum (J) *pâr* /IS **pVrV*, Jglb *p-r*, Nm **pəra*, Eg (MK) *phrr* 'run' (1:541) // Grm (1963:57), HS N 2007 **puhar-* 'run'.

**poHal-* (< **poHal-*) 'break (through)': W 1 Hs *hállè* 'snap, break'; 3 Tng *paale*, Pero *paal* 'strike'; 7 Fyer *baal* 'break'; C 1 (Kr) **fVI-* (< **f₁p₁VI-*) 'break in pieces': Boka *fèlè-dj*, Hwo *fùlè-η*, Gbn *fil-kədj*; E **p₁oHal-* 'break, hollow out': 1 Kera *palwe* 'break', 2 Kbl (J) *paal* 'hollow out'; 3 Sum (J) *pol*, *pālā* 'hollow out' /Arab *flh* (metath.) 'split', Eg (MR) *ph* (< **phl*) 'spalten, durchschlagen' (1:542) // HS N 1929 **pahal-* 'break through'.

**puHer-* (< **puHer-*) 'stone': W 2 **p(u)yer*: Sura *kə-per*, Mpn *peer*; C 3 (Kr) HG, HB *pīre*, Kap *pūre*, HN *pūre*, FK, HF *pīre*; 7 Mafa *pārā-d* 'flat rock', *mpār-pār* 'flat stones'; 4 (Kr) **fura*: FJ *fwala*, Bch, Gude *furà*, Mwl *fūrā*, FM *farā*; 5 (Kr) Gava *fūrā-dā*, Glv *fur-dəxai* (note that C 4 and 5 show a reflex of **p-* < **p* + *H*, not of an initial **p-*); 10 Glf *burr*, Makeri *purr*; E 1 Kera *pār-ki* 'rock'; 5 Bid *peere* 'smooth stone' / Arab *fīhr-* 'pierre assez grand pour remplir toute la main avec laquelle on casse les noix ou on broie les aromates'. Note that Ch is not related to Mandinka *fāda*, Bambara *farā*, Susu *fandie*, as in Mukarovsky (1995:72).

**poHač-* (> **paHač-*) 'break (off), hatch': 1 Hs *baasaa* 'break off (branch)'; 4 **pVš-* 'break': Paa (MS) *pišāā*, Siri *pəšu*; 5 (Kr) Geji *baš-kā*, Dwot *bəš-tiy* 'break'; 6 Ngz *ba-bšū* 'to hatch out of egg'; C 4 Gude (H) *pwašə* 'break off tree limb'; 7 Mafa *pās-*, Mofu *-paš-* 'break'; E 1 Kera *pésə* 'schlupfen (aus Ei)' / Akk *pəšu* (Sd:807), Arab *fhḍ* 'casse (choses humides)', Eg *phḍ* (Med) 'aufschneiden (ein Geschwür, ein Tier)' (1:542) // HS **pVhVč* > Ch **pVHVč-* >

**pVHVč-*, since two primary emphatics in one root are not allowed.

**paHir* 'strip off bark': W 1 Hs *baàra* 'decorticating, striping off bark'; 3 Tng *paara* 'peel'; 6 Ngz *ba-bəru* 'peeling off'; C 11 Mnj *pire* 'éplucher'; E 5 Mig *piraw*, Bid *pir*, Dng *pèrè* 'peel' / Iraqw *puru^f-us-*, Alagwa *puru^f-* 'strip off' (E:145). Metath. in Ch or in Rift.

pih/hu- 'pull': C 7 Mafa *pihu-*; E 3 Sum (J) *pii*.

**pVy/wah-* 'white': W 2 Sura *pyaa*, Ang *pyee*, Grk *pya*; 3 Bol *pe*, Tng, Maha *pe*, Krf *pèewā*; 4 Wrj, Kar *pyau-na*, Diri *bee*; C **p₁Vw/y-*: (Kr) 3 HN *bya*, FG *pāyi*; 4 FJ (Kr) *pwā-yin*, Gude (H) *pwah* 'very white'; 10 Log, Kus *pau*; 12 ZB (S) *bu* 'white', *bùhò* 'white earth' /Nm **p-*.

[p]aHud-* 'thigh': W 3 **punda* (? < **pumda* < **pVd-um*, note that a CVCVm/nV > CVm/nCV metath. is typical of bole languages) '(your) thigh': Dera *púndó*, Krkr *fəntáu*, Krf *fəndó*, Glm *pəndá*, Gera *pindí* [fəndó*], C 1 (Kr) **fuḍ-*: Gaa *fūḍa-tā*, Boka *fūḍə-tə*, Gbn *fūḍə-tə*, Hwo *fūḍā-ra*; E 7 (Jglb) Jegu *paado*, Brg *fāadi*, Mubi *fūúdi* /Jglb **pnd*, Eg *hpd* (Pyr) (metath.) 'Hinterbacke' (3:270) // HS N 1931 **pahud-* 'thigh'.

Initial Ch **b-* (if not modified by a prefix) is preserved in the majority of the languages (it is devoiced in sura, ron and tera groups, in Logone and Musgu). After a noun prefix (**kV-/dV-*) Ch **b-* yields *-v-* in Northern bauchi, Ngzim and C Ch. A **b-* > *v-* shift may depend on the neighbouring consonants, for example **bVn-*, **bVk-* usually yield *vVn-/vVk-* in CCh. Cp. **baš-* 'dig, bury' (II.4), **bVh-* 'cave' (II.6) and the following roots:

**biina* 'hut, house': W 2 **piin-*: Grk, Ang, Mnt *piin*; 3 **bin-*: Bol (M) *bin*, Krkr *bèn*, Bele *bin*; 5 Grnt (Ja) *biin*, Zaar (Sm) *viin*, (Kr) Geji, Pol *biñ*; C **ku-bin-* 'hut': 2 (Kr) Klb, Hld *vi*; 4 (Kr) FM *kú-vu*, FB *ku-vun*, Mwl *bin-ti*, Nza *vine*, Bch *vuney*, Bata (Mo) *vəne*, Gudu (Jglb) *vin*, Bch (Mo) *vine*, Gude (Mo) *ku-va* 'hut'; 5 (Kr) Glv *ven*, Nak *vine*; 7 Gis *ven*, Bld *vin*; 9 Gdr (Mo) *biina*; 10 Log *vəna*, Kus *ven*; 11 Msg *fun*, Mnj *fūnú* (< **binu*), Mba *fin*; E **biin-*: 5 Bid *beena*, Mig *ben*; 6 Mok *biinò* 'case en pailee'; 7 Mubi (L) *bene*. Cp. 7 Mubi (L) *beeni* 'to build' and W 3 **ban-* 'town, village' (pl.?): Bele *bānú*, Gera *bāná* /IS **bVnV* 'build, house', Nm **bən*, Jglb **b-n* 'hut' / Grm:58, AA N 101 **bn* 'build', HS N 264 **ben-* 'building'.

buwut-* 'ashes': 1 Hs *há-bḍii* (< **abuṭ-*, syncope of the 2nd vowel and voicing of **t* in a cluster); 3 **buwt-*: Bol, Krf, Bele, Grm *bútó*, Krkr *bətó*, Dera *bubut*, Gera *bəḍá*, Ngm *buto* [buto*]; 4 **buṭ-*: Diri *bùtù*, Paa (MS) *bəti-ki*; 5 Grnt (Ja) *bùūši* (*-ši* < **ti-*); 6 Ngz *bébét*, Bade (Kr) *pubət-ən*; 7 Fyer *futu*, Bok *afūt*; C **ku-bwut-* 'ashes, flour, dust' > 4 Gude (Kr) *bú-bùtā* 'dust',

**ku-mbut* 'flour': (Kr) Nzn *mbùcì*, Gudu *ku-mbócù*, Bch *hu-mbwòto*, Mwl *ù-mbóti* 'ash'; 7 Mofu *bà-bəḍ-ēs*; C 10 Log *guu-fti*; 11 Mnj *avədiy*; 12 Masa (Mo) *búdu*, (Kr) Lame *bít-kù* Peve *bwut*, BM *but-na*, Bnn *put-nà* (regressive devoicing of *b-*), ZB (S) *bùt*; E **buti/a* 'ashes, flour': 1 Kera *kóráy* (m.) (? < **k-wr-* < **k-br-*), Mobu (J) *da-rwə* (< *da-rbV*, metath.); 2 **tí-br-* (-*br-* < **bt-*): Lele *tí-brè*, Kbl (Cp) *təri*; 3 **dV-brV* (-*br-* < **bt-*): Sum (J) *dà-brí-ny* 'ashes', *də-bríny* 'dust', Tum *də-bər* (< *dəbrV*) 'ashes', Ndam (dJ) *də-bri-ny* 'ashes, dust'; 4 Sok *bità-n* 'flour'; 5 Bid *bùtò*, Mig *bittí* 'ashes', *bittá* 'flour'; 6 Mok *bití-kè* 'tison'; 7 Jegu *bút* 'flour', *bút ko ɔɔk* 'ash' ('flour of the fire'), Brg (J) *bùtá* 'flour', *bùtá ko ɔɔk* 'ash', Mubi (J) *bùt* 'ash'. Ch **-t-* is reconstructed on the basis of *-t-* in W 4 (see table 11) and *-d-* in W 3 Gera. If not for medial *-w-*, Ch **bVt-* should yield *bVt-*. On pref. in ECh see I.2. / IS **bVdV*, Nm **bətu*, Jglb *bt-* 'ashes'. Eg (Med) *wbd* (*d* < HS **t*) 'brennen; Russ' (1:297) // Cp. AA N 61 **bəd* 'ashes'. Cp. Nile Nub *obur(t)*, Shilluk *bur*, Berta *bubuda* 'ashes' (Grn, ChN N 7). Judging by Berta *bubuda*, we are dealing with an ancient HS loan.

bur-oḍi* (> **-bu/ard-* > *-bu/əḍ-*, the suffix is still preserved only in C 3 FG) 'night': W 2 Sura *par*, Ang *paar*, Mnt (J) *payi* (< **bar* < **bura*, Ch **CVdV* > *angas CVt*); Grk (Jglb) *pwɔt* (< **bur-oḍi*); 3 **ba/uḍi*: Bol *boḍi*, Krkr *beḍi*, Dera (J) *bəri*, Ngm *beḍi*, Maha *boḍi*, Krf *búḍi*, Glm *bəryi*, Gera *bír-bí*, Grm *bi'i* [baḍi*]; 5 **ka-buḍ-*: Bgh (Go) *vod*, (Sm) Kir *fūt*, Tala *ká-fūr*, Zaar *gù-vùḍi*, Grnt (Go) *bauru*; 6 Ngz *də-viḍ*; 7 Df *fulul* (< **furur* < **furud*), Kul *má-fōḍ*, Bok *fwɔ*; C **da/ka-buroḍi*: 1 **fuḍi* (< **buruḍi*): Tera (N) *viḍ-ki*, (Kr) Hwo *fīḍi-ra*, Boka *fīḍi-ktə*; 2 (Kr) **-vuḍi* > Chb *viri*, Bura *viri*, Mrg *vi'i*, Wmd *vwu'i*, WM *anvwu'yi*; 3 (Kr) **fur-ḍi* > FG *virdi*, FK *vulè*, HF *viḍi*, HG *fidi*, Kap *viḍi*, HB *vili*, HN *vurɛ*; 4 (Kr) **ka/da-vuḍi* > FB *kḍi*, FM *vùḍi*, FJ *viḍi*, Gudu *vəit*, Mwl *vùḍó*, Nzn *vḍe*, Gude (Jglb) *da-vid*, (Kr) *da-vùḍ(a)*, Nzn (Mo) *dá-vəden*, Bata (Mo) *kááde*; 5 Glv (Rp) *áávəḍá*, (Jglb): Gdf *viḍe*, Dxw *vḍe*, Lmn *viḍi*, (Kr) Nak *viḍeya*, Dxw *vuḍi*, Gava *viḍiyá*, Mnd *vɔ'jiya*; 6 Skr (M) *vət*; 7 Mofu *tə-váḍ*, Gis *du-wudu*, Mkt (Jglb) *vəḍ*; 9 Gdr *də-fda* (Mo); 10 Log *vəḍe*, Glf *fáde*, Kus *mváde*; 11 Mba *di-viḍáy*. Initial pref. in Southern bauchi and CCh languages triggered a *-b- > -v/-* shift. / IS **bVdV*, Nm **bəḍi*, Jglb **bḍ*, Soq *bó'or* 'voyager la nuit', Jibb *ba'r* (Ls:92), Kush 'Afar *bār* 'night' // AA N 95 **b'r* 'night'.

**budVH-* 'pour': W 1 Hs *búḍá* 'sprinkle generously', 4 Wrj *bə-bəḍ*, Paa (MS) *bu-budüü* 'pour out'; C 7 Mafa *bəḍ-* 'verser (un liquid)'; 12 ZB (S)

mbəḍá 'dew'.

**b[a]3-* 'throw': W 4 Paa (MS) *bázáú* (idf.) 'falling, or sound thereof'; C 2 (Kr) Klb *ábüs*; 3 (Kr) Kap *bza-ve*, HF *bzà-nto*, FG *bizà* (secondary lateral); 10 Bud *phažii* 'zerstreuen'.

Initial *b-* in the sura group points to the loss of a preceding laryngeal (**HVbVC* > **VbVC* > *bVC*, note that medial **-p-* also yields *-b-* in this group). Examples:

**HVBuna* / **buHVna* > *bwuna* 'broad, large': W 2 **Vban* > Sura *baan*, Ang *ben* 'broad', Mpn *bán* 'stretch, widen'; 6 cp. 7 Bok *bwaan* 'hoch, lang'; C (Kr) 'wideness' 3 FG *bûñ*, 4 Bch, Gude *bwɔñ*, *bwəñ*, Nzn *xə-bɔñɛ*, Gudu *hāñ* (contraction); Bch *ḥan* 'large'; 12 (Kr) Lame *bábáná* 'large' (note *-a-* in a redupl. stem).

**HVbar-* 'recover': W 2 Sura, Mpn *bār*, Mpn *bár*, Ang *baar*, Chip *bar*; C 7 Gis *ble*; E 1 cp. Kera *wéré* 'heilen' (?-*w-* < **-b-*) / Arab *br* 'recover', IV stem 'cure' // AA N 104 **br* 'health, recover'.

Initial *b-* in Tangale and Logone reflects Ch **b* + *H*, for example:

**bihu-* / **ḥahu-* 'pierce, stick into': W 7 Sha *byāḥ* 'stossen', Fyer *bóó* 'erstecken', *bù-bóó* 'Speer'; C 7 Mafa *ḥahw-* 'percer un abcès'; 8 Daba (Kr) *bux* 'pierce'; 10 Log *báá*, Bud *bihu* 'durchstossen', cp. W 4 **bīyu* (< **bihu*) 'pierce': Diri *ḥuu*, Paa *ḥi*, Wrj, Miya *ḥiy*, Kar *ḥiya*, Siri *ḥiyu*.

**ḥaHal-* 'be large': 1 Hs *ḥálóó-ḥálòó* 'large (of plum-like fruits, etc.)'; 4 (MS) Paa *bá-bələ* 'very big'; 7 Bok *ḥāl* 'viel sein', Df *ḥāl* 'zu viel sein'; C 10 Log *báála* 'breit sein'; 11 Msg *bo-bolo* 'big'; 12 ZB (S) *bāl* 'vaste'; E 1 Kera *bò-bló* 'big', *ablāw* 'viel, sehr'; 3 Sum (J) *bəlle* 'big'; 6 Mok *báálé* 'grand (bouc)'.

**abul-* > **bu'al-* 'tendon > vein': W 2 Ank (Kr) *vel* (< **buyal* < **buHal*) 'vein'; C 5 (Kr) Glv *'awulá*, Gava, Nak *wula* (< **avula*), Dxw *ḥula* 'vein'; 10 Log *bille* (pl.), Bud *bálei* 'tendon'.

**bul-* / **mbul-* 'say, shout': W 3 Tng *pulɛ* 'shout at', Bol (M) *mbele* 'cry'; 4 Miya *bəla*, Cagu *mbul* 'say, speak'; C 1 TP *bəla* 'speak'; 10 Log *vələ* 'call'.

bel- 'hoe'(n.): W 3 Tng *peela* 'small hoe'; E 6 Mok *béelè* 'houe déjà usée'.

**bal-* 'well': C 10 Log *fəli*, Affade *blə*, Ngala *pəlii*; E 3 Sum (J) *bəla*, Tum *bal*; 4 Sok *bal*

**ḥuHal-* 'pierce', **buHul-* 'hole': W 1 Hs *ḥullè* 'pierce a hole'; 2 Ang *ḥel* 'pierce; hole'; C 10 Log *bulu* 'hole'; 5 Mig *bүүлè* 'trou (dans une mur)', Bid

bul 'trou'./Somali *bohul* 'pit, precipice', Galla *bollo* 'pit' (Dlg:56). Cp. Kanuri *baláa* 'hole'.

Medial laryngeals caused secondary emphatization of initial *b*-, *d*- and *p*- (**bVHC*- > *bVHC*- > *bVC*-, etc.). There are no objections against dating this process as far back as PCh (as it was suggested in Illych-Svitych, 1966), so we'll take it for granted for the time being. For more thorough investigation more data is needed.

Emphatic consonants also influenced initial *b* and *d*, but in another way. It was a shift (**bVt* > *bVt*, **bVk* > *bVk*, etc.), but not a secondary emphatization (**bVC* > *bVC*), and it took place not in PCh, but later. Our argumentation is as follows. On the one hand, PCh **bVc* > *bVs* in Sura (for Sura has no voiceless emphatics), but *bVc* in Hausa. On the other hand - PCh **bVt* yielded *bVt* in both languages (for Hausa has no *t*), but > *bVd* in CCh. Two emphatics are not allowed in modern Hausa and it seems that two primary emphatics were not allowed in PCh either (cp. Ch **kasa* 'bone' (I.5) ~ Arab *qasṣ*- 'breast bone'). Otherwise, in case of PCh **bVk* (< **bVk*) we should expect sporadic loss of one of the emphatics in Hausa (**bVk* > either *bVk*, or *bVt*), while only *bVk* is possible in this case. In Bidiya and in the bole group medial Ch **-č-* > *-d-* and so **bVč* always yields *bVd*, never *bVt*. Ch **bVč-* > *bVs-* in Cch; in Northern bauchi Ch *č* and *č̣* are still preserved. Such a diversity of reflexes prove that primary emphatics were lost by different groups of Ch, not by PCh.

While two emphatics were forbidden, secondary **p* did not appear in PCh roots of the **pVc-* type (**puč̣i-ari* > Hs *fič̣ari*), but a shift could occur in individual languages (**puč̣i-ari* > Dwot *ḥuzari*). Secondary PCh **p* appeared only in roots with a medial laryngeal (even in case of **pVHVc*). It seems that a laryngeal and a primary emphatic were not compatible either, so PCh **pVHVc* 'break' > **pVHVt* > **pVHVd* > Hs *ḥaasa*. Cp. also Arab *bʿq* 'creuser (puits)' ~ Hs *ḥáákáá* 'hole under the ground' (**baHač* > *baHak* > *baHak* > Hs *ḥaakaa*, while Ch **bVk* > only *ḥak* in Hs).

For **bVC-* (< **bVC-*) and **bVHC-* roots see **buti* 'untie', W **butV* 'belly', *ḥoti* 'pour' (II.2), C **ḥuči* 'squeeze', (II.3), **baHač-* 'strike, break' (II.4) and the following roots.

C *b[o]č-* (< **boč-*) 'excrement': 5 Mafa *ḥac-ḥatca'a* 'smell of excrements'; 4 (Kr) Mwl *ḥwòži* (voicing of *-č-* in medial position).

**ba[ṭ]-* 'cut': W 3 **ba[ṭ]-* > Bol *ḥot-*, Ngm *ḥat-*, Gera (Kr) *bəḍi-mi*; E 6 Mok *ḥáttè*, *ḥíttè* 'fendre'/ Arab *ḥṭṭ* 'percer un ulcère'//Dlg (1976:248), AA 56 **baṭ-* 'divide, pierce'.

**bufo/*mbufo* 'fog': 3 (Kr) Ngm *but-bundo*; W 4 **baṭa*: Wrj *bata-na*, Kar, Miya *baṭə*, Dirí *abata*, Paa, Jmb *bata*; 5 (Kr) **ḥodn-* (< **ḥotn-* **ḥotn-*): Geji *ḥondi* (metath.); C 1 (Kr) Gbn *mbit-ənči*, Gaa *bit-ənči*, Hwo *bùḍ-əṇ*, Boka *mbùt-aḍa*; 5 cp. (Kr) Glv *kulùwà-mbùtá*, Gava *kulùywa-mbùtá*; C 12 (Kr) Peve *mbəḍa*, ZB (S) *mbùdá*; E (?) 5 Bid *bot*, Mig *bòttó* 'enfumer un trou

pour déloger une gibier'.

**beHačV* > **bač-* > **baš-* 'beer': W 1 Hs *bééçò* 'native beer'; 6 Ngz *básá* 'fermented guinea-corn used for beer'; C 7 Mafa *ḥəš-* 'fermenter (pour de la biere de mil)', Mafa *mbáza*, Gis *mbaža* 'beer' (*mb-* < **mb-*).

buHal-* (< **buHal-*) > **bul-*/bal-* 'break': W 3 **b/uHal-* > **baHal-*: Bol *ḥol-*, Tng *beli*, Pero *ḥelò*, Krf *ḥayálú-*; C (Kr) **ḥul-*: 2 WM *ḥulu*, Mrg *bil*, Wmd *biləw*, Chb *ḥily*; 3 HG *ḥulu-nde*; FG *ḥilā-nti*, HF *bili*, HN, Kap *ḥule*, HB *ḥulɔ*; E 3 Sib *ḥwala* (? < **buwal*) 'casser'.

**ḥuHar-* 'shine': W 3 Tng *ḥər*; 5 Bgh (Sm) *ḥuur* (contraction after the loss of a laryngeal in intervocalic position); C 4 Bch (Kr) *ḥura*; 11 Msg *baral*// Hbr *bhr*, Arab *bhr* 'briller'// HS N 327 **buhar*.

**ḥuH[o]r-* 'cover, bury': W 7 Fyer *ḥur*, Sha *bur*, Df *ḥuur* 'bury', Sha *'abúr* 'tomb'; E 5 Dng *bʿjré* 'cover'. Ch is not related to Ngz *bzu* and Maninke *bulu*, as in Mukarovsky:73.

Chadic data prove that *v-* is not a PCh phoneme, but a positional variant of all the labials, mostly between two vowels and after a laryngeal. When occurring at the very beginning of the word, *v-* usually points to the loss of an initial syllable. A good example is Mafa nouns of the type: *va-raza* 'scorpion', *va-tak* 'thorn', *vo-roḥ* 'pus'. Judging from comparative data *va-* is a prefix (cp. Gisiga *'arac*, Mandara *ɪɾa* 'scorpion'; Mbara *taha*, Glavda *taka* 'thorn'; Hausa *ruḥe* 'to rot'). Being a kind of a noun determinative it obviously originates from PCh **ab-* 'thing' (> Hs *ábù*, 4 Dirí *vu*, Paa *avu*, Mbu *vuu*, Cagi *vay*; 7 Ngz *báy*). As for Mafa verbs with *v-* in anlaut, a number of them have a causative meaning and probably represent former Ch causative stem with a *'V* prefix which influenced the *-b-* > *-v-* shift (**'VbVC-* > **'VvVC-* > *vVC-*). See the following verbs:

**ba/a/ra* 'child', **-bur-* 'give birth; create': W 1 Hs *bééra* (? < **ba'ara*) 'young girl', 2 Ang *par* 'child'; 7 Fyer *ḥarà* 'child'; 4 **vur-d/k-* 'give birth': Wrj *vurḍ-*, Cagu *vərḍə*, Miya *vurk-*, Paa (MS) *vərḍa*, Siri *vùḍ-*, Dirí *və'ra*; C 5 Glv (Rp) *vird* 'to create'; 7 Mafa *vər-* 'produire (terre)'; 12 ZB (S) *vərà'a* 'give birth'; ḥir 'grossesse'./Jglb *bl-*, AA 106 **br* 'son'.

-bari-/*biri* (< **bari-* < **bar[aj]-* < **baraH-*) 'give, sacrifice': W 'give': 1 Hs *báá*; 2 Mnt *pee* (< **pei* < **pari*); 3 Bol, Krkr, Ngm *bar*; Gln *bár*, Gera *bār*, Dera *bo* [baru*]; 5 (Sm) Tule *bər*, Grnt *bùr*, Geji *bil*, Buli *bii*, Zaar *vir*, 6 Ngz *bárə*; 7 Df *fār*, Bok *fā*, Fyer *fā*; C 1 Tera (N) *vəri*, (Kr) Hwn *fīr-ən*, Gbn *fīr-ənči*; 5 (Kr) Gava *bəra-nà*, Nak *bar-biga*, Mnd *vən-tuva*, Dxw (Jglb) *biré*, Glv (Rp) *vil-*, Gdf (Jglb) *bár-*; 7 Mofu *-vāl-*, Gis *vol* (*-l-* < **-rH-*), Mafa *va* 'give', Mafa *vəráy* 'sacrifice' (n.); E 2 **bi'e* (< **biri*): Tob *bə*, Kbl (Cp) *bí*;

4 Dng *béré*, Mig *bíráw* 'give', Bid *ber* 'donner, offrir'; 6 Mok *bará* 'offre, don'; 7 Mubi (L) *báará*, (JgIb) Jegu *bir*, Brg *biri* 'give' / IS **bV*, Nm **barə*, JgIb **brɔ*. Arab *br'* 'être homme plein de mérite', V stem *tabarra'a* 'sacrificier, donner presents'. The original meaning 'to sacrifice, to offer' is still preserved in C and E Ch.

**bid-* 'make, invent': C 7 Mafa *vid-* 'forger, fabriquer'; E 6 Mok *'áábídá* 'modeler, fabriquer, inventer' / Arab *bd'* 'produire quelque chose de nouveau', 1Y stem 'inventer, produire, forger'.

Mafa *vər-* 'gaver, doner à manger' (< **-bVr-*, cp. Gis *beber* 'thick' and Ch **HVbar-* 'recover') ~ Hbr *br* 'be fett', hif'il 'make fat'.

The most difficult problem in this series is that of the two **mb* – a single phoneme and a cluster. In case of a cluster, the first element is usually a prefix, for example:

mbaru* 'butter' (< [br* 'be fat']): W 7 Bok, Df *mbaar* 'oil', Fyer *mbar-an* 'Fettigkeit'; C 7 Mafa *mbar* 'oil'; 10 Log *brááré* 'fresh butter'; 12 (Kr) Lame *mbár*, BM *mbul-na*, Bnn *bulə*, ZB (S) *mbur* 'oil'. Cp. C 12 **mbira* 'milk': ZB (S) *mbir*, (Kr) BM *mbira*, Lame *mbiri*, Peve *mbir*, Masa *mira*, Bnn *bira* / Hbr *br* 'be fat'.

cp. also Mafa *bukw-* 'to bark' > *míbukwe* 'bark' (n.),

Mafa *bur-* 'crier de douleur' > *míbure* 'cri de douleur'.

Or (extremely rare) the cluster appears after a vowel deletion between the first two consonants: **mVbVC* > *mbVC*, for example: **[m]baš-* 'dig; bury': W 3 **[m]bal-* 'bury': Bol *bal-*, Krkr *mbəl-*, Ngm (Kr) *bālít*; 6 Ngz *bāžú* 'dig, dig up', Bade (Kr) *əbžú* 'dig'; C 2 (Kr) Bura *bžá* 'bury'; 5 Mofu *baž-* 'dig', Mafa *bəža* 'écobuer, déchaumer'; E 5 Bid *balbál* 'creuser les fourmilières pendant la famine', *'ùbùl* 'cavité de la tombe où est déposé le cadavre' / Arab *nbš* 'dig out'. A **m-b-C* sequence is impossible in Sem, and thus Ch can well preserve the original HS order of consonants (cp. examples of Ch **ngVC*-roots corresponding to Sem **ngC* in I.5).

Initial *mb* in verbal roots may also have a morphological origin. There is a few cases of W and CCh *mbVC*-shape verbs corresponding to E Ch *'VbVC-*, Mokilko *'VppVC-*. The latter, though singular, look like plurals from **VCVC* roots (Mokilko verbs form plural either by adding a *-t-* suffix (*'assigi-te*) or by geminating the second consonant – *dookide* ~ *dokkide*, *'agisa* ~ *'akkisa*, *'igibe* ~ *'ikkipe*, etc., note the devoicing of the medial consonant). Our idea is that *mbVC* ~ *'umbVC* verbs in W and CCh are also remnants of a plural or of an intensive stem. Its appearance was accompanied by the following phonetical change: **'VbVC* > *'VbbVC* > *'VmbVC* (dissimilation, note that in W and CCh languages only the last consonant in the root can be geminated) > *mbVC* > *bVC*. So far there are only a few examples corroborating this idea, namely:

Vbal-* 'throw' > 1. **biHal-* (metath.) 'throw'; 2. [abbVl-*] > *'ambul-* 'fling, throw away'

1. W 1 Hs *hillà* 'throw'; 3 Grm *bèel* 'throw, Tng *bɔl* (< **bal-*) 'throw (spear)'; C 5 Glv *bal* 'throw, cast'; 11 Mnj *bili* 'lancer', Mba *vlà* 'jeter'.

2. **'ambu/il-* > W 1 Hs *ámbulàà* 'fling handfuls of anything'; 3 Bol *'umbul* 'wegschleudern'; 7 Kul *mbil* 'throw'.

[o]bir-* > **b[o]Hir-* (metath.) / ['ombir-*] > **obbir-* 'throw away': W 2 Ang *bwir*; 3 Bol *bur-* 'niederwerfen'; 4 Cagu *vuru* (< **HVbVr-*) 'throw'; 7 Fyer *beer*; E 6 Mok *'òbbiré* 'lancer (lance)'.

**[a]bVd-* 'hoe(v.)' > **abbVd-* > **mbVd-* 'dig': C 4 Gude (H) *bude* 'hoe deeply'; 7 Mafa *mbad-* 'déterrer'; E 6 Mok *'áppidá* 'creuser'.

'iban-* > ['ibbVn-*] > **'imbVn-* / **'ibVn-* 'to know': W 2 Grk (Fp) *impen* 'know', Mpn, Sura *pàn* 'think'; 3 Tng *poni*, Pero *pénò*, Grm *ban*, Krk *bán-*; E 4 Sok (JgIb) *'ibine*; 5 Mig *'ibinò*, Dng *'ibiné*.

An initial *mb* left unexplained probably originates from one more HS labial consonant, namely from *'b* (see Grm, 1965). The same difficulties are present with *nd-* and *ng-*. To cope with this problem data of HS languages and of all those in contact with Ch should be taken into consideration. Since it exceeds the frame of our present work, we limit ourselves to adding some more Ch roots with *'mb-* in anlaut to Greenberg's list:

**baHasu* / *baHasu* 'count': W 3 Bol *mbós-*, Bele *mbóhú*, Glm *mbás-*, Krkr *mbèesù*, Gera *mbəsə*, Krk *mbaş-*; E 3 Tum *bož*.

**bid-* / *bid-* 'say': W 3 Dera (Kr) *bide* 'say', (M) *bide* 'ask'; 6 Bade (Kr) *b(ə)d* 'ask'; C 7 Gis *buəḍ* 'speak', *mbid*, Mafa *mbəḍa* 'answer'

**bud-* / *bud-* 'wind': W 1 Hs *buda* 'dry harmattan haze with wind and cold'; C 4 (Kr) FJ *mbidi*, FM *mbuḍu*, FB *mbuḍin*, Gudu *mibóócò*.

bittu* / *bittu* 'extinguish': W 1 Hs *bicé*, *bítù*; 2 Sura *pit*; 3 Pero *pittò* 'quench a fire', (Kr) Bol *mbitù*, Krkr *mbùtù*, (L) Bol *bitt/t-* [mbətu*]; 7 Bok *mbit*; E 3 Sum (L) *budə duwa*; 5 Dng *bittò*, Mig *bittò*, Bid *bit* / Nm **(m)bəṭə*.

For initial Ch **f-* see the following roots:

**'a-fita/u* 'flour' (> 'dust, ashes, salt'): W 4 **fita* > *fiya*: Wrj *fiyáy*, Kar *fii*, Miya *fii*, Paa (MS) *fiya*, Siri *fiyi*, Mbu *fiyi*, Diri *áfəṭá*, Jmb *áfəl* 'flour', Paa *fita* 'dust'; 3 **'apti* (< **'afti*) 'flour' (Kr): Krkr *'apti*, Ngm *'əpti*; 5 (Kr) Geji *apti*, Brm *əpti*, (Sm) Zaar *yəpti*; 6 Ngz *áptá*, Bade (Kr) *aptá-n* 'flour'; (cp. 1 Hs *fātée-fátée* 'mushy food of flour and onions'); C 4 FB (Kr) *fite* 'salt', Bch *fita* *ḍiye* 'ashes' (*ḍiye* 'fire'), *fiytey* (Kr) 'ashes', *fito kwana* 'salt'; 11 Msg *afdi*, Mnj *avədiy* 'flour'; 12 **futu* (< **fitu*) 'flour' (Kr): Lame *fütù*, Peve *fut*, Bnn

futà, BM *futa*, Masa (Mo) *fúúdu*, ZB (S) *fút*, (JgIb) *úfút*. Ch **fitat-/fVwat-* 'ashes' (W 2 **fwat*: Sura, Ang *fwat*, Mpn *fwát*; E 7 Mubi (J) *fidáadò*) rather goes back to the same root. Cp. ECh 5,7 'flour' and 'ashes' originating from Ch **buwuŋ-* 'ashes' / JgIb **pt-* 'flour'.

**fir-* 'scratch, scrape': W 1 Hs *fíiriyáá* 'scrapping'; 2 Ang *fiir* 'scratch'; C 5 Dwx (Kr) *fila* 'scratch'; 7 Mofu *fār*, *fā-fār* 'frotter, se gratter' / Amh *farā* 'scrape, scratch', *fār* 'furrow' // cp. AA 142 **fr* 'scrape, herpes'.

**fet-* 'sweep': W 2 Ang *fet* 'wipe off, clean', Sura, Mpn *fet* 'sweep'; C 4 (Kr) **fet-*: Gudu *ma-fida*, Mwl *ufedo* / Kush Sidamo *fiŋ-* 'sweep', Eg (Pyr) *fd* 'etw. abwischen' (1:581) // HS N 796 **fet-* 'sweep'. (for W 2 Ang *fwot* 'scratch ground' and Eg *fit* (21) 'auslöschen einen Inschrift' (1:580) see HS N 822 **fot-* 'scratch').

**fur-* > **fuwar-* 'rub': W 2 Sura *fwor* (< **fuwar*); 3 Tng *pur* 'rub in hands'; 6 Ngz *fār-fārú* 'roll back and forth between hands'; C (Kr) 4 Nzn *kò-fūra-di*; 5 Mnd *vur-dun*; E 2 Kera *pá-pre* (irreg. reflex due to redupl.?).

**fur-* 'shell, bark': 1 Hs *fúurúu*, *húurúu* 'skin of monkey-nuts'; 4 Diri *fū-fūr* 'bark'; E 2 Kera *ké-fré* 'shell' (cp. Kera *fékré* 'hard shell (of a nut)' (? metath. < **fVkrV*); 5 Mig *púr-dè*. Derived from this root is 4 Sok *furkía* 'bark' / Akk *pāru*, *parru* (Sd:836) 'skin', Arab *farw-* 'pelisse' // HS N 838 **fuwar-* 'skin, bark'.

fati/a* > **fā't-/fawat-* 'sun': W 3 : Bolewa (Kl) *poti*, (M) *fōti*, Krkr *fati*, Dera *pori*, Tng *puda*, Ngamo *hoti*, Pero *pori*, Krf (Sh) *fiččí*, (Go) *fiti*, Gln *piizi*, Gera, Grm *piši* [fati*]; 4 **fat-* 'sun': Wrij *fāi*, Kar *áfai*, Paa (MS) *fei*, Diri *fātáá*; 5 (Sm) **futi* (< **foti*): Tala *pidi*, Grmt *fūdi*, Buli *pit*, Zaar *fiiti*; 6 Ngz *afā*; 7 Fyer *vi-vát*, Kul *fāt*; C 1 Tera (N) *fəḍā* 'sun', (Kr) *fīḍā* 'God', (Kr) Boka *fāra*, Gbn *fār-ta*, Gaa *fār-ta*, Hwo *fara* 'sun, God'; 4 **fwot-*: Bch (Skn) *fōré*, (Kr) *fūrèy*, Gudu (JgIb) *fowti*, (Kr) *fwóəti*, Mwl *fótó* 'sun'; 5 **fati*: (Kr) Nak *fāčiya*, Gava *fəciyā*, Dwx *fiččē*, Glv *fāčiya*, Mnd *vəčiya*, Lmn (JgIb) *fītí* 'sun'; 10 Msg *futii* 'sun', *gufi* 'sun, day'; 12 **fota* > (Kr) Peve *fəta*, Lame *fūtá*, Bnn *fōta*, BM *fatta*, Masa *fatta* 'sun', ZB (S) *fētá* 'sun, light'; E **[f]a'ot-* 'sun': 4 Sok *pio*; 5 Mig *páát*, Bid *paato*, Dng *pátò*; 6 Mok *péédó*, 7 **[f]a'ot-* (JgIb) Jegu *fóót*, Mubi *fāāt*, Brg *fōótó*. / IS **phVtV*, Nm **fati*, JgIb **p-t*. Cp. the next root.

fita* 'God, sky': C (Kr) 2 WM *ptæ* (ft-* > *pt-*), Bura *amtā* 'sky'; 1 Boka *afsi* 'sky'; 4 FB *fitun*, FM *fitu*, FJ *fiti* 'God, sun'; 5 Gava *fitā*, Nak *fitā*, Dwx *fite* 'lightning'; 12 Lame *ifri* 'sky, God', Peve *frai* 'sky', *ifrai* 'God'.

fid-od-* 'four': W 1 Hs *fūḍú*, *hūḍú* (fid-odu* > **fiḍu*); 2 **fir-* (< **fir-od* < **fid-od*): Sura, Chp *feer*, Ang *fiir*, Ank *fer*, Mnt *fei*; 3 **fid-odu* (> **feḍu*/**foddu*/**fordu*): Bol *p'orḍo* (Kl), *fōḍḍo*, Krkr *fēḍú*, Bele *fōḍḍó*, Gln *páryá*, Gera, Grm *fūḍu* [**faḍau/o*]; 4 **bi-fwaḍu/i* > *fuḍu*/*fiḍu*: Wrij *fēḍi*, Kar, Miya *fūḍu*, Diri *fīḍi*, Paa *fāḍu*, Mbu, Cagu *fəḍə*, Siri *bīi-fēḍi*; 6 Ngz *fūḍu*; 7 **fuḍu*: Sha *fuḍ*, Kul *fūud*; C (Kr) **fwaḍu/a/i* > 1 Tera (N) *vāt*, (Kr) Hwn *fāḍa*, Gbn *fwəḍə*, Gaa, Boka *fwəḍā*; 2 Mrg (Kr) *fwodū*, Bura *fwar*, Hld *fwəḍu*, Wm *fodu*, Klb *fōḍu*, WM *fwodo*, Chb *fwōḍu*; 3 (Kr) **fwaḍu*: FK *fwāḍu*, HN *fwāre*, Kap, HG *fwāḍe*, FG *fwāḍ*, HF *fwāḍu*, HB *fwō*; 4 **mu/fwāḍ*: Nzn, Bch *fwat*, Gudu *fwát*, *fwād*; Gude (St) *mfāḍa*, FB *fwat*, FJ *fwəy*, FM *fwət*; 5 **ufwāḍa*: Mnd *'ufwāḍe*, Gava *'ūfōḍ(à)*, Nak *wōfada*, Glv (Rp) *ufāḍ*, Gdf (JgIb) *wūfāḍ*; 7 Mafa *fāḍ*, Gis *mūfāḍ*, Mofu *mfāḍ*; 9 Daba (Kr) *fwot*; 11 Msg *pudūu*, Mba *pūḍu*; 12 **fuḍi*: (Kr) BM *fidi*, Peve *fūḍi*, Lame *fūḍi*, Peve *fūḍi*, Masa *fidi*, ZB (S) *fīḍi*; E 1 **wāḍay* (< **-fwāḍ-*): Kera *waḍe*, Mobu (J) *wūḍāy*; 2 **pVri* (< **pVḍi*): Kbl (Cp) *pāri*, Lele (Grg) *poriḥ*; 3 **wadi* (< **fwadi*): Sum (L) *wodii*, Tum *wəri*, Ndam (dJ) *wēetii*; 7 (JgIb) Mubi *fāḍā*, Bir *fōḍi*, Jegu *food*; 5 **fōḍi*: Dng *pòót*, Mig *póóḍi*; 6 Mok *pidé* / IS **phwVḍV*, Nm **fwāḍə*, JgIb **-pd*. Eg *fāw*, *ifd* (1:582). Note the PCh suffix (-*od-*) explaining -*d-* in all the languages, otherwise Ch -*d-* ~ Eg *d* is irreg., -*r* in the sura group points to Ch **CVdVC* (Ch **CVd-* yields **CVt* in sura).

fV3- 'pierce': C 7 Mafa *fūze'e* 'percé (porte, habit); E 6 Mok *'appizá*.

After a prefix Ch **-f-* > *-v-* in bauchi-bade, higi and musgu groups, cp. **m-fit-od* 'mosquito' (II.1) and the following example:

**[fa]-funu-H* 'hole, mouth': W 1 Hs *fāā-fun-gā* 'toothless mouth, hole, well'; 2 Sura *fūḥ* 'hole, window', Mpn *fūḥ*, *mifūḥ* 'hole in a vertical surface', Ang *fūḥ* 'hole'; 4 **vuna-h-* (< **[ha]-funa*) 'mouth': Siri *vən-gí*, Miya *vūn*, Cagu *véhé*, Siri *vən-gí*, Paa (MS) *vin-gí*, Mbu *vinā-hə*, Jmb *vinā* (?-*i* < Ch **-u-* in a weak position), Diri *vəná*; 7 Fyer *fūḥ* 'hole' (< Sura?); C (Kr) **-fun-H* 'mouth': 3 HF *vūḥu*, HG *fūḥe*, Kap *vūḥwe*; 6 Skr (JgIb) *ūḥū* (< **wūḥu* < *vūḥu*); 12 (Kr) Peve *vun*, Lame *vun(ù)*, Bnn *fūnā*, BM *funu-no*, Masa *funā-no*, ZB (S) *vūn*, E 5 **bunnV* (< ECh **-punnV*): Dng *būnnē*, Mig *būnnē* 'trou dans la terre'. Hardly related to WCh **ba-kV* 'mouth' (Stl:152). Cp. JgIb **bk* 'mouth'.

1.2 Dentals.

The dental series includes **t*, **t̥*, **d* and **d̥*. Before *e*, *i*, *o* (especially – after a *n/m-* prefix) dentals may yield *č* and *ǰ* (in CCh and Southern bauchi languages – also *c* and *ɟ*), but the process is far from regular. Preceded by a prefix Ch **t-* > **nt-* > *nd-* in W and CCh.

Due to a lack of lexical material it is not always possible to specify the precise condition of a **T-* > *C-* shift in individual languages. It can not be excluded that this process was mostly active before the two voiceless dentals merged in W and C Ch and affected them in a different way. On the synchronic level it resulted in mostly irregular reflexes of PCh **t* without any reasonable distribution (cp. Mafa *čivéd* (<**tif-*) 'road' ~ *tiv-* (<**tif-*) 'carry fire').

Table 2.

PCh WCh	1	2	3	4	6	7	C Ch	1,2	3	4,5	7	10 11	12	E Ch	1	2	3	5,7	6
<i>*t-</i>	<i>t-</i>	<i>*t-</i>	<i>*t-</i>	<i>*t-</i>	<i>t-</i>	<i>t-</i>	<i>*t-</i>	<i>*t-</i>	<i>*t-, mčj</i>	<i>*t-</i>	<i>*t-</i>	<i>t-</i>	<i>*t-</i>	<i>*t-</i>	<i>*t-</i>	<i>*t-, čj, če</i>	<i>*d-</i>	<i>*t-</i>	<i>t-</i>
<i>*t-</i>	<i>t</i>	<i>*t-</i>	<i>*t-</i>	<i>*t-</i>	<i>t-</i>	<i>t-</i>	<i>*t-</i>							<i>*t-</i>	<i>*t-</i>	<i>*t-, *d-</i>	<i>*t-</i>	<i>*t-</i>	<i>t-</i>
<i>*d-</i>	<i>d-</i>	<i>*t-</i>	<i>*d-</i>	<i>*d-</i>	<i>d-</i>	<i>d-</i>	<i>*d-</i>	<i>*d-</i>	<i>*d-</i>	<i>*d-</i>	<i>*d-</i>	<i>d-</i>	<i>*d-</i>	<i>*d-</i>	<i>*d-</i>	<i>*d-</i>	<i>*d-</i>	<i>*d-</i>	<i>t-</i>
<i>*d-</i>	<i>d-</i>	<i>*d-</i>	<i>*d-</i>	<i>*d-</i>	<i>d-</i>	<i>d-</i>	<i>*d-</i>	<i>*d-</i>	<i>*d-</i>	<i>*d-</i>	<i>*d-</i>	<i>d-</i>	<i>*d-</i>	<i>*d-</i>	<i>*d-</i>	<i>*d-</i>	<i>d-</i>	<i>*d-</i>	<i>d-</i>

Numerous "root variants" (of the type **tuq-* and **zuq-* 'pierce, push', etc.) make the situation even more complicated. To distinguish between lexical variants and phonetical changes, it is necessary not only to sift through Ch data but also to find Semitic parallels. Note that "root variants" are quite common to Semitic (and probably – to HS). In what follows special attention will be paid to such cases.

More data with *t-* in word initial position is needed to confirm or explain away the reflexes so far established for ECh lai and sumray languages. For lack of examples with "pure" initial *t-*, reflexes of the fem. prefix were also taken into consideration to fill in the gap (so far as the *tV-* pref. marking fem. nouns in ECh languages originates from the Common HS morpheme **tV-*). See the following roots:

E **Vr-* > **tV-* **Vr-* 'young girl': 1 Kera *tər*, pl. *kéeréw* 'young girl'; 3 Sum (J) *dur* (<**tV-Vr-*) 'daughter'; 6 Mok *éròwó* 'woman'.

E **rum-* 'child' > **tVrum-* 'daughter', **kVrum-* 'son': 1 Kera *tə-mə* (*-m-* < **-rm-*) 'daughter', *ko-rmə* 'son', 2 Kbl (L) *tə-rəmə*, Lele *te-ren-di*, Gbr *t-rmu tama*, Nan *te-rmu taama* 'daughter', Lele *to-rmo* (f.), *ko-rmo* (m.)

'child', *ko-ron-di* 'son'; 3 Tum *dumu* 'daughter', Sum (J) *gò-rən-dən* 'son'; 4 Sok *rum* 'child', *róma* 'son'; 5 Bid *ruma* 'young girl', *rom-* 'son', *rum-* 'daughter'; Mig *rūn-ti* 'child'; 6 Mok *más kô-rmé* 'child'; 7 Mubi (L) *ròm-béi* 'daughter', Jegu *rón* 'son'. The root is attested in CCh: C 4 FB (Kr) *rəm-in* 'girl'; 10 Bud *dege-rəm* 'young girl' / Kush Oromo *iilma* 'son', cp. EKush **rum-* 'uterus, be pregnant' in Sk (1995:29), Akk *rēmu* (Sd:970), Arab *rihm-*, *rahim-* 'uterus'.

E **tV-* **am-* 'woman': 1 Kwn *d-em* 'wife' (irreg. *d-*); 2 (L) Kbl *ta-ama*, Lele *t-amá*, Gbr *t-ama*, Nan *ta-ama* 'woman'; 3 Sum *d-eme* (L), Sib *dyámé*, Tum *dè-em* (**de-* **am-* > **deyam-* > **de(e)m-*) 'woman'. The root goes back to Ch **am-* 'woman': W 5 Wrj *am-ai*, Kar, Miya *am*, Cagu *omey*, Jmb *ama*; 6 Sha *'amuy*; 7 Ngz *ámâ* / JgIb *ámá* 'woman', Akk *amtu* (AI,2:80), Arab *'am-at-*, etc. 'maid, slave girl' // HS 34 **am-* 'woman'.

ECh **uray/w-* > **t-/k-* *'uraw/y-* 'song': 1 Mobu (J) *kà-raw*; 2 Kbl (Cp) *k-rà*; 3 **d-Vr-* Sum (L) *d-erij*, Tum *d-ər*; 5 Dng *riyè*, Mig *riyəw*, Bid *ree-ra*; 7 Jegu *rèyé*, Mubi (J) *riwwi* 'song'; 5 Mig *riyáw*, Bid *raa*; 6 Mok *'ùuré*, *'òóre* 'to sing' / Cp. Shilluk *wor*, Gulfan *ware*, Berta *hera*, Maba *orire* 'song' (Gm, ChN 85). A borrowing from NS cannot be excluded.

ECh **gon-* > **tV-gon-* 'occiput': 1 cp. Kera *dòṇò* (<**dV-gVn-* < **tV-gVn-*), Mobu (J) *kú-kiin*; 2 Lele *túù-gná*; 3 Sum (J) *gè-gàné*, Tum *gun kùmú*; 7 4 Sok *gon-d-um* 'dein Kopf'; Jegu *donjo* (a Kera loan?). Probably related to the following root.

ECh **eg-* > **tV-eg-* 'head': 3 Tum *d-əg*, Sum (L) *dum* (<**d-ig-um*) 'your head', Ndam (L) *d-ég-um* 'my head'; 6 Mok *'éégó*.

**[h]ar-* > **tV-har-* 'back': 1 Kwn (L) *tauám* 'my back' (< **t-ar-um* ?), Kera *k-er-ke*, 2 Gbr *k-ár-di*, Dm *k-ár-ne*, Nan *k-ar-gum*; 3 Sib *t-ár-yí*, Tum *ter*, (L) Sum *t-ar-um* 'your back', Ndam *t-er-ám* 'my back' (note that *t-* reflects Ch **tVH-* and **t-*); 5 Mig *t-ääró*, Dng *ääró-n*; 6 Mok *d-ár*; 7 Mubi (L) *hâr*, Brg (JgIb) *'ará*. Related to WCh **-Har-* 'back': 3 Tng *t-ar* 'the lower part of the back'; 4 Cagu *aari*, cp. Kar *kyár*, Paa *kar*, Jmb *kyar* (? < **kV-Har-*) 'back' / JgIb *-kr*, Akk *erûtu*, *arûtu* 'back' // HS N 1159 **har-* 'back'.

**tV-run-* 'shadow': 1 Kera *gəsáa tə-ma* 'im Schatten'; 2 Kbl (Cp) *t-ən*, Lele *t-únò*, Gbr *t-únoo*; 3 Sum (L) *d-un*, Tum *d-un* (all < **t-rVn-*, lenition of the medial consonant); 5 Bid *nín-to* (assim.); 6 Mok *dô-rmò-nò*. Related to WCh **runi* 'shadow': 1 Hs *rine* 'become dark in colour'; 2 Sura, Ang *riin* 'shadow', Mpn *dì-riin* 'shadow, spirit'; 3 Krkr *rənní*, Bol *rúnní*, Dera *nónni*

(assim.), Glm *rúnnà*, Gera *ríní* [**runi*]. Related to this root is **Harin-/raHin-* 'shadow, black': W 3 Tng *rigin*, *riwin* (metath.) 'shade, shadow'; 4 **arena* < **Harina* 'shadow': Wrj *arnái*, Cagu *arné*, Kar *arín*, Mbu *réèna* (< **raHin*), Jmb *aréná*, Diri *m-arna*, Paa (MS) *árna*; C 11 Mba *rigín* 'black'; E 5 Bid *'éren* 'nuit'; 6 Mok *ráàhé* 'sue, noir de fumée'.

ECh **uwa* > **t-u/owa* 'fire': 1 Kera *č-šwá* 'fire, sun', Kwn (L) *t-oá* 'fire'; 2 Lele *t-úwá* 'fire, sun', (L) Kbl *t-úa*, Gbr *t-uá*, *t-aa*, Drm *t-oá* 'fire'; 3 Sum (L) *d-óóá*, Ndam *d-ów*; 6 Mok *'úwwó*. Contamination with **taba* 'sun': 2 (L) Gbr *tobá*, *taa*, Nan *tebá*, Kbl *tabá*; 3 Tum *dəw*, Sum (L) *dawa*. ECh is not a Bantu loan, cp. Bantu A.81 *duɔ*, A.83 *düawɔ* 'sun'./ Jglb **tw* 'fire, sun'.

There are a few examples of the same prefix in CCh, namely:

**uli* > **kV-/tV-'oli* 'saliva': W 2 (Kr) Ang *li*, Sura *lii*, Ank *tíli*; 3 (Kr) Bol *yúle*, Dera *leyi*; C 2 (Kr) Bura *mtíli*, Chb *ñkíli*, Klb *túli*, WM *čuli*, *čiri*, Mrg *kwili*, Hld, Wmd *tuli*; 10 Bud *čiluluu*; E 2 Kbl (Cp) *kalá*, Lele *kalá*; 3 Tum *dól*; 5 Mig *'oló*; 6 Mok *lê* (pl.); 7 Mubi (L) *lawe*./ Jglb **ylk*. Cp. Kanuri *táléle* 'spittle, saliva'.

**akay* > **tV/*ba-'akay* 'thorn': W 1 Hs *káyá*; 4 **'aba-kay-*: Wrj *vəḱəy*, Kar *vaki*, Diri *avikiya*, Paa (MS) *vágwe*, Miya *aviki*, Cagu *baagiye*, Siri *vəkiyi*, Jmb *avagiya* (voicing of **-k-* in a weak position under the influence of *-b-*); 3 Tng *toki* 'prickle of a thorn, big thorn'; C (Kr) **tV'aka*: 1 TP *nžək-ti*, Boka *daha*, Gaa *taka*, Gbn *taha*; 2 (Kr) Bura *mtixira*; 3 (Kr) **tikij* < **takay*: HN *tikəy*, Kap *tigi*, HF *čigi*, HG *nčigi*, FG *təke*, FK *kiki* (assim.); 5 (Kr) Nak *taka*, Mnd *dəke*, Gava *təká* 'thorn', Glv (Rp) *taká* 'thorn, bush'; 7 Mafa *há-tak*; 11 Mba *táhá*. Cp. NC: Nupe *eka*, Ibo *ogu* 'thorn' (Grn, p.159), Nilotic Turkana *akokai*, CSud Madi *oki*, Moru *ukyi* (Grn, CN N 96). A borrowing from Ch or an old areal lexical item.

C **tV-/kV-rəb-* 'mud': C 5 Mnd (Kr) *tu-rbə*, Glv (Rp) *tə-rəbə*, Gava (Kr) *tu-rbə*; 7 cp. Mafa *ndə-leb* 'boue, sol boueux'; 8 Daba (Kr) *tí-rəb*. Derived from **r[i]'ab-* 'clay' (I.8).

It is clear that initial *t-* of the prefix yields *d-* in the sumray group. Root-initial **t-* shows the same reflex, see the following roots:

tariy-/tiray-/tayir-* 'moon': W 2 **tary-*: Sura *tár*, Ang *taar*, Mnt *táyí*, Ank (Kr) *tár*, Mpn *tar* 'moon, month', *tar fwán* 'rainy season', Ang *tar kwas* 'time of hoeing'; 3 **tarey /tira[y]*: Bol (M) *tere*, Krkr *tarəi*, Dera, Ngm *teré*, Tng *tere* 'moon, month', Maha *tarya*, Krf, Grm *téré*, Bele *tíré*, Gera *térá*, Glm *číirá* [tare*]; 4 **tira*: Wrj *číra-na*, Kar *tír*, Miya *tír*, Paa (MS) *čira*, Siri *tərí*, Mbu

tír, Jmb *tírá*; 5 Grnt (Ja) *tàran*, Wng (Sm) *čár*; 7 Bok *tùré* (irreg.-u-); C 1 (Kr) TP *ndira*, Hwo *ndùra*, Gbn *ndirra*, Gaa *ndəra*; 5 (Kr) Mnd *təre*, *tílá*, Dxw *tilé* (cp. Glv *kilá*, Nak *kílá* (< **ki-tila*?)); 7 Mkt (Jglb) *télá*; 8 Daba (Kr) *tírá*; 10 cp. Log *teede*, Glf *téde*, Kus *téede* (< **tVr-d-*?); 12 (Kr) **tayr*: Lame *čér*, Peve *če*, ZB (S) *ter*; E **tir-*: 1 Kera *kí-tír*, Kwn (J) *ki-dir*; 2 Lele (Grg) *gi-dirə*, Kbl (L) *ke-dere*, Gbr *ki-dere*, Drm *ke-dere*, Nan *ké-dera*; 3 Sum (J) *dúrú* (< **tiru*), Tum *dər*, Ndam (dJ) *dər*; 6 Mok *tère* 'moon, month'; 7 Mubi (L) *tíri*, (Jglb) Jegu *téré*, Brg *tère* / Nm **təra*, Jglb **t-r*./ Grn (1963:59), AA **tVr*. Ch root is related to Eg *tr* (Pyr) 'time' (5:313). Cp. NS Ingassena *turu*, Kunama *tere* 'moon', Mangbetu *turu*, *tulu* 'star' Grn (ESud, 76). An ancient HS loan?

tum-kV* 'sheep': W 1 Hs *túm-kiyaa*, *tún-kiyaa*; 2 Sura, Ank, Ang *tum*, Chip *təm*, Mnt *təm*; 3 **tuma-ki/u* > Bol *tem-ši*, *tàn-čí*, Tng *ten-ži*, Ngm *təm-ši*, Dera *tiŋá*, Bele, Grm *tùn-ši*, Glm *tun-ku* [tamki*]; 4 **tuma-kwa*: Wrj *tumá-kwai*, Cagu *čáma-ká*, Kar *túma-kú*, Miya *túma-kú*, Paa (MS) *túma-čáká*, Siri *támí*, Mbu *túma-kú*, Jmb *tumá-kwá*, Diri *átuma-gwa*; C 2 Mrg *ntəmá-həw*, Wmd *təmá-xu*, Ngw *timá*, WM, Bura, Chb *təmə*; 3 FK *tum-buku*, HF *timí*, Kap *tumwi*, HB *təməw*, HN *təmə*; 5 **tuwak-* (-w- < **-m-*): Glv (Rp) *túúgwá*, Dxw (Jglb) *túywéyé*, *twigé*; 5a Lmn (Lk) *túwáká*, 7 Gis *tumu*, Mkt (Jglb) *túwán*, cp. Mtk (Jglb) *tám-bák*, Mafa *tábán* (both < **tam-bang*, composita); 8 Daba (Kr) *tumuk*, 9 Gdr (Mo) *time*; 10 Log *təme*, Glf *dumu*, Bud *dimí*, 11 Msg *tma*; 12 **t[u]mi*: (Kr) Bnn *timirá*, BM *timira*, Peve *čime* 'sheep', ZB (S) *cime* 'sheep, ram'; E **tuma-kV* > *tama-kV*: 1 Kera *taamə-ga*, Mobu (J) *tém-ki*; 2 Kbl (Cp) *dámə-gé*; 3 Tum *dəma*, Sum (J) *dəm-nyny*, Ndam (dJ) *dəmə-k*; 5 Bid *támáá-go* 'ram', Mig *támáw* 'sheep'; 7 (Jglb) Mubi *tumáák*, Jegu *tán-kó*, Brg *tán-káy* / Nm **təmkí*, Jglb **tmk*, Arab *tiim-at-* 'brebis qu'on garde à la maison pour le laitage, brebis qu'on égorge dans la famine'. Cp. Kanuri *táma* 'female lamb', *dími* 'sheep'.

**tafa* 'hand, leaf' > **-tifu* 'five': W 1 Hs *tááfá* 'clap (the hands), hand thing to person'; *táfí* 'palm of the hand'; 3 Bol (B) *tafi-sara* 'palm of the hand'; 7 Bok *táf* 'wooden spoon', Df *táf* 'palm of the hand'; C 4 (Kr) **tifu* 'hand' (secondary vocalism due to contamination with 'five'): Bch *túfēy*, FJ *čəvù*, Nzn *tivi*; E **tafa* 'hand, leaf': 4 Sok (L) *tafa* 'hand'; 5 Bid *tápa*, Dng *tápí-ro*, Mig *táppú* 'leaf'; C **-tifu* 'five': 1 Hwo (Kr) *tuf(u)*; 2 (Kr) Mrg *ntifū*, Wmd *tufū*, Hld, Chb, WM *tufū*, Klb *túfū*, Bura *ntufū*; 3 (Kr) FG *čif*, FK (w) *čifū*, HF *mčēf*, Kap *mčufwe*, HB *mčifē*, HN *nčəfə*; 4 (Kr) Gudu *tuf*, Bch *tuf*, Mwl *túhf*, FM, FB *tuf*, FJ *mux-tyup*, Gude (H) *tufə* / Jglb *dbr*, Omotic Kaffa *tap* 'clap hands'.

**tim*- 'gather, pile up': W 1 Hs *tima* 'pile up'; 3 Pero *témmò* 'clean, collect rubbish'; C 7 Mafa *téma'a* 'grand tas'; E 5 Mig *timmo* 'rassambler, entasser' Cp. Ch **cam*- id. (I.3). / Arab *tmm* (i) 'finir, être complete', 1Y stem 'se reunir', Hbr *tmm* 'be finished, be done'.

**tVm*- harvest guinea corn': W 4 Paa (MS) *təmə* 'harvest, esp. cut guinea corn' E 1 Kera *čémé* 'harvest guinea corn' (probably goes back to **tVm*- 'cut').

tVr*->tVw/yVr*- 'turn': C 4 Gude (H) *təri* 'turning'; 12 ZB (S) *tírú*; E 3 Sib *čwàrà* (<**tiwar*-/**tor*-) 'retourner'; 6 Mok *tàariiri* 'vertiger, faire de tourner sur soi-même'/Akk (Sd3:1332) *tāru* 'sich umwenden', Arab *twr* 'faire le tour'// HS N 2427 **tuwur*- 'turn'.

**t[o]č*- 'cold': C 2 (Kr) Chb *tāša-kù*, 3 HF *tāšu*, FG *taši* 'coldness'; 5 Dxw (Kr) *ndāša* 'cold'; 7 Mafa *tās* 'refroidir'; 10 Log *taašē* 'cold'; E 3 Sum (J) *dəsa*, Ndam (dJ) *dwaš* 'cold'; 4 Sok *ndússa* 'Kälte', (AF) *tisa* 'cold' (irreg. vocalism). Cp. Ch **osVs*- 'wind, cold'> Sok *osso* 'cold (of wind)').

tVz*- 'bite, pierce': W 1 Hs *čízà* (<tiz*-) 'bite with front teeth', *ma-čijj* 'snake'; C 7 Mofu *təz*- 'pierce', Mafa *-tuz*- 'poignarder'; E 2 Kbl (L) *taz*, *tez* 'sting'; cp.6 Mok *òddizà* 'piquer, percer'/ Arab *tyz* 's'enfoncer dans une corps dur et vibrer (flèche)'.

tap*- (> **tupap*-?) 'gather, collect': W 2 Sura *tuwaf* (<tapap*, the only case of -f in word final position); 3 Pero *táppó* 'gather (for hunting)'; C 1 (Kr) TP *təpəha* 'gather'; 11 Mnj *tipi* 'rassambler'; E 1 Kera *tépé* 'gather'; 4 Sok *tebede*; 5 Bid *tatap* 'glaner, ramasser', Mig *táppó*, *čéppó* 'reunir'// Akk *tepu* 'hinzufügen, addieren', Hbr *tp̄h* (Sd,3:1388). Hausa *táábi* 'gathering, collecting'~ Berb Ahaggar *tab-ət* 'be gathered' < HS **tab*-.

**turu/i*- rise, mount': W 3 Pero *túru* 'climb', Tng *ture* 'jump, wake up, rise'; C (Kr) 1 **turi* 'lift': TP *dura*, Hwo *turan*, Gaa *itiri*, Gbn, Boka *tiri*; **turi-s*- 'mount': Gaa *tir-si*, Gaa *tər-si*, *tír-zi*, Hwo *tur-čusù*; 4 **ndVr*- < **nturi*- 'lift': FJ *ndur*, Bch *dér*, FM *ndiri*; E 5 Mig *tòr-sò* 'sauter' /Akk *tarú* (Sd3:1336), Eg *tw*'(MK) 'hochheben' (5:248)// HS N 2425 **tur*-. Cp. also Arab *ntr* 'enlever'.

Note affricatization of **t*- before -o- and -u- (in case the latter is influenced by -i- of the second syllable: **tuCi* > *zuCi* / *ziCi*):

C **tuni* 'lion, leopard': 1 (Kr) Boka, Gbn *čini*; 2 (Kr) Bura *cinj*, Chb *zunəy*, WM *žinəy* 'lion'; Bura *tuṇuw* (< **tuniw*) 'leopard'; 7(cp. Mtk (Kr) *zəngwaya* 'leopard'); 12 (Kr) Lame *tír-djir*, Peve *tən-dər*, ZB (S) *cin-žir* 'leopard'.

**tora* 'sweep': W 3 Pero *térèt* 'broom'; C (Kr) 2 **car*- (**tor*-): Chb *cār-ntà*, Bra *cəramta*, Ngw *car-nta*; 3 HG *cal-nde*, Kap *calumte*, HB *carundò*, HF *celinte*, HN *carunte*; 12 (Kr) **tor*-: Masa *toramo* (cp.(Kr) Misme (Zime) *tor*) / Eg *twr* (MK) 'reinigen' (5:253).

C **tuk*- 'taste': 1 (Kr) Gaa *təkənčj*, Gbn *tikənži* 'touch, taste'; 3 **tuki*: FG (Kr) *zuyi-ti*; 7 Mofu *-ča-čək*- 'gouter' (assim. < **ta-čik*- < **ta-tik*-); 12 **t[u]ka*: (Kr) Lame (na) *túkú-vù*, Peve *tak*, BM *žuka*, Masa *žoko-mo* 'taste'; ZB (S) *túk* 'gouter'.

The dental emphatic **t*- is preserved in its original shape only in the Northern bauchi group, in other languages it yielded *t*-. Several cases of initial *t*- in the sumray group (note that Ch **t*- yields *d*- in sumray) as well as secondary emphatization of medial -b- also point to former PCh **t*-. See **tub*- 'close, cover' (II.1) and the following roots:

t[i]r*- > **ku-tu/ir*- 'chief, husband': C (Kr) 1 'king': TP *ku-dəri*, Hwo *kù-tùrà*, Gaa *ku-tira*, Gbn *ku-tire*; E **tVr*- 'husband': 1 Kera *gə-drə* (<kV-drV*<**kV-tr*-, voicing of -t- in a cluster and regressive assim. of initial *k*-); 2 Lele *ku-doro*, Kbl (Cp) *kwo-dərə*, 3 Sum (J) *tər*; 4 cp. Sok *tír-im* 'your father'. /Cp. Nuba *tír-ti* 'Herr' (according to Reinisch (1889:99) originates from *tir* 'give'). The root is not related to Hs *ba-ture* 'Arab'.

**tup*- 'cover': W 1 Hs *túfā* 'put article on or around person or thing to cover'; C 1 (Kr) TP *dəpə-ha* 'close'; 7 Gis *dop* 'close, cover', Mofu *-dəp*- 'recouvrir, couvrir' (CCh shows a reflex of medial Ch **-t*-) / Arab *ʔf* (II,V stems) '(s) envelopper', Gz *ʔf* 'fold, wrap' (Lsl:76). Note that Hausa and Ge'ez cannot originate from HS **tap* (as in Djakonov 1982:33).

**tab*- 'catch, seize': W 1 Hs *tābā* 'touch with hand', *tābéé* 'catching fish with hand'; 3 Gln *tab*-, Gera *tāw*-, Krf *twá-wo*; 5 (Kr) Geji *dobj*; C 7 Gis *tub* 'wegnehmen', Mofu *-təb*- 'receive, get, take', Mafa *ndəb*- 'prendre quelqu'un pâteux'; E 6 Mok *tībā*, *tābā* 'picorer'// Eg *dbdb* (N) 'angreifen' (5:442)// HS N 2447 **tab*- 'catch, seize'.

te[H]a*- 'liver, heart': W 3 (Kr) Ngm *tili* (<tiliy* < *tiV[H]*-), Bol *tīləw* 'heart'; C 11 Msg *eteltel* 'liver'; 12 ZB (S) *telé* 'bas de reins'; E 3 Tum *télu*, Ndam (dJ) *taalu* 'liver' / Arab *thl* 'avoir la rate très développée', *tiḥāl*- 'rate'.

**t[e]w/y*- 'look for, find': C 7 Mafa *tew* 'chercher'; 10 Bud *ta* 'find'; 11 Mba *tey* 'find'; E **tew/y*-. 1 (?) Kwn (L) *žē* 'find'; 3 Tum *tò* 'find, get'; 4 Sok *teyo* 'find'. Cp. Fula *taw*- 'find', *tawt*- 'look for'.

**taw*- 'go': W 4 Wj *ta-n*, Siri *tuwa*, Jmb *da*, Paa, Miya *ta*; C 12 (Kr)

Bnn *tùwwa* ; E 3 Tum *tiw* (< **t₁iw*-) 'walk' (n.); 4 Sok *téui* 'go' / Arab *ṭw* 'go and come', Harsusi *ṭewō* 'come' // HS N 2440 **ta*-/**taw*- 'come'.

**turi*- 'fall': W 3 Glm *tər*- 'get down'; C (Kr) 2 Ngw *tiri*; 3 HN *tərə*, FK *təru*, FG *tərəyi*, HG *tərə*, HF *tūri*; E 3 Tum *toor* (< **t₁VHVR*-) 'fall several times' / Arab *ṭrḥ* 'jeter, mettre' // HS N 2484 **ṭurah*- 'throw, fall'.

W **tuma* 'sing': 2 Mnt (Fp) *tam*; 4 Wrj, Mb *təm*-, Kar *tuma*, Paa *təma*, Miya *atum*, Jmb *duma*, cp. Cagu *taam* (< **tam-tam*-?).

**t[ɔ]sa* 'sweep': W 5 (Kr) Geji *tasikə*; C 4 Gude (H) *taasə*; E 1 Mobu (Ln) *tújé* (< **t₁osi*); 3 Sib *twaḣa*; **ta/os*- 'broom': W 3 Krf *təsò*, *tàsiya* 'broom'; 7 Mafa *ma-tasay* 'paille sp. qui sert à fabriquer des balayettes'.

**tas*- (> **tuHas*-) 'break, thrash': C 2 Ngw *təsə* 'hit'; 7 Mafa *tas*- 'thrash'; 10 Log *túxse* (< **tuHVs*-) 'thrash'; E **ta₁asa/yj*-: 2 Lele *tesí*, Kbl (Cp) *təsə*; 3 Tum *taḣ*, Ndam (dJ) *təsā* 'break' / Arab *wṭs* 'frapper le sol; briser', Gz *ṭasaya* 'crush to powder', Hbr Pbibl *ṭeṣṭeṣ* 'erase' (Lsl:598).

W 4 **tuḥi* 'arrow': Wrj *ṭuwá-ná*, Cagu *tū-n*, Mb *túú*, Miya *tu*, Siri *ṭəyi*, Jmb *diwa*, Kariya *tu*.

**tub*- (> *tub*-) 'pour, be wet': W 3 Pero *túḣḣò* 'pour away'; E **t₁ub*- 'wet' (adj.): 2 (L) Kbl *túbu*, Nan *tíbe*; 3 (L) Sum *tuba* / Gz *naṭba* 'drip', Tigre *nāṭba* 'fall in drops' (Lsl:408) // AA 78 **tVb* 'drop', HS N 2476 **tub*- 'drip, be wet'.

**tuli* 'rib, side': C 5 (Kr) **zil*- (< **tuli*-) Gava *zilā*, Glv *zə-zilā* 'ribs'; E **t₁ul*-: 3 Tum *tul* 'côté' // cp. Arab *'iṭl*- 'côté, flanc'.

E **t₁ul*- 'hang': 2 Lele *tùúl*; 3 Ndam (dJ) *tùlà* // Cp. Arab *mṭl* 'allonger (une corde)'.

For Ch **d*- in word initial position see the following roots:

**deḥ*- (? < **duḥe*-) 'short': W 3 Maha *ḍese* (secondary emphasis) 'small'; C 7 Mofu *des* 'short, small', Mafa *ḍuše'e* 'short, shallow'; E 6 Mok *dòd-dés* 'short'.

**difū* 'dark, black': W 1 Hs *dúfū* 'darkness'; 2 **tipu* 'black': Sura *tup*, Ang *tip*, Mpn *təp*, Ank (Fp) *ge-tup* 'black'; 3 Tng *titidip* (redupl.) 'dark, full of clouds (sky)'; C 12 (Kr) Lame *ndifū-nú*, Bnn *dùfū-ntà*, Masa *ḣufū-nda* 'darkness'. / JgIb *dp*.

d[o]gus*- 'hoe': W 4 **dagus*->dawus*-: Wrj *dauša-na*, Diri *duša*; C (Kr) 5 Mnd *'ugzà*, Dxm *duksə*, Gava *dugusà*.

dig*-/HVdig*- 'dig': W 1 Hs *dáagi* 'iron implement for digging holes'; 2 Mnt (Fp) *dik* (< **dik*/**HVdik*); 4 Paa (MS) *ḣigaa* 'dig, uncover'; C 5 Gis *dik* (*-g > -k in the auslaut), Mofu *-dà-dəg*- 'enterrer'. Related to this root is

**diga* 'hoe' (n.): W Hs *diga* 'pickaxe' (hardly < English digger); C 7 Mafa *dəga* 'pioche'; E 2 Lele *diga*; 3 Tum *dəgà* 'pioche'.

**dar*- 'enclosure, village': W 1 cp. Hs *dār-nii* 'fence of corn-stalks secured horizontally'; 6 Ngz *dār-dār* 'fenced enclosure'; E 5 Mig *dār-mà* 'hut', Dng *dāār-nə* 'village'; 6 Mok *dārrá* 'étable, enclos'. Cp. W 4 Paa *Dàrá* name of Paa village between Tiffi and Guda / Akk *dūru* 'city wall, fortress, enclosure of a house' (A3:192), Hbr *dōr* '(circular) tent-camp', Arab *dār*- 'habitation' (cp. *dwr* 'faire un tour') // HS N 658 **dar*- 'dwelling place'.

**daf*- 'pot': W 2 Chip (Kr) *mə-ddəp* 'big water pot'; C 1 (Kr) Boka *taf-tə*, Gaa *təfə-tà*, Gbn *təfə-tə*, Hwo *tafə-re* 'small pot'; 4 (Kr) FM *dafu* 'small water pot'; 5 Nak (Kr) *dafa* 'small pot', Glv (H) *tḥua* 'pot' (*tḥ*-< **df*-); E 6 cp. Mok *dāppà* 'basket' / Eg (AR) *dfy* 'Art grosses Gefäss' (5:448).

**dig*- > **diga/u/i* 'chest': W 3 Tng *ruk-tuk* 'chest, thorax'; C 7 Mafa *da-dak* 'poitrine', Gis *də-dak* 'chest'; 11 Mba *dī-digay*, Mnj *də-dək* 'poitrine'; 12 (Kr) Masa *diga-no*, Peve *vun-duk*, Lame *vun-ḣukù* (but cp. ZB (S) *vun*) 'chest'; E 1 Kera *dī-digī* 'Brustbein'.

**deHar*- 'hunt' (n.): C 1 (Kr) Hwo *tiri-ra*, Gaa *tire-tà*; 12 (Kr) Ms *dara*, Lame *ná-djira* 'hunting'; E 5 Bid *daari* 'chasse à courre' / cp. Hbr *dhr* 'dash (horse)'.

Initial *d*- (not *t*-) in the sura group and in Tangale originates from Ch **d*- (i.e., from **n-d*-, **H-d*-), for example:

**nVdVk*- 'lie' (v.): W 2 Ang *dük*, Mnt (Fp) *dik*; 3 Tng *dukduk* 'Betrug'; 5 (Kr) Dwot *duk*; C 11 Mba *ndək* 'tromper'; E 5 Bid *dákán* 'tromper, plaisanter' is probably an Arabic loan / Cp. Arab *dgn*, 3 Stem 'duper, tromper'.

Affricatization of the voiced dental is observed before a front vowel. In WCh Southern bauchi, CCh 2-5 and ECh 1-3 groups PCh **d*- may yield *ḣ-/z*- before -o- and before secondary (?) -u-, for example,

**d[a]m*- (> *dw/ym*) 'sit, dwell': W 5 (Sm) Bgh *tam*, Kir *tem*, Geji *dem*-, Buu *dām*, Zakshi *dim*, Boot *dəm*, Zul *dem* 'sit'; E 2 Tob *ḣöme* 'habiter'; 3 Sum (J) *dām* 'habiter'; 6 Mok *dūmmò* 'durer, passer temps' / Ug *dm* 'dwell', Arab *dwm* 'durer, continuer d'exister ou d'avoir lieu' // HS N 643 **dam*- 'live, last, sit'. Cp. Kanuri *dám* idf. 'staying seated'.

**dVm*- 'gather': W 1 Hs *dīmi* 'in great quantity'; 3 Tng *domi* 'to collect, to put together'; 5 (Kr) Dira *ya dòmi*, Pol *zumu*, Bgh *dume* 'gather'; E 3 Tum *dòom* 'harvest' (n.) // cp. Eg (Pyr) *dmd* 'vereinigen, zusammenfügen' (5:457).

n-d[i]m- 'borrow': C 4 Gude (H) *nḣəmə*; E 6 Mok *dímmè*, *démmè*.

C (Kr) **dibu*- 'hand': 3 FG *dùvwu*, Kap *zùvè*, HF *zìbù*; 5 Glv, Gava *djivà*, Nak *diva*, Mnd 'urva / Jglb *dbr*, Omotic Kaffa *dibbo* 'hand', Burunge, Alagva *daba*, Dahalo *dāba* 'hand, arm' (E:162). Note that CCh does not originate from **tafa* 'hand'.

In roots with a medial laryngeal or with a voiceless emphatic initial *d*- usually > *d*-, cp. W **duç*- 'stone', **dVHVç*- 'squeeze' (II.3) **dVh-dVh*- 'bitter', **dih*- 'cook', **dawah*- (< **daHoh*-) 'stink, smell bad' (I.7) and the following examples:

**dik*- < **dik*- 'build, establish; marry', **dīak*- 'hut': W 2 Sura, (Kr) Chip *dik*, Ank *dik* 'build', Mpn *dik* 'build, establish; marry'; 3 Dera *dāhi*, Krkr (Kr) *dēku* 'build', Pero *dīgū* 'build; marry', Krf *dikk*- 'marry'; W 1 Hs *dāāki* 'hut'; 3 Bol (M) *dika* (cp. Krf *daya*) 'roof'; C (Kr) 4 FJ *žikfj* 'hut'; 8 Daba *žik* 'compound' (*ž*- < **dī*-) / Gz *ndq* build, 'establish, wall up', Arab *ndq* (i), 2nd Stem 'entourer d'un mur, d'un haie' // HS 703 **dik*- 'build'. Cp. Rift Iraqw *duy*-, Asa *duhum* 'marry' (E:166). It can not be excluded that WCh **dik*- 'to build; to marry' goes back to two HS roots, namely **dḱ* 'build' and **dq* 'marry'. PB **dagu* 'house' is probably a Ch loan. Note that it is attested only in a few languages (B24 *ndako*, C32, C55 *ndako*) and the regular reflex of initial PB **d*- in C32 is *l*- (Gt, N467).

W **del*- 'go in, out': 2 Sura, Mpn *del*, Mnt (Fp) *del*, Chip (Kr) *dēel* 'enter, pass by'; 5 (Kr) Geji, Pol *deli* 'go out' / Arab *dhl* 'enter'.

1.3 Sibilants and sibilant affricates

The PCh system (*s*, *c*, *ç*, *ʒ*, *č*, *č̣*, *ʃ*) coincides with that of Afrasian (see MiS:48). Only a few Northern bauchi languages still preserve the series in full, others simplified the system, each of them in its own way. The diversity of reflexes enables us to specify an affricate on the basis of the regular correspondence, peculiar to this very PCh phoneme.

For Ch **s*- see **sVHap*- 'spear', C **sipuy(V)ri* 'testiculi', **sob*- 'suck' (II.1), **sida* 'six' (II.2), **sak*- 'leg', **saka* 'scrape, carve', **sak*- 'plait' (II.5), **siman*- 'oil' (II.8) and the following examples:

**suH[o]r*- > **suHur* (-u- < *-o- in contact with a laryngeal) 'fry': W 1 Hs *sóoyà* (a regular shift (*-r- > -y-) in a root with a laryngeal); 2 Ang *suur*; 3 **sur*-: Bol *surr*-, Krkr *sùrri*, Dera *wùrri*, Krf *šùrú*, Ngm *sur*, Glm *sér*, Gera *sūr*,

Gera *sūr*, Pero *čũuro* [**suru*]; 5 (Kr) Brm *sure*; 7 Bok *masũur* 'fireplace'; C (Kr): **suH[o]r*- > 1 **suur*-. TP *zurra*, Hwn *sər-ān*, Boka *sura-đa*, Gbn *sùre-nči*, Gaa *sura-nži*; **suHVr*- > **suHl*- (on a *-r- > -l- shift see II.8): 2 Wmd *šiliri*, Hld, WM *šil-di*, Chb *sul-ti*; 3 (Kr) HG *sur-žē*, Kap *sur-kε*, FG *šili-ti*, FK *šili*, HB *šili-yò*, HN *šile*; 4 (Kr) Gudu *sərá*, Gude *sūr-tič*, FM *šir* (< **suri*) 'fry', Gude (H) *səṛə* 'roast over open fire'; 5 Dxx *sūlayà*, Mnd *sula*-, Glv *šil-yānā*; 7 Mafa *sawar*- (< **suwar* < **suwor*) 'griller'; E 6 Mok *zuriyē*, *soriyē* / Nm **surə*, Jglb **sry*/**swr*, Arab *s'r* 'make fire', Eg *asr* (Pyr) 'burn' (2:335) // HS N 2271 **soʿar*-.

**sina* 'field, earth': W 4 'field': Wrj *sənána*, Kry *sən*, *sín*, Dirí *səna*, Siri *sináwi*, Paa *sina*, Cagu *šínan* (cp. Miya *šim* id.); C 12 'field': Lame *šini*, Peve *šine*, Bnn *senina* (Kr), ZB (S) *siné*, Masa (J) *sinénā*; E 3 **sinya*- 'earth': Sum (J) *sinayà*, Tum *həŋ*, Ndam (dJ) *həny* / Jglb **sn* 'field', Eg *syn* (OK) 'Ton' (4:37) // HS N 2250 **sin*- 'earth, clay'.

sin*- 'brother': W 4 Cagu *šən* (cp. 2 Mpn *son* 'relatives, clan'); E **sen*-/sin*-. 1 Kera *seenə*, Mobu (J) *seéni* 'brother'; 3 Tum *həná*, Sib *syən* 'brother', Sum (L) *seénem gu gisse* 'your elder brother', *seénem gu doi* 'your younger brother'; 4 Sok *šin-tu* 'elder brother'; 5 Dng *siŋò*, Mig *sin*, Bid *sin-te*; 7 (Jglb) Jegu *šin* 'my brother', Bir *sin-tù*, Mubi *sin*, 'brother' / Jglb **sn*, Eg *sn* (Pyr) 'brother' (4:150) // Grn (1963:53), HS N 2193 **san*-/**sin*- 'brother'.

Proto-Chadic **c*- is still preserved only in some of Northern bauchi languages and in Mafa. The reflex of **c*- merged with that of **s*- in all the other languages of the family except Hausa, where **c*- (as well as **ç*-, **č*- and **č̣*-) is reflected as *ç*-. Cp. CCh **cVqwa* 'earth', **cuḥ*- 'pour' and the following roots:

**cof*- 'old man, chief': W 1 Hs *čóofóo*, *čóohóo* 'old; old person'; 6 Df *sáf*, Sha *saf* 'chief'; C 7 Mafa *cəva'a* 'the eldest'; 4 Gude (H) *cof* (irreg. reflex of Ch **c*-) 'premier' / cp. Arab *swf* 2 stem 'charger quelqu'un d'une commission et lui donnant des pleins pouvoirs' // AA N 34 **caf* 'chief'.

**ci'er*- 'rope': W 4 Siri *cira*; 7 Bok *sir*; C 11 Mba *sile*; E 3 Smr *šire* 'thread'; 7 Mubi *šèrri*. **ca*/'i/r- 'tie, plait': C 7 **cacar*-. Mofu -*sasər*- 'plait', Mafa *cacar*- 'tie'; E **sa*/'ir- 'tie': 2 **saar*- > Kbl (J) *sáarr*, Lele *saár*, 3 **sir*- > Tum *hír* / Akk *asēru*, Hbr, Ug 'sr, Arab 'sr 'bind, join' (KB:73) // HSN12 **acir*- 'bind, tie'. Cp. W **carak*-. 1 Hs *čárkiyaa* 'bow-string'; 2 Sura (Kl) *sarka* 'tendon'; 4 Mbu *caraku* 'tendon'. Cp. Dongolese (Arm) *seér*

Table 3. Sibilants and sibilant affricates

P	PW	1	2	3	4	7	6	PC	1	2	3	4	5	7	Log	Bud	11	12	PE	1	2	3	5	6	7
Ch	Ch							Ch										Ch							
*s	*s	s	*s	*s	*s	*s	*s	*s	*s	*s	*s	*s	*s	*s	s	h	s	*s	*s	*s	*s	*s	s	*s	
*c	*c	c	*s	*s	*c	*s	s	*c	*s	*s, *ç	*ç	*s	*s, *ç	*c, *ç	s	h	s	*s	*s	*s	*s	*s	s	*s	
*ç	*ç	c	*s	*ç	*ç	*ç	s	*c	*c	*c?	*c	*s	*c	*c	s	s	s	*c	*s	*s	*s	*s	s	*s	
*z	*z	z	*s	*z	*z	*z	z	*z	*z	*z	*z	*z	*z	*z, *πz	z	h,	s	*z	*z	*z	*z	*z	s,	*z	
			-z					*s	*s	*ç						ç,						-z			
*ç	*ç	ç	*ç	*ç	*ç	s, ç		*ç	(ç)	*ç	*ç	*ç	(ç)	ç, ç	s	ç	ç	ç	*ç	*ç	*ç	ç	s	ç, s	
*ç	*ç	c	*ç	*ç	*ç	(ç)		*ç	*ç	*ç	(ç)	*ç	(ç)	ç, ç	s	ç		ç	*ç	*ç	*ç	ç	z	*ç	
*ç	*ç	ç	*ç	*ç	*ç		ç	*ç	(ç)	*ç	*ç	*ç	ç	ç, ç	z,	ç,		*ç,	*ç	(ç)	*ç	*ç	s	*ç	

1. Ch *s- > š- before a front vowel. 2. Ch *nc-, *nc- and *nč- > nž-/nž-. 3. Ch *nž- and *HVž- > CCh ž-/ž- (regular reflex of Ch *ž- is z-). 4. Ch *mç->*mc- in the bata group, *č- in masa. 4. Ch *z->ž- before a front vowel.

Table 4. Lateral sibilants and affricates.

PCh		PW	1	2	3	4	5	6	PC	1	2	3	4	5	7	Log	11	12	P	1	2	3	5	6	7
Ch		Ch							Ch									ECh							
*s	*s	l	*l	*l	*l	*l	*l	*l	*l	*l	*l	*l	*l	*l	*l	*l	*l	*s	*s	*l	*l	*l	*l	*l	
*č	*č	s, š	*l	*s	*s	*s	*s	*s	*s	*s	*s	*s	*s	*s	*s	*s	*s	*č	*s	*s	*s	*č	*s	*č	
*č	*č	ç	*ç	*ç	*ç	*ç	*ç	*ç	*ç	*ç									*ç	*ç	*ç	*ç	*ç	*ç	

'strap' < Arab?

*cum- 'swear': W 4 *cum- > Wrj, Kar cəm, Miya cum, Jmb šəm, Paa čumá; E 7 Sok sáamesáame (note -a- in a reduplicated stem).

*cif- > *caf-cif- 'sweep': W 1 Hs čááfa-čéé (< *caf-cif-) 'remove the top layer of corn while washing it'; 4 Kar čəfə, Diri səfə, Siri cəfu; 6 Ngz səpu 'remove foam', səspu 'sweep off the table'; E 5 Bid sep 'remove foam'; 6 Mok sippé, zippé /Hbr sfy 'sweep away'/ HS N 398 *cip- 'sweep'.

*cir-oč- 'two': W *cir- : 3 Ngm (Migeod) šili-n; 4 Miya cîr, Paa (MS) čirú, Siri bə-čār, Mbu cār, Jmb šir 'two'; Kar mēē-čir, Miya māā-čir 'seven'; 6 Ngz širí-n; C *cir-uč- : 1 (Kr) Hwo suyuri (< *siyuč- < *siruč), Gaa suri, Gbn siri; 2 Chb (Jglb) sđé, Mrg (Ho) səda-j; 4 (Kr) FJ sul; 7 Mofu čew 'two', mää-sálá 'seven'; 8 Daba (Jglb) siray 'two', čī-šire 'seven'; 10 Log x-sdā, 11 Msg silú, cúlo, Mnj čúlú; 12 'seven': Peve séda (Kr), ZB (S) séda'a, E *sir-Uđi 'two': 2 (?) *sVw- > Lele (Grg) sò, Kbl (Cp) súwə; 3 Tum hēē, Som (J) sár, Ndam (dJ) sá; 4 Barein (Jglb) siidi; 5 Dng sēē, Mig sēē, Bid siđi; 6 Mok siré; 7 (Jglb) Brg siiri, Jegu shee, Mubi siir; cp. 1 Kera seeda; 6 Mok sára(t); 7 Mubi bēē-sir 'seven'. Irreg. loss of Ch r in a number of languages points to the intervocalic position (*cir-oč > cVw-oč > sVw-) /Nm *sar(-), Jglb *sr. Rift Iraqw car, Burunge čada. Cp. Kenga cili 'seven'.

Initial *nc- (when preserved) yields n3-/n3- and then -3 or 3̣. Quite regular are the reflexes in the matakam group only. Note that s- in E Tum points to former nc-/nč- as well (the regular reflex of *s-, *c-, *č- and *3- in Tum is h-). Examples:

*[n]car- 'chief, elder, rich': W 4 Wrj cara 'chief'; C 7 Mafa n3ar 'be older' (n3- < *nc-); 12 ZB (S) cár 'become rich'; E 3 Tum sari 'adult' / Eg sr (Pyr) 'Fürst, Herrscher' (4:188) // MiS *cVrVw(-n/m) 'elder, chief', HS N 386 *car- 'elder, chief'. Cp. Kanuri cári 'old (of a man)'.

*[n]cag- 'carry': W 3 Krkr (Kl) na ségou 'I take'; C 7 Mafa n3ag-; E 3 Sum (J) sage 'carry on the shoulder'; 7 Mubi (J) sag 'bring'.

*nc[o]t- 'press, squeeze': W 3 *nsoč- (< *ncot-) 'squeeze': Krkr n3ad- (*ns- > n3-, -o- < -a- after -3-), Tng sond, Pero čóttó; 5 (Kr) *nCVt- > Dwot nzət; C 1 *nceč- (assim. of vowels or < nica/o/ut-): TP (Kr) n3edj; 2 Ngw (Kr) nsitə; 7 *n3a/o/ut- > Mafa n3əč- (n3-, not n3- in Mafa speaks in favour of some back vowel after 3) / Arab mst 'serrer, presser' // HS N 1753 *mecut-/mecit-.

*[n]caray- 'be thin, meager': C 5 (Kr) Mnd šeré 'thin'; 7 *n3ar- < *ncar-

'thin': Mafa n3ara 'a thin'; 10 Bud harei 'meager'; E 5 Bid sersere 'thin'. Cp. Kanuri sársar 'narrow, thin'.

C *caku/*ncaku 'buy': 5 (Kr) Gava sūgwəná, Nak aw-čiyiya, Dxw skwayá, Mnd škwap-škwe, Glv (Rp) sagw, sugw; 7 Mafa n3ak- 'redeem'.

PCh *č- is reflected as c- or č- in a number of W and C Ch languages, in ECh it yielded s-. Note an epenthetic laryngeal in the sura group (čVC > sVHVC, like CVč > CVHV). Cp. *čagiy- 'hair' (II.5), *čam- 'sour', C *čin- 'hear' (II.8) and the following examples.

*čup- 'wash (tr.)', *čap- 'be clean': W 1 Hs čáb, čáf 'well washed', čáf-tá, čab-tá 'cleanliness'; 2 *suHup (epenthetic laryngeal): Ang sup 'wash, be clean', Sura sugup, Mpn suup, suwup; 4 Diri cəvə 'bathe'(n.); 5 (Sm) Zaar cop; 7 Df sapa 'be clean'; 5 Glv (Rp) cuf 'wash, bathe' / Jglb šə, cp. Akk šapū 'smooth, white (of body)' (A16:98), Arab šfw 'clean (of water)', Mehri šōfi 'clean' // AA 35 *čVp, HS N 432 *čap- 'be clean'.

*čal- (*čaal-) 'rope': W 2 Ang saal 'tree, it's bark is used for making ropes'; 3 Bol (Kl) coli; C 4 (Kr) Mwl sàalú (cp. also 7 Mafa čē-čelew 'menottes', č- < *č- < *č- before a front vowel) / Hbr 'šl, Arab wšl 'join, attach' // HS N 422 *čal- 'rope, tie'.

*čay- 'plait, weave': W 3 Bol sa'' 'plait' (cp. Kanuri sa); C (Kr) 2 *ca- 'weaving': Mrg caka, Bura capuwa, Chb cati; *ca- 'weave': Wmd, Mrg ca, Hld cagu; 3 *ca- 'weaving': HN, HK cá, HG ca; *ca/y-: HG cāde, HB cāyo, HN caše 'weave', HK cāte 'weave, plait'; 5 Mnd cākə 'weaving', Glv cacugā, Gava cūganā 'weave', Glv (Rp) ca-cə 'plait'; 12 (Kr) Peve sa 'plait'. Derived from this root are E 5 Bid saayaw 'plait a rope' and W 1 Hs čaawó 'three-ply rope'.

čim-/čiyam- 'seed': C 10 Bud sími 'corn', šimó 'seed' (note Bud s- only < *č-); 11 Mba síyom 'seed'; E 5 cp. Bid síima 'sorgho'.

*čimu 'skin': W 2 *čimu : Sura, šim, Mnt (Fp) gob-šim, Grk (J) sàm (initial s- only < Ch *č-), Ank (Fp) šum, Ang šim, C *ku-cim : 1 Tera (N) kə-zəm; 2 (Kr) Bura, Ngw kī-sim, Chb ku-cí, kwu-čī, Klb čī; E *sum- 'skin': 1 Kbl (Cp) səm, 3 Sum (J) súmo 'skin', Tum hum (? cp. also 7 (L) Mubi 'ūjùmó 'fur') / Nm *zəm, Jglb *zm

*čir- > *čuwar- 'dew, rain': W 2 *siHir (epenthetic laryngeal) 'dew': Sura sēgér, Mpn səər, Ang sūr, (Kr) sir; 3 *cir-cir (> *cin-car, dissim., or < *ci-ncir, cp. Gera 'dew': Bol sin-sori, Krkr (Kl) sen-cer, zen-zer, (L) sən-sér, Ngm čin-čir, Gera šī-šir [*sənsər]; 4 *čuwar- 'rain': Wrj čuwarə, Diri čuwaru; 5 (Kr) *si-sir- 'dew': Geji si-sil, Pol si-sir, Buli, Say šīšir, Dwot su-sūr, 6 Bade

(Kr) *suwar* 'tears'; E **ka-sir-/*ka-suwar-* 'dew': 1 Kera *kə-sər-dídí*; 2 Kbl (Cp) *sú:rrú*, Lele *kà-sùwáró*; 3 Sum *ši-širi*, Tum *žòòr* (*žò- <*so-*), 5 Dng *sí-síró*, Mig *sí-síró*, Bid *sí-sro* / Akk *šarāru* 'flow, drip' (A16:105).

**čina-* 'life, heart': W 2 Sura *seen* 'life'; 4 **čina-hu* (*č- <*č-* before *-i-*) 'life, heart, liver': Wrj *čan-həna* Paa *čin-ki*, Mba *čan-huu*, Miya *čan-həna*, Siri *činga*, C 1 (Kr) Gbn *ši šin-de*, Gaa *šin-da*, Boka *šišin-ta* 'life'.

The PCh emphatic affricate /*č*/ is often voiced in *nč-/mč-* clusters (*Nč->*Nž-/Nž->ž-/ž-*, for example:

nčVI-* (nučal- <*mučal-?*) 'monkey': W 1 Hs *čúulà* (?metath. < **čumla*) 'blue monkey'; 2 Ang *želi* (*<*nž-<*nč-*); 3 Dera (M) *šel* (cp. Tng *salan*); C 3 (Kr) **ncala*: HB *ncala*, HN, Kap, HG, FG *cala*.

C **[mč]aku-* 'increase': (Kr) 1 TP *šata*, Gaa *čeke-nži*, Gbn *čèkè-nži*, Boka *čèkà-da*, Hwo *čək*; 2 **m-caku-*: Chb *žək-tí*, Klb *ácák-tù*, Mrg *mčaxu*, Ngw *žəgə-tə*, WM *žəg-di*; 3 **m-caku-*: Kap *m-cux-te* (*-u- <*a-* in contact with *-x-*), HB *čaxu-dž*, FG *m-caxa-ki*, HG *w-cuko-dè*, HN *mp-sux(u)-tè*, HF *m-sxu-tò*; 4 Mwl *úžikó'ó*, FM *čək*, Nzn *čəkə-ən*, FJ *n-caft*, 12 **cuku*: Bnn *čukə-mù*, Masa *čuk funu-mo* // cp. Arab *š'k* 'engraisser, rendre gras'.

**nč[i]b-* (*>*nž[i]b-*) 'sew': W 1 Hs *čáábà-čee* 'sew together'; C 5 Glv (Rp) *žib* (*<*ncib-*) 'sew'; 7 Mofu *-nžəb-* 'join, sew'; 10 Log *sba* 'sew'.

Chadic **č-* is traceable by secondary emphatization of the voiced labial in word medial position (**čVb- > cVb-*), cp. **nčup-* 'buttocks', **nčabu* 'cover' (II.1) and the following roots:

C **čabo* (*>*čəbə*) 'mud, silt': C 3 (Kr) **ncač-* 'mud': HB *nzačə*, FK *nc'əbū*, Kap, HN *nzačə*, HF *nzečə* (**nc->nz-*, regressive assim. with the voiced labial); (Kr) Klb *cábú*; 7 Mafa *cač-cačbə'a* 'filthy, sticky'; 4 **sočw-* (*<*čabw-*): Bch (Skn) *səčwe*, Mwl *səbó*, Gudu *čəbó* 'mud'.

**čiH[a]r-/*H[a]čir-* 'sand': W 7 **Čoor-* (contraction, *-oo-* may originate not only from **-iHo-*, but also from **-iHa-*): Df *jóòr*, Kul *'a-sóór*; C 5 (Kr) **siy[a]l-* (*<*čiyar-*, deglottalization of initial *č* due to a laryngeal in the same root: **ČVy- >*sVy-*): Mnd *šili*, Glv *sùγula* (*<siyula, -a- <-u-* after *-γ-*), (Rp) *səγəlu*, Nak *siyle* (cp. Gava *zəyà-zəyà*, Dxw *žiyè* 'sand', irreg. loss of *-r*, irreg. voicing of the initial sibilant); E 5 **čiHVr-/*HVčir-*: Bid *čira* (*<*čir- <*čHir-*), Mig *dyiiró* (*<*HVčir- <HVčir-, -či- <*-či-*, Mig shows the reflex of Ch **-č-* in medial position) / Arab *šhr* 'être vaste', *šahrā* 'desert' // HS N 420 **čaħora-* 'sand'. E Ch data has been added to HS and the latter should be changed to **čaħir-/*čiħar-*.

PCh **ž-* is devoiced in *sura, kera, lai, sumrai* groups, it yields *w/y* in Dera and Tangale, *h-* in Bele, Tumak, Ndam, Mokilko. In all other languages the PCh voiced hissing affricate is reflected as *z* or *ž*. Cp. **žuqan-* 'gazelle' (II.6), **žin-* 'child' (II.8) and the following examples.

**ža/w/y- >*ža'aw-/*žayaw-* 'rope': W 4 **žawa*: Wrj *žáu-ná*, Kar *žau*, Miya *zyáu, žowu*; 6 Ngz *žayí*, Bade *zayí*; C 1 Tera (N) *zo*, (Kr) TP *zúwa*, Boka, Gbn *sax-tà*, Gaa *səx-ta, səxü-rà*; 3 (Kr) **zuw-*: HN, Kap *zúwe*, HB *zúwo*, HG *zúwi*; 5 (Kr) **za//aw-*: Mnd *zəwa*, Gava *zəwə*, Glv *zəwə* 'rope', Mnd (Mo) *zááwa* 'rope', Glv (Rp) *záwə* 'strap'; 7 Mafa *záyá*; 4 **zaw-/*ziy-* (*>*za'uw-*): Gudu *zò*, Nzn *zo'o*, FB *zú'w-un*, FM *zú'u*, FJ *ziyə-gwe* (Kr) Gude (H) *zə'wá*; 12 Bnn *siyəw-nə*, BM *siaw-na*, Peve *žeo*, Lame *ižáu*, ZB (S) *zèò*; E 3 Tum *ha*, Ndam (J) *há/Nm* **zawi*, Eg *izy* (NK) 'rope' // HS N 2612 **žaw-/*žay-* 'rope'. Cp. Kanuri *žē* 'rope, string'.

**nžabun-* 'guinea-fowl': W 1 Hs *zàábóó*; 4 **zabun-*: Wrj *zabrí-yai*, Kar *zábúr*, Diri *ázávúna*, Miya *zábùr-kú*, Paa *závúuna* (initial affricate (instead of *z-*) in a number of W and Ch languages points to a pref.), Jmb *žáábùr* (*-n > -r* in the auslaut or in a cluster; still another suffix (*-Vr*) in all these cases cannot be excluded); 5 Bgh (Sm) *šáp*, Jimi (Go) *zubben*, Grnt *zum* (Ja), Zul (Go) *lemene*, (Kr) Dira *žimuni*, Pol (Kr) *žibin*, Zakši (Go) *zubm*, Zaar (Sm) *žèpm* (note secondary lateral) 6 Ngz *zàábánú*; C (Kr) **nzabun-*: 2 Chb *zùvùra*, Ngw *zìvirà*; 3 HN *zùrune*, FK *zəvən*, FG *zuvuni*, Kap *zəvùne*, HB *zəvùnɔ*; 4 Gudu *zúvan*, Gude *zòvəna*, FB *zāvùnun*, FJ *zāvəni*; 5 Dxw *zāvira*, Nak *žabura*, Gava *žaburà*, Mnd *žabərə*, Glv (Rp) *žabəra*, 5a Lmn (JgIb) *zəvənàa-káá*; 7 **zapan* (irreg. *-p-*): Mukt (JgIb) *zāvúr*, Mafa *zápán*; 8 Daba (Kr) *zāvun*, (JgIb) *zāvín*; 10 Log *záwan* 'Perlhuhn' (cp. Kotoko (By) *sáfān*); 12 ZB (S) *žámlà-kà* (*-ml- <-bl- <-bn-*; cp. Zime Dari (JgIb) *čófnók*, id. proving that there are at least two PCh words for 'guinea fowl', one of them originally denoting some other bird); E **zabul-* (*-l- <*-n-* after a labial consonant): 2 Lele (Grg) *simlí* (*<*sibli*, cp. C ZB, vowel assim., *s- <Ch* **ž-* is regular); 3 Tum *hibəl* (*<*zibili*, vowel assim.), Ndam (dJ) *həbəl*; 5 Dng *zòpùlò* (irreg. devoicing of the labial), Mig *zóbíló*; 6 Mok *sùbilò* (*s- <*ž-* is regular) 7 (JgIb) Jegu, Bir *zóbóló*, Mubi (L) *nèbèlɔ* (according to JgIb, *<*n-žebelo*). / Nm **zaban*, JgIb **zbl*.

ži-uk-/*wu-zaw-* 'body': W 1 Hs *jikíí*; 2 **šik*: Sura *šik*, Ang *šeuk*, Grk (J) *tək*, Mpn *šik, šišik*; 3 Bol *zuwo, jiwo*, Dera *yək, yik*, Tng *'ik*, Ngm *zugo*, Krkr *zu*, Pero *šik*, Bele *hikò*, Gera *zuwi*, Grm *žii* [zu/*zik*], 5 Grnt (Ja) *zù*, Zaar (Sm) *ži*, (Kr) Geji *ši*, Buli, Sayanchi, Pol *žr*, 7 Sha *zək*, Kul *zígy*, C (Kr) 2

**wu-zaw-*: Ngw *zái*, WM *iʒa*, Hld *zaw*, Wmd *əzùw*, Klb, Bura, Chb *za*, Mrg *wuzù*; 4 **su-* (irreg. reflex): FM *sù'u*, FJ *sə-sə-n*, FB *sù'-wun*, Gude *ši-šin*, Nzn *šiš*, Mwl *sù-gí*, Bch *su-tò*, Gudu *fwáá-sí*; 9 Gdr (Mo) *zu*; 10 Log (Mo) *zozí*; 11 Msg (Mo) *su*, Mba *sii*; E 1 Mobu (J) *sii*; 2 Kbl (Cp) *ko-sǎ*; 3 Sum (L) *šií*, Tum *hig*, Ndam (dJ) *həg*; 5 Dng *zi*, Mig *zii*, Bid *zii-te*; 7 (Jglb) Mubi *zi-č*, Jegu *zii-tə*, Brg *zi*. Initial *wu-* in CCh 2 probably goes back to a marker of body parts (cp. W 3 **wu-tin-* 'nose'). **k* / *-t* is a marker of unalienable possession, cp. conjugation of the word "body" in W 2 Sura (Jungraithmayr, 1962:212). Newman (1977) considered *-k* to be an augmental suffix of body parts. Nm **zi*, Jglb **zk* 'body', Kush **ʒVq-* 'body, flesh', Dlg (1976:199) // HS N 2597 **za-/ʒi-* 'body'.

**ʒVm-* 'rob, take by force': W 1 Hs *zäämaa* 'defraud a person of his proper share'; C 10 Log *zum* 'rob' / Akk *zummû* 'beraubt sein, berauben' (Sd3:1536) // HS N 2632 **ʒum-* 'rob' (Hausa data added recently changes HS reconstruction to **ʒom-*).

When preceded by a laryngeal or *n-*, **ʒ-* can yield *ǰ-* or *ʒ-* (in the sura group and Mokilko - *z-*), cp. **nV/V-ʒihu-* 'rub, smear' (II.6) and the following examples:

**HVʒVm-* 'want': W 2 Ang *zum* (*z-* only < **ʒ-*); E 3 Tum *ǰim*; 7 Mubi *ʒém* (< **HʒVm-* < *HVʒem-*) // Arab *ʿzm* 'determine, desire to do'.

**n-zum-* 'heart, chest': W 2 **-zum* 'chest': Mnt (Fp) *po-sum-den*, Mpn *zùuŋ* (-ŋ < *-m*); 5 Pol (Kr) *nǰəm* 'heart'; C 4 **nʒum-* 'chest': Gude (H) *əʒəmái*, Mwl (Kr) *nzúm-tígí* 'chest', Gude *ʿili-ʒimə* (< **ʒumi*) 'rib' ('bone (of) chest'); Cp. E 6 Mok *zúmé* 'front' (note, that **ʒ-* > *s-* in Mok) / Eg *zm* (Pyr) 'lungs' (3:445).

**n-ʒVy/-* 'sit': W 7 Kul *za* (J), *nza* (Jglb); C (Kr) 2 Bura *nzunzu*, Chb *nzey*, WM *nǰey*; 3 (Kr) *nzonzù*, FG *nzùyi*; 4 (Kr) FJ *nzá-xá*, FB *nǰan*, Gudu *nzan*, Gude *nzác*, Bch *nzá* 'sit', Gude (H) *nʒa* 'dwell, live'; 5 (Kr) Mnd *nǰa-nǰa*, Glv *nʒan-ʒu-ga*, Gava *nzù-ganà*; 7 Mafa *nʒa* 'sit down, rest', Mofu *-nǰ-ʒit*; 10 Bud *ǰei*; 8 (Kr) Daba *nǰä*.

**n-zuk-* 'pierce, stuck into': W cp. 1 Hs *zùùkaa* 'draw tobacco smoke into the mouth'; 4 Wrj *nzaḵw-* 'pierce'; C 4 Gude (H) *ʒəku* 'stuck in an opening'; 7 Mafa *zukw-* 'enfoncer, piquer dans' / Arab *ḥzq* 'percer, transpercer (une lance), frapper le but (flèche)'.

**ʒVk-* > C **nʒak-* (? **nizak-*) 'gather (intransitive), together': W **ʒak-* > 1 Hs *zúkù-mii* 'batch, compani, collection'; 2 **šak*: Ang *šak*, Sura *šək* 'gather',

Ang *šak* 'together'; C **ni-ʒak-* > 5 Gava *ʒəxà-nufā*, Dxw *ʒax-nəfē*, Nak *zira-nzixa* 'gather' (Kr), Glv (Rp) *ʒax* 'assemble, gather, come together'; 7 Mafa *nǰockw-* 'récolter, ramasser'; 12 ZB (S) *nǰék* 'rassembler personnes, se réunir'; E 6 Mok *zikí, siki* 'apporter, prendre, ramasser', *tää-siká* 'Gemeinschaft'. Note a **k-* > *-x-* shift in the glavda group under the influence of an affricate in word initial position.

**HVʒum-* 'give; gift': W 2 **zuyum-* < **yuʒum-* 'gift (v., n.) (*z-* < **HVʒ-*, a *HVCVC* > *CVHVC* metath. is regular, cp., for example Sura *miš-kayam* 'chief' (*miš* "Mensch") ~ Arab *ḥkm* 'to have power'): Sura *zùyùm, zùgùm* 'Geschenk, Gabe', Ang *zum* 'gift', Mpn *zuum* 'gift', *zúùm* 'give gifts'; C 7 Mafa *zum-* 'donner une petit peu'.

Obviously, initial *z-* in W and CCh languages originates from PCh (and HS) **ʒ-* in word initial position, while initial *ʒ-* goes back to Ch **-ʒ-* preceded by a laryngeal or *n-* (PCh **ʒVC-* > *zVC-*, but PCh **H/n-ʒVC-* > (n)ʒVC-). However, in a few cases initial *ʒ-* in CCh languages corresponds to Sem **z-* in word initial position, for example:

**ʒam-* 'remind, think, remember': W **ʒam-*: 3 Bol *zum-* (irreg. vocalism), Glm *ǰām* 'think'; 4 Wrj *zāmə-*, Kar *zām-*, Miya *zām-* 'remind'; C 5 **ʒam-* (< Ch **-ʒam-*) 'remember': Gava *ʒəmə-nānā*, Nak *ǰama*, Mnd *ʒəma* 'remember' (Kr), Glv (H) *ʒam* 'think, remember, believe, reckon'; possibly also 7 Mofu *ǰim-* (with an object) 'think about smth' / Hbr *zmm* 'think' (KB:259) // HS N 2607 **ʒam-*.

**ʒuk/qo* 'push, move aside': W 1 Hs *zúúkuú* 'pushing pupils too fast and letting them pass on without their having committed to memory lessons already given', cp. *záákù-ḏaa* 'move aside to make room'; 2 Mpn *zək* (< **ʒVk*) 'move a little, toss'; 3 Krkr (Kr) *nʒukwa* 'push'; 5 (Kr) Geji *ʒékka* 'push'; C **ʒoku* < **-ʒoku*: 7 Mafa *ʒa-ʒək* 'obliger qqn à se rendre à une endroit, forcer'; 12 ZB (S) *ʒúk* 'déplacer' / Arab *zḥḥ* 'pousser or jeter quelqu'un ou quelque chose d'un lieu plus élevé dans un précipice'.

Taking into consideration that irregular initial *ʒ-* (not *z-*) < PCh **ʒ-* is attested only in verbs, we may think of some morphological reason for such a discrepancy (probably, verbs of this kind represent a former causative stem with a *HV-* marker. Mafa verbs reflecting sometimes initial PCh **b-* as if it were preceded by a laryngeal seem to support our idea).

Only a few Ch languages have different reflexes of Ch **c-*, **č-* and **č-* (see table 3), so we are able to distinguish between them only in the case of a widespread root. In the majority of CCh languages reflexes depend on the

following vowel. In Mafa, for instance, all the affricates yield *c-* before a back vowel, but *č-* before a front one. Note that PCh **č-* > *č-* in Buduma and *š-* in Tumak (while PCh **c-* and **č-* are attested as *h-* in both languages). Examples are not very numerous. Cp. **čad-/ *čaHad-* 'cut, carve' (II.2), **čaḥu-* 'pierce, tattoo' (II.7) and the following roots:

**čala* 'pot': W 2 Ang *čal*; (also 4 **čila* 'melon': Diri *ačila*, Wrj *čila*); 5 Dwot (Kr) *čal*; C (Kr) 2 Mrg *nčala*, Klb *šalá*, Wm *čalā*, Hld **čalā*.

**čal-* 'rise, stand up': C **čal-*: 10 Bud *čalai* 'aufheben'; E **čal-*: 7 Bir *čaalí*; 5 Bid *'ačal* 'rise', Mig *čòòlè* 'regarder d'en haut'.

**čeri* (? **čēri*) 'cry' (v.): W 1 Hs *čéeráá* 'cry out'; 2 Ang *čir* 'explain'; 3 Tng *seer*, Pero *čérò*; C 11 Mba *čirí*; E 5 Bid *če-čer* 'cry (of a guinea-fowl)' (n.) / Eg *sšr* (MK) 'aussprechen' (4:548), for more examples of Eg *sš* reflecting HS **č* see Belova, 1989, Arab *tṭr* 'bavarder' // HS N 483 **čer-* 'speak, shout'.

**čomum-* 'gather, join': W 1 Hs *čamme* 'link up, join'; 3 Krkr *čaam-* 'versammeln'; C 2 (Kr) Wm *cumiya* 'gather' (tr.), Klb *ácúm-tù*, Mr *cùn-gwiya* (*-ng-* < **-mg-*) 'gather'; 3 HN (Kr) *cùm-tè*; 4 Gude (H) *cəəmə* 'gather'; 7 Mofu *-čəm-* 'rassembler', Mafa *cam-* 'entasser' / Arab *tmm* 'ramasser, porter sur un seul point des herbes, du foin' // HS N 471 **čam-* 'gather, join'.

**čul-* 'seed': W 3 Tng *šala* (< *šula*); C (Kr) **čuli*: 2 Klb *čúli*, Hld *čuli*, Wmd *čulí*, 3 HN *cili*, HB *cə̀lù*; E 5 Bid *čilal* 'sow'.

**čeHap-/ *čapVH-* 'catch': W 1 Hs *čáfè* (< **čapaH-*) 'catch a thing thrown'; 2 cp. Sura *čip* 'trap' (n.); 6 Df *syap* (< **čayap-* < **čaHap-*); E 3 Sib *syáb-á* 'seize'; 5 Bid *čaa* 'to fish', *'áčap* 'catch', Mig *'áčípò* 'saisir au vol' / Eg *sph* (Pyr) 'mit dem Lasso fangen und fesseln' (4:105) // HS 473 **čapah-* 'catch'.

**č[u]lib-* 'wolf, jackal': C 11 Msg *če-čelebe* 'jackal'; E 6 Mok *sullibe* 'wolf' / Akk *šēlebu* (A17,2:268), Arab *ta'lab-* 'fox' // HS N 464 **ča/u'lib-* 'fox, jackal'. Cp. Fula *cuule* 'jackal'.

**čela* 'cut': C 4 (Kr) Nzn *čele* 'chop'; 7 Mafa *cal-* 'break off a piece', *čə́lád-* 'cut off a piece'; 10 Bud *čeeu* 'mow'; E 5 Bid *čóllà* 'fente, ouverture'; 6 Mok *séelè*, *ziili* 'dépecher (animal), hacher' / Arab *tlf* 'casser, contusionner (la tête)'. Cp. Tubu *cal* 'mit den Schwert schlagen'.

**čVw-/čVy-* 'to fish': W 3 cp. Tng *saa* 'net for fishing or hunting'; 4 Kar *čiwu*, Paa *čuču*; Bade (RL) *ma-súuy-an* 'fisherman', Ngz *šiyú* 'to fish'; C 12 ZB (S) *ču* 'pêcher au panier'; E 6 Mok *sáwwè* 'pêcher au filet'.

**čar-* 'rise': W 5 (Sm) Grnt *šēeri* 'stand up'; C 10 Bud *čar* 'rise (of the sun)'; 12 Lame (Kr) *čēr-ší*, Peve (Sn) *čár* 'stand up', ZB (S) *cár* 'ressusciter' / Arab *twr* 'être soulevé et se repêtré dans l'air (poussière)'.

**ča'ok/q-* 'house': W 3 Krf *šoyo* 'house' [*sooko*]; E **čōk-* (< **č[a]ok-*) 'barn': 5 Bid *čòoki*; 6 Mok *sóoki* / Eg *wsh.t* 'Raum' (1:366), Akk *'ašahhu* 'storehaus' (A1,2:411). Cp. Nandi *čoke* 'granary'.

**čag-/an-* 'rise, lift': C 5 Glv (Rp) *čig(a)* 'the rising'; 10 Bud *čagi* 'hinaufsteigen'; E 3 Tum *soṇ*; 2 Lele *čangí* 'lift'.

ECh **čila[m]-* 'stick': 1 Kwn (J) *čilān-ta*, 3 Tum *silān*, Ndam (dJ) *čilān*; 4 Sok *čilam*.

PCh **č-* has been preserved in its original articulation only in a few Northern bauchi languages. Also it yielded *ç* in Hausa, which makes it possible to distinguish PCh **č* and **č̣* (in all the other languages their reflexes merged). Cp. **čub-* 'smash', **čepur* 'guinea fowl', **č[i]fu* 'suck' (II.1), **čih-* 'pour, wash' (II.6) **čaman-* 'think, know', **čikan-* 'goat' (II.8) and the following examples (note secondary emphatization of *-b-*):

**čama* 'night', **čum-* 'dark': W 3 Tng *sum*; 4 Wrj *čamá-zá*, Mbu *čama-ze*, Kar *čamá-zə*, Miya *čámà-zá* 'night'; C 1 (Kr) TP *žùm*, Gaa *šim-šim* 'dark'. / Jglb *šmz* 'night'.

**čag-* 'cut, split': W 1 Hs *čáágà*; E 3 Ndam (dJ) *čəgə* 'cut'; 5 Mig *čéc-čigò* 'fundiller'.

**čako* 'pot': W 4 Wrj *čakwa-na*; C (Kr) 3 FG *caxwa*; E 5 Bid *čookiya* 'big vessel' / Berber Ghadames *a-zku* 'plate for couscous' / HS 501 **čak-* 'vessel'.

**čilVm-* 'be dark': C 10 **čilVm[i]*: Bud *čilim* 'be dark', Gul *selem* 'black' (cp. Kanuri *səlem* 'black'. In the view of the HS origin of the root borrowing from Ch is highly probable.); E **čilVmu* > 5 Mig *čúlmó* 'aller vers l'ouest', *čúlùm-tí* 'west'; 6 Mok *zímóló* 'twilight' (metath., note that Mok *z-* is the regular reflex of CCh **č-*). Regressive assim. of the second vowel in C and ECh/ Arab *žlm*, SAR *žlm* 'be dark' (Lsl:556) // Grm (AA N53), HS N 511 **čilam*. The root is derived from HS **čVI*, see below, not from **l/rVm*, cp. Sk (1995:30).

**čaw-/čiy-* 'catch, seize': W 3 Krkr *čaw* 'catch, seize', 4 Paa *čei* (irreg. loss of an emphasis); 7 Mafa *č-* 'take, hold', Gis *že* 'seize'; 'catch': 10 Bud *ča*, Log *si*; 11 Mba *saw*; 9 Gdr *čɔ*; E 5 Mig *'iččó* 'take'; 7 Mubi *čiyá*, *číwa* (J) 'take'; 6 Mok *ze'iyó* 'fangen' (note regular *z-* < **č-*) / Eg *d'* (MK) '(Fische) fangen' (5:534) // HS N 496 **ča'f-* 'catch, seize'.

**čib-* 'spring, jump': W 3 Krf *šibb-* 'spring down' (*sVb-* < **čVb-*); C 5 Glv (Rp) *cəv*; E 6 Mok *zibbè*, *zabbè* 'descendre, sauter (du haut vers la bas)' / Arab *žbz* 'tomber (se dit d'une chose qui tombe légèrement)'.

Cp. also W 2 Ang *čaar* 'to want a thing very much' ~ Arab *'zr* 'avoir du

degoût pour quelque chose',

E 6 Mok *zírè* 'pic, honte abrupte' ~ Arab *zír-* 'pierre tranchant', cp. MiS 28 *čVr- 'flint, hard stone, rock'.

After a prefix Ch *č- can yield ʒ- or ʒ̣-, for example:

*č[i]la 'shadow': W 2 Ang *žil* (< *n-žil- < *n-Cila) 'shade under trees'; 7 Sha *čalā*; C 7 *n-Cala > Gis *nžala* 'west' / Arab *žil-*, Jibb *zelel*, Kush Sidamo *caale* 'shadow' // HS N 503 *čal-/*čil- 'shadow'.

*čuway-/*čiyaw- 'tail': W 1 Hs *wúciyá* (metath., or < *wu-čiya, with a prefix of body-parts, cp. CCh *wu-zuw- 'body'); 4 Diri *čúwáá*; C 10 *n-žuway- (< *n-čuway-): Bud *nžui*, Log *zuée* (z- < *nž- < *nž-); 12 (Kr) *Lame čáu*, Peve *čeo*, ZB (S) *céó*.

*čugu- (? / *čogu-) 'sit': W 1 cp. Hs *čugúnaa* 'squat'; 4 *čVg- 'sit': Wrij *cəgə-*, Cagu *čəgu*, Miya, Mb *čəgə* 'sit'; C 1 (Kr) *čok- (< *čogx-) 'sit': Gaa *čòk-xa*, Boka *šòk-xi*, Gbn *čòxā*; 5 *cugu: Glv (Rp) *cugw*, *cəgw* 'go down, descend'.

For Ch *ž- see *žub- 'pour, be wet' (II.1), *žigaw 'rock, stone' (II.5), C *žah-/*žab- 'divide, half' (II.6) and the following roots:

*žiba > *žibaH- 'break, beat': W 1 Hs *žibgáá* (< *žibh/h/g-) 'beat a person'; 3 Krkr *žibó* 'beat' (< *žiba-); *žabaH- > Krf *žābbātú-* (tr.), *žābbú-* (intr.), Glm *žòw-*, Grm *žāb-* 'break'; C 2 (Kr) Ngw *žəbwi* 'break'; 7 Mafa *žáv* 'donner un coup de pied'; E 2 Kbl (Cp) *žip* (-p < -b) 'push'.

*žaw/- 'tie, bind': C 7 Gis, Mafa *žaw*, Mofu *žaw*; 12 (Kr) Peve *žeo*, ZB (S) *žéo* 'tie', *nžà'à* 'untie'; E 3 Tum *žəw*.

*žar- (*že'ar-) 'locust': W 2 cp. Sura *nžar*, Ang *žar* 'termite'; C 7 Gis, Mafa *žaray*, 12 ZB (S) *žér*; E 5 Bid *žariyò* (cp. *ariža 'scorpion' II.3)

*ži-/*žaw- 'go': W 2 Ang *ži*, Sura *ži* 'come'; 3 Bol *ži* 'davonlaufen'; 6 Ngz *žu* 'go'; C 4 (Kr) FM *žu*, FJ *žu* 'go'; 12 ZB (S) *ži* 'follow'; E 7 *n-žaw- > Mubi (L) *nžaa*, *nžau*, Jegu *žawo*.

*žal- 'bend, turn': C 5 (Kr) Mnd *žala* 'bend'; E 1 Kera *žèlè* 'swerve from one's course'; 5 Bid *žal* 'contourner'.

*žoba 'follow, trot': W 2 Ang *žop* 'trot'; C 5 Glv (Rp) *žəv* 'cross, jump'; 10 cp. Log *zbi* 'follow'; E 5 Mig *žóbbo*, Bid *žób* 'follow' / Arab *dhh* 'go away' // HS N 2672 *žVhab- 'go, trot'.

*ž[i]r- 'barren, impotent': W 2 Sura *žèr*, Mpn *žéér*, Ang *žiir* 'barren (woman)'; C 12 ZB (S) *žəràò* 'impuissant'.

*žub- 'tax': C 10 Bud *žibiya* (< *žubi-) 'Zinsrinde'; E 5 Bid *žubaye* 'impôts' / Eg (AR) *wəb* 'Rente an Naturalien, die einem zweiten Empfänger aus den Tempeleinkünften zufließt' (1:409).

*ž[a]geri 'duiker': W 1 Hs *žagari*; 2 cp. Ang *žiri* 'roan antelope' (contraction?); C (Kr): 2 *žigiri (secondary -i- in the first syllable): Bura, Ngw *žikəl*, Mrg *ižigil*, Chb *žigil*, WM *šikil*, Klb *žigəl*; 3 FK *žəgəl(u)*; 4 Gudu *žəəra*, Nzn *žigile*, FM *žəgəru*, E 3 Tum *žərgə* 'antelope'.

*ži/č/an-um 'chin': W *ži/g/an-um: 2 *žaHam > Sura *žayam*, Ang *žaam*, Ank *žam*; 3 *žinag-um- (metath.) > *žanag-um- > Grm *žangumu*; 6 Ngz *žigəna*; C 3 (Kr) Kap *čakame* (č- < *ž-, ? regressive assim. with -k-); E *žikum- > 3 Tum *žigəm* 'jaw'; 6 Mok *sùkùmó* 'jaw', *zùkùmò* 'chin, beard' / Akk *ziqnu*, Hbr *zāqān*, Arab *da/iqan-* 'beard, chin' // HS N 2650 *žakan-/*žikan-. Reflexes in W 3 Grm and 7 Ngz prove that -Vn was a Common HS suffix. In Ch it was ousted by the 2nd person possessive pronoun. By metath. the old HS prefix has preserved in Grm./Cp. Nub (Hoh) *žaham* 'cheek', Dongola *žakum*, Bari *nyekem* 'jaw', Lotuko *əžəxom* 'chin' (Grm, ESud N 66), a HS loan?

Cp. also C 7 *žurVf- 'pour': Mofu *žərf*, Mafa *žurf-* / Arab *durf* 'tomber, couler (larmes)'.

I.4. Lateral sibilants and affricates

(see Table 4 on page 38).

Ch languages show the most complete system of laterals within HS. The Northern bauchi languages still preserve three lateral phonemes *ž*, *š* and *ṣ̌*; in zaar, Ngz and CCh the emphatic lateral has merged with *š* (in specific environments - with *ž*). On the basis of regular correspondences between Chadic, Semitic and Rift languages the following HS system has been reconstructed: *ṣ̌, *č̣, *č̣ (cp. Dlg (1976: 327), AA (1993:10), HS p. XIX). Proto Ch system seems to coincide with that of HS. Note, that PCh initial *ṣ̌- > s- in the lai group (and thus, it was rather a voiceless, not a voiced phoneme), PCh initial *č̣- > č- in the dangla group, while medial *č̣- > -d- in the bolewa group (both facts imply, that it was an affricate, not a sibilant). An emphatic member of the triad > č in Hausa (like all the other emphatic affricates). So, PCh system more likely looked like *ṣ̌*, *č̣, *č̣*, than (according to Dolgopolsky, private communication) like *ž*, *ṣ̌*, *ṣ̌*. Desaffricatization, so typical of Ch languages, changing *č to s and *ž to z (see table 3) was most consistent namely in the lateral area, where no affricates at all have been preserved (*č̣ > ṣ̌, ṣ̌; *č̣ > ṣ̌). The HS emphatic lateral /č̣/ yielded *č̣* in Rift languages and thus merged with the reflex of HS *č̣ (*č̣ > č̣, and *č̣ > č̣).

(Another view see in Dlg (1976: 327)). As for Sem, reflexes of HS *š introduced in Mz (114–115) and in AA (1993:10) need further investigation. Proto-Sem *š seems to yield š in all the languages of the family (in Jibb – š or s (we use the š-sign instead of s with a “tilda”)) and to correspond to Ch *š; Rift *š. The data so far collected do not contain widely spread Common Sem roots of this kind (cp. AA (1986:38–42), HS:487–492).

For PCh *š- see *šab- ‘be wide, stretch’, CCh *šava < Ch *šaba ‘mat’ (II.1), *šag- ‘pierce, tooth’ (II.6) and the following roots:

*šab- ‘beat, strike’: W 1 Hs *záb-čē* ‘demolish a wall’; 3 Pero *lovo*; 4 *šabač- > Wrj *žabəč-*, Kariya *žabəč* ‘beat’, Paa (MS) *žáábučū* ‘strike with a cudgel’; C 1 Tera (N) *žabə* ‘hit’, 4 cp Bata (Mo) *lebo*, Bch (Sk) *lyəbo* (? < *žeb-); 11 Msg *šaba* ‘fallow trees, beat’, Mkt *žábái*; E 3 Tum *ləb*. /Nm *hləbə ‘hit’.

*šamb- ‘beat, flatten’: W 4 Jmb *žamb-* ‘beat’; C 7 Mafa *žəmbát-* ‘flatten; taper pour applatir’; E 2 *šamb- < *šamb-: Tob *sombe* ‘box on the ear’ (related to the previous root) / cp Arab *šbm*, 2nd stem ‘bâillonner’.

*šam- ‘be possible, be able’: W 6 Ngz *žamu* ‘do, make, be possible’; C 10 Log *žəm* ‘can’ / Kush Asa *šam-* ‘allow’ (E:208) // HS N 2327 *šam- ‘be possible, be able’.

*ši/a- ‘cut’: W 2 Ang *li* ‘cut grass’, *li-n gwa* ‘tribal marks on cheeks’, Mpn *lèè* ‘cut by taking off slices, harvest’, *lāa* ‘wound’; C 2 *žā- ‘chop’: Chb *ži-ntà*, Bura *ži-mtə*, Klb *ažā-ndi* (Kr); 4 *žā- > FM *žā-bi* ‘cut’, FJ *žā-bi* ‘chop’ (Kr), Gude (H) *la* ‘cut’; 7 Mafa *ža* ‘cut’, *žáh* ‘égorgé’ /Nm *hla, Rift *lraqw hlah-* ‘es’ ‘to hurt (someone)’, Burunge *hla-* ‘anyia’ ‘scar’, Kwadza *hle’o* ‘knife’ (E:210).

*šab/ə ‘fence’: C 7 Mofu *žəb* ‘clôture (avec des épines)’, *mežəbəy* ‘fence’; 10 Mba *žəbə* ‘fence’, Msg *šab* ‘fence around the house’, Mnj *žəb* ‘parc a betail’; E *šaba : 2 Kera *laḫi*; 3 Kbl (Cp) *səbā* / ? Sem Jibb *misób* (< Sem *šVbb-) ‘temporary pen for cattle’.

*š[i]Had- ‘push, pull, move aside’: W 1 Hs *zazzadoo* (modified vocalism in a reduplicated stem) ‘pull, draw out’; 3 Bol *lood-* ‘move aside’; E *šVd- (< *šiHVd-): 1 Mobu (Ln) *lede* ‘se déplacer’; 2 Tob *side* ‘déplacer’; cp. 6 Mok *liddə, léddə* ‘(s’) éloigner’ / Sem Soq *šé’ed* ‘pousser’.

*šem- ‘speak’: W 2 Ang *lem*; 5 (Kr) Geji *žemi*, Buli *šəmi*; C 10 Msg *žəma*, Mba *šim*; E 2 Mobu (Ln) *lém* (< *šVm-).

*suHob- ‘cover’: W 1 Hs *zóóbə* ‘overlap (eg. edges of book-cover)’; C 12 ZB (S) *žùḫ* ‘cover’.

C *šat- ‘pull’: C 4 (Kr) Gude *lət-ič* ‘pull’; 11 Mba *žāt* ‘tirer d’un coup sec’; 12 ZB (S) *žāt* ‘arracher’ / cp. Akk *šātu* ‘pull, drag’ (A17,2:242).

*šo[bb]- > *šamb-/*šob- ‘make fire; warm (tr.)’: W 1 Hs *zóóbəá* ‘applying warmth of heated pit to a sick person’; 2 Ang *laplap* ‘blaze up (of fire)’; 3 Tng *lambe* ‘to light fire’; E 5 Bid *’òlob* (< *šob-) ‘s’embraser; blaze up (of fire)’ / Akk *šabābu* ‘burn’ (A17,1:2), Arab *šbb* ‘set fire’, Soq *šbb, šwb* ‘warm up’, cp. Jibb *šbb* ‘flare up (fire)’ (< Sem *šbb) // AA *šVb ‘heat, burning’, HS N 2337 *šob- ‘set fire’.

*šang-ir- (< *šanVg-ir-) ‘cattle (> possessions, wealth)’: W 2 Ang *long* ‘possessions, wealth’, *long ma* (pl.) ‘plenty of cattle’, Mpn *lón* ‘domestic cattle’, *lon* ‘wealth’, Sura *lon* ‘possessions, cattle’; 4 Kar, Mbu, Miya *žangir* ‘domestic cattle’, Paa *žangir* ‘wealth’; C 7 Gis *žənge-rek* ‘ram’; E 5 Bid *lònyò* ‘wealth’.

*šim[am]- ‘to hunt’: W cp. 3 Tng *lilim* ‘assembly for special occasion (hunt, drink, etc.)’; C 4 (Kr) *li’am- (< CCh *ži’am-) ‘hunting’: Mwl *liəmò-tí*, Gudu *lámə-cú*; 11 Mba *žim*, Mnj *žem*; E 6 Mok *’ilmí* ‘poursuivre’.

ša/y/p- ‘wear, put on’: W 2 Mpn *lèp*; C 12 Peve (Sn) *žap* ‘wear’.

*šap- ‘be flat’: W 2 Mpn *làap sár*, Ang *lep sar* ‘palm of the hand’ (*sár* ‘hand’), 3 Tng *lob-lob, lop-lop* ‘broad and flat’; C 7 Mafa *žəpa’a* ‘large and flat’.

*šap- ‘like, want’: W 3 *lob- < *lo/ap- > Dera (J) *ləw* ‘like’, Tng *lobi* ‘agree, accept, like’; C 12 ZB (S) *žap* ‘desirer’; E 5 Bid *lap* ‘avoir des relations sexuelles’ / Arab *š’f* ‘occuper tout entier (passion d’amour)’, *ša’af-* ‘violente passion d’amour’.

*ša-/*šiy-/*šuw- ‘forge’: C (Kr) 2 Wmd *žəw*, Hld *žiyà*, Klb *žà*, Chb *žə*; 3 HB *žò*; E 7 Jegu *li* ‘forge’; 5 Mig *’ulú* ‘forgeron’.

*šabur- kind of corn : W 1 Hs *žábráá* ‘millet’; C 5 Mnd *žəbère, žəbùre* ‘ocra’ / Hbr *šeber* ‘roughly broken grains?, corn, grain to be sold’ (hardly < *šbr* < *tbr ‘to break in pieces’, cp. KB: 946).

WCh *ša/y/p ‘cut, plunge’: 2 Ang *lap* ‘plunge’; 3 Pero *lépə* ‘spear with a wide blade’; 6 Ngz *žápú* ‘plunge into’; 7 Fyer, Df *lef* ‘cut’.

WCh *šamb-/*šab- ‘mix, knead’: 3 Bol *lomb-* ‘mix, knead’; 4 *žab- ‘knead’: Wrj *laḫə*, Kar *lábə*, Miya *láb-*, Paa *žaaḫāu*, Siri *šāḫa* (cp. *šamb- ‘beat’) Arab *šwb* ‘mix’, Eg (OK) *šbb* ‘zusammenmischen’ (4:439) // AA *šab ‘mix’.

Cp. also Arab *šatw-* ‘côté, bord’ ~ C 7 Mafa *žā-žad-* ‘côté’,

Arab *ḥṣr* 'rassembler, réunir' ~ C 7 Mofu *ḡa-ḡar* 'entourer, joindre'.

For initial **č*- see **čap*- 'leaf' (II.1), and the following examples:

čaw/y*- (or **čVwa*-) 'stand up, rise': W 2 cp. Mpn *lè* 'cause, move'; 4 **šaw*-: Wrj *šáu*, Kar, Mbu *ša*-, Siri *šú*, Cagu *šə*; 5 (Sm) Tala *iša*, Geji, Zaar *ši*, Wng *šu*; 6 Ngz *šáu* 'stand up'; C (Kr) 1 **ša*- 'mount, stand up': TP *ša* 'mount', Hwn *ši*, Gbn *šə'e*, Gaa *ša'i*, Boka *žə'i* 'stand up'; 2 (Kr) **šay*- (> **šya*- > **xya*-) 'stand up': Mrg *xije-du*, Bura *ša-ta*, Chb *xə-ti*, Klb *ahya-átu*; 3 (Kr) **ša*- 'stand up': HB *ša-və*, FK *ša-tu*, 5a Lmn (Lk) *ša*- 'stand up'; 12 (Kr) Lame *ši-si*, Peve *še*, Bnn *ša-mwa*, Masa *tu-mo* 'lift'; E **[č]ay*-/[č]aw*- 'stand up': 3 Sib *swə*; 2 Lele *se*, Tob *səy* /Nm **hla*, Akk *našū* 'lift' (A11,1:80), Hbr *nš*, Arab *nš* 'être haut, très élevé', Eg (Pyr) *šwy* 's. erheben' (4:341), zšy 'emporfiegen' (Pyr), (3:485), Rift Burunge *ča'as*- 'jump' (E:215). // HS N 516 **ča*/w/y- 'move upwards'.

**čuk*- 'cut, knife': W 1 Hs *súukā* 'pierce; slaughter a camel', 7 Sha *šuk*, Kul *suk* 'knife'; C 1 TP *šug-di*, Boka *šəx-tə* 'knife'; E 5 **[č]uk*-: Bid *čúkkay* 'tattoo lips'. Related to this root are: 1. **čakaw* (> **čakwa*) 'sharp weapon': W 1 Hs *sákwaí-sákwaí* 'sharp point'; 4 Miya *ašakwam* 'spear'; C 5 Mafa *šəkaw* 'iron arrow-head' and 2. C **čaku* 'sickle': (Kr) 2 WM *šaku*, Klb *šákú*, Bura *šahú* (-*h* < **-k*- under the influence of the initial lateral), Chb *laxú* (irreg. reflex of Ch **č*-), Mrg *šagu*; 4 Gude (H) *šákwa*; 12 (Kr) Peve *šikwoi*, Lame *lókwaí* (irreg. *-l* < **-š*-), ZB (S) *šúkuei* /Hbr *škk*, Jibb *šekk* 'cut, pierce', Arab *šwk* 'piquer', Hbr *šukā* 'sharp weapon', Arab *šawk-at*- 'thorn' // HS NN 569, 570 **čuk*- 'cut, pierce; sharp weapon'.

W **čak*-> **čawak*- 'shave, scratch': 1 Hs *áskə* 'shave'; 2 Mpn *lóok* 'take off hair, shave'; 4 **šak*- 'scrape': Kar, Mbu *šakə*, Siri *šaka*

**čar*- 'sweep', or *č[o]ar*- 'sweep, smear': W 1 Hs *šáaraa* 'sweep'; C 7 Gis *šar* 'zusammenscharren'; 12 ZB (S) *šor* 'crepir'; E **sar*- (< **čar*-) 'sweep': 1 Ngam (Ln) *saré*; 3 Som (J) *sar*. /Note Tubu *sár* 'abwischen'.

**čib*- 'beat, strike': W 1 Hs *šibə* 'kicking'; 7 Kul *aššib* 'whip'; C 2 Mr *šəb*- 'hit'; 4 Gude (H) *šəbə*, 11 Mnj *šibi* /Rift Iraqw *čiwí*- 'push', Dahalo *čibi*- 'to shove, to thrust away' (E:216). (C (Kr) 'hit': 3 **šuv*-, 5 Dxw *šuvayə*; 4 FJ *šuvə* < **čuf*-, 1 Gaa *šifə-nži* < Ch **čufi*-).

čaw*-/čiy*- 'cut, scratch': W 4 **šaw*- 'scratch': Wrj *šaw*-, Paa *šawə*, 5 (Kr) **šaw*- 'cut': Buli *šo*, Brm *šuwe*; C (Kr) **ša*- 'cut' 1 TP *ša*, Hwo *šəŋ*, Gbn *šena*, 2 WM, Mrg *ša*, Hld *šana*; 3 HG *ša-və*, HF *ša-vu*, HN *ša-mte*; 10 Mnj *ši* 'couper a la facile'. Related to this root are: 1. **čaw*- 'tribal marks' > W 1 Hs

šásšawə; 4 Paa *šawa*, Mbu *šaw*, Miya *ašau* and 2. **čawu*- 'knife': C 1 Gaa, Gbn *šú-ta*, Hwo *šawu-ra*, 7 Bld *šuw*, Mofu, Gis *šuw-ed*; E 6 Mok *suwo* / Eg (Pyr) *šr* 'cut' (4:415), *šr.t* 'knife' // HS N 525 **ča*- 'cut', 567 **ču*- 'knife'.

**čaw*- 'obtain, receive': W 2 Mpn *la*; C 5 Glv (Rp) *ša*- 'receive'; E 5 Mig *čáwwó* 'receive'.

W **čap*- 'smear': 1 Hs *šaaŋə* 'smear, anoint'; 2 Ang *lap* 'smear, make even'; 3 Tng *wupe* 'rub oil on, into skin', Krf *šaaŋu* 'wipe' / Arab *šwf* 'polir, enduir de goudron (un chameau galeux)', AA **čVf* 'ointment'. Eg *zšp* (Pyr) 'polieren', *zšp* (OK) 'Möbelpolierer' (3:485) changes HS reconstruction to **čap*-.

Examples already given show that PCh **č*- yields *l*- in sura languages. There is another group of PCh roots showing a sibilant reflex in the same languages (**č*- > *s*-). Considering that all roots of this kind have a medial laryngeal, one cannot exclude secondary emphatization of initial *č* (**čVHVC*- > *čVC*- > *sVC*-). Note that the Ch emphatic lateral /*č*/ also yields *s*- in the sura group. Examples:

W **sVwop*- (< **čVHop*-) 'hair': 2 Sura *šwop*, Mpn *siwep*, Mnt *šwep*; 3 Maha *šfi*, Bol (M) *šowo*, Grm *sówi* / Arab *ša'af-āt*- 'hairlock' // HS N 529 **ča*'op- 'hair'.

W **čaHwa* 'guinea corn': 2 Sura *šwáa*, Ang *šwe*, Ank (Fp) *sua*; 3 Tng *sua*; 4 Siri *šawi*; E 5 cp. Mig *čiwwa* 'gros mil (sorgho)' // cp. Akk *še'u* 'barley' (A17,2:245).

čaHir*-/čiHar*- 'friend': W 1 Hs *čáaráa* (< **čaHir*-) 'equal in age; paramour'; 2 **šiHar*: Sura *šaar*, Ang *šeer*, Mpn *sia*; 3 Tng *seer*, Glm *čor*, Krf *šorò*; C **sVyar*-: 7 Mafa *šáál* même class d'age' (note *r* > *l* after a laryngeal); 4 Gude (H) *šəyara* 'friend' / Arab *šr* 3 stem 'vivre, avoir relations avec quelqu'un', *šāšir*- 'friend'. / Nandi (Nilotic) *čorua* 'friend'.

**čaHar*- 'moon': 2 **zar* (< **sum-zar* < **sum-sar*, 'sky's star'): Sura, Mpn *zar*, Mnt *zayi*, Grk *dar-kir*, Ank (Kr) *sum-šar*, 5 (Sm) Mbaru *šaarú*, Tule *šaa-súr*, Boot *šaar*, Zakše *čāā-žur*; E 3 Tum *herú* / Arab *šahr*-, Soq *šéher* 'moon' // HS N 531 **čahar*- 'moon, star'

čoHar*- (> **čuHar*-, **-o* > *-u*- in contact with a laryngeal; ? var. **čer*-) 'root': W 1 Hs *sáiwaa* (< **saHrwa*); 3: Bol (M) *sorin*, Ngm *šori*, *čoori*, Maha *sorom*, Tng *yaara*, Krf *sóoriyó*, Glm *surya*, Gera *suurəná*, Grm *suura* [*soor*]; 4 **šar*-/šuur*-/**šer* -: Paa *šári*, Mbu *šar-náani*, Cagu *šár*, Siri *šúurá*, Jmb *šérá*, Miya *šérwa* 5 (Sm) Grnt *soori*, Kir *šəri*, Tala *šer ki*, Geji *šél-ki*, Zaar *šor-tu*; 7 Df *súré*; C **šoHar*- (note *-l* < **-r*- under the influence of a laryngeal): 5

Dxw (JgIb) *šəla*, Glv (Rp) *šali*, Gdf (JgIb) *šila*; 7 Mtk (Kr) *nzo-nzor* (*nz* < **nš*), Mofu *šašalay*, Gis *šašalak*, 12 Masa (J) *sʃʃla*, ZB (S) *šór*, (J) *šóór*; E **caar* < **coHar*: 1 Kera *kə-sár*, Mobu (J) *kí-sar-ké*; 2 Lele *sara*, Kbl (Cp) *hàrà saar*; 3 Som (J) *sár-bə*, Tum *həraw*, Ndam (dJ) *sírwé* (irreg.vocalism); 5 Mig *čáárú*, Bid *čáára* /Nm **sar*, JgIb **šarw* 'root', Gz *šərw* 'tendon, root, Tigre, Gurage *sər* 'root, vein', Akk *šuršu*, etc. 'root' (Lsl:535)//Grn (1963:61), HS N 551 **čer*–.

The HS emphatic lateral /č/ is still preserved in its original shape only in the South Arabian and in the Northern bauchi languages.. Specific reflexes in E 7 and 5 groups (*dy*– or **ž*–) and in Hausa (*ç*) are also indicative of the PCh emphatic lateral affricate. The full list of roots with *č– in word initial position looks as follows (cp. **čep*– 'bark' in II.1):

čiy*–/čay*– 'pour': W 1 Hs *čiyáayaa*; C 7 Mofu *šay*, *šey*, *žay*; 10 Log *ši*, *šə* 'pour away'; 11 Mba *šee* 'to rain'.

**čim*–'sew': W 4 **šim*–: Siri *šimu*, Jmb *šim*, Paa *šimba*; 5 (Kr) **šim*–: Geji *šim-wi*, Buli *šimu*; E **čimm*–: 5 Mig *dyímmó*; 4 Mubi **žémè-gè* /Gz *čmm* 'join, bind', Arab *čmm* 'rassembler les bouts d'une chose' // HS N 586 **čim*– 'tie, sew'.

**čam*– 'be bitter': W 2 **nžam* 'gall' (< **nčam*, regular development of any emphatic affricate in contact with *n*–): Ang *žam*, Sura *nžam*; 4 **šamam*–: Paa (MS) *šamma*, Siri *šáamaami* (n.), Cagu *šeemáma* (–e < *–a after an emphatic consonant); E 4 Jegu **žèemá* / Omot Omoto *čam*–, Kaffa *čamm*– 'be bitter' // HS N 580 **čam*– 'be bitter'. Cp. Kanuri *cim* 'bitter'.

čaw*–/čey*– 'squeeze, wring': W 1 Hs *táa-čaa* 'milk' (v.), *táa-ča* 'squeeze out'; 4 **šey*– 'wring': Wrj *šey*–, Paa *šei*, Siri *šeya*, Miya *šiy*–; E **čaw*– 'squeeze, milk': 1 Ngam (Ln) *sow* 'squeeze out pus'; 5 **dyaw*– 'milk' (v.): Bid *dyáaw*, Mig *dyúwáw*.

čur*–/čir*– 'pierce': W 1 Hs *čúurá*, *čírè*; C 2 WM (Kr) *mšili*, *mšeri*; 5 (Kr) **šur*–: Dxw *žúr-nayá*, Glv *šəlu-gà*, Gava *žila-nàna* (*ž*–/*š*– alternation may point to Ch *č–); 7 Mafa *šér-c*– 'fourrer dans un trou'; E 3 Tum *hər* 'pierce with an arrow'.

čapa*–/čaHap*– conceal (oneself), be silent': W 4 Paa (MS) *šaapa* 'hide, conceal oneself'; E 5 **dyap*– (< **čap*–) 'be silent': Dng *dyaap*, Mig *dyáapó*.

čāk*– (čaHak*–) 'calabash': W 3 Tng *seega* (–g– < *–k– is regular) 'large pot for beer'; E **čāk*– > 3 Tum *hàag* 'pumpkin'; 5 Mig *dyèékú* 'big calabash'.

čena 'cricket': W 1 Hs *čányá*; E 5 Mig *dyéena*.

W **čar*– 'split, cut': 1 Hs *čará* 'lance, cut'; 4 Paa (MS) *šar* 'rip up, split (wood)', (Sk) Cagu *šaar*–, Siri *šara* 'rip'.

W 4 **šuf*– (< W Ch **čuf*–) 'shoot': Siri *šəfa*, Paa *šəfú*, Jmb *šuw*– // Arab *wdf* 'lancer des pierres avec une fronde'.

Note secondary emphatization of medial –b–: C **šab*– < Ch **čab*– 'be close, stick to': 4 Gude (H) *šab* 'be close against smth'; 12 ZB (S) *šəba* 'collar' / Arab *qbb* 'être attaché, être collé', *qb* 's'attacher, se coller'.

C *–*šəbi*– < Ch **čab*– 'dew': (Kr) 1 Gbn *či-šip-ta*, Gaa *či-šib-ta*, Hwo *ši-šib-ura*, TP *žəb-di*; 4 Gude *man-šəba*, FM *mā-šəba*, FJ *mā-šəbi* / Arab *qbb* 'être mouillé, être couvrir de moiteur'.

Cp. some Ch ~ Arab parallels: W 1 Hausa *čááfā* 'squeeze oneself into a small place' ~ Arab *čff* 'se presser en foule';

E 5 Bid *dyirā* 'pus' ~ Arab *ħadīr-t*– 'pus de la plaie';

I.4.a. Secondary laterals.

Violations of the regular reflexation in the system of laterals of the kind:

	Northern bauchi	Southern bauchi	CChadic (except for masa)	masa
(1)	s	s	š	s
(2)	z	ž	z,s	z,s

are treated in (Newman, 1977) and in (JgIb, 1995) as reflexes of two more PCh lateral phonemes, in (Dolgopolsky: 1990) as reflexes of Nostratic *š and *s. In our opinion, Chadic data rather speaks in favour of a secondary lateral articulation caused by specific environments. What follows is a more or less full list of relevant roots.

(1) **sumi* (> **ku-sumi*) 'name': W **sumi*: 1 Hs *súúnáá* (< **sum-na*), 2 Sura *súm*, Ang *süm*, Ank (Fp) *sum*, Grk *təm* (J), *attum* (Fp), Mnt *súm*, 3 Bol *sún*, Krkr *səm*, Dera *yim*, Tng *sumo*, Ngamo (M) *sun*, Maha *sum*, Bele *hín-ti*, Krf *šimí*, Glm *šim*, Gera *səmə*, Grm *šimí* [**səm*], 4 **sumi-n*: Diri *šin*, Paa (MS) *sim*, *sun*, Mbu *šin*, Cagu *šim-án*, Jmb *súú*; 5 (Sm) Bogh *iisum*, Kir *wusum*, Tala *səm*, Geji *šin*, Tule *šəən*, Wang *šim*, Zaar *súm*, Grnt (Ja) *sin-di*; 7 Kul *sim*, Df *súm*, Fyer *ku-súm*; C 1 **šim*– > Tera (N) *žim*, (Kr) TP *lim*, Hwo *šim*, Gaa *šima*, Gbn *šime*; 2 (Kr) **šim*–: Mrg *šim*, (JgIb) *šəm*, Chb *šimá*, Klb (M) *šim*; 3 (Kr) FG *šan*, FK *šəm(u)*, HN, Kap *ši*; 7 Gis *šim-ed* 'name, ear', (JgIb) Mtk *n-žəmb-ād*, Mukt *šúm*; 8 Daba (Kr) *žimi* 'name, ear'; 10 Log *šémii*, Bud *hemi*; 11 Mba *šim*; 12 **sum-de*: Peve *šem-de*, Lame *súm-dè*, Bnn *səna*, Masa (J) *sém-ná*, ZB (S) *sém*; E 1 Kera *sám*, Mobu (J) *ká-səm*, 2 Kbl (Cp) *ko-sí*, Lele (Grg) *koondi* (< **ka-sum-di*); 3 Tum *him*

'name, ear', Sum *súmi* 'name, ear', Ndam (dJ) *ham*, 4 Sok (JgIb) *sin-tà*; 5 Mig *sémé* (pl.), Dng *sin*, Bid *semé*, 6 Mok *súma* 7 (JgIb) Mubi *sámi*, Bir 'ósóm /Nm **sám*, JgIb **s₃m*, Akk *šimu*, Gz *səm*, etc. (Lsl:504)//Grn (1963:60), HS N 2304 **sūm*. Note a *k*- prefix in WCh Fyer and in ECh and contamination with the word for 'ear' in C and ECh.

sim-* /ku-sim-* 'ear': cp. W **kuma* (? < **kusma*) : 1 Hs *kúnnee* (< **kusne* < **kusme*); 2 **kwom* : Sura, Cip *kom*, Ang *kwom*, Mnt *k'om*, Ank (Fp) *kum*; 3 Bol *kúmóo*, Tng *kumu*, Krkr, Bele *kúmó*, Dera, Ngm *kumo*, Maha *kuma*, Krf *kúma*, Grm, Glm *kúmó*, Gera *kúmi* [**kumo*]; 4 Wrj *kumái*, Kar *kúm*, Diri *kúma*, Paa (MS) *humá*, Mbu *kumá*, Jmb *kúma*, Miya *kumái*, Siri *kún-tá*; 5 (Sm) **ku-sim-* : Bgh *kumsí-k*, (J) *kumsi* (< **kusmi* < **ku-sim*, metath.), Kir *kəm*, Tala *kəm*, Grnt *kwansi* (< **kusima*, metath.), Geji *kín*, Buli *kum*, Tule *kəmə*, Wang *kím*, Zaar *kəm*, **kum-* 'hear': Kir *kum*, Tala *kəm*, Grnt *kumi*; 7 Fyer *humu*, Df *hwám*, Kul *kuru-kúm*, Sha *kum*, C **ku-sim-*: 1 Tera (N) *žim*, (Kr) Hwn *šima-ra*, Gbn *šimà-tā*, Gaa *šimà-ta*; 2 (Kr) Mrg *šimi*, Hld, Wm *ximi*, Chb *šəmə*, Bura *šim*, Klb *hími*; 3 HN *šəmə*, HG *šimwu*, Kap *šiməy*, FK *simu*; 4 **gu-sim-*: Bata (Mo) *gú-lmo*, (JgIb) *gu-lemé* (< **gu-šmo* < **gu-sim-*), Gudu (JgIb) *šim*, (Kr) FJ *žəm-ən*, FB *žim-in*, Gude *limin*, (H) *ləmə*; 5 Mnd *xima* (Kr), Glv (Rp) *hyímià*, Gdf (JgIb) *šimà*, Dxw (JgIb) *šmé*; 5a Lmn (JgIb) *šimin*, *šimà*, 6 Suk (JgIb) *šəmə* 'ear', *šám-ni* 'hear'; 8 Daba (Kr) *žimi* 'ear', *ždim* 'hear' (JgIb), Musgoy (Mo) *žim* 'hear'; 7 Bld *šəmay*, Mofu *šumày*, Mukl (JgIb) *šúm*, Mtk (JgIb) *žəmb-ād*, Gis *šim-d* (cp. 'name'); 9 Gdr (Mo) *šum*; 10 Log *šim*, Bud *homú*, Kus *smee*, Glf *šim*; 11 Mba *šúmó*, Msg *šiméé*; 12 **hum-* (< **kumV*, cp. WCh): Lame *humu*, Peve *hum* (Kr), ZB (S) *húm* 'ear', Masa (Mo) *hum* 'ear, hear'; E **ka-sima*: 1 Kera *kó-són*, Mobu (J) *sem-dí*; 2 Kbl (Cp) *sámi*, Lele (Grg) *súma*; 3 Sum (J) *súmi*, Tum *him* 'ear, name', Ndam (dJ) *hám* (unexpected *-a-* in some E Ch languages may show former plural or dual infix); 7 Mubi (L) *súmaámú*. Crucial evidence for a PCh velar prefix reconstructing is C Bata *gú-lma* (< **gu-šma*), W 5 *kumsi* (< **ku-smi*) and E Kera *kó-són*. Cp. W Ch **kum-* 'smell, hear': 3 Bol *kum-*, Tng *kume*, 5 Bgh *kum*, Grnt *kumi*, Tule *koomi*, Zaar *kaam* (Sm); 6 Ngz *kəma* (*ágúd* 'ear'). Probably it is a verbal derivative from 'ear', or, on the contrary, the original meaning was 'to smell' and this verb is not related to 'ear' (cp. W 6 Ngizim; note that there is no traces of *-s-* in Northern bauchi group). In the latter case contamination between **kum-* 'smell, hear' and **ku-sim-* 'ear' is highly probable. /Nm **šəmi*, JgIb **km/*šm*, Akk *šemū* (A17,2:277), Hbr *šm'*,

Arab *sm'* 'hear' (Lsl:501) //Grn (1963:55), HS N 2245 **sim-* /**sima'* 'hear, ear'. Cp. Kanuri *səmo*, Tubu *sumu* 'ear'.

**sina* > **sinan* 'tooth': W 5 **sina* : (Sm) Bogh *šan-al*, Kir *šan-al*, Tala, Zaar *šin*, Grnt, Geji *šin*, Jimi (Go) *san*; C 1 Tera (N) *žin*, (Kr) Hwn *šanà*, Gaa *šena*, Gbn *šene*, Boka *šan-da*; 2 (Kr) WM *šir*, Mr *hyir*, Klb *hyir*, Hld *xiru*; 4 Gudu (JgIb) *šin*, Bch (M) *lin-to*, Nzn (M) *line*, Gude (M) *lin-žin*; 5a Lmn (M) *šiin*; 5 Mnd (Mo) *šére*, Dxw (JgIb) *širé*, Gdf (JgIb) *šidà*, Glv (Rp) *šér-da*, 7 Gis *šen*, Mofu *šér*, Mafa *nžéné*; 6 Suk (M) *liin*; 10 Log *šini*, Bud *hénai*; 11 **sin-* > Mba *sín*, Msg *šin*; *še-šien*; 12 Masa (Mo) *sáya*, (Kr) *sia-no* (< *sina-no*), BM *siino*, Bnn *sina*, Lame *ši'*, Peve *še'*, ZB (S) *sé'é*; E **ka-sin-*: 1 Kera *kó-són*; 2 Kbl (Cp) *ká-sən-dá*, Lele *ka-sin-gá*, Drm *ga-senə*; 3 **sinan* : Sum (J) *sán-de*, Ndam (dJ) *hán*, Tum *hiin*; 4 Sok *sən*; 5 **sinan* : Dng (F) *sàànò*, (L) *sénén*, *sén-ko*, Mig *sānū*, Bid *séénoo*; 7 Mubi *šinàrū* (L), Jegu *sàrò* / Akk *šinnā*, Arab *sinn-*, Gz *sənn*, etc. (Lsl:504) //Nm **šan-*, JgIb **s₃n*. // Grn (1963:63), HS N 2250 **sin-*. Note that CCh Musgu, West Margi and Mbara have *š*, not *s*.

**sila* 'leg': C 2 (Kr) Bura *sil*, Chb *šilə*, Ngw *šil*, WM *šil*; 3 (Kr) FK *səla*; 5 Mafa *salay*; E 4 Mubi (L) *síláló* 'Shienbein'. Note the haotic distribution of *š* and *s* in CCh.

(2) **čin-* 'send, drive away': W 2 **čiin-* 'drive away': Sura, Mpn *čeen*, Ang *čiin*, Ank (Fp) *šien*, Mnt *šini*; 4 **čin-* 'send': Wrj *čin*, Paa (MS) *čina*, Mb, Cagu *čin-*, Siri *čənu*, Jmb *šan*; C 4 (Kr) FJ *žanəy* 'drive away'; 7 Gis *šan*, Mofu *šər* 'drive away'; 10 Log *šən* 'send'; 12 ZB (S), Peve (Sn) *sín* 'drive away'.

C **čin-* > *čin-* 'hear': C 4 Gudu (Kr) *lin*, (JgIb) *šin* 'hear', (Kr) *má-lin-žicú* 'smell'; Mnd *činaə-čina*, Glv *činga*, Gava *cunà-cinà* 'hear, smell'; 5 (Kr) Dxw *čininé*, Nak *čina-*, Gdf *ts'ina-ts'ina* 'hear'; 7 Gis *can*, *čin*, Mofu *čən*, Mafa *cən*, Bld *čin* 'hear'; 10 **šVn-* 'hear': Log *šəna*, Glf *xenge*, Bud *hange*; 11 **šin-* > Mnj *šini*, Mba *šini* 'hear', Msg *xéna* 'hear, understand' / JgIb *šn*. Contamination with HS N 422 **čin-* 'smell' (> Akk *ešēnu*, Gz *šenawa*, etc. (Lsl:562)) is highly probable.

**čin-* 'work, make', **kV-čina* 'work' (n.): W 2 **čin-* : Ang, Sura *šin*, Ank (Fp) *šin* 'do, make', Ang *sət-čən* (Kr) 'work', Mpn *čin* 'do, work'; C (Kr) 'work' (n.): 1 TP *šina*; 2 **kV-šina* > Ngw *kə-šəra*, Chb, WM *kə-šər*, Bura *kə-šir*, Mrg *šər*, Klb *širə*, Wmd, Hld *šəraw*; 3 FG *šəni*, FK, HF *šinu*, HN, Kap *šəne*, HB *šənəw*, HG *line*; *mə-lišine*; 4 Gude *šəna*, Nzn *lənə*, Gudu *šén-cú*,

Mwl *liin-tí*, FJ *šiyəŋ-ku*, FM *šùnù*, FB *lenən* ; 5 Gava *šuxà*, Nak *šira*, Dwx *šura*, Mnd, Glv *šurà* (irreg. vowel), Glv (Rp) *šəra* ; 7 Gis, Mofu *šəra*, Mafa *mi-šan* ; 12 Lame *šini*, Peve *šin*, Mm *sen*, Bnn *sùn-da*, ZB (S) *sin*; E **kV-sVn-* 'work' (n.) > 3 Tum *kə-hən*, 4 Sok *ússen*. / Nm *səna*.

(3). **zabun-* 'guinea fowl' (I.3). Note reflexes in W 5 **zubVn-*: Jimi (G) *zubben*, Grnt (Ja) *zūm*, Zul (Go) *lemene*, Buli (Go) *šim*, Zar (Sm) *žəpm*, Zak (Go) *zubm*.

**wV-zi / *zi-k-* 'body' (I.3), irregular reflexes in W 5 (Kr): Geji *ši*, Buli, Snc, Pol *ži*, Zaar (Sm) *ži*.

(4). **sa/i'- > *swy / *sy' / *sw'* 'drink': W 1 Hs *šáá* ; 2 Sura *šwaa*, Ang *šwee*, Cip *šuu*, Grk *ta*, Ank (Fp) *sua* ; 3 Bol, Krkr *s(a)*, Ngm *sòwòò*, Pero *žə*, Bele *hee*, Krf, Grm *šee*, Gera *šē*, Tng 'ee, Dera *yə* ; 4 **si/a-*: Kar, Miya, Paa *sa*, Wrj *sá*, Siri *sá*, Cagu *šaa*, Mbu *sí*, *šáá*, Jmb *sí*, *sá*, Diri *čáá* ; 5 **say-* > *šay-*: Bgh (J) *še*, (Sm) Kir *se*, Tala *hya*, Grnt *sai*, Geji *ša*, Buli *ša*, Wang, Zaar *še* ; 6 Ngz *sá* ; 7 Fyer *šo*, Df *šoh* ; C (Kr) **si/a'-* : 1 TP *za*, Gbn *ši*, Hwn *sa*, Boka *šà-da* ; 2 Chb (Jglb) *sa*, 3 FK *sa*, 4 FJ *se*, Mwl *úsé*, FM *si* ; 5 Mnd *šoše*, Dwx (Jglb) *šdà* ; 7 Bld *ši*, Mofu *-s-* ; 8 Daba (Jglb) *sa* ; 9 Gdr (Mo) *sa* ; 11 Msg (Mo) *sa* ; 12 (Kr) Lame *či*, Peve *če*, Bnn *či'e*, BM *čə-mu* (irreg. reflex), ZB (S) *sé*, (J) *cé* ; E **say-* : 1 Kera *sé*, Mobu (J) *sée* ; 2 Lele (Grg) *si*, Kbl (Cp) *súwə* ; 3 Sum (J) *šá*, Tum *hé* ; 4 Sok (J) *sá* ; 7 Jegu *s-*, Mubi (L) *súwə*, Brg (Jglb) *sáyə* ; 4 Sok *sa* ; 5 Dng *séé*. Note the initial lateral in W 5 and in C 4 Dwx./Nm **sa*, Jglb **s₂w*, Arab *hsw* 'drink'// Grm (1963:55).

The most numerous group includes nouns denoting parts of the body. All of them have absolutely reliable Sem and Eg parallels with HS **s-* in word initial position. Considering that we can postulate a velar (or a laryngeal) prefix for this noun-class in PCh, the development **kVsVC > ksVC- > kšVC- > šVC-* in CCh languages (except for masa) seems more than probable. Note that the syncope of the first syllable is typical of Cch.

The voiceless lateral /š/ in (2) may originate from Ch **č-* in a specific environment (? **čín-* > *šin-*, like **bVn-* > *vVn-*). Otherwise one more lateral ought to be added to the PCh consonantal system, for this case was previously not taken into account.

Up to now we have no explanation of the secondary lateral in Southern bauchi languages (3) and (4).

It cannot be excluded, that the Ch verb 'to drink' goes back to HS **hVsVw*. Belova (personal communication) supposes it to be a causative in Arabic. In this case *š-* originates from **hVs-*.

If we are going to add several lateral phonemes to the PCh system to account for the above mentioned (and other) roots of this kind, the following

arguments should be taken into consideration:

1. we should include at least three more laterals into the series;
2. reflexes of these new PCh phonemes are far from regular, while not a single case of violation has been registered in Ch. I.4.
3. these new laterals yield *s-* or *č-* in Northern bauchi languages, though this is the only group within Chadic, still preserving the HS lateral series in full (the emphatic phoneme, inter alia). There is no reason for them to lose lateral articulation in these very cases.
4. examples from (1) have reliable cognates in Sem and Eg with **s-* in anlaut. Thus, adding more laterals to the PCh system, we solve this problem on the PCh level but still need to solve it on the Proto HS one. And the latter seems to present far greater obstacles.

Trying to specify the conditions under which secondary laterals appeared in Ch seems more promising than introducing three new proto phonemes of inexplicable origin, irregular reflexes and no place within the system.

I.5. Velars.

Table 5.

P Ch	W Ch	1	2	3	4	6,7	C Ch	1	2	3	4	5	7	10, 11	12	E Ch	1	2	3	5,6 7
<i>*k-</i>	<i>*k-</i>	<i>k-</i>	<i>*k-</i>	<i>*k-</i>	<i>*k-</i>	<i>k-</i>	<i>*k-</i>	<i>*k-</i>	<i>*k-</i>	<i>*k-</i>	<i>*k-</i>	<i>*k-</i>	<i>*k-</i>	<i>k-</i>	<i>*k-</i>	<i>*k-</i>	<i>*k-</i>	<i>*k-</i>	<i>*k-</i>	<i>*k-</i>
		<i>či</i>	<i>či</i>	<i>ši</i>			<i>*xi</i>				<i>či</i>				<i>či</i>			<i>-g</i>	<i>(g)</i>	
<i>*k-</i>	<i>*k-</i>	<i>k-</i>	<i>*k-</i>	<i>*k-</i>	<i>*k-</i>	<i>k-</i>	<i>*k-</i>								<i>*k-</i>					
<i>*g-</i>	<i>*g-</i>	<i>g-</i>	<i>*g-</i>	<i>*g-</i>	<i>*g-</i>	<i>g-</i>	<i>*g-</i>	<i>*g-</i>	<i>*g-</i>	<i>*g-</i>	<i>*g-</i>	<i>*g-</i>	<i>*g-</i>	<i>g-</i>	<i>*g-</i>	<i>*g-</i>	<i>*g-</i>	<i>*g-</i>	<i>*g-</i>	<i>*g-</i>
		<i>ži</i>	<i>*k-</i>				<i>xo</i>	<i>yu</i>		<i>*ži</i>	<i>yu</i>		<i>k-</i>			<i>ži</i>		<i>ži</i>		

1. Ch **kVs-* > *čVs-* in Karekare, tera and higi languages. 2. Ch **ku/oC-* > CCh *γ/hVC-*, **kVl-* > *h/γVl-*. >

The system of velars in Ch (**k*, **k*, **g*) is quite similar to that of Semitic and HS. Ch **k-* > *č* before a front vowel; by assim. with a sibilant in word medial position. Ch **k-* > *s-* in CCh and *č-* in Karekare. Examples.

**kaw[a]y-* 'fry, burn': W **kawVy-* 'fry': 3 Tng *kawe* ; 4 Wrj, Kry *kaw*, Miya, Jmb *kaw-*, Paa *kù*, Cagu *kuwa*, Siri *kúú* ; 6 Ngz *kauyú* ; C 10 Bud (Cy) *káwáy* 'fry'; E **kVwiy-* 'make fire, fry, burn': 1 Kera *kí* 'burn', *kəkwəw* 'Feuerstelle, gebildet aus drei Tonstücken' ; 2 Tob *kuye*, Lele *kuy* 'fry', Kbl (Cp) *küyə* 'stove'; 7 Mubi (L) *kə̀̀wíí* 'make fire'.

komu* 'cow, meat': W 3 (M) **kom* 'cow': Bol, Krkr, Ngz *kwəm* [kwam*] ; 7 Ngz *kwam*, Bade *kwam* 'bull'; C **kumu* (<**kwamu*) 'meat': 2 (Kr) Klb *kúm*, Bura *kúm*, Hld *kumu*, Mrg *kùm*, WM *kum(ù)* ; E **koma* : 7

Mubi (L) *kòmé* 'meat'; 5 Dng *kúma* 'meat'. /Jglb **kum* 'meat'.

**kolu* 'hoe': W 2 Krkr *kālā* (< Hs?), Gera *kwalli*; 5 Jimi (Go) *kwalə*, C 2 (Kr) Wmd *kul*, Hld *kwulū* (W 1 Hs *káálai* 'worn out long-handled hoe' is a Kanuri loan) / Akk *kullu* 'hoe' (A8:508).

E **kil[e]m-* (> **ti-kilem* > *t/dilVm-*) 'darkness, shadow': 1 Kwn (J) *tòlmó* 'dark', Kera *tilmə* (f.) 'darkness'; 3 Sum (J) *diləm* 'dark', Tum *dī-gləm* (< **ti-kilVm*) 'darkness', *dəlmí* 'black', Ndam (dJ) *mán dələm* 'dark', *də-gré* 'black'; 4 Sok *kilmio* 'dark, black'; 5 Dng *kəlmò*, Mig *kéléèmò* 'shadow'. The root hardly goes back to **lm* 'darkness' (as in Sk 1995:30), because two prefixes in ECh are not likely. /Eg (Pyr) *km* 'black' (5:122), (BD) *kum.t* (? < **klm*) 'Finsternis'. Contamination with **kumil-/kulum-* 'charcoal': C 4 (Kr) Bch *kələñəy* (irreg. *-ñ-* < *-m-*); 12 (Kr) BM *kimil-na*, Bnn *kimelā*; E 1 Kera *kil* (< **kiyil* < **kimVI*?); 2 Kbl (Cp) *kulə*; 3 Tum *guləm*; 5 Dng *kúlmò*, Mig *kòlmò*; 6 Mok *kúulə* (< **kuml-*); 7 Mubi (L) *kílim*, Brg *kílmó*. / Jglb *-lm*, (5:132). Kanury *kəlimi* 'charcoal' is a Ch loan.

**koḍay-* 'worm, snail' (rather < **kodaH-/koHad-*, note, that the velar emphatic **k* is usually preserved in Siri): W 4 Siri *kóóḍe* 'snail'; C 5 (Kr) **kodVy-* 'worm': Dxw *kwadā*, Glv *kweḍiyā*, Nak *kwayəḍi*, Gava *kwedye*; 10 Bud *ñ-gúdi* (voicing of a velar in contact with *n-*) 'Grütze-Wurm'; 12 ZB (S) *kəḍá* 'caterpillar'; E 'snail': 3 Sum (J) *kóḗḗ*, Ndam (dJ) *kódé*.

Ch **kVs/s-* > *s/cVs* in C Ch and in Karekare, for example:

CCh **kus-* 'hold, seize, take': 1 (? < **kusi*) (Kr) TP *kisa*, Hwo *kis-dən*, Gaa *kiš-ər*, Boka *kiš-hər* 'hold', Boka *kisa-ḍa*, Hwo *kis-əñ* 'seize'; 2 (Kr) **kusi* 'hold': Ngw *kisi*, Bura *kisi*, Chb *guzi*, Klb *ágùziyā* (< **kuzi* < **kusi* voicing of *-s-* in a weak position and then regressive assim. of *k-*); 3 (Kr) Kap *kusu-və*, FG *ks-uti* 'seize, hold', HN *cušə*, HG *sužə* HF *cišū* 'seize'; 4 Bata (Mo) *kəs* 'seize', (Kr) FJ *kušj*, FM *kuš* 'seize', Mwl *úkúso* 'seize, hold', FJ *ks-aft* 'hold'; 5 Mnd (Mi) *ks-a*, Glv (Rp) *ks-* 'take, seize'.

**kač-* 'chop': W 4 Jmb *kəša* 'split, cut'; C (Kr) **kaš-*: 1 Hwo *kyəšū-ñ*, Gaa *čəšə-nči*, Gbn *čəšə-nči*, Boka *žəš-tindi*; 3 HB *ceši-ndə*, Kap *cašu-mte*, FG *kštamtj*, HF *cašu-vu*. Cp 5 Dxw *kšunayā* 'cut' ~ Arab *qdd* 'pierce', Rift Burunge *quuč-* 'cut' // HS N 1600 **kuč-* 'cut, pierce'.

Initial **k-* may yield *x-/h-* in almost all CCh languages when followed by *-u-* and an affricate. Cp. **kuča* 'near' (II.3) and the following root:

**kuci-* 'mat; weave': W 1 cp. Hs *kíçā* 'finish off the top of a grass roof, mat'; C (Kr) 'mat' 1 Boka *xíši*, Gbr *yíçə*, 2 Chb *kwúči*, Bura *kuči*, Ngw *kíçi*; 3

Kap *kšj*, FG *kšj-du*; 4 Bch *kúžə-to*, Mwl *kúžə-tí*, Nz *hižij*, FB *xúž-un*, FJ *xúžj*, Gudu *hižj*, Gude *užə*; 5 Gava *xinza* (< **kusi-n*); Dxw *kužə*, Mnd *kužə*, 4 (Kr) 'weave': Bch *ndá ka kúžə-tò*, Mwl *úká-kúž-un*, FJ *xúžj*; (cp. 4 FJ *kaza* 'plait'; 7 Mofu *-kəsw-* 'plait quickly'; E 3 Tum *kož* 'spin' < **kacu*) / Akk *kušī* 'garment' (A,8:585), cp. *kasū* 'tie', Ug *kst* 'Oberkleid' // HS 1489 **kuc-* 'clothes'. Cp. Kanuri *kəče* 'grass prayer mat'.

Some more Chadic roots with initial **k-* will be discussed below.

1. The case of 'buffalo'. The root is attested all throughout the family, but there is a lot of problems with the reconstruction. Our variant is closer to that of Skinner (**k-bwən*, 1984:23), but seems to be more adequate to the data.

ka-HVpan-* 'buffalo': W1 Hs *ḥaunāa* (< **ḥakona*, metath., cp. pl. *ḥákwaānēé*, *-ḥ-* < **-p-* < **-Hp-*); 2 Sura *kəḥən* (< **ka-Hoban* < **ka-Hopan*, regular voicing of *-p-*), Mpn *kəḥən*, Ang *keun*, Ank (Fp) *koon*, Mnt (J) *kəyən* (< **kVHVpVn*, contraction, note that PCh **kbn* leaves without any explanation *-y-* in Mnt and *-ḥ-* in Sura), (Fp) *feong* (< **pVHon*, metath.), Grk (Fp) *koen*, (J) *kafin* (< **kafVni*); 3 **ka'abani* > Bol (Sh) *kòowún*, Krkr, Ngm (M) *kaban*, Dera (Jglb) *kímné* (< **kibne*, probably *k-* < **kVH-*), Tng *kəbne*, Ngm (M) *kimne*, Pero *kábiné*, Krf *kàunú*, Grm *kabani* [kabən*]; 4 **ka-vVn-* > Wrj (Go) *kavna*, (Sk) Kar *kəvən*, Diri *kəvən*, Mbu *kəvən*, Miya *kəvən*, Jmb *kənná*, Siri *kə-vəni*, (Go) *te-vni* (? with a fem. pref), Paa (MS) *li-vyin*; 5 Gmt (Ja) *kəḥən*; C 1 Tera (M) *gavin* (< **gabini* / **gapini*); 3 FK (M) *nfun*; 4 Gude (St) *uwená*, Nzn (St) *uwune*; 5 **kuban-* (< **koban*): Gis *guvən*, Mtk (Jglb) *rkúvâr* (*-r* < **-n#*); 11 Msg *mwun*; 9 Gdr *kewen* (Jglb); 12 Masa (J) *vúnna*, E **ka-'opani*: 1 Mobu (Jg) *kipinte* (vowel assim.); 2 **goban-* (< **koban-* < **kopan-*, voicing of medial *-p-* and regressive assim. of *k-*): Kbl (Cp) *gwábənə*, Lele *gumnò* (< **gubno*), Kbl (Cp) *gwábənə*; 3 **gun-* (< **gVwan-* < **gVban-* < **kVban-*): Sum (L) *gùni*, Tum *gùn*; 5 **kopin[i]*: Dng *kúpínò*, Mig *kòfinú*, Bid *kopini* (note, that ECh 4 and 5 cannot go back to Ch **kVbVn*. Voiceless labials in a weak (CVPVC) position yield *-b-* or *-v-*, but a reverse developement (CVbVC > CVPVC) is impossible); 7 **kapeni* (> **kabani*): Jegu *káfine*, Mubi (J) *kibéni*, Brg *kabánó*. In our opinion W 2 Mnt *feong*, 4 Siri *te-vni*, C 3 FK *nfun*, 4 Gude *uwená*, Nzn *uwune*, 10 Msg *mwun*, 12 Masa *vúnna* hardly originate from another root (? **up/fon*), but rather represent the same Ch lexical root without the **ka-* pref., cp. two variants in Siri. A connection between Ch and BC *-fün* 'buffalo' (WS:48). and even a borrowing cannot be excluded. / Nm **kəḥən*, Jglb **kbn*.

2. The case of 'fish'. Chadic word for 'fish' is treated as a possible borrowing from Temne *kə-lòp* (the idea has been put forward by Rössler and Mukarovsky (1976:255)). Correspondingly, in JgIb (1:67) the PCh reconstruction has been changed from **kp* to **k/p*. Meanwhile, PCh **k/p* and a borrowing from Temne seem more than dubious. First of all, reflexes of **-l-* violate those established in JgIb (v.1:XVIII-XXIX) and in the present research (table 16). The root definitely looked like **kVrVp-*, and in intervocalic position medial **-l-* never yields *-r-* in W Ch, in *tera* and *higi*. On the contrary, there is a reverse process: *-r- > -l- > -y-* (for more examples see 2.8). Second, being a borrowing, this word has been borrowed by PWCh and PCCh or, rather by PW-C Chadic, not by each of 40-50 Ch languages. Hardly the Temne dialect existed at that time, rather Ch should have borrowed this word from Proto-Atlantic. If so, it is more than strange that the root is not attested in Fula or Serer. Strangely enough, this word can be found only in another dialect of the same *temne - бага - landuma* subgroup of South Atlantic languages, namely in *Baga Koba*, where it looks like *ku-rup*, and at least, it is not necessary to change the PCh reconstruction, for it may be a Baga-Koba loan as well. Still more, and it is the most surprising this word belongs to the class of *trees* with *kV/ε* prefixes (Pozdn'akov: 140-141). Judging by the facts so far collected it seems more than evident that the word for 'fish' was borrowed by two South Atlantic dialects from different groups of Ch (as for *Baga-Koba* word, it is a *higi* loan). And as the first syllable of the loan coincided with one of the class-markers, the word was interpreted as *kV-rup* / *kV-lop* and included into class 3/4. Two more arguments were added by N.Koval: *temne* people are not fishermen and we do not know how old is the Temne system of noun prefixes. Of course, it cannot be excluded that Ch and SATlantic words have nothing in common.

The following reconstruction seems to account for all the manifestations of the root in Ch:

kirap*- 'fish': 1 W 1 Hs *kíifíí* (contraction); 2 **kirap*: Mnt *šiep* (< **kiyep* < **kiyap*), Grk *kirup*, Sura (JgIb) *šérép*, Ank (Fp) *šarrp* (< **širap*, assim. of vowels); 3 **kírofu/a*: Bol (B) *keruo*, Krkr *čārāfū* (< **kiarafu*, assim. of vowels), Dera (Nm) *širuwo*, (J) *šúruwɔ*, Ngm (M) *kerfɔ*, Maha *kerwo*, Bele *širò*, Glm *kàrbà*, Gera *kérufà*, Grm *kàrfà* [kyarəf*]; 4 Siri *kərff*, 5 (Sm) Bgh *kíip*, Kír *čirəp*; 7 Kul *kirif*; C 1 Tera (N) *yurvu*, TP (Kr) *hirivi* (lenition of the initial velar is not quite regular); 2 (Kr) Wmd *kalfi*, Hld *kálfí* (irreg. *-a-*), Bura *kilfā*, Chb *kwulfā* (< **kuluf* < **kiluf* < **kilaf*, *-u- < -o-* before a labial), Mrg (Ho) *kyifí*; 3 (Kr) **kurupu/i* > FG *kūrpi*, FK *kūrpu*, HF *kūlupu*, HG *kūlubi*, Kap *kūlupwe*, HB *kilipo*, HN *kilipe*; 4 **hurif-* / **hiruf-* (irreg. *h-*): Gudu (JgIb) *xirfū(r)*, Gude (JgIb) *hərfin*, Nzn (Mo) *húrfē*, Bata (Mo) *hórfē*, (Kr) Mwl *húrifí*, FB *xirfun*, FM *xirfu*, FJ *xurfū*; 5 **kirup-* > *ki/ulf-*: (Kr) Nak *kə̀lə̀te*, Gava

kilifā, Zxw *kulfē*, Glv *kilfā*, Mnd *kulfē*, Glv (Rp) *kilf*, (JgIb): Ngweše *khilíf*, Gdf *khiləfā*, Lam *kəlfí*; 7 **kilifi* (vowel assim.): Mtk (Kr) *klef*, (JgIb) *kilef*, Mukt *klifi*; 8 Daba (JgIb) *kilif*; 9 Gdr (JgIb) *kilfi*; 11 Msg *həlíf* (*k- > h-* under the influence of *-l-*); 12 **kiruf-*: (Kr) Lame *kírvi*, Peve *keve*, Bnn *kulúva*, BM *kulufna*, (Mo) Masa *kúluf*, ZB (S) *kérfē*. / IS **kVI(V)phV*, Nm **kərfi*, JgIb *klp*.

3. The case of 'rat'. Reconstructing initial **k-*, we leave without explanation the initial *xk*-cluster in Glavda, the long vowel of the first syllable in Hausa, hiatus in Kofyar and the loss of the first syllable in Siri. Not quite regular are reflexes of **k-* in C 1 and 8. A variant with a prefix (an old class-marker ?) given below seems to be more appropriate.

ku-[h]asami* 'rat': W 1 Hs *kúúsùù* (contraction, the long vowel in the auslaut points to the loss of *-m*); 2 Ankwe (JgIb) *kesem*, Kofyar (JgIb) *kóezúm* (< **kV-HVsum*, *-um < am-*); 3 **kasom*: Krk *čāšóm* (< **kasVm*, regressive assim. of a velar), (Sh) Bol *kòsúm*, Dera *kóm*, Krf *kòtòmù* (irreg. reflex of medial **-s-*), Gera *kásómi* [kasəm*]; 4 Kar *kúsam* 'rat', Miya *kúsám* 'mouse', Mb *kúšən* 'rat', Paa *kúsán-čiki* 'mouse', Siri *čən-čəki* (< *HVsVn*); 5 (Kr) Brm *kwásúm*, Geji *kusiñ*, Buli *kusèn*, Pol *kusum*, Grnt (Ja) *kwásàn*, Bgh (Sm) *kusam*; 7 Bok *kúsím*, Df *kúsúm*; C 1 **xum-* (< **xuyum* < **[k]xusumi*, vowel assim. and lenition of *-s-*): Tera (N) *yum* 'mouse', (Kr) TP *hum-di*, Hwo *umə*, Gaa *wíma*, Gbn *wumə*, Boka *xumə* 'rat'; 4 (Kr) **ximi* (< **xiyim-* < **[k]xVsimi*): FJ *ximi*, FB *ximin*, Gude *ximə*, Bch *yim-əy* (masc.), Gudu *heeməñ*, Nz *himo*; 5 Glv (Rp) *axkwa* (< **ax-kuma* (*-w- < *-um-* is regular), contr. < **ax-kusum-*, metath. < **ku-xasum-*); 7 Gis *gožomo* (< **kožomo* < *košomo* < *koHsomo*, *-š- < *-Hs-*, regressive assim. of vowels, regressive voicing of *k-*), Mofu *šəhwem* 'shrew' (< **husemi*, metath.); 10 Log *úxsemii*; 11 Msg (Mo) *kúsum*, /Akk *ušummu* 'Rörichtmaus; cane rat' // JgIb *ksm*, *km*. PB *-kòcùè* 'kind of rat' (Gt:1103).

4. The case of 'crocodile'. We prefer to reconstruct two different roots, one of them being a borrowing or originally denoting some other animal, not a "crocodile" (cp. W 7 Sha in 4.2).

4.1 **kadV* (? < **kV-* 'adV- cp. Eg, initial *x-* in CCh may originate from *kV-*) > **kadV-ami* 'crocodile' (*-am* meaning "water", cp. in WS:96 "Many Bamileke forms (for 'crocodile') are "crocodile of water"): W 1 Hs *kádāā*; 2 **kut* (< **kudu* < **kadu*): Sura *kút*, Ang *kuť*, Mnt *kuut*; 3 Bol *kadam*, Dera (J) *káram*, Tng *kodom* [**kadam*]; 4 **kayami* > **kiyimi* (lenition of *-d-* in a weak position): Wrj *kəyín-na* (irreg. emphatic, probably < *kV-*), Mba *kéyàm*, Miya

kíyàm, Kar *kíyim*, Jmb *kələən* ($-n\# < -m\#$), Cagu *kíimà-n*, Paa (MS) *kin*, Siri *káyámí*; 6 Ngz *kárá*; C 1 **kiran* ($< *kari\eta < *karimi < *kadimi$): Tera (N) *žiran*, Hwo (M) *kiraŋa*; 2 **xim* ($< *kHiyim$): Mrg (M) *xim*; 3 **[k]ilimi* ($< *kHirimi$): HN (M) *ikilimi*, Kap (M) *xilim*; 4 Gude (M) *kirma* (cp. Nzn (M) *gadaŋe*, Bata (Mo) *giline*, Bch (M) *giline*, (Sk) *gilàné* ($< *giri\eta < *gidini < *kidini$, reflexes of $*k-$ and of $-m-$ are not regular)); 5 (Jglb): Dxx *kímè*, Mnd *čirwè*, Glv (Rp) *kirəwə* ($-Vw < -um$); 5a (Jglb) Lmn *kərá*, 7 Mafa *kədám*, Mofu *gidəm* (voicing of the initial consonant under the influence of $-d-$); 8 (Jglb) **ma-krin* ($< *ma-kdimi$): Daba *mā-kri*, Musgoy *mó-kriŋ*; 6 Skr (M) *kilim*, 10 **mi-dege* (metath.) ($< *mi-gede < *mi-kede$: Log *midegee* (L), *mégde* (Mo), Bud (L) *liige* ($< *rige < *dige$); 9 Gdr (Jglb) *énde* ($< *emkVde$); 11 Msg (Mo) *kúrum*, Mba *húrum* ($< *kadum$, $-um < *am$); E 3 Ndam (dJ) *žermo* ($< *kirmo < *kidmo$); 1 Kera *kim* ($< *kiyim < *kidimi$). /Nm **kədəm*, Jglb **kdm*. Note that the auslaut $-mV$ cannot be traced in Hausa, in sura and kotoko groups, so probably it was not a Common Ch affix. / Eg 'd (Pyr) 'wütend sein (als Eigenschaft des Krokodils)', 'd (TS) 'Krokodil'. Cp. BC Plateau **-kute* (WS:96). Kanuri, Tubu *kodom* looks like a Ch loan.

4.2 **h/huram* 'crocodile (?)': W 7 Fyer *'nhòròm*, Bok *harām*, Df *hārām*, Kul *hārāŋ* 'crocodile', Sha *hārām* 'Krokodil (?)'; dem Informanten nicht genau bekannt, nannte er es "water monster (perhaps hippo)" Jungraithmayr, (1970:285); C 5 Gis *hurom*; 12 Masa (J) *húrúm-dá*, ZB (J) *húrúm*; E 3 **'orm-* Lele (Grg) *urmo*, Kbl *ormé* (Cp). // Cp. Nub *ulum* (Hoh:326).

Note that E 3 Lele and Kabalay can go back neither to **kadam*, nor to **ka-'adam* (in this very group all the Ch prefixes are preserved, see numerous examples in I.2). In case of a single root being reconstructed, an irreg. $*-d > -r-$ shift in Zime would be also left without any explanation.

(5) The case of "tail". Irregular reflexes of the initial consonant may be caused by the prefix in anlaut. It is still preserved only in C Ch Musgu but traceable by the palatalization of the velar in Karekare.

n-katuri > kutari* 'tail': W 3 Krkr *čátér* (*ča- < nča- < *nka-*), Pero *kérèt*, Dera *kərat* (according to Newman[1965], $-r- < -t-$, but $-t\# < -r\#$), Krf *kitiri*, Tng *kəɗɗɗ*, Ngm *kotir*, Grm *kitiri* [katər*]; 4 Wrj *kwátaré*; 5 (Kr) **katiri > kitari*: Dwot *čir*, Pol *čir*, (Sm) Tala *kítər*, Kir *kər*, Geji *čil*, Buli *kidar*, Tala *kítər*, Tule *kyeera*, Grnt (Ja) *kəru*; 6 Ngz *kútər*; C 2 (Kr) Bura *kūr*, WM *kudə*, *kūt*, Ngw *kudari*; Chb (Jglb) *kwudee* (irreg $-d-$); 3 (Kr) FK *wtili* ($< *kutili$); 5 **xoturi*: (Jglb) Gdf *xóthilá*, Dxx *xótholè*, Ngweše *xthil*, (Kr) Gava *x(u)tilá*, Mnd *'ukture* (Nak *xikyela*, Glv *xukila* go back to **xutila*, cp. **tarVy* 'moon' or

to PB **-kila*; 5a Lmn (*ù*)*xtiiri* ($*xt- < *kt-$); 7 Mafa *fútór* (but cp. (Kr) Matakam *xutor*); 6 Suk (Jglb) *thúr*; 9 Gdr (Mo) *kútra*; 11 Msg *untul* ($< *unktul < *nkutVI$), (Mo) *gider*, Mnj *gidəri* (looks like a borrowing from Masa, note that regressive voicing of velars in Masa is quite regular); 12 Masa (J) *gidər-dá* (?) **kidari < *kadiri*). /Nm **kətər*, Jglb **kšr*. Ch **ktr* can not be borrowed from PB **-kila*, for $-t-$ never yields $-t-$. PB **mo-kweda* may be the origin of C Ch 2 only (if we do not mention $-d-$ and the loss of $-r$), but not of the words with medial $-t-$, because $-d-$ never yields $-t-$. Cp. Mukarovsky (1976:156).

There is one more group of words with irregular reflexes of initial $*k-$. All of them denote different parts of the body, thus the divergence may be caused by a class-marker. Such a prefix (**ha-*) has already been reconstructed for PWCh (see Stl, 1987) and it seems that it may go back as far as PCh. (According to Newman (1976) initial *ha-* in Hausa originates from a body-parts marker). A PCh prefix may be reconstructed in the following roots with initial $*k-$:

**ha-kuris-* 'kidney': W 4 Wrj *γwursái*, Kar *γwursə*, cp. Miya *tirkwasə* (metath. $< *ti-kwVrasa$, or $< tir-kwasa$, in the latter case goes back to another root); 7 Ngz *kúrsáásiyáán*; C (Kr): 1 Hwo *kwuliša*, 2 Bura *kulši*, Chb *kwulsə*, Klb *xušū*, Hld *xušu*; 3 HN *gwuriši*, Kap *γwuluse*, FK (*u*)*wurši*, FG *γwulis(u)*; 4 Gude *xwɔ-xwursə*, FM *kwɔ-kwursi* ($< *ha-kurs-$, assim. of the prefix, secondary lateral); 5 Mnd *γwūsəsə*, Gava *gwulisə*, Glv *zirə kwšila*; 12 (Kr) Lame *γwóró*, Bnn *gilisə* ($g- < *nk-$); E 1 (J) Kwn *mo-korá*, Mobu *mù-gursú*.

**[h]-kuni* 'urine' (for the $*-n > -r-$ shift after laryngeals and *k* see II.8): W 1 Hs *kúúráá*; C (Kr) 1 TP *ngwin-di*, Boka *xwin-dá*, Gaa *win-da*, Gbn *win-de*; 2 Wmd *kwunyi*, Hld *kwunyi*, Klb *kuní*, Chb, WM *kwunyi*, Bura *kini* 3 HB *xwunči*, FB *xyəwuna*, FK *xwinči*, HF *xwónši*, HG *wančə*, Kap *xwunši*; 5 Mnd, Dxx *kurə*, Glv, Gava *kuriyá*; 7 Gis *kunnay*, Mafa *kurey*, 10 Bud *kərai*, Log *ηkune*; 11 Msg *honai*; E 6 Mok *gontiö*.

The velar emphatic $*k-$ is now preserved only in Hausa and Northern bachi languages; Sem and Eg parallels also help to distinguish between $*k$ and $*k$. The former emphatic may be traced by secondary emphatization of voiced plosives i.e. $*kVd- > kVd-$, $*kVb- > kVb-$ (cp. **kwaɗ-* 'pot' in II.2). Examples with PCh initial $*k$ are not numerous. Cp. **koč-* 'beat, push' (II.4) and the following roots:

**kas[i]* 'bone': W **ha-kasi*: 1 Hs *kāšii*; 4 Wrj *kāasu-nə*, Kar *kāasu* (probably $< *kas-um$), Miya *kúsi*, Paa (MS) *kəs-ki*, Cagu *ké-kəsə-n*, Mbu *ká-kəsə*, Jmb *kə-kási* (all $< *ha-kasi$, regressive assim. of the prefix); 6 Df

kyās, Bok *kyas*, Kul *gyašaw* (< **kayas*- <*kaḥas*-, metath. ?); C 11 Msg *kéx-kéx*, *keš-ké* (secondary -š- in contact with a velar, see 1.4a); E **kas-kV* (cp. WCh **ba-kV* 'mouth', **ɜV-kV* 'body'): 1 Kwn (J) *kisí-gi*, Kera *kəs-kən*; 3 **gus*- (<**gus-u* < **gus-um* 'my bone', initial *g*- is irreg.): Tum *guuy* (Ch **-s*- > Tum -Ø- in CVsVC roots), Ndam (dJ) *gusé*, Sum (J) *gūsāny*, 5 Dng *kāàsò*, Bid *kās-ko*. (Mig 'ássú originates from **esas*- 'bone' (1.4a). Otherwise it is impossible to explain, why Bidiya and Migama, having absolutely the same reflexes of all PCh phonemes, show different word-structure and phonetics in one and only one case). /Nm **ʒásu*, Jglb **ks*, Eg (Pyr) *ks* (5:68), Berb Ahaggar *eyes* /Grn (1963:53), MiS N 67 **kVs*, HS N 1557 **kas*- 'bone'. Cp. Nub (Reinish, 1889) *kōs* 'bone'.

*[ʼa]kōr- 'be angry': W 1 Hs *kēērāu-kēērāu* 'wrangling'; 2 Ang *kōr* 'quarrel', Sura *kwar* 'hatred'; 3 Tng *kor-moso* 'anger'; 4 Paa *akwār*, Siri *aḳūr*, Jmb *kwar*; E 3 Tum *kērāw* 'anger'.

**kar*- 'end, finish' (v.): W 1 Hs *kāārè*; 3 Tng *ker* (-e- < -a- in contact with an emphatic consonant); 5 (Kr) Buli *kyeru*; E 1 Mobu (Ln) *kāre*, Ngam *kar*; 2 Tob *kare*.

**ka*/'w- 'speak, call': W 4 Wrj *kəkə*, Kar *kəy*, Paa *kí* (MS), *ka* (Sk), Cagu *káwù*, Siri *ka* 'call'; C 10 Log *ka* 'speak'; E 3 Tum *ka* 'speak'; 4 Mubi (L) *káá* 'speak'.

**kapp*- (or **kopap*- > *kawap*- > *kwap*-) 'sow': W 1 Hs *kwááfi* 're-sow'; 2 Ang *kwop*, Sura *kop*; 3 Bol *kapp*, Dera *kape*, Krf *káppú*, Gln *kāáb*- 'sow, plant'; C 12 (Kr) Lame, Peve *kap* 'plant'.

**kun*- 'tie': W4 Cagu *kún*-; 5 (Sm) Bgh *kaan*, Buli *kənni*; C 1 (Kr) TP *gəna*, Gaa, Gbn *kənə-nci*, Boka *kənə-ḍa*, Hwo *kənə-ŋ*; 8 Daba (Kr) *kən*. Related to this root is **Kan*- 'plait' 12 (Kr) Lame *kənwa* 'plait', ZB (S) *kán* 'plait hair'; E 3 Tum *kōŋ* 'twist'; 6 Mok *kini*, *gini* 'plait (mat, hair)' / Berber Qabyle *əqqən* 'tie', Eg (MK) *kny.w* 'weaver' (5:50) / Nm **gənə* 'tie' // HS N 1546 **kan*- 'plait'.

**ko*'ud- 'testicles': W 1 Hs *kóódà*; C 5 (Kr) Gava *kidi-nwa*, Mnd *šè-kudà*; (Mo) Padk *kúda-ma*; 7 Mafa *kúḍec*; 12 Masa (J) *húḍá*, BM (Kr) *hudo-no* 'testicles' (*hu*- < **ku*-).

Initial **g*- is devoiced in sura languages and in Tangale. Usually it yields *g*-, except for a few cases of palatalization (mostly in ECh languages) and spirantization before -u- or under the influence of a medial sibilant or a liquid in CChadic. Examples:

**gulu/a* 'left': W 2 **kul* < **gulu*: Sura *kul*, Ang, Mpn, Mnt (Fp) *kul*, Ank (Gr) *kul*; C **gula*: 3 (Kr) Kap *gwulà*; 7 Mafa *gúlá*, Mofu *gùlā*; 10 Glf *thede geli* 'left hand', Log *yalá-n* (γ- < **g*- under the influence of medial -l-); 12 (Kr) Masa *gal-gulu*, BM *bik gulu*, Bnn *kùluwà(ra)*, Lame *bà-gùrú*, Peve *ba-gur*, ZB (S) *gúra* (irreg. -r- < **-l*-); E **gula/e*: 1 Kera *gùlā*, Kwn (L) *gélee*, 2 Kbl, Nan *gùlā*; 3 Sum (L) *géle* 'links'; 4 Dng *géélè* (vowel assim.); 6 Mok *géélò*. / Cp. Bagirmi *geli*, Lendu *gru*, Fur *oguro* (Grn, NS N 85).

gāb*- (possibly < **ga*'ab-) 'part of a building': W 3 **gaabi* 'room': Bol (N) *gabi*, Dera *gaawi*, *gaabi* 'room', Tng *kaabi* 'bedroom', Krf *gaāfi*, Gln *gaábú*, Gera *gáwá* 'hut' [gaabi*], E 3 **gab*- 'wall': Tum *gab*, Ndam (J) *gáb* // Gz *gabgab* 'reception room', Eg (NK) *gb.w* 'Art Gebäude' (5:163), HS N 854 **gab*- 'wall, dwelling'.

**gur*- 'charcoal, ash': W 1 cp. Hs *gúurā* 'make fire'; **gur*- > 2 Ang *kur*, Sura *keur* 'ashes', Mpn *kuur* 'charcoal'; 3 Tng *kuru* 'charcoal' (initial *k*- < **g*- is regular); C **n-gur-sV* 'charcoal': 2 Bura (Kr) *aŋ-gwulā-sim*; 8 Mwl (Kr) *ŋgólí*; 12 ZB (S) *ú-ŋór-sú*; (cp. 4 Gude (H) *gúrá* 'hearth for warming room'); E 3 Ndam (dJ) *güre* 'charcoal' / Akk *gurāru*, *kurāru* 'hot ash' (A5:126) // HS N 986 **gur*- 'ash'.

**geza* (or **geeza* < **gV*'Vɜ-) 'mane, tail': W 1 Hs *gèézaa* 'mane'; 4 **gVzay* 'mane': Wrj *gəzi*, Paa *ngəza*, Mb *ngəzi*, Miya *agəžu*, Siri *gəzi*, Jmb *gəza*; **n-geza* 'hair': Wrj *gəzái*, Kar *gəši*, Miya *ágəžu*, Paa (Sk) *ngəza*, (MS) *ngəzá*, Siri *gəzi*, Mbu *ngəzi*, Jmb *gəzá*; C 7 Mafa *gəz-gəza* 'mane'; (irreg. reflex of -ɜ- due to contamination with Ch **gawɜ*- 'hair'; 4 **geza* 'tail': FJ *gāžā*, FM *gyēza*, FB *gyēz-ən*, Gudu *gəža* (Kr), Gude (H) *gaža*.

**gaš*- 'fall down, throw': W 4 Paa (MS) *gùžu* (< **gažu*) 'bend down'; C 5 Glv (Rp) *ngaž* 'fall down'; 7 Mofu *-gəž*- 'throw'; E 3 Ndam (dJ) *gəla* 'throw'; 5 Bid *gál*, Mig *gálaw* 'fall down'.

guru*- 'pond, river': W 3 Krf *gúrú*, Gera *gúr-kú* 'pond' [gurko*], C 5 Lmn (L) *ghorāvā* 'lake', (Kr) Dxx *gula-wā* 'river'; 4 (Kr) Nzn *gogəmya*, FM *guru*, Bch *gurey* 'pond'.

I.6. Uvulars

Table 6.

PCh W Ch	1	2	3	4	6,7	C Ch	1	2	3	4	5	7	10	11	12	E Ch	1	2,3	5,6,7
*b	g	*g	*g	*γ	g	*γ	(γ)	*x	*γ	*x	*γ	*h	γ	h	*h	*γ	(γ)	*h	*g
*q	k	*k	*k	*q	g	*q	(x)	*γ	*γ	*k	*k	*k	γ	h	*h	*k	*k	*k	*k
		*g							(*x)				gw						
									ng				/kw						
*q	k	*k	*k	*q	g	*q	(k)	(*γ)	*γ	(*x)	*γ	*g	γ	h	*h	*k			
		(γ)	(q)										γ						
*g	h	*g	*g	*g	g	*γ	*x	*ng	*γ	*x	*γ	*xu	*h	γ	(h)	*h	*g	*g	*g
										*gu									

1. Ch *nh-→CCh 4,5,7 *ng-; E Sib, Mubi η-, Kwan ng-.

An uvular series (*b, *q, *q̣, *g̣) has been reconstructed for PCh on the basis of mostly velar reflexes in WCh and EC languages, on the one hand, and the laryngeal /h/ or velar fricatives in Musgum, Logone and ZB, on the other. The uvular spirant is reflected as g in WCh (in Northern bauchi – as g, h or γ) and in ECh Mokilko, mubi, dangla languages. Ch *b-→h- in kera, lai, tumak (not quite regular). All over CCh the uvular spirant (b) yields γ, x or h. The voiceless obstruents (*q and *q̣) yield the voiced velar /g-/ in ron, Southern bauchi, Ngizim, and it helps to distinguish them from velars (note that under special conditions Ch velars yield fricatives in CCh). Sem, Eg (also Rift) show the uvular fricative /h/ corresponding to all these PCh phonemes. A voiced counterpart to *q and *q̣ yields the voiced velar (g) in ECh and in WCh (with the exception of Hausa). Judging by the reflexes, Ch *g̣- developed into a fricative in Proto-CCh and thus it is very difficult to distinguish it from *b. The crucial evidence here is that of Hausa (b-→g-, but *g̣-→h-), Logone (*b-→γ-, but *g̣-→γ-) and ZB (*b-→h-, but *g̣-→h-). There are also a few examples proving that Ch *g̣- yields g- in W 4 Paa, while Ch *b-→h in Paa.

Reconstructing uvular phonemes for Proto-Ch we follow Dolgopolsky (1976:84–85) who had reconstructed them for Proto-Kush. His arguments were quite similar to ours: on the basis of regular correspondences one more series of gingival phonemes should be reconstructed. All of them correspond to Sem b and yield a velar, pharyngeal or laryngeal in modern Kush languages. On the basis of typological parallels Dolgopolsky had suggested that these phonemes might have had uvular articulation. This idea was developed in (AA) and (HS).

For Ch *b- see CCh *yu/arp- 'turtle', *hobas- 'pig', *ha/ub- 'to hatch', C *yufon- 'charcoal' (II.1), *huro 'steal' (II.8) and the following roots:

W *holu 'slave': W 4 Wrij galu-zəhə-na, Kar, Miya galu-zəhə, Diri galu, Cagu gaalun Paa hwalin-čiki, (cp. 1 Hs gállábáá 'force person to do smth.') Cp. C *yula 'young man'— 'slave': 4 (Kr) FJ mu-gula 'slave'; 9 Log yule-mazé 'slave', cp. yule-gwaši 'Mädchen'; 5 Glv (Rp) yula 'bride', 7 Mafa gwala 'young man'.

*hur- 'dig', *hūr- (<*huri-) 'pit, grave, hole': W 1 Hs gúurē 'enlarge a hole, well'; 2 Bol gur 'dig', Tng kur-uk 'grave'; 4 *yir- 'pit, hole': Wrij gir-ná, Kar gir, Paa ngir, Miya ágir, Cagu gār-én, Siri yerí, Jmb yira 'hole', Miya yar 'grave'; 5 (Kr) 'pit, hole': Buli yir, Brm čir, Snc gir; 6 Ngz gār-id 'pit, cave'; C 7 Mofu hur 'dig; creuser (pour avoir de l'eau)' / Akk herū (A6:175), Ug hr 'dig', Akk hurru, Arab hurr- hole// HS N 1375, 1376 *hur- 'dig, hole'.

*hori 'dry up': 1 Tera (N) ywari, (Kr) nuwari, Gaa hwōiri, Boka xweri, Hwn xwar, 3 FG ywōli, HB ywūli, HN wūle, HG xūle, HF ywōlo, Kap ywūle, FK wyūrivū; 4 FJ xwēru, Nzn horē, Bcm mē-hiir, FM xuri, Mwl uōri, Gude (H) huurā; 5 *yulala (probably < *yolala, -u- < *-o- after γ-): Glv 'ūyūlal, Gava yūlalā; 7 Mafa gwār 'dry up', ngwār 'dry season'; E 5 'dry season': Bid gor-gōr, Mig gōr-gōr. /Plato Irgw hru, Yashe hor, Ogbi á-yaráyará all look like Ch loans (PPlato kwat, WS:118–121). / Akk nahru 'dry' (adj.) (A11,1:141) / HS N 1356 *hor-.

hul- 'throat': C 9 Log yulú 'gullet'; E 6 Mok góllá 'neck', būr-gúló 'Adam's apple'.

hubar- 'increase, grow': W 1 Hs gúbrā 'increase'; C 5 Glv (Rp) yubar 'grow big'; 12 ZB (S) hābri 'big' / Arab hbr 'graisser un mets'.

*hVn- 'keep, store': C 7 Mafa hən 'preserve, keep, store'; E 5 Bid gony 'mettre de côté, économiser' / Eg hnn (Pyr) 'stören' (3:383), Jibb han 'storage place' // HS N 1389 *hən- 'preserve, keep'.

*h[a]l- 'give': C 5 Glv (Rp) yālā 'sacrifice (small)'; 11 Mba hāl 'give'; E 1 Mobu (Ln) gāle 'rendre' / cp. Eg hnt (MR) 'Extrageschenk, Sondergabe' (3:289).

*hub- 'carrion, rot': W 1 Hs gúbā 'poison, carrion'; C 4 Gude (H) hub-yak 'rotten (fruit)'; cp. E 6 Mok góobē 'mort, cadavre'.

*huba 'hoe'(n.), *hoba 'cultivate': W 1 cp. Hs gwābā, kwābā 'insert the blade of a hoe into its handle'; 3 *gub- 'hoe-handle': Krf gūfē, Gera gūbā, Glm gibā; 7 Bok hūben 'hoe'; C 1 Tera (N) gābā 'hoe'; 4 Gudu (H) hwaḅa 'second cultivation after planting' / Akk (A6:86) habūtu, hapūtu 'a light hoe',

Eg *hb'* (BD) II. 'den Erdboden aufhacken' (3:253) // HS N 1365 **hubV'*- 'hoe, till' (v.)

huba 'skin, bark': W 1 Hs *gàbàà-gabà* 'leather apron'; C 1 Tera (N) *gàbà* 'bark'; 7 Mafa *hubá* 'skin for carrying a child' / Arab *hubb-* 'bark'. Cp. also Arab *hubb-at-* 'long coupon d'étoffe', Akk *hubbutu*, *hupputu* 'garment', Log *γ'ube* 'Hose' / PB *-*gobi*, *-*gùbò* 'skin, baby sling', *-*gùbò* 'cloth'. (Gt:837, 874, 873).

ham- 'look for': W 7 Df *gām* 'suchen'; E 3 Lele *hām* 'look for'.

W **har-* 'be old': W 1 cp. Hs *gírmé* 'exceed in age', *gírmá* 'bigness'; 2 cp. Ang *gor* 'lunatic, idiot'; 3 Glm *gàarà-mì*, Gera *gàara*, Krf *gàarò* 'be old' [**gaaro*]; 4 **hara* 'old': Wrij *gyàrà-na*, Diri *ngar*, Mba *yàrò*, Cagu *gar*, Siri *yār-wá*, Jmb *hára, kára*; 6 Ngz *gàrú* 'become old', Bade *gàar-én* 'elder sister'; 7 Df *gàar* 'become old' / Nm **gar*.

C 5 (Kr) **yud-* (<Ch **hud-*) 'cut': Glv *yudj-gà*, Nak *wiyda-nanà*, Gava *xùžà-gàná* 'cut, split' // HS N 1368 *hud-* 'cut'.

The most weak phoneme in this series is **q*, it differs only slightly from PCh **k* (cp. tables 5 and 6). See **q/kurap-* 'beat; stick, whip', **mV-q[o]ripu* 'be blind' (II.1) as well as the following roots:

**qay-* 'bear child': W 5 Bgh (Sm) *kay*; C **qay-*: 1 Tera (N) *hya*, 2 Ngw (Kr) *ki*; 10 Log *yée*, Bud *hui*.

**qad-* (< **qadVH-*) 'beat, strike': W 1 Hs *káda* 'to drum'; C **qad-*: 7 Mafa, Gis *kaða* 'strike, kill', Mofu *-kəð-* 'strike'; 4 Gude (H) *kaðe* 'strike', Mwl (Kr) *ùkúdí* (irreg. vocalism) 'break in pieces'; 11 Msg *háda* 'break', cp. *hódai* 'blacksmith'.

**qad-* (< **qadVH-*) 'pluck': W 1 6 Ngz *gədu* (tr.), *gadu* (intr.) 'snap in two (rope), pluck (fruit)'; E 2 Ngam (Ln) *kédə* 'pluck' / Eg *h'd* (OK) '(Geflügel) rupfen' (3:236).

**qora* 'cry, groan' (v.); throat', **qur-* 'voice, cry (n.)': W 1 Hs *kùruuruwà* 'scream, cry' (n.); 2 **gwar-* 'groan': Sura, Ank *gwar*, Ang *gweer*; 4 **gwar-* 'shout, cry': Kar, Miya *kwar*, Jmb *gwar-al*; C **qu/or-*: 7 Mafa *kwár-* 'to order'; 4 Gude (H) *kùrà-ká* 'funeral wailing'; 12 ZB (S) *hòr* 'voice; larynx, trachee'; E 5 Mig *kòrkòrré* 'throat' / Arab *hwr* 'mugir', Eg *hrw* 'Stimme', *hr* (OK) 'say' (3:324), Iraqw *xuray* 'rumble, roar' (E:370) // MiS **qwVr* 'to produce a noise', HS 2050 **qur-* 'voice, noise', 2044 **qor-* 'shout, say'.

**q/koé[i]p-* 'bark, shell': W 1 Hs *kwásfaa* 'any sort of shell or outer covering'; C 4 (Kr) FM *kwásipu* 'bark' // Hbr *hšf* 'to peel, to skin', cp. Arab *hšf*

'être rongé par la gale'.

**qal-* 'run, go': W 6 Sha *gal* 'run'; C **qal-*: 7 Mofu *-kəl-* 'go quickly'; 11 Msg *hála*, Mba *híli* (< **hali*, vowel assim.) 'go'.

**q/kiš-* 'thrash, beat': W 1 Hs *kiláá* 'thrash'; C 7 Mafa *kəž-* 'beat' / Rift Alagwa *hiš* 'rub' (E:262) // HS 2040 **hiš-* 'grind, rub'.

**qoram-* 'hoe, plough' (n.): W 1 Hs *kóóráméé* 'long handled hoe'; C **qorum-*: 3 (Kr) **ngurum-* (*-*am* > *-*um*) 'hoe': HG *ngwuri*, FK *ngwurumu*, FG *ngwur*; 4 (Kr) FB *ta-kurm-in* 'hoe'; 11 Msg *hòrúm* 'Feldgerat', *hərma* (Mo) 'plough' (v.), Mnj *hirmi* 'cultiver'.

**qaram-* 'take by force': W 1 Hs *kārmaamà* 'any seizing by force of other's belongings, looting the property of opponents in civil war'; 3 Tng *kurma* (< **kurum* < **karum*, *-*um* < *-*am*-) 'struggle, effort'; C 12 ZB (S) *həram* 'take by force'.

**qan-* 'war': W 6 Bok *gân-* 'struggle, wrestle; ringen'; C 9 Log *γəna* 'Kämpf', *γana* 'Krieg' // Eg *hn* (MR) 'Rebell' (3:288).

**qirom-* 'guinea corn; corn': W 2 (Fp) Grk *kirrum*, Mnt *šiem*, Ank *šiam* 'corn'; C 1 (Kr) **xirom-* > **xwarm-* 'guinea corn': Hwo *xwārma*, Gaa *hwerma*, Gbn *xwərme*, Boka *xwərma*.

**quṭ-* 'be tired': C **quṭ-*: 2 (Kr) 'fatigue' > Mr *yùda*, Wm *xudà*, WM *xudà*, Chb *yuri*, Klb *áhudà*, Hld *xuda*; 3 HB *yúni* 'fatigue, be tired'; 5 Glv *kudu-gà*, Mnd *kùdəp-kùdè* 'fatigue'; Glv (Rp) *kud* 'be distressed'; E 6 Mok *gidde, kéddè* 'avoir les jambes fatiguées'.

For lack of Hausa and Northern bauchi data we cannot distinguish between PCh **q-* and **q̄-* in the following cases:

**q/q̄VyVI-* 'break in small fragments; crush': W 7 Sha *gol*, Bok *gyel*, Kul *gyol* 'zerbrechen'; C 12 ZB (S) *həlà* 'broyer', *həlà* 'ecraser'.

**q/q̄ar-* 'slope, steepness': C 12 ZB (S) *hàràà* 'escarpment'; E 5 Bid *kàr-kàràa-čà* 'escarpements rocheux'.

Cp. also two W Chadic roots with initial **q-* and **q̄-*:

WCh **qaf-* 'grasp, seize': W 1 Hs *kaf* (idf.) 'the security of hold' (note loss of emphatization); 2 Ang *gap* 'tongs' (*g-* never reflects Ch voiceless velars in word initial position); 4 **qVf-* > Paa (MS) *kəfāā* 'take a handful of'; 5 (Kr) Pol *gup-tu*, 6 Ngz *gáfāu*, Bade *gaf* / Eg *hf* (Pyr) fassen, packen; Faust' (3:272) // HS N 2032 **qafVf-* 'hold'.

WCh **qabaṛ-* 'break, strike': 1 Hs *kāpaa* 'knock against'; 3 Tng *keeb*

'break'; 7 Sha *gboh* (*gbo'i*) 'break in pieces'.

For PCh *q- see *qoqay 'throat' (II.6) and the following roots:

*quzi- 'hunger' > *quzi-am > *quzi-um 'thirst': W 1 Hs *kisi*, *kisirwaa* 'thirst' (i.e. *kisi-ruwa* 'hunger of water'); 2 Grk (Fp) *kattum* (-t < -z < *-z- is regular) 'hunger'; 2 *kuzi-um: Bol *kuzum*, Krkr *kuzam*, Glm *gusi*, Tum *kum*, Ngm *kizi*, Dera *kiyim*, Krf *kuşuŋu*, Gera *kizim*, Bele *gühi* 'hunger', Bele *güjá*, Krf *kúšám ám*, Glm *gúši áamá*, Gera *kuzum ham*, Grm *kúžú ámmá* 'thirst' [*kuzum]; 5 (Kr) Geji *kuzuŋ*, Pol *guzuni* 'hunger'; 6 Ngz *gəži* 'thirst'; C1 *qoizim: Tera (N) *xužum* 'hunger', (Kr) TP *hwòšum-di*, Hwo *kwušim-dá*, Gaa *küčim-da*, Gbn *küčim-de*, Boka *kwušim-tə* 'thirst'; 11 Log *yožəm*, Glf *skem* (metath.) 'hunger'/Nm *kəžəm 'thirst', Jglb *kəm* 'hunger'.

*qadig-/qidad- 'hoe' (n.): W 1 4 Cagu *kaadige*, Mb *kaadagə*; C *qidad-: 10 Bud *hádágə* (Cy); 11 Msg *hidég*, Mnj *hədək*; cp. 7 Mafa *gədək* (idf.) 'movement d'un coup de faux ou de hache'.

W4 *qam- 'hut': Wrj *kan-na* (<*qam-na), Kar, Miya *kam*, Mb *kam*, Siri *kami*, Cagu *kan*, Jmb *gan* (the latter two, as well as Eg *hn* 'tent' may go back to HS *qan-, as in (HS, N 2059), but most likely they all originate from one and the same root, with a shift *-m# > -n# in several dialects)/Jglb *kan, Ug *hm-t* 'tent', Arab *hym* 4 stem 'se faire une tente', *haym-at-* 'tent'//HS *qam-/qayam- 'tent, house'.

*qaraw-/qawar- 'fight': W 1 Hs *káaróó* 'fight'; C 5 Glv (Rp) *ɣwára* 'war' (but cp. the next root); E 1 Kera *kuuri* 'to fight'; 3 Tum *kəraw* 'war' / Eg *hrwyw* 'Streit, Krieg' (3:326), *hrw* (MK) 'enemy'//HS N 2063 *qaraw- 'war, fight'.

*qaw- 'fighting': E 3 Krf *káwə*, Gera *káwə* 'fighting'; C *qaw- (Kr) 'war': 4 Gudu *háá-čü*, FJ *ɣə-kū*; 12 ZB (S) *həo* 'disorder, fighting, bagarre'; Peve (Sn) *yaw* 'fight'./Cp. Jaba (BC) *ɣwa* 'war'.

C *qalum- 'boat': C 10 Log *ɣ'oám* (<*ɣ'aom < ɣ'aum); 11 Msg *hólum*, hullum, Mnj *hulum* /Akk *hallimu* 'raft' (A.6:45)//HS 2057 *qalum- 'boat'.

W *qaru > *qawar- 'roast, burn': 1 Hs *káuráa* 'fry without oil', *káurfi* 'smell of burnt rags, hair, etc.'; 3 *kar- 'roast': Krkr *káru*, Krf *ká'u*; 7 Bok 'agoor' 'verbrennte Reste am Gefässboden' / Eg *hr.t* (Reg) 'flame' (3:323), Rift Burunge *xwera'es* 'fry', Alagwa *xwere'es* 'hot' (E:271) // HS 2062 *qar-/qawar- 'burn'.

W *qof- 'hoof': 1 Hs *kwaáfə*, 2 Ang *kwap* / Arab *huff-* //HS 2066 *qof-

'hoof'. Related to this root is *qufu- 'to forge': 4 *quf-: Wrj *kuf*, Paa *kufa*, Miya *kuf*, Kar *kufə*, Jmb *guf*; 5 (Kr) *gwupu-: Say *gwup*, Dwot *gwup*, Pol *gubu*.

W *ha-qori/*ha-qawVri 'tooth': 1 Hs *hákoóri* (*ha-* is a prefix of body-parts); 7 Kul 'agwér, Sha 'agaha (-h < -r-), Fyer *hágor*, Bok 'ágúr / Kush Bedaue *kwir* 'tooth'//HS N 2070 *qor- 'tooth'.

C *q/qom- 'red, yellow': 3 (Kr) *yomi/u: Kap *ɣume*, HG *xùme*, FG *ɣəmi* 'red', FG *lan* *ɣwumu*, HF *kumzi* 'yellow'; 12 (S) ZB *ham* 'yellow'.

For Ch *g- see C *ɣup- 'flour' (II.1) and the following roots:

*gwa[t]- 'cave', *guu[t]- 'dig out': 2 *goHot (epenthetic laryngeal) 'cave': Ang *gwot*, *got*, Sura *goyot*; 6 Ngz *gütú* 'dig a pit, scrape earth'; C 12 ZB (S) *hut* 'to empty; vider' / Arab *gwt* 'creuser un trou' // HS N 1022 *guwut- 'dig'.

*gabar- 'dry earth, sand': W 1 Hs *hábaaá*, *hábraá* 'dry earth, dust'; C 7 Mofu *ma-hurbay* 'sand' / Arab *gabar-at-*, *gu/abr-at-* 'dust' // HS N 1002 *gabar- 'dust'.

*gola 'vagina, hole': W 7 Fyer *wul*, Bok *hwál-ši*; C *ɣol- 'vagina, hole': 4 (Kr) Bch *gwüley* 'vagina'; 5 (Kr) Nak, Gava *ɣwala*, Glv *ɣalá* 'vagina'; 12 ZB (S) *hol* 'hole'.

*ga[k]a 'crow': W 4 Paa (MS) *gā:ga* (assim.); C *ɣa[k]-; 5 Dxw (Fr) *ɣágə*, Glv (Rp) *ɣayə-xəra* (*ɣ < k*, assim.); 7 Gis *mu-ghak*, Mofu *mán-gáhák*, 10 Log *yake*, Bud *ngagé*; E 7 Mubi (L) *gak*; 5 Bid *gaaga* / Arab *gāq-* 'raven' // HS N1003 *gak- 'crow'.

*gor- 'kill, punish': W 1 Hs *háráá* 'raid' (possibly < Arab), *hòoráá* 'discipline (a person). break in (a horse)'; C 7 Mofu *hər* 'kill' / Arab *gwr* 'raid, attack' (v.), Rift Iraqw *hwar-* 'beat hard', Asa *har* 'punish' (E:375)//MiS *9wVr 'plundering raid, foray', HS N 1014 *gor- 'punish'.

*gora-[b]- 'crow': W 2 Sura *gooroo*; E 3 Ndam (dJ) 'àgrà'; 7 Jegu *gurb-ak* / Arab *gurāb-* 'raven', Mehri *yegerayb*, Rift Iraqw *hwa'ari*, Burunge *hwarariya* (E:270)//HS N 1015 *gor-, 1020 *gurab-.

*gVn- (*go/en-) 'forbid': W 1 Hs *hana* 'forbid, prevent'; 7 Fyer *hen*, *hyen* 'decline; ablehnen'; C 12 ZB (S) *hòn* 'defend, forbid'.

gab- 'swell, increase': W 1 Hs *hábi* 'the increase in size of an udder (prior to giving birth), increase in size (of fruit)'; C 7 Mafa *hab-* 'faire grandir (plaine)'.

*g[a]s- 'make fire, be hot': W 1 Hs *hásò*; 3 Tng *kus* 'make fire'; C 12 ZB

(S) *hās* 'heat; chaleur'.

**gobi* 'chin, cheek': W 1 Hs *hábaa* (? < **hubā* due to the long vowel in the auslaut) 'chin'; 4 Paa (MS) *gábā-čangá* 'chin, lower jaw'; 5 Geji (Kr) *gis-gibā* 'chin'; C (Kr) **nyobi*: 2 Chb *ngubæ* (*ng-* < **ny-*) 'cheek'; 3 HF *γubi* 'chin'; E 1 Kera *gabi* 'cheek' /cp. Arab *gubgub-* 'gorge, fanon, barbe'.

**gal-/gol-* 'child': W 7 Kul *hal* 'bear (a child)', *hál*, Df *'ál* (irreg. reflex) 'child'; C 10 Log *γ'oli*, Bud *wuli*, *üli*, Kus *uló*, Gul *ulía* 'child, son' / Rift Iraqw *xwayl-* 'to bear', Alagwa *holimo*, Burunge *xwaylimo* 'child'.

W **gada* 'be fat, fat': 1 Hs *hádé* 'become fat'; 3 Bol (B) *geddo* 'fat' (adj.); 7 Ngz *gád-báyák* 'be fat' / Ug *gdd* 'to swell', cp. Arab *mgd* 'faire prosperer, rendre florissant', *magd-* 'gras, plein de sève'.

**gVI-* 'say, tell': W 2 Ank *gwal* 'say'; 4 Paa (MS) *gəla* 'tell'; C 11 Msg *hélél* 'Sprache, Wort, Rede'; E 3 Ndam (dJ) *gólá* 'cry'.

Uvular articulation is no longer preserved in Ch languages, yet external parallels as well as internal Ch data make it possible to reconstruct an uvular series for PCh. Now that in the majority of the languages reflexes of uvulars have merged with those of velars, it is extremely complicated, though possible, to distinguish between them. Being not numerous, all the roots with uvulars in word initial position given in this chapter have been reconstructed on the basis of regular correspondences and most of them have reliable parallels outside the family.

I.7.Laryngeals.

Table 7

PCh WCh	1	2	3	4	6	7	C Ch	1	2	3	4	5	7	10	11	12	E Ch	1,2 3	5,6 6	7
* <i>h-</i>	<i>g</i>	* <i>γ-</i> ** <i>i-</i>	* <i>h-</i>	* <i>h-</i>	<i>g</i>	<i>h</i>	* <i>x-</i>	* <i>x-</i> * <i>xy</i> > <i>y</i>	* <i>x-</i> * <i>xw</i> > <i>w</i>	* <i>x-</i>	* <i>x-</i> * <i>xw</i> > <i>w</i>	* <i>x-</i>	* <i>h-</i>	<i>γ-</i>	<i>h-</i>	* <i>h-</i>	* <i>h-</i>	* <i>h-</i> **	* <i>h-</i> **	* <i>h-</i> **
(** <i>r-</i>)	<i>g</i>	**	**	(** <i>γ</i>)		<i>h-</i>	* <i>x-</i> * <i>x-</i>	** * <i>x-</i>	** * <i>x-</i>	** * <i>x-</i>	** * <i>x-</i>	* <i>x-</i> * <i>h-</i>	<i>h-</i>	(')	* <i>h-</i>	* <i>h-</i> **				
* <i>h-</i>	<i>h</i>	**	<i>h-</i> '	* <i>h-</i>	Ø	'	* <i>h-</i>	* <i>h-</i> (** <i>h</i>) * <i>x</i>	* <i>x-</i> (** <i>x</i>)	* <i>x-</i>	* <i>h-</i>	<i>h-</i>	<i>h-</i>	<i>h-</i>	* <i>h-</i>	* <i>h-</i>				
**	Ø	**	**	**	Ø	'	**	**	**	**	**	**	**	**	**	**	**	**	**	**

1. Ch **hw-* (< **hVwVC-*) and Ch **ho-* > *w-/* in lai and sumrai groups.

Laryngeals are still preserved in Ch words going back to **HVCV* roots. As a rule PCh laryngeals have disappeared in **HVCVCV* roots (**HVCVC* >

CVCV), but it is possible to trace them because of some changes of the next consonant. In case the syncope of the second vowel preceded the loss of the first syllable (**HVCVCV* > *HVCCV*) laryngeals were as stable as in *HVCV* roots. Reflexes of laryngeals merged in a number of languages (mainly, in East, also in WCh), still Sem parallels as well as a careful analysis of the data helps to distinguish between PCh **r-*, **h-*, **h-* and **h-*.

For Chadic **h-* see **hari* 'intestines' (II.8), **hafa* 'sharp stick, arrow', C **xuruf-* 'seed, corn' (II.1) **hodami* 'beans', **hadu-* 'envelop, close' (II.2), **hažV* 'guts, intestines', **haž-* 'cut (hair), shave' (II.3), **hawVn-* 'mix' (II.8) and the following examples:

**haw-/hay-* (or **haway-*) 'belly, stomach': W 'belly' 2 Ang *eäk*, 3 **h/haw-kV* (-*k* is a body-parts marker): Bol 'awo, Krkr 'ako, Ngm *hawo*, Maha *aho*, Tng 'age, Krf *awò*, Glm *awá*, Gera *hawí*, Grm *aa*; 7 Fyer *hyè* Bok *hihye*; C **xVway-*: 2 WM *xay*, Chb *γay* (Kr) 'intestines'; 3 HF, HG, HN *xwi*, Kap *xwa*, HB *xu* 'stomach' (Kr); 12 Masa *haya* (Mo) 'belly' // Arab *hawiyat-* 'intestines' // HS 1251 **haw-/hay-* 'stomach'.

**hama* 'salt': W 7 Fyer 'amā; C 11 Msg *həm* / Eg *hm.t* 'Salz' / HS 1231 **ham-*.

**huna* > **huwan-* 'build': W 4 Paa *hwun*, Miya *yan*, Kar, Jmb *wan*, Siri *wuni* 'build, plait'; C (Kr) **xuna-* 'build': 2 Bura *xun(a)*, Wmd *xurəw*, Hld *xuryà*; 3 HN *hānutè*, HB *anudò*, FK *γumtù*; 4 Nzn *xiné*, Gudu 'úún, FM *γunyi*, Mwl *uhòno* 'build', Gude (H) *ghene* (vowel assim.) 'build of mud and clay'.

**hakVw* 'stone': W 2 **γək-* 'stone': Sura *γək*, Ang *γk*, *γük*, *γək*, Grk *γək*, Mpn *ək*; C (Kr) 3 FG *xəkwo* / Eg *ht* (n) 'Art Stein', *ht.t* (MK) 'Steinbruch' (3:203), Arab *hakak-* 'pierre blanche semblant au marbre' (cp. *hkk* 'scratch, rub') // HS 1220 **hak-* 'stone'.

**huy/wan-* (? < **huHan-*, cp. Eg) 'fill' (v.): W 4 Kar *wen*, Wtj *yan-*, Paa *hyangu*, Mbu, Miya *an*, Jmb *wan-*; C 12 cp. (Kr) Misme (Zime) *hen* (contr.) 'fill'; E **oyan-*: 3 Tum *an*; 2 Kbl(Cp) *wənə*; 5 Mig 'unaw, Bid *ween*, 6 Mok 'óonè, úunè; 7 Bir 'uni 'to fill'; 2 Tob *woon*, 4 Sok (L) *wénna* 'full'.

W **haVm-* 'hold, take': 2 Ank (Fp) *hoom* 'hold'; 4 Paa (MS) *hamaa* 'take (a lot of)' / Eg (Pyr) *h'm* 'catch, fish' (v.).

W **ha-m-* 'head': 4 **hama*: Wtj *γam-ai*, Miyi, Kar *γam*, Diri *ama*, Paa *hama*, Mbu *γamo*, Cagu *aamai*, Siri *γami*, Jmb *gama*; 5 (Kr) Bulu, Gdz *gà*, Dwot *gəm*, Say *gəm*, (Sm) Brw *hôm* / JgIb **g-m* // Eg *h'* (Pyr) 'occiput'.

**huway-* 'buy, sell': W **h/huway-*: 3 Tng *way* 'sell'; 7 Sha *hyu*

(< *hVyuw–metath.); C *xuwiy– (> *xiy–) : 1 (Kr) Hwo xyen, Boka xiya dadi ‘sell’; 10 Log yi, Bud uwi ‘sell’.

*hVI– ‘burn’: 1 *hol– : 1 Hs gwaalaa ‘red-hot fire’; 3 Tng hali ‘burn’; 7 Bok hol ‘make fire’; E *h[u]l– : 2 Kbl (Cp) hals; 3 Sum (J) ‘ul’ (note that in all these languages –l– may go back to Ch *–s– as well, cp. Arab hss ‘allumer (feu)’). / Jglb hl.

hVp– ‘swell’: W 2 *yVp– > Sura yap ‘anschwellen’; E *hop– : 1 Kera hope ‘sich aufbläen’.

haz– ‘gather’: W 1 Hs gaazaa ‘abundance’; C 7 Mofu haz– ‘amasser en quantité, récolter beaucoup’ / Arab hws ‘rassembler’.

*h/oc– ‘cold wind’: W 3 Ngm yedo (–e– < *–o– in contact with an emphatic consonant) ‘cold’; C 2 *xVs– ‘coldness’ (Kr): 1 Gaa hahes, Gbn xasxas, E *os– : 4 Sok osso ‘Kälte, Wind’; 5 Mig ussu ‘(cold) wind’; 7 Jegu es ‘cold (wind)’ / Eg hsy (MK) ‘frieren’, (n.) ‘Kälte’ (3:166), Arab hss ‘brûler (froid – les plantes)’ // Jglb ussu // HS 1281 *hos– ‘cold’ Note that on the basis of internal data Ch *h– may as well be reconstructed.

*hut– ‘take, catch’: W 1 Hs gaatuutu ‘bird snare’; C 5 *xut– ‘take’: Gava xutanana, Nkc xtaxta (Kr) ‘take’, Glv (Rp) xuxta ‘take’, xuxc– ‘take away’; E 7 Mubi (J) huwuta ‘catch’.

*h/esa/i (*h–, *f–) ‘faeces’: W *esa : 2 Ang, Sura yes, Chip ees; 3 Krkr isē; 5 (Kr) Buli is, Geji isi; C 12 ZB (S) isi ‘dirt, dregs’; E *is– : 3 Sum isiny (J), Ndam isin (dJ); 4 Sok issii; 6 Mok iizi; 7 Mubi (J) asi (pl.), Jegu is. Cp. also: W 1 Hs kaasi; E 1 Kera kusi, 2 Kbl (Cp) kasi, Lele kasiya (probably < *kV–Vs– with a prefix) / Jglb dysn, Eg hs (Pyr) (3:164) // HS 1275 *his–. Cp. ChN Barea is, Bulala isi, Bongo isi ‘excrements’ (Grn:120).

*hur[e]p– ‘trample down, pietiner’: C 7 Mafa harp–; E 5 Bid erēp, Mig urp; E 3 Tum harab.

*[h]awil– (*h–, *h–, *f–) ‘year’: W 7 *wil– (the first syllable is lost): Sha wul, Kul ‘a-wul, Fyer wél, Df wil; E *ha[w]il– : 1 Kera hél-ná ‘this year’, Kwn (L) oleyé; 2 Gbr ille; 3 Tum alay, Sum (J) aliyá ‘year’, mana wéele ‘dry season’; 5 Mig illa, Bid al-gò, Dng el-gò / Arab hawl– ‘year’, hwl ‘changer, prendre un autre tour, s’écouler (se dit d’une année), durer un certain temps, plusieurs années’. Ch wil, wel or ille can hardly be Arab loans, which means that we should reconstruct a HS root meaning ‘period of time, year’. No traces of the corresponding verb have been so far found in Ch.

*h/a/m– ‘eat’: 4 Paa (MS) hma ‘eat (eg. grain)’, (J) mma; C 8 Daba

hamu, 10 Bud ham; 11 Msg ham ‘chew’; E 1 Kera hamé; 3 Sib wama ‘eat meat’; 7 Mubi om / Jglb hamé, Dahalo ham– ‘toss a portion of food into the mouth’ (EN:14).

*hapat– ‘arm, wing’: W ‘wing’ 6 Ngz gaptā, Bade gapt-on; C *pVt– ‘wing’: 8 (Kr) Daba pètè pètè; 10 Bud (K) fèvédò, (L) fefeeto (cp. Kanuri fefeto ‘wing’. Seeing that Daba is not a Kanuri borrowing, the latter may be a Chadic loan or simply be of descriptive character); E *pat– ‘arm’: 3 Tum béd ‘arm’, Ndam (dJ) bad ‘arm, hand’; 4 Sok patu ‘arm’; 7 Jegu potó ‘arm’ / Eg (MK) hpt ‘die Arme’ (3:71) // HS 1238 *hapat– ‘arm, wing’.

Cp. also W 6 Ngz ganyi ‘penis’ ~ Eg hnn (Pyr) ‘penis’ (3:115).

The PCh phoneme, corresponding to Semitic *f– differs slightly from Ch *h– (for example, both yield *x– > ‘– in CCh). Sem *f– corresponds to h– in Kera and to h/ in Sha. Ch *VC(C)V roots yield gVC(C)V in Hausa. In Northern bauchi languages *f– seems to be more stable than *h–, though the reflexes are almost the same. By metath. *f– > –y– (not ‘) in sura languages. There is one case of Ch *fag– > hag– (not ‘ag–) in E Tob and Som, pointing to a former ECh laryngeal (the regular reflex of Ch *f– in ECh is ‘–). Examples.

*fal– > *fal-iy–/*yi-fal–/*ilay– ‘rise, stand up’: W 1 Hs gal, gaga expresses being high in the heavens (of the sun); 2 *yaya– (< *yiHal–, vowel assim.): Sura yaya, Ang yaal, Mnt ya, Mpn yol; 3 *il– (contraction < *yi[l]al– < *yifal–, or < *ilay–): Tng ile, Pero illò, Dera yil; 5 Geji (Sm) hily-a (< *ilay–); C *Hal– : 9 Bud hal-go ‘aufsteigen’; 12 Masa (J) hallá ‘jump’; E *ayVl– (< *al–Vy–): 1 (Ln) Mobu alé, Ngam ale ‘climb’; 2 Sib ayl-a ‘rise’ / Hbr al ‘top, upper part’, Arab ly (a) ‘être haut, être élevé’, Eg ir (late) ‘aufsteigen’ (1:41) // HS *fal– 1061 ‘top’, *ilay– 1102 ‘rise’.

*forib– ‘mix’: W 1 Hs gaurayaa (< *fobr–, metath., *gobr– > gour–); 2 Sura riyeep (< *riHep < *riHVB–, metath.); 7 Fyer rep; C 7 Mofu haleb haleb ‘melanger’ (–l– < *–r– after a laryngeal); E 1 Kera horbe ‘vermischen’ / Hbr, Aram rb ‘mischen’ // HS 1113 *oreb– ‘mix’.

fam– ‘monkey’: W 7 *fam–en– (< *faN–faN–, redupl.?): Sha amen, Kul rimén, Fyer yamén, E 1 (J) Kwn aamó (3 Sum (L) oo < *amo)

*fum– ‘cover’: W 3 Tng wume ‘cover, gird around’; C 5 Glv (Rp) xum / Arab mm ‘couvrir entièrement, envelopper tout’.

*fiwum– ‘bury’: W 2 Sura, Ang wum, Mpn wam ‘bury’; 4 *iyam ‘grave’: Miya iyam, Jmb yima; E 2 *im– ‘bury’: Kbl (C) im, Lele im. This root is obviously related to *fum– ‘cover’ (cp. CCh *xuda– ‘close, bury’ > Gava xudá ‘close’, xadana bury, Mrg yadiya ‘close’, yaduna ‘bury’, etc.)

**ʔog-* 'call': C 5a Lmn (L) *xag-*; E **ʔog-*: 3 Sib *wāgā*, Tum *wəg* Sum (L) *wóogo*; 4 Sok *yéégi* (< var. **ʔeg* ?); 1 Mobu *óge* / Arab *ʔgg* 'crier' // HS 1107 **ʔog-* 'shout, call'. Cp. Dongolese (Arm) *wíig* 'cry'.

**ʔiyan-* 'see': W **ʔiyan-*: 3 Bol *ʔinn-* (< **ʔiyn-*); 4 **ʔyan-* (? < **ʔVyan-*): Paa *han*; 5 (Sm) Geji *yeni*, Pol *yeni*; 7 **ʔʔiyan-*: Kul *ʔiyan*, DB *yen*; C (Kr) 1 Gaa *anni* (but cp. TP *na*, Gbn *ni*, etc.) / Hbr *ʔayin*, Arab *ʔayn-*, etc. 'eye' // HS 1084 **ʔayVn-* 'eye'.

**ʔag-* 'stand up, climb': W 6 **ʔag-*→ Sha *hāg/ʔāg* 'hinaufsteigen, klettern', Kul *ʔegy* 'aufstehen'; E **hag-*→ 2 Tob *hogé* 'soulever'; 3 Sib *hāg-ā* 'gravir', Tum *ág* 'climb'.

ʔurok-* (h-*, **h-*) 'rub': C 12 ZB (S) *húrókó* 'gratter, ecailler'; E 1 Kera *horke* 'rub' / Arab *ʔrk* 'frotter, gratter, racler' // HS 114 **ʔoruk-* 'rub'.

**ʔag-* 'beat, grind': C 9 Bud *hagé* 'grind'; E **ʔag-*→ **ʔayig-* (? < **ʔa* 'ig' 'beat, grind'): 3 Ndam (dJ) *ʔage* 'to drum'; 5 Dng *éégé* Bid *ʔeyég* 'grind'; 6 Mok *ʔigg-* 'beat'; 7 Bir *ʔygi*, Mubi (J) *yágé* 'grind' / Eg *ʔg* (MK) 'schlagen', (Med) 'squash dates' (1:168), cp. also *ʔg.t* 'Art Zuberietung des Getreides (Schrott o. ä.)' (1:235) ~ W 6 Ngz *ágāw* 'pounded cooked grain' // HS 1051 *ʔag-* 'strike'.

**ʔu/ʔ-* 'divide, cut in pieces': W 5 Geji (Kr) *húli* 'divide'; E 1 Kera *hóle* 'cut in pieces (animal); zerlgrn (Tiere)' / Arab *mʔl* 'fendre, separer'.

C (Kr) **ʔʔub-* 'faeces': 1 **ʔxʔub-* (-*p* < **-b-*): Gaa *xupātā*, Gbn *xəpətā*, Boka *xəpədā*; 2 Mrg *ubi*, Klb *ibí*, Hld *ʔubi*; 3 HB *ibi*, Kap *úvyé*; 5 Mnd (Mo) *úgve*, Dxw *gvé* (irreg. reflex of a laryngeal in a cluster); 8 Daba *buba* / Jglb *ugve*, Gz *ʔabā* 'dung', Eg (Sarc) *ʔbw* 'Ausdruck für Schmutz' (1:174) // HS 116 **ʔub-* 'dirt'.

There are a number of roots with *ʔ-*, attested in WCh only, namely:

W **ʔar-wa* 'cow' > 4 **ʔar-wa*: Wřj *ʔəyiw-ai*, Kar *wuru*, Mb *ʔərwa*, Paa *ħar-ěaka*, Miya *ʔuru*, Cagu *ʔwurwe*, Jmb (*ʔ*)*ʔərwa* / Rift Iraqw *ʔoru* 'cow, seized by force' (E:279).

W **ʔum-* 'rise, climb': 3 **hin-di-* 'rise' (< **hum-di*, assiim.): Bol *ind*, Krkr *hind-*, Tng *aidi*, Ngm *hindi*; 4 **ʔumu* 'climb': Wřj *ʔəmə*, Kar *ʔimo*, Paa *ħwum*, Mbu, Miya, Jmb *ʔəma*, Cagu *ʔwum*, Siri *ʔəmu*.

W **-ʔayay-* (? < **-ʔaHay-*) 'maid, slave girl': W 1 Hs *wáháyiyaa* 'slave woman who has borne by her owner' (irreg. reflex of medial **-ʔ-*); 4 **ʔayay* 'maid': Mbu, Jmb *ʔaya*, Cagu *hayai* (a Hausa loan?) / Eg *ʔhʔy.t* (MK) 'Art Dinerin' (1:222) // HS 1131 **ʔaħaʔay-* 'maid'.

Sem and Eg parallels help to identify the laryngeal in the following cases:

**ʔʔub-* (*h-*, *ʔ-*) 'drink': C **Xub-* > 5 Glv (Rp) *xəb*, Nak *xuboka* (Kr), Gava *ʔa xəbuwā* (Kr); 7 Mafa *ħuḃ-ac* 'boire par gorgées' (hardly < *ħac* 'casser', as in (Barreteau :174) / Arab *ʔbb* 'boire'.

**ʔʔur-* (*h-*, *ʔ-*, *h-*) 'town': C 1 **Xur-* > Gbn *wūre*, Gaa *wīra*, Boka *xuraʔa* 'town', Hwn *wūrē* 'compound' / Ug *ʔr* 'Stadt', Hbr *ʔr* 'hill, castle'.

**ʔʔayit-* (*ʔ-*, *-*) 'cry, call': C 1 Gbn *itə-ʔənči*, Boka *et-indi*, Hwn *ad-ən* (Kr) 'call'; E 5 Mig *ʔyyitō* 'call' / Arab *ʔyt* 2 stem 'crier'.

**ʔʔuf-* (*ʔ-*, *-*) 'cure; be healthy': C 5 Gava *ʔufā*, Nak *wufā* 'cure, medicin'; 3 HB *fwo* (Kr) 'cure'; E 2 Kbl (L) *uoba* 'healthy, strong' / Arab *ʔfw* 4 stem 'guérir quelqu'un' // HS 1120 **ʔuf-*.

Cp. also Arab *ʔrg* 'be lame' (Lane) ~ Hausa *gurgu* 'lame person',

Arab *ʔdq* (a) 'mordre' ~ Hausa *gààcáá* 'bite off' (< Ch **ʔač-*).

On the specific effect produced by a laryngeal on the neighbouring *č* see I.4.

Ch **h-* yields *h-* or *ʔ* (which means, it has coincided with Ch **h-*, **-ʔ* or **-* in almost all the languages). Ch **ho-* > *wu-* in W and CCh. Cp. **ʔhjar-* 'back' (I.2), **hVt-* 'release' (II.2), **ħazu* 'cloud' (II.3) and the following examples:

**ħawi-* 'run': W 1 Hs *haya*; C 2 **hwi-/ħay-*: Bura *hwi*, Chb *xwi*, Klb *áyí*, Mrg *wi* (Kr); 7 Mofu *hw(á)* 'courir, fuir'; 4 **ħwi-*: FM, FB *xwi*, Gudu *hwíy*, Mwl *ùwéyò* (Kr), Gude *hwii* (H); 11 Mba *hóy* 'return' / Eg *hwhw* 'dafonlaufen, dafongehen' (LMK) (2:485).

**hVwuta* 'fire': W **wʔotu* > *wut-*: 1 Hs *wútáá*; 5 (Sm) Kir *wut*, Tala *wudi*, Buli *wut*, Wng *wùura*, Zaar *wùuti*, Jimi (Go) *wuto*, (Kr) Dwot *ʔutí*, Geji *wutu*; C (Kr) **hot-*: TP *wəti*, Gbn *wəte*, Gaa *wəta*, Boka *xwəta* / Jglb *wt*, Eg *hwt* (Sarc) 'fire' (2:485). // HS 1187 **hot-*. Cp. in Grn (NS, N61): Kunama *ito*, Fur *uto*, Coman: Bulditi *wutti*, Madin *woti*, Uduk *ot*. Ch word has a reliable Eg parallel and is hardly a NS loan; besides Boka *xwəta* < *wot-* is dubious.

**ħaʔy-* 'town, place': W 6 Bade *he* 'town'; C Tera (N) *he* 'town, place'; 7 Gis *hay* 'compound' (Cp. 4 **ħa-* 'town, place' < **ħa-*) / Eg *ihy* 'Art Gebäude' (Sait) (1:118), *h* (Pyr) 'Hof' (2:470). // HS N 1166 **ħa* 'building, town'.

**ħay-* 'guinea corn, millet': W 2 Ang *he, ee* corn; 3 Tng *ai* 'millet'; 7 Fyer, Bok *hay* kind of millet; C **xay-* 'guinea corn': 3 (Kr) **ħa*: FK, HN, HG, Kap *xā*; 4 (Kr) Gudu *xəi* 'seed'; 5 (Kr) Nak *xaya*, Mnd *xíya*, Glv, Gava *xíyā* 'guinea corn'; 9 Gdr (Mo) *haya* 'millet' / Eg *ihy* (OK) 'Art

Gerteide'(1:118)// HS 1167 *hay- 'cereal'.

*haw(V)č- 'river': W 3 *hawučī : Bol əuši, Bele əuši, Krkr awučī, Ngm hauši [*auči]; E *h'oc- (contraction): 4 Sok ócu; 6 Mok 'óssó.

*hal- 'call, ask' : W 3 Pero éle 'sound' (vowel assim.); 7 Sha hál 'call', Kul hal 'ask'; C 10 Glf aalu 'call'; E 2 Kbl (Cp) ələ 'cry'.

*huwal-/*huyal-/*hulal- 'cry' (v., n.): W 1 Hs hóólóó 'lowd talk at once'; C 5 *xuw(V)l- 'cry' (v.): Glv (Rp) xul, Mnd (Mi) həwl, Dxw xwla; E 1 cp. Kera túlúl (< *tV-ulul) 'Alarmschrei'; 2 Nan húlelele 'cry' (n.); 3 Sum (L) eiululu 'Schreien'. Derived from *hal- 'call, ask'.

*hiḍar-/*haḍir- 'fat' (n.): W 4 Wrj ha'ara (vowel assim.), Kar ha'ar, Mbu xəḍər, Siri həḍəri, Paa hiḍur (secondary -u-); E 6 Mok 'əḍḍir-sà. / Jglb *kdyr

hVwi-'throw': W 7 Df hwi; C 10 Log hi.

*h[a]yi- 'sew, plait': W 1 Hs háyi 'act of sewing'; C 5 Glv (Rp) xɔ 'weave'; 10 Log hí 'plait, tie', Bud hi 'plait'.

*hosu 'grind': W *es-/*os- > 2 Sura 'ees, Chip 'ées, Ank es; 3 Bol 'oss-, Krf 'yasu, Grm ès- [*yasu]; C 7 Mafa hus- 'ecraser'; 12 ZB (S) hós 'emieter' / Arab hss 'casser, briser en petits morceaux' // HS 1186 *hos-

*had- 'be weak': C 1 (Kr) *had- 'weakness': TP hadi, Gaa hatō-fwəta, Gbn xatī-fəta, Boka xafatə; 4 (Kr) Bch 'oto (-t- < *-d-); E 3 Tum had 'weak'; 7 Mubi (L) húwádé 'sick' / Eg 'hd (Med) 'schwach' (1:12) // HS 1149 *ha'ad- 'be weak'.

The reconstruction of ** offers the same methodological difficulties in Ch as in Kush. Following Sasse (Ss:50-51), whose arguments seem more then convincing and adequate to Ch data, we assume that ' had a phonemic status in PCh.

For initial ** see *am- 'woman', *uli 'saliva', *akay 'thorn' (I.2), *ida-n- 'eye' (II.2) *a/w/c- 'dog', C *ariža 'scorpion' (II.3), *esas- 'bone' (II.4a), C *ayu 'fire' (II.6) and the following roots:

W *am- 'arm': 1 (?) Hs háma-taa 'armpit' (with a body-parts prefix); 5 (Sm) Bgh am-si, Kir wam, Mansi wam-si, Zul ame, Pol aam (wa- < 'a- before a labial); 6 Ngz amai / Ug 'amt, Sar 'mt, etc. 'elbow' // HS 33 *am- 'arm'.

*Vm- (probably, *am- > *awam-) 'catch, seize': C 1 Tera (N) oóm 'catch'; 10 Msg ime, ime (vowel assim.) 'fangen, ergreifen, nehmen'; 12 ZB (S) 'ám 'steal'; E 2 Lele oóm 'seize', Kbl (Cp) ám 'catch'. Related to *am- 'arm' / Eg 'mm (Pyr) 'ergreifen' (1:10) // HS 35 *am- catch, seize

*ul-/*ulal- 'pour, soak': W 3 Pero állò 'soak'; C 12 Lame (S) 'úlá 'pour'; E 5 Mig 'àlò 'jaillir'.

*jč-/*ač- (? > *iwač-) 'to cough', *wu- 'cough' (n.): W 4 *i/ač-: Wrj iš-, Kar ášə, Miya iší, Paa (MS) ášə, Siri aši, Mbu d-iši, Jmb iš 'to cough', Cagu 'áás-an 'cough' (n.); 6 Ngz áazā; C 'to cough': 5 Mnd (Mr) wš-a; 11 Msg (Jglb) hw š; 12 ZB (S) 'óšó; (Kr) 'cough' (n.): 2 Mrg wušā, Klb 'úžā, Chb 'əšā; 3 HK 'iša, HB 'yaša, FG 'iša; 5 Gava wužaxā, Nak wūlixa; 12 Masa ɔt-na, BM ɔrsna, Bnn 'wəšā, Peve ul; 7 Mafa wušā, E *iwaš- 'cough' (v.): 1 Mobu ose (J); 2 Kbl (Cp) úwəšə; 3 Sum (J) 'ásá, Ndam (dJ) 'əšā; 5 Mig 'ěččò, Bid 'eč, 6 Mok 'éžé; 7 (Jglb) Mubi áččá, Bir 'ěččí / Nm *žahla, Jglb wš, Eg išš 'ausspeien' (1:135), š (Opfergaben) ausspeien, bildlich vom Nil'.

*as-/*es- 'come': 1 Hs isa 'come, arrive', Gwn iso; 7 Df yes, Bok yēs; C 6 Skr (Jglb) yétshā; E 4 Jegu 'as, Bir (Jglb) 'ási; 5 Bid 'ás // HS 59 *as- 'come'.

HS **VCVC- roots usually yield *(V)CVC- in all Ch languages; **VC- roots lose their first syllable only in CCh, for example:

*abuni 'millstone': W 3 *buni : Krkr buni, Bol, Ngm buni, Dera buni, Tng pin, Krf, Gera biní, Glm bin, Pero púni [*bani]; 4 *avun- : Wrj vənái, Kar vun, Miya vùn má der, Paa (MS) ván-kā, Jmb ávəna; 6 Ngz vənýí; C 1 Tera (N) vəna; 5 Mnd (Mo) úvra, Dxw (Jglb) vrá; 7 Mofu lá-vār; 9 Gdr (Mo) búúna na ara; 11 Msg fūni, Mba fūnáy; 12 ZB (J) vənā; E 1 Kera kuuni (< *kuwuni < *ka-buni, contraction) . Cp. W 2 Mpn fin 'lower grindstone' (? < *Hbin-). The loss of the initial 'alef can be traced by an irreg. reflex of Ch *b- in Northern bauchi, Ngizim and CCh (v instead of b) as well as by Sem parallels / IS *bVnV, Nm *bāna, Jglb *bn, Akk abn-, Gz 'əbn 'stone', etc. (Lsl:4) // HS N 9 *abun- 'stone, millstone'.

*akuw- 'fire': W 4 Wrj kúwə, Cagu áákwe, Miya aku, Kar ákú, Mbu kúwá, Diri akúwá, Siri kuwí, Jmb akwá; C *kuw- : 8 Daba (Jglb) ku; 6 Suk (Jglb) khú; 12 (Kr) Peve ku, Lame kwu, Bnn ku-dā BM ku-ra, Masa ku-ta, ZB (S) kú, E *ako/uw- : 4 Sok óko; 5 Bid 'ako; 7 Jegu 'óók 'fire'. C 9 Log kku, Bud aahúa 'hot' / Nm *aku, *akwa, Jglb *-kw / Arab 'kk 'be hot'. (Note Ch *- ~ Sem *f- due to a velar consonant in medial position, cp. Arab hkr 'être injuste à l'égard de quelqu'un', Gz hkr 'despise' ~ W *akur- 'be angry': 4 Paa akwar, Siri akur, Jmb kwar).

I.8. Sonorants and semivowels.

Table 8

PCh WC	1	2,3,6	4,7	P CC	1	2	3	4	5	7	10, 11	12	P ECh	1	2,3	5,6,7
<i>*m-</i>	<i>m-</i>	<i>*m-</i>	<i>*m-</i>	<i>*m-</i>	<i>*m-</i>	<i>*m-</i>	<i>*m-</i>	<i>*m-</i>	<i>*m,</i> <i>mw</i> <i>>w</i>	<i>*m-</i>	<i>m-</i>	<i>*m-</i>	<i>*m-</i>	<i>*m-</i>	<i>*m-</i>	<i>*m-</i>
<i>*n-</i>	<i>n-</i>	<i>*n-</i> <i>IVP</i>	<i>*n-</i>	<i>*n-</i>	<i>*n-</i>	<i>*n-</i> <i>IVP</i>	<i>*n-</i>	<i>*n-</i>	<i>*n-</i>	<i>*n,</i> <i>IVP</i>	<i>n-</i>	<i>*n,</i> <i>IVP</i>	<i>*n-</i>	<i>*n-</i>	<i>*n-</i>	<i>*n-</i>
<i>*r-</i>	<i>r,l</i>	<i>*r-</i>	<i>*r-</i>	<i>*r-</i>	<i>*r-</i>	<i>*r,</i> <i>l</i>	<i>*r,</i> <i>l</i>	<i>*r,</i> <i>l</i>	<i>*r,</i> <i>l</i>	<i>*r,</i> <i>l</i>	<i>*r,</i> <i>l</i>	<i>*r-</i>	<i>*r-</i>	<i>*r-</i>	<i>*r-</i>	<i>*r-</i>
<i>*l-</i>	<i>l-</i>	<i>*l-</i>	<i>*l-</i>	<i>*l-</i>	<i>*l-</i>	<i>*l-</i>	<i>*l-</i>	<i>*l-</i>	<i>*l-</i>	<i>*l-</i>	<i>*l-</i>	<i>*l-</i>	<i>*l-</i>	<i>*l-</i>	<i>*l-</i>	<i>*l-</i>

1. Ch **n-* > *l-* in Hausa, sura, bole, ngizim, bura, gisiga, masa, lai, sumray groups if the second consonant is a labial (**nVF > lVF*). 2. Ch **n-* > *l-* or *r-* (in CCh bata, glavda, matakam groups) in case the second consonant is a uvular or a laryngeal. 3. P bata **r-* > FJ *l-*. 4. P masa **r-* > *l-* or *r-*, Bnn *l-*, Masa *l-*. 4. Ch **HVrVC-* > *IVC-* in higi (except for FK and FG), glavda, kotoko, musgu, kera groups.

Initial **m-* is always preserved in non-contact position. Ch **mw-* > *w-* in glavda languages. Examples:

**mal-* 'star': W Hs *tà-uraarò, tà-mraarò* (*-mr-* < **ml-*); 2 Ang *mal-m* 'star'; C 11 Msg *me-mél* 'moon'; E 6 Mok *mòolé* (? < **mawal-* < **mamal-*) 'star' (note the three different kinds of partial redupl.). Hs *-mr-* > *-wr-* is regular (Klingenheben's law), and the original form is *ta-mrarò*. The latter is hardly related to Chadic **tr* 'moon'.

**m[a]'*is- 'steal, take by force': W 1 Hs *ámsè* 'seize a thing forcibly from a person'; 7 Kul, Sha *mus* (secondary *-u-* after a labial?) 'take'; E 1 Mobu (Ln) *maže* 'empoigner'; 3 Tum *móžə, mùž* 'steal', Sum *múi* 'thief'; 5 **ma'*is-> Mig *māəsò, Bid miis* 'steal'/Akk *mašā'u* 'rob, 'take away by force' (A10,1:360)// HS N 1745 **masi'*- 'take, steal'.

moH[a]r-* (> *mVr*, a long vowel points to the loss of a laryngeal) 'oil': W Hs *mây* (Hr-* > *-y-*, but **-r-* > *-r-*); 2 **mwoyVr*: Sura *mwòòr*, Mpn *mwoòr*, Ang *mwiir* (< **mwoyir*), Mnt *məyi* (**məyiy* < **məyVr*), Ank *mwer-nung*, Grk *mur-larr*; 3 **mwar-* Krkr *meru*, Bol, Ngm, Maha *mor*, Bele *mùrù, Krf mùrù, Glm mər*, Gera, Grm *mòori*, Dera *mot* (*-t* < *-r*), *mori* [**moor*]; 5 (Sm) Kir *màär*, Tala *miir*, Geji *mill*, Buli *mier*, Zaar *miir*; 6 Ngz *mèrà-k*; 7 Kul *màär*, Fyer *moo*; C **moHar-* (note the **-r-* > *-l-* shift under the influence of a laryngeal): 1 Tera (N) *mar*; 2 Mrg (Jglb) *màel* (< **mayVl-*),

(Kr) Wmd *mal*, Hld *malu*, Klb, WM, Chb *mál*, Ngw *màl*, Bura *mól*; 4 **maar-* (contraction): Gude (H) *máará*, Bch (Skn) *mààré*, Nzn (M) *mare*; 5 **wala/i* (< **mwal-* < **moHar*, note that Ch **m-* > *m-* in the glavda group): Glv (Rp) *wála*, (Jglb) Gdf *wálà*, Dxw *wili*; 6 Skr (M) *mir* (< **mari*); 7 Mukl (Jglb) *ámál*, Gis *mal*, Mofu *mál*; 9 Gdr (Jglb) *méelee*; 11 Msg *amél*, Mnj *amel mál*, 12 Masa (J) *múllá*, Peve (Kr) *mar* (if not < **mbar-* 'oil'). /Nm **mar*, Jglb **maar* 'oil', Akk *marû* 'fatten' (A10,1:307), Eg (OK) *mrh.t* 'Fett' (2:111), Arab *mrh* 'oindre' // Grm (1963:60), HS N 1784 **mori'*- /**moriḥ-* 'fat, oil'. HS **CVCVH* > Ch **CVHVC* is regular.

Ch **moHar-* 'oil' has absolutely reliable Sem and Eg parallels and can not be a Bamileke loan (cp. Bamileke **gbat* 'fat'). Even rejecting the quite obvious HS origin of this word we should bear in mind the following facts. Only a few Bamileke dialects show *mut* (Bank), *muruy* (Wrkm) or *mur* (Mama) for 'fat'. All over Bamileke this word looks like *m-vát* (Bana), *mə-gwút* (Menm), *mə-ywút* (Bnmy), etc. and it is not so easy to prove their PBamileke origin. On the other hand, *mwar/maar* is so widely spread within Ch that it should be at least a W and CCh loan from Bamileke. (Hardly each of over 40 Ch languages borrowed this word from Wurmum or Mama independently). But it is clear that PCh has nothing in common with PBamileke (**gbat* would yield Ch *gwat* or *bat*). Borrowing from Ch into Bamileke dialects seems more probable. For BC data see WS 1968:150-153).

**malu-* 'put down': W 2 Sura *mul*; C 11 Mba *mùl* 'ramasser, mettre'; E Kera *melé* 'hinsetzen, hinlegen', Kwn *mál* 'put down'.

After a vowel syncope Ch **mVt-* > **mt-* > *mc-/nt-/wt-* (> *t-/c-*); Ch **mVK-* > **mK-* > *ηK-* (> *K-*), cp. **muti/*muwat-* 'die' (II.2) and **muqa* 'chief, king' (II.6).

Except for specific environments, PCh **n-* > *n-* in all the languages. Examples.

**nu/i-nah-* 'ripen': W 1 Hs *nùuná, nàaná, niiná*; 2 Sura *nùn*, Ang *ning* 'ripe'; 3 Tng *niy*, Ngm *nu*, Bele, Krf *nú-*, Glm *ny-*, Gera, Grm *nee*; 4 Wrj, Miya, Kar *na-*, Paa, Siri *na-*, Diri *həna* (metath.?), Cagu *nehe*, Jmb *nah-*; 6 Ngz *núwáu*; 7 Bok *nun*, Df *nun*, *nuh*, Sha *nú*; E 1 Kera *né*, Mobu (Ln) *naye*; 3 Tum *ni* / Nm **nə*.

**nah-/*nay-* 'see': W 2 Sura *náa*, Ang *ne*, Chp *naa*; 3 Gera *née*, Krf *née*, Glm *ny-/*naa*; 4 Wrj *nah*, Miya *nay*, Mbu *na*, Kar *nah*; C (Kr) 1 TP *na*, Hwn *nà-dən*, Gaa *ànni*, Gbn *ni*, Boka *nè-dí*; 3 (Kr) FK *nānu*, HN *na-ta*, Kap *nà-ké*, HG *nà-gəy*, HF *né-gi*; 4 (Kr) Nzn *nahən*, *naan*, Bch *nəñ*, *ná* (Skn) /Nm **na*, Eg (18) *nw* // HS **na'-/*naw-/*nay-* N 1820 'see'.

*noja 'see, observe': C 5 (Kr) Dxw *nuye-nè* (-u- < *-o- in contact with -y-), Nak *nayà-kena*, Gava *nùgà-čina*, Glv (Rp) *nay* 'see'; 7 Mofa *-nak-* 'regarder, voir', cp. Mafa *raka* 'voir avec peine'; E 5 Bid *nak* 'observe'.

*naħar- 'become thick; fat' (note the *-r- > -l- shift due to medial *-ħ-): W **n[a]Har* > 2 Sura *négór*, Mpn *nəhər* 'thick', Grk (Yiwom, Jglb) *məħar* (< **m-nHar-*) 'fat' (n.); C **ngVI-* 'fat' (n.) (< **nyar-*, initial *ŋ-* points to the velar spirant / *ɣ* / in the place of -g-) > 5 (Jglb) Gdf *ngəla*, Dxw *nglā*; 7 Gis *mu-ngul* 'fat' (n.); E **n[a]H[a]r-* > 4 Sok (L) *nééree*; 5 Bid *neer* 'become fat'. Note that in W 2 and in C 5 **maHor-* 'oil' (see above) and **naħar-* 'thick' are both attested.

*nik- 'lick': W 4 Wrj *nəkə*, Kar *nəkə*, Paa *ləkən* (cp. Ch **nVQ-* > *IVQ-*); C 7 Mafa *naka-d* (secondary vocalism); 11 Mba *nik* 'lick'; Msg *té-nék* 'saliva' / Akk *enēqu*, Hbr *ynq* 'suck' // HS N 1872 **nik-/*nuħ-* 'lick'.

Chadic verbs of the type **nCVC-* usually derive from HS *nVCVC* verbs. Note that thiradical verbs are of the *CVCCV* or *CVCVC* structure in Ch languages (roots with initial *m-* or *n-* being the only exception). ECH initial **ŋ-* originates from Ch **nh-*. Syncope of the first vowel is not typical of **nVCV* verbs, so Ch roots of the type **ndV*, **ngV*, etc., usually go back to **nCVH-* < **nVCVH-*. Cp. **naž-* 'ask, tell' (II.3), **nco[ǵ]-* 'pull' (II.7) and the following examples:

*ħor-, **nVħor-* 'to snore', **ħur-* 'snore': W 2 Sura *ngər-òk*, Ang *ga-ngor* 'snore' (n.); 3 Bol *ngor* 'snore'; 4 **n-go/ur-* (< **nuħor-*) 'snore': Wrj *ngur-tə*, Kar *ngər-ən* (n.), Cagu *ngwar* 'snore'; 7 **ha-gor-* (< **ha-yor-*) 'snore': Bks *hagor*, Df *hagər*, Fyer *gogor*, Sha *həgər*; C 7 Mafa *ghur-ghur* id. 'bruit de ronflement'; E **ngor-* 'snore' (< **n-yur-*, note, that PCh **ng-* > *ng-* in E Ch languages): 1 (Ln) Mobu *ongore*, Ngam *ngoré*, 3 Sib *ŋwərə*, 7 Mubi (L) *ŋür-üróók* / Arab *ħrr*, *nḥr*, Jibb *ənherer* 'to snore' // HS N 1901 **nVħor-* 'snore', N 1357 **ħor-* 'snore, to snore'.

WCh **nzalu* 'pour': 3 Bol *nzólú*, Krkr *nzálú*, Dera *ale*, Ngamo *nzal*; 4 Kar *zal* / Hbr *nzl* 'flow' // HS N 1909 **nVzál-* 'flow, pour'.

**ndV'y-* 'speak, ask': W 4 Diri *nda*, Miya *and-*, Mb *nd-*; C 5 (Kr) Zxw *ndiy'a-* / Arab *nd* 'appeler quelqu'un, lui crier de venir'.

Cp. also some Ch ~ Arab parallels: C Ch 7 Mafa *ngəl-* 'cut' ~ Arab *ngl* 'fendre, percer, oter la peau'; W Ch 3 Glm *ngwal*, Gera *ŋwal* 'throw' ~ Arab *ngl* 'lancer, faire voler (cailloux)'; C Ch 7 Mafa *ngəz-* 'throw a spear' ~ Arab *nḥz* 'piquer (avec une instrument pointu)'; E Ch 5 Bid *néč-ŋéč* 'ronger' (< Ch **nHč/*nHč*) ~ Arab *nḥš* 'piquer, mordre avec les dents de devant'.

The medial consonant being a labial, initial **n-* > *l-* in a number of Ch

languages. Examples:

**nafos-*, **nufas-* 'breath': W 1 Hs *númfaášíí*, *lúmfaášíí*; 7 Sha *lufwos*, Df *nafos*, Bok *lafos*; C 10 Log *náwusə* 'soul' / Akk *napištu* (A11,1:296), Arab *nafs-* 'breath, soul' // HS N 1830 **nafus-* 'breath'.

**nim-* 'weave, plait': W 3 (Kr) Krkr *ləmusu* 'plait', Pero *ləmuyò* 'weave'; 7 Ngz *nəmú*, *ləmú* 'construire; weave, plait'; C 2 (Kr) Mrg *ilim*, Wmd, Hld *liməw*, WM *nima-di* 'plait'; 10 Log *nüm* 'plait'; E 3 Tum *ləm* 'plait (hair, rope)', Ndam (dJ) *ləmā* 'spin'; 2 Lele *lim-di* 'spin'.

**nam-* 'touch, hold': W 4 Diri *nama*; 5 (Kr) Bgh *nəmu*, Dira *ya numi*, Dwot *limiy* 'hold', Gdz *ləmi* 'touch'; C 7 (Kr) Mtk *ləməná*; 12 (Kr) Lame *ná-lám-kwə* 'touch' (cp. (Kr) Misme (Zime) *lam* id.); E 5 Bid *nyaam* 'plonger la main dans la nourriture'.

**nVm-* 'tell a lie': 2 Sura *num*, Ang *nüm*; E 3 Sib *lámá*; 5 Bid *nyiim* 'simulate, conceal' / Arab *nmm* 'lie, gossip' (v.), *nmš* 'mentir' (cp. W Hs *lámis* 'a lie' < Arab, *l-* < **n-*) // HS N 1884 **num-* 'lie' (v.).

Cp. also W **nam-* 'frog': 1 Hs *náámúúláá* 'any kind of frog'; 3 **nam-wat* 'frog': Sura *lümwat*, Ang *lamwat*, Ank *nimwət* 'frog', Mpn *nəmwát* 'toad'.

**n-* sometimes yields *l-* in **nVr-* roots, for example:

Hausa *nárè*, *lárè* 'thoroughly understand'; 3 Tng *neri* 'understand'.

W 6 Df *lárú* 'wicked'; E 1 Kera *ŋorye* 'be wicked'.

And finally the **n-* > *l-* (and **r-* > *n-/l-*, see below) shift is attested in roots with a uvular in medial position. More examples are needed to specify the conditions of this change and the languages it affects. Examples

**ni[ǵ]-* 'be heavy': W 1 Hs *nikè* 'overload'; C (Kr) **neg/x-* 'heavyness': 1 Gbn *lik-lik*, Boka *lig-lig*; 5 Dxw *nexa*; 12 Masa *nege*, Bnn *negè*.

**nawVq-/*nayVq-* 'rest, live': 2 Sura *nɔɔk* 'ausruhen', Ang *nyok* 'rest, life', Mpn *nook* 'rest' (v.); 11 Mba *lák* 'rest' (v.); E 6 Mok *likké* 'live, rest' / Akk *nāhu*, (A11,1:143), Ug *nwh*, Hbr *nwh* 'rest, be still' // HS N 1709 **nVwVq-* 'rest' (v.).

Note the same **n* > *l* shift in the same environments in EKush languages, cp. EKush **nam-* 'man' > Burji *lam-a*, EKush **nuug-* 'suck' > Galla *luug-* 'and many others' (Sa:24).

For initial **r-* see the following roots:

**rV-* 'enter, go', **rVy/*rVw-* 'run': W 2 Grk, Ank (Fp) *ru* 'enter'; 3 Bol *rii-*, Krkr *raa*, Bele, Krf, Glm *rii*, Grm *ry*, Gera *rii* 'enter'; 4 Diri *riya*, Cagu *rey* 'run'; 6 Ngz *rəwə* 'run'; 7 Kul *ro* 'enter'; C 7 Gis *ra* 'walk'; E 7 Jegu *rer* 'go' /

Arab *rwḥ* 'aller, partir'//HS N 2103 **rawah-* 'move, walk'.

**rimu-* 'moisten': W 1 Hs *rimáá*, *láimà* 'damfness'; C (Kr) 3 FK *řəm-ənu* 'dew' (> *mini* in all the other languages of the group); 5 (Kr) Glv *rum-γana*, Mnd *rma-na-rma* 'moisten'.

**rako-* > *rawak-* 'beat, fight': W 1 Hs *ráákà* 'strike, beat'; 3 Pero *rkwo* 'kill'; E 3 Tum *rág* 'beat', *rág* 'fight'; 5 Dng *róóké* 'beat'; 6 Mok 'arka' 'war'.

**r[i]ʼab-* 'clay': W 3 Dera *loḥ-uk* 'clay' (irreg. reflex of Ch **r-*); 4 **riḥu*: Paa (MS) *riḥ-ún* 'clay for pots', Wrj *rəḥə-ná*, Kar *rúḥu*, Jmb *áriḥu*, Diri *áləḥ-ən* 'clay'; 6 Ngz *rəḥá* 'pottery clay'; C 7 Mafa *rəḥəš-* 'clay for pots'; 12 **riḥu*: ZB (S) *ruḥu* 'clay', cp. (Kr) Lame *rúbú*, Peve *rub*, Bnn *lúbu-ná*, BM *lubu-na*, Masa *to-robok-ḡa* 'mud'; E 1 (J) Kwn *kí-rpe*, Mobu *kí-rbe* 'clay', *lubi-na*, Masa *to-robok-ḡa* 'mud'; 2 **gu-rm-* (< **gu-rb-*) 'clay, mud': Lele *gù-rmò*, Kbl (Cp) *kí-rpé* 'mud'; 3 **gV-rab-* 'clay': Som (L) *gí-rfē*, Tum *gab* (< **gVrab-*, contraction); 4 Sok *rāfaa* 'Ton(erde)' 5 Mig *mà-rḥál* 'clay', *rábáa-wá* 'laterite rouge'; 7 Mubi (L) *ráabò* 'clay'.

**ra-* 'dig, bury' > **raḥu-* 'hoe up': W 3 Ngm *ruye* 'hoe up', Dera (Kr) *àrèyi* 'bury'; 4 **ruyu-* (-u- < *-a- in contact with -y-) 'ridge up': Siri *ruyu*, *ruw*, Cagu *ruhu*, Paa *ruwú*, Mbu *ruu*; 5 cp. Bgh *rwak* (?-k < -g# < *-h) 'dig'; 6 Ngz *ruuyú* 'hoe (v.)'; C (Kr) 'dig': 1 TP *ra*, Hld *rə-ḡ*; 2 **la-*: Chb *là*, Mrg (*i*)*la*, Ngw *li-kwa*, Wmd *là-kəwá*, WM *là-mdá*, *lè-ko*, Bura *là-mta*; 3 HN *la-tè*, Kap *la-tà*, HF *la-tò*, FG *la-ti*, FK *řyá*; 4 Bch, Gudu *rā*, FM *ri*, Mwl *urá*, FJ *la-vič*, 7 Mafa *ra*, Gis *le* 'dig', Mafa *ra* 'creuser (pour enterrer un cadavre, un trou)'; 8 Daba *là*; 10 Bud *la*'; C (Kr) **la-* < **ra-* 'bury': 2 Bura *là-mtə*, Chb *là-bá*; 3 HG *la-nde*, HF *la-ntu*, HB *la-ndɔ*, HN, Kap *la-mte* Jglb **r-k*.

**ribi* 'rain': W 3 Tng *rip-rip* 'dripping (rain)'; E 2 Gbr *ti-rbei* 'rainy season', Lele *kú-rbiya* 'rain'; 5 Mig *ribibi* 'end of the rainy season' (cp. 1 Hs *ráábáá*; C 5 Nak *ti-rba* 'dew') / Hbr *rəbībim* 'rain'.

ni-ra[q]-* 'bow': W 3 **rinka* (metath.): Krkr, Ngm (M) *rinka*, Gera *rəka*, Dera *riga*, *rəh* 'bow', Tng *riga* 'hunt with bow and arrow' [rəka*], C (Kr) 2 **laga* > Mrg *lagá*, Klb *lágá*, Wmd *lágá*, Hld *lágá*; 3 (Kr) **n-rigi*: Kap *řigi*, FG *riḡe* (< **nrVg-*), FK *inḡi-nu* (< **in-ryi-*), HF *riḡi*, HG *ḡi*, HN *řigi*; 4 (Kr) Bch *rəḡey*, Nzn *ragəy*, FM *rāgu*, FB *rāgun*, FJ *lāḡiy*; Gudu (H) *rāḡá*; 5 **laya* (Kr): Gava, Dxw, Glv *layá*, Mnd 'ulika, Lam (M) *lexe*; 7 Mafa *leke-d* (**nr-* > (? *nl-*) > *l-* in glavda and Mafa) / Nm **rəḡa*, Jglb **rg*. Cp. Ekoid Bantu *ó-lig-*, *é-nig-*, *é-lɔg-* 'bow' (Crabb:57). Note that -k- in Ch languages never

originates from *-g-.

**riya* (?? < **riCa*, cp. Boka) 'arrow, bow': W 'bow': 2 **nV-riya* > Chp (Kr) *riyè*, Mpn *ree*, *ree*, 3 Bol *riyá*; C (Kr) 1 TP *ri*, Hwo *riye*, Gaa *riya*, Boka *riša* 'bow'; 2 Bura *la-li*, Ngw *lə-lè*, WM *li-lè*, Chb *li-lè* (redupl.) 'bow'; 12 Lame *riá*, Peve *riya*, ZB (S) *riya* 'arrow'. Hardly goes back to Ch **ni-raq-* 'bow', but contamination is highly probable.

Deviations from regular reflexation in CCh 3,5 and 7 (*l-* instead of *r-*) seem to be stimulated by an initial laryngeal lost by Ch languages but preserved in Sem (Ch **HVrVC-* > *IVC-*). See II.8 for Ch **h/hVr-* > C Ch **γ/xVl-* shift. Examples:

rako-* (? **HVrako-*) 'drive away': W 3 Bol (L) *rokk-* 'drive away', (Kr) *ròkkú*, Krkr *rakú*, Ngm *rok* 'hunt' [raku*], 4 **rako-*: Wrj *rəkw-*, Paa *raku*, Kar *rəki*, Miya *rak-*, Siri *rək*, Jmb *rək-*; 6 Ngz *raka*; C (Kr) 1 Gaa *řikə-nči*, Hwo *ruḡ-ḡən*, Gaa *řiki*; 3 HB *lùkayò* (irreg. vocalism); 4 Nzn *lākəy*, Gudu (H) *lakə* 'drive away' (irreg. initial *l-* due to contamination with **luk-* 'push': Bch *lùkòdò*, Mwl *ùlùkán*; W 1 Hs *láké* 'hit a person, knocking him down'); 5 Nak *lākaw*, Glv *lāḡwa*, Gava *lakwəlá*; E 1 (Ln) Mobu *lāágé*, Ngam *alàke*; 5 Bid 'arāk 'purchasser'. /For an initial laryngeal cp. Arab *ḥrk* 'se mouvoir', 2nd stem 'toucher une chose et lui imprimer in mouvement ou la déplacer'.

**H[o]rak-* 'be afraid; fear': W 1 Hs *rááki* 'fear'; 3 Tng *rok* 'state of becoming suddenly frightened'; C 7 Mofu *lalək* 'be afraid'; E 1 Kera *wálgá* 'fear'; 6 Mok 'òrgidè, 'ùrgidè- 'be afraid'.

**Hurabi* 'bark': C (Kr) 2 Klb *libibi*, Hld *mi-lpu-bá*; 5 Nak *laba-na*, Gava *làbá*, Glv 'alàbá; 4 Gude *arbibin*, Mwl 'ùlbí, FB *riḥu-n*, FJ *libi*; 12 cp. ZB (S) *róbó* 'plumer'; E 2 Lele *ùrbó*, Kbl (Cp) *ùrbá* 'bark'; 6 Mok 'ùrbí'yè 'dry bark' / Jglb **ḥ-r*. Cp. Tubu *arfe* 'Fell', Kanuri *karabi* 'Haut'.

HVrVb- 'untie': C Mnd *lèvelèvá*; E 3 Tum *əṛəb*.

It seems that Ch initial **r-* yielded *l-/n-* in roots with a uvular or the emphatic velar in medial position, cp. **rVḡ-* 'ask' (II.5) and the following root:

**raḥu* 'fill': W 5 (Kr) Kir *lyek-m*, Zul *lax-*; C (Kr) 1 Boka *nəx-ḡadā*, Hwo *lik*, 3 HN *laxu-mte*, HB *nəxù-ndɔ*, FK *ḡxu*, HG *xužē* (< **nxu-*); 5 Dxw *rxù-nayá*, Gava *ryá-nufā*, Glv (Rp) *ray*; 7 Mofu *-rāh-* 'fill', Gis *nah* 'be full'.

For initial **l-* see the following roots:

**loḡ-* 'lick, taste': W 6 Df *loḡ*, Bok *lok* 'lick'; C 1 (Kr) Gaa, Gbn *lèk-te*, Boka *lek-tə* 'lick'; 7 Mafa *lóékwé* 'petite quantité de bière de mil donnée pour goûter'; E 5 Mig *léllikò* (redupl.) 'goûter du bou de la linge', *lòkkókò*, Bid

lokok 'baver' / Arab *l'q* 'lick', Hbr *lqq* // HS N 1697 *IV_k- 'lick'.

*luma 'eat hard food': W 1 Hs *lāā-luma* 'chewing by a toothless mouth'; C 11 Mnj *limi* 'bite', Mba *lúm* 'bite', Msg *láma*, *lúma* 'eat hard food'; E 5 Bid *lelèm* 'to taste' / Akk *lamāmu* 'chew' // HS N 1687 *lum- 'eat'.

*IV-/w/y-/ *lul- 'speak, cry': W 3 Bol *luul* 'cry' (v.), Glm *luw* 'speak'; 7 Df *laal*, Kul *lay*, Bok *lal* 'cry' (n.) Bok *lūl* 'cry' (v.); C *IV-/w- 'speak': 5 Dwx (Kr) *la'i*; 7 Gis (Mo) *lu*; 6 Musgoy (Kr) *liwā*; E 4 Sok *lolólle* 'Geschrei'.

*la_{ko}- 'throw, sow': W 4 Jmb *la_kw-* 'sow'; 5 (Kr) Geji *lāki*, Buli *lagigi* 'throw'; C 3 (Kr) HN *lākay* 'throw' // Arab *lq^r* 'jeter, lancer quelque chose'.

*lab- 'soft': W 4; 5 Brm (Kr) *ilulub*; C 5 (Kr) Dwx *la_bulebi* (< *lbH); E 2 *lom-d- (< *lob-d-): Lele *lomdi*, Kbl (Cp) *lomdā*; 3 Som, Ndam (J) *lāw*.

*IV-/ *IVy- 'go': W 1 Hs *láyā*, *lúulā* 'run away'; 3 Dera *loi* 'accompany', Krkr *l-* 'go'; C 2 (Kr) Mrg *(i)lū*; 3 (Kr) HB *lu*, Kap *li*; 5a (L) Lam *l-*; 7 Gis *li'e* 'walk'; 7 (Kr) Daba *lāxu* 'accompany'; 10 Log *ló*, Glf *lu* 'come', Bud *lō*.

*ha-lesi-um 'your tongue': W 1 Hs *háršē*, *hálšē*; 2 Ang *leus* (< *lemus, metath.), Sura, Mnt *liis*, Grk *lis*; 3 *lisi-um: Bol *lisim*, Krkr (M) *lusu* (< *lisum), (J) *lúúsəm*, Ngm *linsa* (< *limsa, metath.), Gera *de-limsa*, Grm *límsí*, Maha *ḍilis*, Krf *ilmiší* [*les-m]; 7 Fyer *lés*, Bok *'alis*, Df *lís*, Kul *'alús*; 5 (Sm) Bgh *ni-lis*, Zaar *ris-in*, Gmt (Jg) *laši*; C 7 Mtk (Jglb) *nē'én/néné*, *lé'én/léné*, Mafa *lene* (according to Jglb (v.2:169) medial -s- "has left a trace as" *: *lesem > *lesen > le'en > leen), Mofu *'ərné*, Gis *'ime* (< *elne < *leen-, syncope of the medial vowel), Bld *ne*; 9 Gdr (Jglb) *əržum* (< *əržum < *əVlšum < *əls-um); 11 Msg *álés*, *alesi*, *alxi*, Mnj *élés*, Mba *násáy* (a Kotoko loan?); 10 Log *nši*, Kus Glf (Mo) *nxi*, *nši* (*-s- > -š- in contact with -l- and then *-lš- > -nš-); 12 Masa (J) *sín-ná* (< *sil-na), (Kr) Peve *šele*, Lame *šidí*, ZB (S) *sili* (according to Jglb, metath. < Ch *IVs- (v.2:169)); E *k/d-les-um: 1 Kera *kə-səl* (metath. < *kV-IVs-), Kwn (L) *ke-les-um* 'my tongue', (J) *kí-lisi*; 2 *kV-len- (< *kV-lesn- < *kV-lesm-?): Gbr *ke-len-din* 'my tongue', Kbl *k-lan-di*, Drm *ké-lene*; 3 *dV-IVs-: Sum (L) *dí-lés-um*, Tum *dúž* (contraction < *dV-IVs-), Ndam (dJ) *dās*; 4 Sok *sólán-um* (metath.); 5 Dng *léséé*, Mig *liit* (< *lis-t, with a body- parts marker); 6 Mok *'ilzé*; 7 Bir *liisi*, Mubi *lísí*, Jegu *léesó*. WCh 4 *sina-k seems to be related to Eg *snk* 'tongue', not to originate from *ls /Nm *ahləsi, Jglb *ls₃ / Arab *lisān-*, Jib *elsén*, *ləšān* (Lsl:318) // Grm (1963:63), HS N 1666 *les-.

Bearing in mind Ch *IVs- > nVs-, rVs- in the preceding root, we may well reconstruct the initial *l- in some more cases: *laHVs- 'branch': W 1 Hs

léésé, *réésé*; C cp. 7 Mofu *las* 'tree'; E 5 Bid *'aráasá* 'branches covering a well'; 6 Mok *láyisá*.

W *IVs- 'close': 2 Ang *luus* 'close', Mpn *luas* 'plug a hole with clay, block up'; 3 Tng *nase*.

*IVs- (? *luHas-) 'black': C 5 (Kr) Gava *lusá*, (Jglb): Gdf *lúsá*, Dwx *lúsá*, Nak *lúsá*; E 7 Mubi *ráásá*.

W *I[o]Hač- 'rub': W 2 Sura *loyas*; 3 Glm *nāas*, Bol *ras-*, Krf *ráččú-wo*.

In the following root with two liquids progressive as well as regressive assim. took place (-l- > -r- and, on the contrary, -r- > -l-).

*a-luba-ri 'lion': W 2 Sura *rəḥəl* (metath.) 'wild cat'; C (Kr) 1 Hwn *lifari* 2 Mrg *ha-ləvəri*, Klb *levəri*, Chb *'alvəri*, WM *ləvəri*, Hld *luvəri*, 3 HF *lùvəri*, Kap *nivəri*, HB *livəri*, HN *livəri*; 4 FM *lùvəri*, Gude *livára*, FJ *žùvəri* (secondary lateral); 5a Lmn (L) *ərvərə*; 5 Mnd *ərvare*, *'uruvwəri*, Glv *'arvərə*, Gava *'urwvara*, Dwx *ərvire*; 7 Mtk (Kr) *laval* 'hyena'; E 3 Sum (L) *larbá* 'leopard' (metath.) /Jglb *rəb* 'leopard, lion'. Akk *lab'u* 'lion', Arab *labu-* 'lioness' // HS N *labi- / *liba-.

Followed by a laryngeal PCh *l- yields r- in bata languages:

*lub- (< *luHVb-) 'be tired': W 3 Krkr *ləb-*; C 3 (Kr) HF *liḥi* (< *luḥi), Kap *luḥwe*; 4 (Kr) FM *rūbu* 'fatigue', *rip* 'be tired'; 5 Glv (Rp) *lipa* 'weak'; 12 (Kr) *lob- < *lub-: Bnn *lobuwa*, BM *lɔbiya* / Arab *lgb* 'be tired'.

*luHun- 'dry season': W 2 Sura *lùgùn*, Ank *luun*; C 4 (Kr) FM *rùḥù*, FB *rùḥùn*, Nzn *rìn-či*.

C *la[q]a 'axe' (< Ch *laqa): 4 (Kr) Gude *raxa*, FB *rəxan*, FM *rāxa*, FJ *laxa* 'axe' / Eg *nh* (TS) 'knife'.

It seems that the reflexes of PCh *HVIVC- and *HVrVC- coincided in a number of languages (both > rVC in bole, Northern bauchi and bata, IVC in bura and glavda languages). Hausa preserves the PCh liquid. Note, that Ch *HVI- > N bauchi group HVI-, but *HVIVC- > rVC-, CVHVI- > CVr-, which means, that the shift occurs in contact with a laryngeal, namely: *HVIVC- > HIVC- > rVC-, CVHVI- > CVHI- > CVr- (cp. *waHal- 'weep' > [*waHI-] > Jmb *wara*, Cagu *wure*). It cannot be excluded that one more phoneme of this series should be reconstructed to account for irregularities in individual languages. But there is a problem with *n* and *l* in Sem as well, so it should be solved on the HS, not on the Ch level. Cp. *Huliḳu 'ulcer, pimple' (II.5).

*Halič- 'coal': W 3 *riḍu 'coal': Ngm *ruḍu*; C (Kr) 1 *a/[i]ž- 'coal': Hwn *'āšilē* (metath.) Gaa *'ilšā*, Gbn *ilše*, Boka *ilžə* (voicing of Ch *-č- in a cluster); Gaa *'ilšā* 'fire'; 3 FK *rišiši*, Kap *řeš-kwùni*; 4 Gudu *rišéšé* (< *riHVs-, metath.). This root may be related to Arab *lzy* 'brûler'. Cp. E *ruč- 'roast,

burn': 1 Tum *ruʒ* 'burn'; 5 Bid *'éred* 'roast'. Note the **l- > r-* shift, stimulated by the initial laryngeal or by the medial affricate.

**HVlubi* (> **luHVbi*) 'moisten': W 1 Hs *lùbùlùbùu* 'sogginess'; 3 Bol *rubii* 'wet'; 4 Miya *rəb-* 'be wet'; C (Kr) 'moisten': 2 Hld *luḡu-ri*, Chb *lup-ti*, Klb *alüb-tü*, Bura *libə*, WM *ləb-di*, Wmd *lub-ta*, 3 FG *luḡwi-ti*, Kap *lùḡi-kè*, HF *ləḡə-ši*, FK *yəlḡu-tu*'; 4 FM *rùbu-ft*, Nzn *mə-rəḡ-n*, Mwl *ùrùḡi*, Gude *rubə-tiḡ*, Bcm *rúbé*, Gudu (H) *rəḡə*; 5 Gava *lùḡu-gana*; 7 Mafa *rùḡ-* 'mettre à tremper (du mil, une peau sèche)', Mofu *-lá-ləḡ-* 'amollir en faisant tremper'; 8 Daba (Kr) *lùḡ*; 10 Log *lebuu* 'waschen'; 12 ZB (S) *láb*, E 1 Kera *lúḡi* 'eintauschen'; 3 Som (J) *lāwé*, Ndam (dJ) *lwāp* 'wet' // Arab *hlb* 'tremper, mouiller' // HS N 1196 **hulüb-* 'soak'.

**[ha]-lub-* (with a body-parts prefix) 'heart, liver': W 3 Tng *rubo*, Dera *ru(w)ò*, (Sh) Bol *rəḡ-sə*, Krkr *rùḡu-sò*, Ngm *rùḡ-sò* 'liver' [i^hrəḡso]; C (Kr) 2 Klb *libibi*, Hld *mi-lpubə* 'heart'; 5 **xV-IVb->* 'urVvi > 'urvi: Gava 'urvə, Glv *rivi-ḡiya*, Mnd 'urvə-ḡudé, Nak *iirivi-de* 'heart', Nak *irva*, Glv 'uryə 'liver' (irreg. reflex of *-r-* in glavda languages as compensation for the lenition of **-b-*, cp. **a-luba-ri* 'lion'); E 6 Mok 'ùlḡó 'heart' / Akk *libbu*, Arab *lubb-* 'heart', etc. (Lsl:305).

Cp. also W **(HV)IVk-* 'moisten, to wet': 2 Sura *lok* 'wet', Mpn *lòk* 'wet, end of the wet season'; 3 Dera *reke* 'moisten'.

C 4 (Kr) **xul/ruba* 'baboon': FM *xùrvu*, FJ *xoluve*, Gude *xurba* 'baboon', FB *xùrùvin*, Gudu (Sk) *řwába* (< **ruwuba* < **ruHuba*) 'monkey'.

Initial *w-* and *y-* are rather rare in the Chadic languages. Sometimes it is not so easy to distinguish between **wu-* and **u-* as well as between **ye-* and **e-*. It seems that the *w-* ~ *o-* variants point to Ch **o-*. By assim. with an emphatic in medial position Chadic **wuḡ-* > **uḡ-* and **yiḡ-* > **iḡ-*. See **wuḡi* 'lightning', **waHad-* 'give' (II.2) **waḡ/ay-* 'to rot' (II.3), **wapin-* 'vomit' (v.) (II.8) and the following examples.

**waḡ-* 'cut, stab': W 1 Hs *wáásə* 'sharpen'; 5 (Kr) Gdz *waši*, Buli *wəšù* 'chop'; C 12 (J) ZB *wáš* 'cut hair'; E 5 Mig *wááčó* 'stab', Bid *waač* 'pierce with a knife, a spear', Dng *wáátye* 'pierce, stab'.

**waḡi* 'faeces': W 4 Kar *wáḡə*, Miya *wáḡə*, Paa, Siri *wúḡi*, Mb *waadə*, Jmb *wáḡi*; 5 (K) Brm *wárr*; C (Kr) 3 HN *wáḡiwade*; E 1 Tum *wád* 'faeces', Ndam (J) *wuda* 'defecate'; 4 Mubi *wáḡə*, Jegu *wáḡi* 'defecate' / Jglb *wḡ*.

**ha-wuyar* 'neck': W 1 Hs *wúyá*; 2 Grk *arreu* (< **a-rew*, metath.); 3 Krkr *wulo*, Dera *wuro*; 4 **hV-wyir-*: Wrij *yyir-na*, Kar (y) *wír*, Paa (MS) *rei*, Mbu

(y) *wíro*, Miya *wir*, Cagu *wiré*, Siri *yiri*, Jmb *yirá*; 5 (Sm) **wiyar*: Kir *uyar*, Tala *yaar*, Grnt *yár*, Geji *yaál*, Buli *yaar*, (Go) *iyaar*, Tule *yààrə*, Zaar *yér*; 7 Kul (J) *wur*; C **HV-wurya* (PCh laryngeal is traced only in Teraand Bachama): 1 Tera (N) *g'ura*, (Kr) Hwn *wùràra*; 2 (Kr) Bura *wilyə*, Mrg, Chb *wiya*, Klb (M) *wulya*; 3 (Kr) HN *wuře*, FK, FG, HB *wuři*; 6 Skr (Mo) *wúla*; 4 Bch (Skn) *hùrá*, (Kr) *wura*, Gude *ura*, Nzn *wuro*, Gudu *wùrá*, FJ *úlá*; 5a Lmn (M) *wurek*, *wulek*; 8 Daba (Jglb) *wilə*, 10 Gdr (Mo) *wul*; 11 Msg (Mo) *úlla*; E 1 **k-ur-*: Kwn (L) *k-ir-im* 'mein Hals', (J) *kəř*, Kera *k-ur* 'neck'; 2 Lele *k-òr-gə*, Drm *k-or-mu* 'mein Hals'; 5 Mig *urè*; 6 Mok *óré*; 7 (Jglb) Mubi *wíir*, Jegu *were* / Nm **wəra*, Jglb *gdyr* (1:126) // cp. Eg *iw'y.t* (gr) 'Kehle (des Gegners, die durchbohrt wird)'

**w[a]k-* 'fall': W 3 Dera *wukot*, Tng *wuge*, uk; C 5 Mofu *wak-* / Arab *wqf* 'tomber' // HS N 2518 **waka-* 'fall'.

**waHal-* 'weep': W 1 Hs *há-wááyə* 'tears' (*ha-* is a body-parts prefix); 2 **waHal* > *waal* > Ang *waal*, Sura, Chp *wal*, Mpn *waal*; 4 **war-* (< **waHI-*): Jmb *wara*, Cagu *wure*; E **aI-/*iI-* (total loss of the first syllable): 2 Lele *ile* (vowel assim., or < **[wa]HI-*); 4 Sok *'áále-áále* 'weep', *olu* 'funeral song'; 5 Dng *ale* 'weep'; 6 Mok *'oolé*, *'iilé* 'pleurer'; 7 Mubi (L) *ilééli* 'Tränen'.

**wa'y-* 'go, come': W 2 Ang *wee* 'return', Mnt *wa* 'go away'; 3 Dera, Tng *wa-* 'come'; 7 Fyer *wu*, Bks *wa* 'go (away)'; C 1 Hwn *wi* 'go'; 10 Mba *wo* 'come'; E 3 Sum *wa* 'run' / Eg *w'y* (MK) 'come', Omot Kaf, Anf *waa* 'come' // HS N 2489 **wa-/*way-* 'come'.

**yaw/-* 'call': W 3 Perp *yo*; C 4 (Kr) Gudu *'ya*; 12 (Kr) Masa *yu-mo*, BM *ya-mo*, Bnn *ya-mu* (also 2 Chb *yuwe*; 3 FK *yiwa-*, HN *yuwe* 'ask'); E 2 Gbr *ye* / Eg *iy* (BD) 'saying', Kush Saho *ya-*, Hadiya *yi-* 'say'. HS N 2564 **ya-* 'call, speak'.

**yag-* 'shake': W 2 Ang *yok*; E 1 Tum *yəəg*, Ndam (dJ) *yiksə*; 5 Mig *yəggò*.

**ya-/*yaw-* 'go': W 1 Hs *yááwə* 'wander through'; 2 Grk *ya* 'go', Mnt *yayee* 'follow'; 3 Dera *ya*, Krf *yow-* 'go'; 5 (Kr) Bgh *yuway* 'run'; 7 Df *yú*; 7 Ngz *ya*; C 8 (Kr) Daba *yə* 'come'; E 2 Tum *yə* 'run'; 2 Tob *yə* 'walk' // Kush Somali *yaa-* 'run away', Berb Qabyle *əyya* 'come' (Imperative) // HS N 2566 **ya-* 'go, come'.

Appendix I. Consonants in word initial position

Table 9. Sura languages

P sura	*p	*b	*b	*f	*t	*d	*d	*s	*s	*s	*c	*z	*z	*k	*g	*g	*h	*
Sura	p	b	b	f,vw	t	d	d	s,si	s	s	c	z	z	k,ci	g	g	h	'
Mupun	p	b	b	f,vw	t	d	d	s	s	s	c	z	z	k	g	g	h	'
Angas	p	b	b	f,vw	t	d	d	s,si	s	s	c	z	z	k	g	g	h	'
Chip	p	b	b	f	t	d	d	s,si	s	s	s,si			k,ci	g	h	h	'
Montol	p	b	b	f,vw	t	d	d	s,si	s	s	s,si	s		k,ci	g	h	h	'
Gerka	p	b	b	f	t	d	d	t	s	t,si		t		k,si	g	h	h	'
Ankwe	p	b	b	f	t	d	d	s	s	s				k	g	h	h	'

1. *bVVC(< Ch *bVH/KVC-) > *fVVC > vVVC > *vVC(> Gerka fVC).

Table 10. Bole-Tangale languages

Proto bole	*p	*b	*b	*p	*t	*d	*d	*s	(*c)	*z	*c	*z	*k	*g	(*q)	*h	*h
Bolewa	p	b	b	f	t	d	d	s	s,c	z	z	c	z	k,si	g	k	'
Krkr	f	b	b	f	t	d	d	s	s	z	c	z	k,ci	g	k		h
Dera	p	b	b	p	t	d	d	w/y, si	s	w,y		y	k,si	g	k		'
Tanga-ae	p	p,b (b)	p	t	t,n	d	w/y, s	s	w, Ø	s	y,s	k	k	k	Ø	Ø	
Ngamo	f	b	b	f,h	t	d	d	s	s	z,z	c	z	k	g	k	ha, Ø	h
Kirfi	f	b	b	f	t	d	d	s	s	z	c	z	k	g	k		'
Galambu	p	b	b	p	t	d	d	s,si	s	z	c	z	k	g	g		'
Gera	p,f	b	b	f	t	d	d	s,si	s	z		z	k	g	k	h	h
Grm	p	b	b	f	t	d	d	s,si	s	z,z		z	k	g	g,k		'
Bele	f	b	b	f	t	d	d	h	h	h			k	g	g		'

1. Ch *kVS- > Kakekare cVS-.

Table 11. Northern bauchi languages

P N bauchi	Warji	Kariya	Diri	Paa	Mburku	Miya	Cagu	Siri	Jimbin	PCh
*p	p	p	p,f	p	p	p	p, pVc->w/fVc-	p, fVS	p	*p
*b	b	b	b,b	p	p	p	p	p	b	*p
*b	b	b	b	b	b	b	b	b	b	*b
*f	f	f	f	f	*fVγ>vVγ	f	f	f	f	*f
*v	v	v	v	v	v	v	v	v	v	-b,-f
*t	t	t	t,ci	t,ci	t	t	t	t	t	*t
*t	t	t	t	t	t	t	t	t	t	*t
*d	d,zi	d	d	d,zi	d	d	d	d	d	*d
*d	d	d	d	d	d	d	d	d	d	*d
*s	s,si	s,si	s,si	s	s,si	s,si	s,ci	s,si	s	*s
*c	c,ci	c,ci	s,si	s,ci	c	c	c	c,ci	c,si	*c
*c	c,ci	s,ci	c,s	c	c,s	s	c,s	c		*c
*z	z,zi	z,zi	z,zi	z,zi	z,zi	z,zi	z,zi	z,zi	z,zi	*z
*c	c	c,si	c	c	c	c	c,si	c,c	s,si	*c
*c	c,ci	c,ci	c,s	c	c,ci	c,ci	s	c		*c
*z	z	z	z	z	z	z	z	z	z	*z
*z	z,l	l	z	z	z,l	l	z,l	z,s		*z
*s	s	s	s	s	s	s	s	s	s	*s
*s	s	-	-	s	s	s	s	s	s,s	*s
*k	k	k	k	k	k	k	k	k	k	*k
*k	k	k,k	k	k	k	k	k	k	k,k	*k
*g	g	g	g	g	g	g	g	g	g	*g
(*q)	k,g	k	k	k	k,g	k,g	k,g	k,g	g	*q
(*q)	k	k	k		k			k	g	*q
*h	g	g	g	h	γ	g	g	γ	γ	*h
*h	γ	γ	Ø	h	γ	γ	Ø	γ	Ø	*h
*γ	γ	γ	(h)	h	γ	γ	γ,h	γ	γ	*γ
*h	h		h	h		h		h	Ø	*h

1. *hw/y- > w/y- in all the languages except for Paa; 2. *γγ- > Warji, Miya y/i-; *γw- > Cagu w-; 3. *hw- > Warji, Miya, Diri, Siri w-.

Table 16. Mandara languages.

Pman dara	*p	*b	*b	*f	*v	*t	*d	*d	*s	*o	*z	*ō	*j	*z̄	*s̄	*k	*g	*γ	*x
Mandara	p, fu	b	b	f	v	t	d, ži	d	s	c	z	?	ž	š		k	g	x	x, wu
Glavda	p	b	b, b	f	v, wu	t, d	d		s, nzi	c, ci	z, nzi	(č)	ž	š		k	g	γ	x
Dghwede	p	b	b	f	v	t	d	d	s	c	z	ž	š			k	g	γ, gu	x
Gava	p	b	b	f, vuS	v, wu	t	d	d	s	c	z	ž	š			k	g	γ	x
Naka-ci	p	b	b	f, vuS	v, wu	t	d	d	s	c	z	ž	š			k	g	γ	x

1. Ch *puk- → fuk-. 2. Ch *tok- → co/ak-. 3. Ch *kuR- → xuR-. 4. *guR- → γur-

Table 17. Matakam languages.

P ma takam	*p	*b	*b	*f	*t	*d	*d	*s	*o	*z	*ō	(*č-)	*j	*z̄	*s̄	*k	*g	*h
Gisi-ga	p, f	b, v	b	f, -v	t, č	d	d	s	s	z		ž, nž		ž	š	k	g	h
Mafa	p	b, HVB >v	b	f, -v	t, č/u	d	d	s	s, nž	z	c, č/e	c, č/e	ž, ž/e	ž	š	k	g	h
Mofu	p	b, v	b	f, -v	t, č	d	d	s	c, nž	z	c, č/e	c, č/e	ž, ž/e	ž	š	k, č/e	g	h

Table 18. Masa languages.

Proto masa	*p	*b	*b	*f	*t	*d	*d	*s	*o	*z	*ō	*j	*z̄	*s̄	*k	*g	*h	*h
Masa	p, fV	b	b	f, t, žo	t, č	d, ž	d	s	*nc- >č	(č)		š		(t)	k	g	h	h
Bnn	p, f	b, p	b	f	t, č	d	d	s	*nc- >č	s	č	š	(š)	š	k	g	h	
BM	p	b		f, t, ž	d	d	s			s				š	k	g		
Lame	p	b		f, -v	t, č/e	d	d	s		z, ž	č	ž		š	k	g		
Peve		b		f, -v	t, č	d	d	s	s	z, ž	č		(ž)	š	k	g	(h)	
Zime Batna	p	b, -v	b	f, -v	t, ci	d, ži	d	s	c, nc/nž	z, nž	c, č	ž	ž	š	k	g	h	h, i

1. Ch *kuC- → huC-

Table 12. Tera languages

Proto tera	*p	*b	*b	*f	*t	*d	*d	*s	*o	*z	(*ō-)	*j	*z̄	*s̄	*k	*g	(q)	*γ	*h-
Tera	p	v, b	b	f, v	t, d	d	d	z, nž	s, nž	z	č	ž	ž	š	k	g	xw	γ	h-
Hwona	p, fVc	p	b	f	t, nd	d	d	s	c, č	s	č	ž	ž	š	k	g	k	x	h
Gaanda	p, fVc	p	b	f	t, nd	d	d	s	č	s	č	ž	ž	š	k	g	k	h	h
Gabin	p, fVc	p	b	f	t, nd	d	d	s	č	s	č	ž	ž	š	k	g	k	h	h
Boka	p, fVc	p	b	f	t, nd	d	d	s	s, č	s	č	ž	ž	š	k	g	k	x	h

1. *tuPi > čipi. 2. *xw- > w- in Gabin and Gaanda. 2. *hw- > w- in Tera, Gabin, Gaanda.

Table 13. Bura languages.

Proto bura	*p	*b	*b	*f	*t	*d	*d	*s	*o	*z	*ō-	*j	*z̄	*s̄	*k	*g	*γ	*h-
Bura	p	p	b	f	t	d	d	d	s	c	z	ž	ž	š	k	g	x	h
Cibak	p, -b	p	b	f, vu	t	d	d	d	s	c	z	(s)	ž	ž	k	g	γ	x
WM	p	p	b	f, vu	t	d	d	d	s		z	ž	ž	š	k	g	x	h
Kilba	p	p	b	f, vu	t	d	d	d	s	c	z	ž	ž	š	k	g	h	h
Hildi	p	p	b	f	t	d	d	d	s	c	z	ž	ž	š	k	g	x	h
Wamdiu	p	p	b	f	t	d	d	d	s	c	z	ž	ž	š	k	g	γ	h
Margi	p	p	b	f, vu	t	d	d	d	s	c, mč	z	ž	ž	š	k	g	γ	h

1. *pVc > Mrg bVc, Wmd bVc; 2. *pVz- > Kb, Hld, Wmd bVz-. 3. *tis- > čis-. 2. tuPi > zuPi/cuPi; 3. toP- > coP- > caP-; 4. *ntoP- > nc-; 5. *diPu > zu/iPu.

Table 14. Higi Languages.

	p_{-}	b_{-}	b_{-}	f_{-}	v_{-}	t_{-}	d_{-}	d_{-}	s_{-}	o_{-}	z_{-}	\tilde{c}_{-}	\tilde{z}_{-}	\tilde{s}_{-}	k_{-}	g_{-}	γ_{-}	x_{-}
Proto hiigi																		
Higi Nkafa	$p_{-}^{*}p_{-}^{*}t_{-}^{*} > p_{-}^{*}o_{-}^{*}, p_{-}^{*}t_{-}^{*} > t_{-}$	$b_{-}, -v_{-}$	b_{-}	$f_{-}, v_{-}, -v_{-}$	v_{-}	t_{-}	d_{-}	d_{-}	s_{-}	c_{-}, n_{-}	z_{-}		\tilde{z}_{-}	\tilde{s}_{-}	k_{-}	g_{-}	γ_{-}	x_{-}
Higi Baza	$p_{-}^{*}p_{-}^{*}s_{-}^{*} > w_{-}s_{-}$	$b_{-}, -v_{-}$	b_{-}	$f_{-}, v_{-}, -v_{-}$	v_{-}	t_{-}	d_{-}	d_{-}	s_{-}	c_{-}, n_{-}	z_{-}	$n_{-}^{*} > n_{-}^{*} \tilde{z}_{-}$	\tilde{z}_{-}	\tilde{s}_{-}	k_{-}	g_{-}	γ_{-}	x_{-}, x_{-}'
Kapsiki	$p_{-}^{*}p_{-}^{*}t_{-}^{*} > w_{-}t_{-}$	$b_{-}, -v_{-}$	b_{-}	$f_{-}, v_{-}, -v_{-}$	v_{-}	t_{-}	d_{-}	d_{-}	s_{-}	c_{-}, n_{-}	z_{-}	\tilde{c}_{-}	\tilde{z}_{-}	\tilde{s}_{-}	k_{-}	g_{-}	x_{-}	x_{-}
Higi Ghye	$p_{-}^{*}p_{-}^{*}s_{-}^{*} > w_{-}s_{-}$	$b_{-}, p_{-}^{*}t_{-}^{*}, -f_{-}$	b_{-}	f_{-}	v_{-}	t_{-}	d_{-}	d_{-}	s_{-}	c_{-}, s_{-}	z_{-}		\tilde{z}_{-}	\tilde{s}_{-}	k_{-}	g_{-}	γ_{-}, k_{-}	x_{-}
Higi Futu	p_{-}	$b_{-}, -v_{-}$	b_{-}	$f_{-}, v_{-}, -v_{-}$	v_{-}	t_{-}	d_{-}	d_{-}	s_{-}	c_{-}, s_{-}	z_{-}		\tilde{z}_{-}	\tilde{s}_{-}	k_{-}	g_{-}	γ_{-}	x_{-}
Fali Kiria	$p_{-}^{*}p_{-}^{*}t_{-}^{*} > t_{-}$	$b_{-}, -v_{-}$	b_{-}	$f_{-}, v_{-}, -v_{-}$	v_{-}	t_{-}			s_{-}		z_{-}	$c_{-} \tilde{c}_{-}$	\tilde{z}_{-}	\tilde{s}_{-}	k_{-}	g_{-}	γ_{-}	x_{-}, x_{-}'
Fali Gili	p_{-}	$b_{-}, -v_{-}$	b_{-}	$f_{-}, v_{-}, -v_{-}$	v_{-}	t_{-}			s_{-}	c_{-}	z_{-}	c_{-}, \tilde{c}_{-}	\tilde{z}_{-}	\tilde{s}_{-}	k_{-}	g_{-}	γ_{-}, x_{-}	x_{-}

1. $*H/p \rightarrow b$, HB $P_{-}b$, HG p_{-} ; 2. $*N/S_{-} \rightarrow v/S_{-}$, HG $N_{-}v$; 3. $*b/Vn \rightarrow v/Vn$; 3. $*mUp_1 \rightarrow mOff_1$; 4. $*dIPu$ in Kap and HF; 5. $*ngi \rightarrow nji$ in HN, HB, HF; 6. Ch $*k \rightarrow x$ under the influence of medial $-l$.

	$\#p$	$\#p_{\perp}$	$\#b$	$\#b_{\perp}$	$\#f$	$\#f_{\perp}$	$\#v$	$\#t$	$\#d$	$\#d_{\perp}$	$\#s$	$\#z$	$\#c$	$\#c_{\perp}$	$\#j$	$\#j_{\perp}$	$\#s$	$\#k$	$\#g$	$(\#y)$	$\#x$	$\#h$
P bata	p	p_{\perp}	b	b_{\perp}	f	f_{\perp}	v	$t, \bar{c}, i, n, \bar{z}$	d	\bar{d}, \bar{j}, i	s	z	\bar{c}	c, \bar{c}, i	\bar{j}, i	\bar{j}, \bar{j}	\hat{z}	\hat{s}	g	$x', -g$	x	x
FJ	$p, -v$	f, p_{\perp}	b	b, b_{\perp}	f	f	v	t, \bar{c}, i	d	\bar{d}	s	z	\bar{c}	c	\bar{j}, i	\bar{j}, \bar{j}	\hat{z}	\hat{s}	k	g	$x, -g$	x
FB	$p, -v$	f	b	b, b_{\perp}	f	f	v	t, \bar{c}, i	d	\bar{d}	s	z	\bar{c}	c	\bar{j}, i	\bar{j}, \bar{j}	\hat{z}	\hat{s}	k	g	x	x
FMM	$p, -v$	f	$b, -b \triangleright v$	$b, -b \triangleright v$	f	f	v	t, \bar{c}, i	d	\bar{d}	s	z	\bar{c}	c	\bar{j}, i	\bar{j}, \bar{j}	\hat{z}	\hat{s}	k	g	x	x
Gudu	p	f	$b, -b \triangleright v$	$b, -b \triangleright v$	f	f	v	t	d	\bar{d}, \bar{d}	s	z	\bar{c}	c	\bar{j}, i	\bar{j}, \bar{j}	\hat{z}	\hat{s}	k	g	h	h
Mwl	p	f	b	b	f	f	v	t	d	\bar{d}	s	z, \bar{j}, i	\bar{c}	c	\bar{j}, i	\bar{j}, \bar{j}	\hat{z}	\hat{s}	k	g	h	h, \emptyset
Bch	$p, p \triangleright f$	f	b	b	f	f	v	t	d	\bar{d}	s	s	\bar{c}	c	\bar{j}, i	\bar{j}, \bar{j}	\hat{z}	\hat{s}	k	g	h, g^w	h
Gude	p	f, p_{\perp}	$b, b \triangleright v$	$b, b \triangleright v$	f	f	v	t, \bar{c}, i	d	\bar{d}	s	$z, n, \bar{j}, \bar{j}, i$	\bar{c}	c, \bar{c}, i	\bar{j}, i	\bar{j}, \bar{j}	\hat{z}	\hat{s}	k	g	x	h
Nzan-gi	p	b, b_{\perp}	$b, b \triangleright v$	$b, b \triangleright v$	f	f	v	t, \bar{c}, i	d	\bar{d}, \bar{j}, i	s	\bar{c}	\bar{c}, \bar{j}	\bar{c}, \bar{j}	\bar{j}, i	\bar{j}, \bar{j}	\hat{z}	\hat{s}	k	g	h, x	x, h

1. $pVz \rightarrow FJ$, Gudu	2. Ch $*[l]hCu\phi \rightarrow \tilde{j}iCu\phi$	3. $*ndi \rightarrow n\tilde{j}$ in Gude and Gudu.	4. $*\tilde{c} \rightarrow \tilde{j}$ in case the second consonant is a voice one.	5. $*ku\phi \rightarrow *w\phi$.
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*sVHop- (<*ēVHop-) 'hair' and *čeHap-/čapVH- rty 'catch' in.11). Still, in such roots reflexes different from those of Ch *-p- are attested and we can quite reasonably reconstruct an emphatic labial. It is not quite clear whether *-p- was a PCh or a P WCh, etc., phoneme. See the following roots:

*luHip- (<*luHip-) 'cover': W 1 Hs *lú-lùḅaa* 'completely cover the body with clothes'; 3 *lip- : Bol *libḅ-*, Dera *lipe* ; C 7 Mofu *-lāp-* 'plier, retrousser', Mafa *lép-* 'poser des tiges ou des branches sur un abri (verandah, cour intérieure)'/Arab *lhḥf* 'envelopper quelq'un d'un drap, d'un couverture', Eg (MK) *h'p* (? < *hlp*, metath.) 'bedecken'.

*sVHap- (>*sap-) 'spear': C (Kr) *sa[p]- > 12 Lame *sáḅa*, Peve *sab*, BM *sappa*, ZB (S) *saḅa*, E 2 Gbr *soo* (contraction); 4 cp. Sok *su'a* (<*supV'a).

C *sipuy(V)ri 'testiculi': (Kr) 2 *sipili : Mrg *šipəli*, Wmd *šipili*, Hld *šipili*, Klb *šipili*, Ngw *šipil*; 3 *sipuyri : FK *šimpuṛi*, FG *spuryli*, HN *sūḅile*, Kap *səpūle*, HG *sḅule*, HB *sūḅulɔ́a* HF *sḅulu*; 4 FJ *fčérin*, FM *fūčūri* (metath., *fc* < *psuy*), Gudu (H) *šipiri-nə*. Note that the regular reflex of -p- in CVpVC roots is -v-.

Secondary *-p- also appeared in roots with an initial emphatic consonant.

C (Kr) *min-tipi < *min-tipi 'guest' > 2 Bura *min-tipi*, 3 *min-tibi > HF, HB *min-tibi*, HN *min-tibē*, Kap *min-tibi*, HG *min-čibi*.

*nčup- 'buttocks': W 3 *n3Vp- (<*nsVp-) : (L) Krkr *nzəḅi* ; C *n/sup-aw : 3 HN *zāpwa*, HB *zuv(w)a*, Kap *zvəve*, HG *suvwa* 'buttocks', HF *zuvu* 'anus' (Kr).

*čepa 'bark': W 3 Bol (Kl) *n-šep-ku* ; C 5 Gis *ša-šapay* ; 8 Gude (H) *šəpə* 'remove shell'. Derived from this root is *čepar- 'bark, shell': W 4 Wrj *šápárai* (< *šapar-, note that *CVpVC- > CVvVC-) 'bark'; 2 cp. Sura *šəbəl* 'skin' (irreg. -l) ; C 3 (Kr) *žepal- (< *šepal-, shift of emphasis, -l- < *-r- is regular, cp. II.8) 'bark' > FK *žápāl*, HF *lápilu*, Kap *žépūli*, HB *lápilo*, HG *lāḅile*, HN *lápələ*; 7 Mafa *šeper* 'glume de mil'; E 1 Kera *sərbe* (metath., -rb- < *-rp-).

Reflexes of Ch *-p- in C Ch may well depend on the root structure. Ch *CVrVP- either: (1) yielded *CVrPV (in case the second syllable was unstressed), or (2) preserved the original form (if the first syllable was unstressed; note, that two consonants in anlaut are impossible). In the latter case, influenced by an initial laryngeal, or simply being in a weak position, *-r- > -l- in higi (except for FK), bura, glavda, gisiga, masa groups. Then the second vowel could be lost as well, and -lp- > -lf-. Compare such originally similar sequences:

(1) *q/kurap- > *q/kurp- 'whip': W 1 Hs *kúrfóó* 'whip, whipping'; C 4

Gude (H) *kurəpa* 'leather whip'; 5 Glv *kúrpa* 'stick, lash, whip' / Eg *ḥrp* (MK) 'Art Szepter'(3:326) / Kanuri *kərfo* 'whip' < Hs.

q/karVp- *q/karp- 'crush, trample': C 7 Mofu *-kərp-* 'crush'; E 5 Dng *karpe* 'kick, trample'. Probably related to 'whip'// HS 2051 *qurap- 'beat'

*sipar-/sirap- > *si/urp- 'rib': C 3 (Kr) *širapu (< *iṣ sirapu, 'is bone'): FK *šurpu*, FG *iṣ šurpwu*, HF *šérpu*, Kap *šurupwe* ; 4 (Kr) *iṣurpu (< *iṣ šurpu ?) : FB *iṣurpin*, FM *iṣurpu* ; 5 Mnd (Kr) *šurpe* ; 11 Mba *sirāp* ; 12 (Kr) Lame *šəbár-hái*, Peve *so-hai* ; E *sirap- : 1 Kwn (J) *sirāpu*, Kera *sərbə* ; 3 Sum (J) *čwār* (lenition < *čpar- < *sVrap-); 4 Sok *serfi-dum* 'your rib'; 5 Dng *sārpe* ; 7 Jegu *širafo* 'Brustseite' / Eg (Pyr) *spr* 'rib'. Eg parallel points to Ch *sipar-.

CCh *yadup- > *ya/urp- 'dove'(Kr): 3 HG *xərbə*, HF *yurpu*, HN *rūpe*, FG *yurpupwu*, Kap *yəḁupe*, HN *rūpe*, FK *ḁepu* ; 4 FM *xarbu*, FB *xarḁən*, FJ *yulepeki*.

In these roots Ch *-rVp- mostly > -rp- > -rb-. A quite different development of the same structure is attested in the following roots:

(2) *ma-q[o]ripu 'be blind': W 1 Hs *mā-kāfōó* (contraction, irreg. -k- < *q-); CCh *m-q[o]ripu > (Kr) 2 Mrg *lifū*, Wmd *lifəw*, Klb *wulfū* ; 3 FG *ɣwulfu*, HB *uyulū*, HG *uxwūli*, HF, Kap *ɣwuli*, FK *mu-ɣuripū* ; 4 Nzn *mwə-wurifə*, FB *mu-rufən*, FM *mɔ-rufun*, FJ *mo-gorupu*, Gudu *mu-rūfā*, Mwl *urufō* ; 5 Mnd *ɣwulfe*, Nak *mū-lfā*, Gava *ngwulfā*, Nak *mulfā*, Dxx *ngwulfe* ; 9 Daba *wulluf* ; 10 Log *xfi*.

*kirop- 'fish' > C *ku/arup > 1 TP *hiriv*, 2 Wm *kalfi*, Hld *kálfi*, etc. (< *kuluf < *kiluf < *kilaf, -u- < -o- before a labial), Mr *kyifi* ; 3 *kurupu/i : FG *kurpi*, FK *kurpū*, HF *kulupu*, HG *kulubi*, Kap *kulupwe*, HB *kilipo*, HN *kilipe*; 4 *hurif- / *hiruf-: Guduf *xirfū*, Mwl *húrifī*, FB *xirfun*, FM *xirfū*, FJ *xurfū*, etc.; 5 *kirup- > ki/ulf-: Nak *kələte*, Gava *kilifā*, Zxx *kulfē*, Glv *kilfā*, etc.; 7 *kilifi : Mtk *klef*, *kilef*, Mukl *klifī*, 6 Daba *kilif* ; 10 Msg *ḥelif* ; 12 *kiruf- : Bnn *kulūva*, BM *kulufna*, Masa *kuluf*, ZB *kérfe* (see I.5).

It seems that the CVrVp structure was preserved in these roots and medial *-r- > -l-. After that the second vowel was lost in some of the languages; -p- > -f- under the influence of -l- or -r-.

For Ch medial *-b- see *t-k-raḅ- 'mud', *tab- 'catch, seize', *tub- 'pour, be wet', (I.2), *nčVb- 'sew, join', *nčab- 'mud, silt', *čVIVb- 'wolf, jackal', *čib- 'spring down', *žub- 'tax'(I.3), *šab- 'beat, strike', *šab/ḅa 'fence', *šuhab- 'cover', *šamb-/šob- 'make fire; warm (tr.)', *šabur- kind of corn, WCh *šamb-/šab- 'mix, knead', *čib- 'beat, strike', C *šab- 'be

close, stick to' (I.4), **gāb*- 'part of a building' (I.5), **hubar*- 'increase, grow', **hub*- 'carrion, rot', **huba* 'hoe'(n.) **hoba* 'cultivate', WCh **qaba*- 'break, strike', **gabur*- 'dry earth, sand', **gab*- 'swell, increase', **g[u]ba* 'chin, cheek'(I.6), **forib*- 'mix', C (Kr) **[ʔ]ub*- 'faeces', **[ʔ]ub*- 'drink'(I.7), **ribi* 'rain', **ra'ub*- 'clay', **lab*- 'soft', **lub*- 'be tired', **HVlubi* 'moisten'(I.8).

Ch **CVbVC*- (**VbVC*- included) > *CVvVC*- in WCh Northern bauchi, Ngizim and in CCh; in kera, lai and sumrai groups Ch **CubuC*- > *CuwuC*- *Cuuc*-; after a round vowel Ch -*b*- sometimes yields -*w*- > Ø in kera and lai groups. Ch **CVCVb*- > *CVCVv*- in CCh (in case the medial consonant has been preserved). See **zabu-Vn*- 'guinea-fowl' (I.3), **a-lubari* 'lion', **[ha]-lub*- 'heart, liver'(I.8), **abuni* 'millstone' (II.1) and the following root:

E **tVba* (? **tV*-*Vba*) 'sun' > (L) 1 Kwn *tua*; 3 Gbr *tobá, ta*, Nan *tebá*, Drm *toa*, Kbl *tabá*. Note that this root is not related to E **uwa* 'fire' (though contamination is highly probable) and is not a Bantu loan, see (I.2.).

Syncopé of the first vowel is extremely rare (though possible) in WCh **Ku/obVC*- roots (Ch **gbVCV* > *gwVCV* in sura languages), for example:

**jobas*- 'wild pig': W 1 Ang *gwaas* 'wild pig'; 7 Ngz *gubás* 'warthog'; C 5 Glv (Rp) *γávəsa* 'pig'.

**gobar*- 'person': 2 **gwar* > Sura *gwar* 'Mann, Mensch', Mpn *gwár* 'person'; 3 (M) Bol *gɔr-zo*, Ngm *gwɔr-zo* 'man, male' (could it be an angas loan?, if so, -*zo* goes back to Ch **ɜV*- 'man'); C 4 Bch (M) *gboara* 'person'/Hbr *geber*, Aram (Mand) *gabra* 'man' (KB:168)/HS N 860 **gabar*- 'male'.

cp. Ch **sipar*- 'rib' (I.4a) > E 3 Sum *čwar* and CCh: 5 Glv (Rp) *yubas* 'laugh' ~ 7 Mafa *hwás-hwás* '(rire) levres étirées'.

Numerous examples show secondary emphatization of PCh *-*b*- under the influence of an emphatic consonant or a laryngeal. The difference between these two cases is just the same as between Ch **bVC*- and **bVH*- (see page 24), namely: the **CVb*- > *CVb*- shift took place not on the PCh level, but later (that is why Hausa *ɕVbV* corresponds to *sVbV* in other languages). On the contrary, PCh **CVHVb*- and **CVbVH*- roots rather developed into PCh **CVb*-/**CVHVb*- and yielded *CVb*- throughout Ch. Examples:

sob*- (so'ab*-) 'suck': W 1 Tng *sumbe* (< var. **somb*-); C 7 Gis *sob*, Mofu *-susab*-, Mafa *sosub*-; 9 Daba (Jglb) *seb*; 4 Bch *sóbò*, Gude (H) *sibè* (assim. of vowels); 10 Log *sóá-hee* (< **soba*) 'lick'; 12 ZB (S) *sóbó*; E 1 Kera *sóbé*/Nm **səbə*, Jglb *s₂b/s₂b₂*, Ug *s'ḅ* 'schöpfen (Wasser)', Arab *s'b* 'se gorger de la boisson'. W 3 Tng *saabe* 'scoop water to drink' and E 6 Mok *sóbò*, *sibè* 'drink' are rather related to Sem **sb*' > Hbr, Aram *sb* 'drink'.

**šab*- 'be wide, stretch': W 2 Bol *lab*- 'weiden, stretch'; C 2 (Kr) **žab*- 'wideness': Klb *lab*-, Chb *žabú*, Ngw *žabú*, Hld *žabu* /Arab *šbh* 'étendre une

peau à l'aide de deux pieux fichés en terre'.

h/ħab- < **h/ħabVH*- 'break into pieces': W 1 Hs *gáḅáá-gāḅáá* 'in large pieces (salt or anything split, as firewood)', *gágāḅee* 'split or crack (wall preparatory to falling)'; C 7 Mofu *-həḅ*- 'briser'; 12 ZB (S) *háb* 'briser', Peve (Kr) *hab*, Lame *háb-sí* 'break in pieces' / Eg (Pyr) *hb* 'zerhacken, zerstören', also cp. *hby* (Pyr) 'vermindern, schmälern' (3:251, 253)

**ha/ub*- < **hVHVb*- 'to hatch': C 5 Mofu *guḅ* (it is not clear, whether *g*- is a regular reflex of Ch **h*- in Mofu before -*u*-, or not) 'couvrir'; 12 ZB (S) *háb* 'couvrir'; E 1 Kera *haḅe* 'ausbrüten'. Cp. W 7 Klb *hibí*, Sha *'ahóḅòò*, Kul *'ahúbar* 'egg'.

Two emphatics are compatible only in Northern bauchi languages, though a single one is more typical of them. For secondary -*b*- in roots with an initial emphatic consonant see C **-šāḅi*- (II.1) and the following roots:

**tub*- (> **tub*-) 'close, cover': W 3 Tng *teebe* (irreg. vocalism) 'put on leaves (as a traditional way of covering the pudenda)'; 4 **tub*-: Kar *təḅə*, Mbu *təḅw*, Miya *tùḅ*, Jmb *duḅa* 'cover', Wrj *tuwai*, Kar *tubahə*, Jmb *dúḅa* 'roof'; 6 Ngz *dəḅā* 'close' (regressive voicing of **t*-); C cp. 7 Mofu *-táb-áz-* 'close'; 12 ZB (S) *ndūḅ* 'boucher' (*nd*- < **nt*-, cp. (Kr) Misme (Zime) *ndoub* 'close')/Eg *dbb* (MK) 'verstopfen' (5:436) // HS N 2447 **tub*- 'cover'. Cp. Bagirmi *dobo* 'close', Nandi *tup*, Suk *típ* 'bury' (Grn, ChN, 25).

**tab*- > **tab*- 'mud' (cp. **čabo*, id.): W 1 Hs *təḅoo* 'clay, mud'; 3 Bol (N) *teḅḅi*, Ngm (Kr) *ndēḅi*, Pero (Kr) *teḅḅ* 'mud', (Fr) *téebò* 'floor with clay'; C (Kr) 1 Gaa *təp-ta*, TP *təb-di*, Gbn *təp-tā*, Boka *təp-tə*, Hwo *tab-ura* /Somali *dobo* 'dirt', Arab *tb* 'être sale' // AA N 71 **tVp* 'dirt'.

ntukob*- (ntubok*-, metath., < **ntubok*-, derived from **tab*- ?) 'mud': W 3 Tng *budeke* (metath.); 4 **[u]koḅu*: Kar *tábaku*, Cagu *ndabákya* (**nt*- > *nd*-), Siri *təḅəhi*, Diri *átúbákù*, Mb *ndāḅáku* (metath.), Wrj *tákwaḅái*, Miya *dāgwáḅu*, Jmb *tákwaḅa*; 5 (Kr) Brm *ndòp*, Pol *nduwəp*, Dwot *ndwəp* (**-b*- > *-p*); C (Kr) 2 **n-tukoḅu*: Chb *ndiyabù*, WM *ndüyabə*, *dahəḅe*, Wmd *cükwəḅu*, Mr *nckəḅò*; 4 FJ *zúgwáḅu* (**ntu*- > *nc/zu*-), FM *dùḅu*.

**nčabu* 'cover' (cp. **tab*- 'close, cover'): W **čabu* > *žabu* (shift of emphasis): 4 Siri *šəḅu*, Paa *žāḅù*, Cagu *zəḅ*-, Mbu *žab*-, Diri *žāḅáá*; C 2 Mr *nžəḅu*; 8 Gude (H) *žəḅa* (< **n/čVba*) 'wrap, loop' / cp. Eg *db* (Pyr) 'bekleiden, Kleid anlegen' (5:556).

**čub*- < **čub*- 'smash, break': C 4 Glv (Rp) *čəḅ* 'break'; 5 Mafa *cuḅ*- 'châtrer un animal domestique'; E 2 Kera *čóḅé* 'break bones'/Arab *wəḅ* 'fouler

avec un pied'.

It is highly probable, that in Chadic, like in Semitic, different variants of one and the same proto-root may be attested (for example, with and without a laryngeal), namely:

**ǰub*- 'pour, be wet' > **ǰubo*- 'wash things': W 3 Bol *ǰubb*- 'pour', Dera (J) *ǰob*- (probably, a Krkr loan), Krkr (Ch) *ǰoɓe* 'wash th.'; C 'be wet': 7 Mofu *-ǰab*-; 8 Daba (Kr) *ǰup*. Related to the root is **ǰab*- 'swamp': W 2 Ang *ǰaap*; C 7 Mafa *ǰáǰá* / Akk *zābu* 'ooze' (A21:9), Arab *ǰwb* 'fondre', *ǰ'b* 7 stem 'couler sans interruption' / AA N 58 **ǰVb* 'water flow', HS 2669 **ǰub*- 'flow'.

For PCh **f*- see **taf*- 'gather', **tafa* 'hand, leaf', **difu* 'black', **daf*- 'cook', **daf*- 'pot' (I.2), **cof*- 'old man, chief', **cif*- 'sweep' (I.3), **ša/y/p*- 'cut', **šuf*- 'shoot' (I.4), **qwa*- 'hoof', **qaf*-/**qaf*- 'grasp' (I.6), **[r]uf*- 'cure; be healthy' (I.7), **nafo*- 'breath' (I.8) and the following examples:

**tifu* 'road': W 5 (Kr) **ntuf*- : Dwtot *zup* (< **ntup*), Brm *nə-dāp*, Dira *tupé*; C 4 (Kr) FM *tūvu*, FB *təvən*, Mw *tùvó*, Bch *tùfəy*, Gudu *tóévù*; 7 Mafa *čivéd* (< **tif*-Vd); 11 Mba *tifay*.

gufi*- 'knee': W 1 Hs *gwiíwaa* (< *guwi*-); C 12 Zime Dari (JgIb) *giff*, ZB (S) *cin-ǰif* (*cin* 'leg', cp. (Kr) Misme (Zime) *guf*); E **gu[fi]*: 3 **gubi*: Sib *gùbé*, Ndam (dJ) *gub*, Tum *gùb*; 5 Dng *gipi*, Bid *gèpe*, Mig *gíppí*; 7 Mubi *gip*, Jegu *gifo* (?< **gifu*), Brg *gífi*. / IS **gwVbV*, Nm **gəfu*, JgIb *gip*. The root is hardly related to WCh **ha-bir-um* '(your) knee' (see Stl (1987:156). Note that W 3 **birum* [burum*] (Bol, Maha *burum*, Dera *birim*, Gera *burmi*, etc.) and E 5 **gipi* have not a single consonant in common.

tuf*- > **tafuf*- 'spit': W 1 Hs *tóófə*; 2 Bol *tuf*-, Dera *tuwi*, Ngm *tup* [tufu*], 6 Ngz *təp-kú*; 7 Fyer, Sha *tuf*, Df *túf*; C 4 Bch (S) *túfə*; 5 Glv (Rp) *taf*, Dxw (JgIb) *tfa*; 7 Mofu *nǰif*- (< **n-tufi*), Mafa *təf*; 10 Log *tuufu*; 11 Mba *túf*; 12 ZB (S) *túuf*; E 1 Kera *túfi*, Kwn (Ln) *àtəpe*; 7 Mubi (L) *tuffa*, Brg (JgIb) *čiff* / IS **tVphV*, Nm **tufə*, JgIb *tp*, Eg *tf* (5:297) // Grm (1963:62).

č[i]fu* 'suck': W 3 Gera *čufu*, Krf *šuppú*, Glm *sùb*- [sufu*], C 10 Log *sefu*, Bud *čəfo*, (By) *thəfə*.

C **xuruf*- (for *-l* < **-r*- after a laryngeal, cp. II.8) 'seed, corn' (Kr): 1 TP *hurva*; 2 Bura *hulfā*, Chb *xwulfā*, WM *kwulf*, Mrg *wulfū*; 3 FG *xwulufwu*, HF *xulfu*, Kap *fuluxwe* (metath.); 5 Mnd *wulfā*, Glv *xulfā*, Gava *xwəlfā*, Dxw *xulfude*

PCh **CVfVC*- yields *CVvVC*- in CCh languages. For example:

C **yufon*- (< Ch **hufon*-) 'charcoal': C 2 (Kr) **vuni* (the complete loss of

the first syllable): WM *vuna*, Bura *vinā*, Klb *vúni*; 4 (Kr) FM *ivinyi*, Nza *avēni*, FB *gun* (contraction); 5 **yuvuni*: Lmn (JgIb) *ùγəvíini*, Glv *ghúvra* (Rp), (Kr) Nak *oyvəra*, Dxw *uvure*, Gava *γuvurā*; 7 Mafa *váng*, Mkt (JgIb) *ávál* (for a **-n* > *-l*- shift after labials see I.8); 8 Daba (Kr) *vwunyí*, (JgIb) *ngivan*; 10 Log (JgIb) *fāñ fāñ*; 11 Msg (JgIb) *āñ-vəñ*; 12 **ufona*: (Kr) Peve *vwon*, ZB (J) *úfān* (irreg. reflex of **γ-*); E 2 cp. Gbr *bun-du* / Rift Iraqw *hawo*, Alagwa *həbi*, Burunge *həbo* (E:260) 'charcoal'. Judging by reflexes in ZB and in Logone a voiceless labial in inlaut should be reconstructed. / JgIb **gbl* // HS N 1311 **hab*-.

C **Hufiya* 'rainy season' (Kr): 2 WM *uviyā*, Mrg *vya*, Chb, Bura, Wmd, Ngw *vwiya*; 3 FG *xuviya*, FK *viya*, HF *va*, Kap (*xu*)*viya*, HG *gəfiya*.

C **[č]efān*- 'guinea fowl': W cp. 7 Sha *čì-čyən* (contraction); C 1 Tera (N) *čivān*, (Kr) **sifan*-: TP *sivānu*, Gbn *šefēne*, Gaa *sēfēna*, Boka *sefānda*; 9 Log (L) *safān*, Kotoko (By) *sāfāñ*; 12 ZB (J) *čófnó-k* (cp. (Kr) Misme (Zime) *dǰafān*); 7 Mofu *čávár*, *nǰávár*, Gis *cuvun*, *čivon*, Bld *čufun* (an irreg. *-a* > *-u/o*- shift after *-f*-

In CCh *higi*, *bata* and *glavda* **-f* > *-v*- in **HVFV* roots also, for example:

C **ma'afa* 'slave' (Kr): 1 Gbn *ma'afə-ta*, Gaa *māfā-ta*, Boka *māfə-tə*, TP *māvu*, Hwn *māfā-rā*; 2 Klb *māvā*, Bura *məfa*, WM *mafa*, Hld *muva*; 3 FG *mava*, HG *māfā*, HB, Kap *mavā*.

**hafa* 'sharp stick, arrow': W 1 Hs *gāāfaa* 'wooden bit put into an animal's mouth to prevent from eating corn or suckling'; C **xafa* 'arrow': 1 Tera (N) *yāfa*, (Kr) TP *həf-ti*, Hwn *hafu-ra*, Gaa *həf-ta*, Gbn *xaf-ta*, Boka *xaf-tə*; 2 Chb *xafə*, Klb *hāfā*, Mrg *yāfu*; 3 Kap, HG, HN *xəve*, FK *xavù*; 4 Gude *'ava*, Gudu *'avù*, FM *'avu*, FJ *xavi*; 5 Dxw, Gava *xavā*.

Note that medial **-f*- is usually preserved before *-u*- in CCh (Cp. C 3 **safu* 'wind' > FK, HG *sāfu*, HF *səfi*, Kap *səfwí*, HG *sévi*, HB *sūfū*)

II.2. Dentals

(see Table 21 on p. 99)

Ch **-t*- is palatalized before a front vowel; in *CVtVC* roots **-t*- > *r* > *ʃ* in Northern bauchi *-r*- > *l*, *y*, *Ø*. In matakam and glavda groups PCh **mt*-/**nt*- yield *mc*-/*nc*- before a back vowel, so it is impossible to distinguish between an original affricate and a dental in this position. Ch **-bt*- > *-br*- in E sumray and lai groups. In *CVwVt* roots (or, probably, - being the third radical) Ch **-t*- > *-r*- > *-Ø*- in bura, *higi*, lai, sumrai groups.

See **patu*- 'go (out,in)', **bitt*-/*[*mb*]*jitt*- 'extinguish', **a-fita* 'flour', **fati/a* 'sun, God' **fita* 'God, sky', (I.1), **siHat*- 'pull' (I.4), **n-katuri* /**n-kutari* 'tail' (I.5); **hut*- 'takeh', **hotu* 'fire', **h/apat*- 'arm, wing' (I.7).

The frequency of dentals is extremely low as compared with labials, that is why we are far from obtaining a clear view of all the peculiarities of their reflexation in different Ch languages. To make the picture more or less complete almost all the roots with medial *-t- are given below.

mut*-/muwat*- 'die': W 1 Hs *mútù*; 2 Sura, Chp, Mnt *mùùt*, Ang *mut*, Grk (Fp) *mud*; 3 Bol *mot*-, Maha *muto*, Krkr *mét*-, Dera *muri*, Tng *mude*, Ngm *mata*, Pero *mùtù*, Bele *mótú*, Gln *məz*-, Gera *múdù*, Grm *mut* [**matu*/**mutu*], 4 **mawut*-/**miyut*-: Wrj, Miya, Mbu *miy*-, Paa *miyà*, Kar *miyà*, Siri *miyù* (<**mVy*- < **mVt*-, *-t- > -y- is regular), Jmb *mul*-, Cagu *moosen*, Diri *matu*; 5 **musi* (< **muti*, regular): (Sm) Bgh *mas*, Kir *muse*, Tala *məs*-, Grnt, Wang *mis*, Gedi, Buli *miš*, Tuli *məši*, *miši*, Jimi (G) *maši*; 6 Ngz *mətə*; 7 Fyer, Df, Bok, Kul *mot*; C 1 (Kr) **muti* 'die': TP *mədi*, Gaa *iməri*, Gbn *məri*, Hwn *mur*, Boka *məri*, (N) *mətá*; **mur-ta* (< **mut-ta*, dissim.) 'death': Hwo *mara*, Gaa *mər-ta*, Gbn *mər-ta*, Boka *mər-tə*, Tera (N) *mətá* (vn.); 2 (Kr) Mrg *mitù*, Klb *tá*, Chb *nti*, Bura *mtə*, WM *mitə*; 3 (Kr) HF *mtə*, HB *wto*, HN, HB, Kap *mtə*, FG *mti*; 4 (Kr) FB *mti*, FJ *mči*, Nzn *mute* 'die', FM *mitu*, FJ *mtə-kún*, *mcə-kun*, FB *mər-ən*, *mət-ən* 'death'; 5 Glv (Rp) *mc*-, (Kr) Mnd *mcámca*, Dxw *mcaya*, (Jglb) Ngw *c'áwé*, 5a Lmn *mt*-; 7 **ma/uc*- (< **mVwt*-) Bld *muč*, Gis *moc*, Mkt *məc* (Ro), Mofu *-mác*-, Mafa *məca*; 8 Daba (Kr) *mùč*; 10 Log *mti*, Bud *matte*; 11 Msg *mara* (L), Mnj *miri*; 12 (Kr) Lame *mā*, Peve *mat*, Bnn *mitùwa*, BM *mit-na*, Masa *mita*, ZB (S) *mátá*, E **matu/i* 'death': 1 Kwn *máti*, Kera *mə-ŋ*; 2 Lele *tu-madu*; 3 Sum *madi*, Ndam *maat*, Tum *maad*; 5 Dng *mùutù*, Mig *múutú*; **mawat*- 'die': 1 Kera *mé*, Kwn (J) *mayé*; 2 Lele *maa*, Kbl (Cp) *muwə*; 3 Sum *maar* (J), Tum *ma*, Ndam (dJ) *miyá*; 4 Sok *mite*; 5 Dng *mátə*, Mig *máatə*, Bid *maat*; 6 Mok 'ind- (? < **immVt*-); 7 Jegu *maat*, Bir *maáti*, Mubi (L) *maat* / Eg (Pyr) (2:165) *mwt*, Akkmátu, Hbr, Arab *mwt* (Lsl:375) //Nm **mətə*, Jglb **mwt* // Grm (1963:55), HS N 1751 **mawut*- 'die'.

**foti* 'roast': W 6 Sha *fwôt*, Kul *fot*; C 8 (Kr) Nzn *fītadi*, FJ *fcə-vz*, FM *fūci*, FB *fīci*, Mwl *ūfütá*; 11 Msg *fáda* 'cook'; E 3 Lele *padi*.

**fīt-ud/t*- 'mosquito': W 2 Sura, Mpn *mīt*, Ang *fut*; 3 (Kr) Bol *fwotò*-, 4 **a-virVt*- (-r < *-t-): Wrj *vivii-ná*, Kar *viví*, Miya *áverí*, Paa (MS) *vítuví*, Jmb *avũltu*; 5 Grnt (Ja) *vūrti*, Zaar (Sm) *vuriŋ*; 6 Ngz *vədádúwá* (v- < *-f- voicing of medial *t); C **fīrud/t*-: 1 (Kr) Boka *fīrdá'á*, Gbn *fīrd-icá*, Gaa *fīrdá*; 8 (Jglb) Daba *viríš*, Kola *vít*; 9 Gdr (Mo) *birt-énge*; 11 Msg (Mo) *avuli*; 12

Masa (J) *húrúttá*, (Mo) *vru*, (Kr) Bnn *fūru-ná*, BM *furut-no*; E 3 **bida* (< **pid*- < **fīt*-): Sum (J) *béde*, Ndam (dJ) *bidé*, Tum *bəəd*. Cp. Ch **k/t-pirac*- 'mosquito' (I.1) / Jglb *brt* (2:121).

**fat*- 'to fan': W 1 Hs *fāā-fītaa* 'fanning a person'; C 5 Mnd (Mr) *vata*; 7 Mofu *-fat*- 'to fan', Mafa *fāt*- 'refraichir (pour la vent qui souffle sur quelq'un qui a chaud)'; E **fat*-: 1 Kwn (J) *pe-petée*, (cp. Kera *wítí* 'Getreide schwingen' < **afVt*-); 2 Kbl (Cp) *pədə*, Lele *piyí*, Tob *pə-bdé*; 3 Sum (J) *pə-bdó*, Ndam (dJ) *pədə*, Tum *bàad* (< **pV-bad*-).

**hVt*- 'release, loosen': W 3 Tng *yed*-; 7 Bok *hwēt*; E 6 Mok 'úttò.

**hVt*- 'dry' (trans.): W 3 Grm *hēt*; C 9 Log *xtíti*.

W **kuti* 'cold (weather)': 2 Ang *küt*, Mnt *kut-zum*; 3 Gln *čiiizí* 'cold weather', Tng *kodom* 'winter', Bol *kotodi*, Krf *hití*, Gera *kití* 'coldness'; 6 Ngz *ká-kú* 'make cold'. /Jglb *kt* Related to this root is **katu* 'harmattan': W 2 Chp *kut* 'harmattan', Sura *kut*, Grk (Fp) *kut* 'wind'; 3 Tng *kùto*; 5 (cp. Dira (Kr) *kwutu-kwùtù* 'fog'); C (Kr) 12 Lame *kwátú*, Peve *kwut*, Bnn *kut-ná*, Masa *kut-na* 'harmattan, fog', ZB (S) *kút* (cp. (Kr) Misme *kuđ*) 'fog'.

**ka/ut*- 'cheat': W 1 Hs *kúta* 'devise lies, make mischief', *kātá-kata* 'a form of cheating'; 3 Tng *kwade* 'Täuschung'; C 12 ZB (S) *kát* 'tricher'.

**la/it*- 'pull': C 7 Mafa *nát*-, *lát*- 'tendre (arc, main)'; E 5 Bid *liit* 'étirer, tendre'; 6 Mok *liitè*, *léetè* 'tendre la corde d'un arc'.

Ch *-bt- > -br- in E Ch 1-3, for example:

E **pVt*- 'aunt': 3 Lele *abri*; 5 Mig *áptù*,

E **d/t-butu* 'ashes' (I.1) > 1 Kwn *da-rwə*; 2 Lele *tí-bre*; 3 Tum *də-bər*.

The Ch dental emphatic *-t- has better preserved in word medial position (it yields -d- in a number of W and CCh languages, and -t-/-t- in Northern bauchi) than in the anlaut (initial *t- > t- in a few Northern bauchi languages and t- in all the other languages).

For Ch *t- see **paŋu* 'skin', **buwut*- 'ashes', **ba[t]*- 'cut', **boŋi*/*[*mb*]*ŋoti* 'fog', *feŋ*- 'sweep' (I.1), WCh **nc[o]t*- 'squeeze' (I.3); **quŋ*- 'be tired', **guwat*- 'dig' (I.6); **[ʔ]ayit*- 'cry, call' (I.7), C (Kr) **min-tipi* < **min-tipi* 'friend, guest' (II.1). Some more examples:

**buŋi* 'untie': W 4 **bu/ti*: Kar *biit*, Paa *mbuta*, Miya, Cagu *but*; C 11 Mba *būt* 'unbind'; (Kr) 12 Masa *budu-mo*, Bnn *puti-wá*, ZB (S) *būt* 'derouler, detacher'; E 2 Kera *biti* (assim. of vowels).

**pa[y]ta*- 'cut': W 2 Sura *pet*; 3 **pett*-. Pero *péttò* 'cut into pieces', Tng *pete* 'cut corn'; 4 Paa (MS) *pata* (< **paŋa*) 'split other than wood'; 7 Mafa *pat*- 'cut'; 12 ZB (S) *pát* 'désosser'; E 5 Mid *péeto* 'split', Bid *peet* 'cut wood'.

**ko'aŋ*- 'go, follow': C 8 (Kr) Mwl *úkwód-in* 'follow smbd.'; E 1 Kwn *kote* 'follow smbd.'; 7 Mubi (J) *kaat* 'go out'; 5 Bid *kaat* 'go, start', Mig *káátó* set out'.

**fuŋ*- > **fuy/waŋ*- 'pour': C 4 (Kr) **fuŋ*- : FJ *ŋabi*, *fēi*, Nzn *fuðe'e*; E 5 Mig *pootò*, Dng *pâyte* 'verser', Bid *poyot* 'puiser de l'eau'; 6 Mok *pútutú* idf. empl. avec **obi* 'transvaser'; indique qu'on verse en grand quantité.

**wuŋi* 'lightning': W 3 Krkr *wiŋd*- 'shine' (v.); C (Kr) **wuŋ*- 'lightning': 1 Boka *wut-wut* 'light', *wil-wuta*, Gbn *wul-wutte*, Gaa *wul-wudanyi*, TP *wədi* 'lightning'; 5 Dxw *wuðugè* 'lightning'; 5 Mafa *wate-wate* 'shine'; 12 (Kr) Lame *wúdi*, Peve *wúdi* 'lightning'.

**g[e]ti* 'hoe, axe': W 1 Hs *gittà* 'axe'; 4 Kar, Miya *giti*, Siri *gəti* 'axe'; 5 (Kr) Bgh *gyat*, *get* 'hoe'; C (Kr) 'hoe': 1 Gaa *wən kītā*, Gbn *wəŋ gītā*, Boka *kāta*; 8 Bch *ngəto*, Mwl *ngédɔ*, Nzn *ngède*, Gudu *ngédé*.

The PCh dental emphatic *-t- is traceable by secondary emphatization of *b* in initial position, see WCh **baŋ*- 'cut' (I.1) and the following roots:

W **butV* 'belly, stomach': 2 Sura *but*, Ang *but*, Mnt *bəət*; 5 Gdz (Kr) *bōti* 7 Fyer *būtó*; E cp. 7 Brg *būturi* // Berb **but*- 'navel, belly', Hbr *bəten*, Aram *batnā*, *biṭnā* 'womb' // AA **bəŋ-ən* 'womb'.

**bōti* (< **bōti*) 'pour': W 3 Dera *but*- (? *but*-); C (Kr) 3 **but*- (< **but*-): Kap *būtiyi*, HG *ptiye*, HF *bətiyi*; 12 ZB (S) *bāt* 'couler' // Arab *nbt* 'soudre (de l'eau)'.

For PCh *-d- see **[p]aHud*- 'thigh', *-*fid-od*- 'four' (I.1); **siHad*- 'push, pull, move' (I.4); **kadV-ami* 'crocodile', (I.5); **hud*- 'cut, dig', **qadig*- 'hoe', W **gada* 'be fat, fat' (I.6); **had*- 'be weak' (I.7) and the following examples:

**ida-n*- 'eye': W 1 Hs *idòò*, pl. *idaànúú*; 2 Sura, Mnt, Ang *yit*, *yid* Ank (Fp) *has-yid*; 3 **ido*: Bol, Krkr *idó*, Tng *ido*, Dera (J) *yérò*, Ngm *ido*, Maha *ida*, Bele *idó*, Krf *iró*, Glm *iirya*, Gera *yero*, Grm *idá*; 4 Jmb *ida*, Diri *adoo*, Mbu *t-ira-n-hu*- (-*ira*- < **ida*-, *t*- is a fem. pref, *hu*- is a suff of body-parts; note that Cagu *aače*, Miya *ayti*, Siri *itá*, Paa *atá*, Kar *tyuwé*, Wj *ciyèy* go back to **ay-t*-); 5 **gV-yir*- (< *yid*-, with a body-parts pref.): (Sm) Kir, Tala *yir*, (dial. *gə yir*, *kə yir*), (Sm) Jimi *yerr*, Grnt *gwà-yer-en*, (Go) *yer-en*, Buli *iir*; 6 Ngz, Bade *dà*; C 1 TP *idi*; 4 **di-tV* (with a fem. suff.): Nzn (M) *di*, Gudu (Kr) *dii*, Bch (Skn) *díitɔ*, Bata (Mo) *dii*; 5 (Jglb) **idV-n* > Dhwa *ndé* (metath.), Gdf *diyà*, Mnd *iiche*; 7 Mofu *dèy*, Mtk (Jglb) *dây*, Mkt (Jglb) *yáudi*, Gis *re*, Bld *aray*; 8 Daba (Li) *xi-ra* (with a body-parts pref.); E 1

Kwn (L) *k-éd-um* 'my eye', (J) *té-enii*, Kera *d-ər* (< **dV-Vd*- < **tV-Vd*-); 2 **tV-id(V)n*- > (L) Gbr *t-ind-in* (< **t-imd*- < **t-id-Vm*) 'my eye', Drm *t-ine*, Kbl *ē-indí* (all with a metath.), (Cp) *čidi*, Nan *té-reng* 'my eye'; 3 Sum (L) *d-era-m*, *d-ud-um* 'your eye', (J) *dù-dí*, Ndam (dJ) *čī* 'eye', Tum *tù-wər* (< **tu-əd*, assim. of - after -u-) 'eye, heart'; 4 Sok *id-im* 'your eye'; 5 Dng *ódò*, Mig *idè*, Bid *ūdīyā*; 7 Mubi (L) *irín*, Jegu *ūdē* (< **ud-um*-, cp. 3 Sum). Note various suff. and pref. lengthening the root. Otherwise, having only one "strong" consonant, it might just disappear. In case -n was the third radical, we should expect **idan*-> *dan*-, so it was rather a suffix. Its HS origin cannot be excluded. It seems that the HS -Vn suff. of body-parts was ousted by the possessive marker -um in Ch (cp. **ži/k/an-um* 'chin' in I.3). Ch **ida-n* hardly originates from **itn*- < **in-t*- and thus, it is not related to Sem **ayn*-, as was suggested by Dolgopolsky (personal communication). Ch data show an original 'dn sequence (cp. Hs, Mbu, etc.) and it cannot go back to 'nd or to 'nt, on the contrary, Ch CVdVnV yields CVndV in modern languages. CCh kotoko, Musgu and bata words for "eye" (Bud *yél*, Msg *aráy*, Lame *irí*, Masa *ira-no*, Bnn *irā*, ZB (S) *ir*) represent the same HS root as Eg (Pyr) *ir* 'eye'. Note, that in ZB Ch *-d- does not yield -r- (cp. ZB (S) *ədi* 'dog', *idi* 'forest', etc.). //Nm **idə*, Jglb *ydn* // Grm (1963:56).

**sida* 'six': W 1 Hs *šidā*, Gwn *šida*; 3 Ngm *sedu*; 6 Ngz *zidù*, Bade *əzdú* (assim. of a voiceless consonant); E (L) 1 Kwn *side*; 7 Mubi *istālā*.

**mVd*- 'speak': C 5 (Kr) Mtk *mədanā*; 10 Msg *mēda*; E 1 Ndam (L) *medidii* 'call'; 4 Jegu *maad*- 'ask'. Cp. Hs *mūdā* (irreg. -d-)/Eg *mdw* (Pyr) 'sprechen' (2:179). Cp. Tubu *modi*, *medi* 'Rede'.

In *CVdVC- roots *-d- yields -r- > -y- > Ø, see *paHid*- 'fall, lie down' 'fall', *-*fid-od*- 'four', **kadV-ami* 'crocodile' and the following root:

**hodami* 'beans': W 2 **yirimi*: Sura *yirim*, Ang *yürm*, Mnt *iyim*; 3 Bol *wodo*, Krkr *idam*, Dera *worom*, Gera *hāndimi*, Ngm *ədə*, Glm *āndi*; 4 (Sk) Cagu *waran* (< **hodam-an*-); C 1 Tera *wòrōmɔ*; 11 Msg *adēm*.

*CVHVd- > CVr- in E sumray, kera and lai languages, for example:

**wVHVd*- 'give': W 6 Kul *wot*; E 1 (L) Sum *wúr*, Ndam *wúdā*, 2^o (Ln) Kwn *wúr*, Mobu *wəre* 'give'; 6 Mok *ééd-iyò* 'give, outstretch' // ?? Arab *w'd* 'faire des promesses, menacer à quelqu'un de quelque chose'.

giHad*-/giHad*- 'neck': W 3 Krkr *ngidò*, Glm *ngiryā*; E 3 Tum *geér*, 5 Dng *gaādyā*; 4 Sok *gét*-/ Arab *gīd*- 'cou long et gracieux'/ HS N 924 **giHad*-/**giyad*- 'neck'.

*gVHVd- 'run': W 1 Hs *gúdù* 'run away'; 3 Krkr *gaḍ*- 'go by'; C 12 ZB (S) *gāt* 'go'; E 2 (L) Kbl *gírgira*, Gbr *gére*, Nan *gúr*, Drm *geré*; 5 Dng *gádé*, Mig *gàḍḍò*, Bid *gaḍ*; 4 Sok *gédé*

E *si'aḍ-/*sid[a]H- 'swallow': 2 Kbl (Cp) *siyərə*, Lele *sàr*; 5 Dng *sidé*, Mig *siddyo*, Bid *sidi*.

Medial -ḍ- is attested in roots with a laryngeal or with an initial emphatic, cp. *koḍVy- 'worm, snail', *ḵodu 'testicles, kidney' (I.5), *qaḍ- 'beat', *q[a]ḍ- 'pluck' (I.6) and the following examples:

*kida (< *ḵida) 'earth': W 4 Diri (Jg̀lb) *kēḍā*; E 2 Mobu (Jg̀lb) *čəḍò*; 7 Mubi *kidi*, Brg *kiḍò*, Jegu *kito* (irreg. reflex of Ch *ḵ-ḍ-); 5 Dng *kida*, Mig *kida*.

*koda < *ḵoda 'pot': W 3 Krf *kwāḍò*, Gera *kwāḍā* 'calabash'; C 3 (Kr) HF *kwadya* 'small pot'; E 5 Dng (Fr) *kóḍā* / Eg *ḵd* 'vessel'.

*ḥad- 'envelop, bury, close': C (Kr) 2 Mrg *yāḍiya*, Wmd *haḍiya*, Hld *xāḍiya*, Klb *áhāḍiyā*, Chb *harti*, WM *hadi*, Bura *xartā* 'close'; Mr *yāḍunaa*, WM *xā'andaā*, Chb *harti*, Bura *xaramta* 'bury'; 4 Gude (H) *háḍé* 'wrap, dress'; 5 Gava *xəḍufā*, Nak *xāḍāntida*, Mnd *xūḍāntuxuḍā* (-u- < *-a- after x-) 'close'; Glv (Rp) *xəd* 'shut, cover, bury', Dxw *xəḍnayā*, Gava *xəḍanānā*, Nak *xadānxāda*, Mnd *xuḍaxuḍā* 'bury'; E 'envelop': 1 Kera *hāyḍé*; 3 Tum *aad*.

*čēHad- (cp. long vowel in E 5) > *(ča-)čad-/čed(-ed)- 'cut, carve': W 4 Paa (MS) *čāḍāā* (< *čēdaH-) 'chop off'; C 7 Mofu *čā-čād* 'tailler'; 12 Zime (J) *čed* 'carve', ZB (S) *céḍ* 'équarrir'; *čēḍ- 'axe': BM *čet-na*, (devoicing in a cluster), Lame *čēḍé*, Masa *čē'ē-na* (Kr), ZB (S) *čēḍe*; E 1 Kera *čēde* 'carve'; 2 Tum *sad* 'couper plusieurs fois', Sib *čēḍé* 'cut'; 5 Mig *čāḍḍò* 'cut hair', Bid *čēḍḍ* 'couper en lanières'.

*roḍa- (< *rodVH-) 'rot; bad': W 4 Wrj *raḍa*, Kar, Mbu *rad-*, Siri *raḍa* 'rot'; C 4 Nak *rwad* 'bad' // Arab *rd* 'être méchant, dépravé', IV stem 'gâter, corrompre' // HS N *rado- 'be rotten'.

*siḍ- < *čid- 'stab, split': W 3 Pero *čidḍò* 'stab', Tng *side* 'pierce, stab'; E 6 Mok *sisḍā*, *zissidā* 'tailler du bois' / Arab *šd* 'fendre, percer'.

Cp. also W 3 Krf *kaḍa* 'skin' ~ Arab *qadd*- 'peau d'agneau, de chevreau'. See the following roots with Ch *ḵ-ḍ- in ch. I: *puḍ- 'hide', buḍ- 'pour' *biḍ- 'make, invent', *bVḍ- 'hoe', *biḍ-/[*mb]iḍ- 'say', *buḍ-/[*mb]uḍ- 'wind' (I.1); *hiḍar- 'fat' (n.) (I.7), *waḍi 'dirt' (I.8). Of special interest is the case of *fid-oḍ- 'four' > fwaḍ- (I.1). Note that -oḍ- is a numeral marker. Though reduced, it is attested in Mofu: *staḍ* 'one', *cəḗḍ* 'two' and in almost all Ch numerals up to 'five' (cp. *kun-oḍ- 'three', *cir-oḍ- 'two')

II.3. Sibilants and sibilant affricates.

Medial *-s- > -s-, or -š- before a front vowel (but -h- in Bele, -ž in Tumak and Ndam). See *pas- 'break', *baHasu 'count' (I.1); *tas- 'break, thrash', thrash', *tʃo/sa 'sweep', C *kus- 'hold, seize, take', *ka-[h]usami 'rat', *ḥa-kuris- 'kidney', *kas[i] 'bone', *gas[u]- 'make fire, be hot' (I.5); *h/es- 'faeces', *hos- 'grind', *as-/es- 'come' (I.7), *mfa]is- 'steal, take by force', *nafos- 'breath', *ḥa-lesi-um '(my) tongue' (I.8), *esas- 'bone' (II.4a).

Sibilant affricates are extremely rare in word medial position. As a result there are many gaps in the table. The system is preserved in full only in a few Northern bauchi languages. The full list of PCh roots with medial affricates is given below (those attested only in a couple of languages included).

Medial *-c- > -c- in Northern bauchi languages and in Mafa. It merged with -s- in E Ch, in sura, ron, masa groups, in Ngizim and Musgu. Like all the other affricates, Ch *c- > -c- in Hausa. Most of the bole languages show a dental reflex of Ch *c-. Such a shift (*-S- > -T-) can account for the extremely low frequency of inlaut sibilants in bole languages. Examples.

*koca 'quiver, pot': W 1 Hs *kòḍḍò* 'kind of drum'; C (Kr) *kwaža 'quiver': 1 Hwn *kwəšā-rā*, Gaa *kūčē-ta*, Gbn *kwiči-te*, Boka *kwēs-tə*; 2 *kwaža: Wm, Chb *kwāžā*, Hld, Mrg *kwāža*, Bura *kwāža*, Ngw *kwəžā*, Klb *gwāḍžā*; 8 Gude *kwāža*, Mwl *kóso-ró*, Nzn *kūsù-re*, Bch *kwòsò-to*, FJ *kwəžā*, FB *kwəžən*, Gudu (H) *kwāžā* / Akk *kāsu* (A,8:253), Hbr *kōs*, Arab *ka's*- 'bowl' // HS 1401 *ka'oc- 'vessel'.

*kuca- 'abuse, be angry': W 1 Hs *kūḍḍaa* 'reproach angrily'; 2 Ang *kass* 'abuse'; 3 *kuc-: Tng *kude* 'deny, hate'; E 4 Sok *kešikeši* 'blame, abuse' // Hbr *k'f's* 'make discontent, offend' / HS N 1442 *ke'Vc- 'be angry'.

wuc- 'plough': W3 *wuc-: Tng *wude*; E 1 (Ln) Mobu *úsé*, Ngam *wuśe* *dir[a]c- 'press, push': W *dirc-: 1 Hs *dirčā* 'squeeze'; 4 Kar *dərcə* 'press'; C 5 *diras/c- > Mofu *-dəras-* 'push (away)'; E 6 Mok *dirśé* '(s) appuyer' / Akk *darāsu* 'trample, press' (A3:110), Arab *drs* 'battre les grains sur l'air' // HS N 719 *dirac- 'press, beat'.

*kac- 'snap, break': W 1 Hs *káčā* 'snap (thread, rope, etc.)'; C 12 ZB (S) *kás* 'break', (Kr) Mm *kas*, BM *kus-* (irreg. vowel) '(stick) snapped'.

W *ḥa/*wu- 'ac- (different pref. of body-parts) 'tooth': 2 *ḥa-has: Ang *aas*, Chp *ayās*, Mnt *yəəs*, Grk *yās*; 3 *u-ac-: Bol *udo*, Krkr, Tng *wudo*, Dera *wuro*, Maha, Ngm *udo*, Glm *yiizi* (vowel assim.), Gera *wāšā* ('u-a- > wa-), Grm *òčóná*, Krf *iččó*.

**dac*– ‘cut; knife’: W 1 Hs *dááçà* ‘cut off, bite off’; C 10 Log *dəsə* ‘chop’; E 2 Kbl (Cp) *dəsi*, (L) Drm *dəsi-n*, Gbr *dási-n* ‘knife’; 5 Bid *qaas* ‘ce couper, fondre’ /Eg *ds* (Pyr) ‘knife’, (t) ‘cut’ (5:486)// HS N 610, 611 **dac*– ‘knife, cut’.

mac[i] give, help’: W 3 Tng *madi* ‘help, save’; C 7 Mafa *meč*– (< **maci*) ‘donner tout ce que est dû à qqn’.

**hur[o]c*– > **ruhac*– ‘cut’: W 1 Hs *rúúçà* (contraction) ‘stab’; 3 Tng *rwade* (< **ruwac*–) ‘cut grass’; C 4 Gude (H) *hərəsə* ‘cut edge’; 7 Mafa *húrc*– ‘cut’; E 5 Dng *róòsè* (contraction) ‘pierce’.

**a/w/c*– ‘dog’: W 2 (Fp) Mnt, Ank *as*, Grk *at*, Sura *as*, (Jg) Mnt ‘*as*, 3 ‘*ad*– > **ad*–: Bol, Ngm ‘*ada*, Krkr *ade*, Ngm *yede*, Krf *éré*, Gera *yádá*, Grm *édé*; E 5 Bid ‘*úsù* / Arab ‘*aws*– ‘wolf’. Cp. NS Songai *hanši*, *ansi*, Fur *asa* ‘dog’ (Gm: NS N3).

In Mafa and Mofu medial **-ç*–, **-č*– **-č*– yielded –*č*– before a front vowel, –*c*– before a back one. For medial **-ç*– see **pa/uçi* ‘sun’, **puçi/a* ‘ashes’ (I.1) and the following roots:

**wac/ay*– ‘to rot’: W 4 Cagu *wààçéé*; E **os*– (< **wac*–, ‘*o*– < **wa*– (?) due to an emphatic consonant): 1 (Ln) Mobu *ósé*, Ngam *ose*; 2 Lele *òži*.

**KV-çin*– ‘nose’: W 2 **gV-zin*: Grk (J) *yiddin*, Sura *pə-gə-zin*, Ank (M) *gong* (cp. (Nm) *wantín* < **wa-tin*), Ang *gi-zin*, Mnt *pə-zəŋ*, Chip *góòŋ*; 5 (Sm) Bgh *nyún-sun*, Kir *nyi-sən*, Tala *əsən*, Grnt *yán-sin*, Geji *için*, Zaar *yii-cin*; C 2 (Kr) **ku-čir[i]*: Mrg *mčir* (cp. Mrg *ntifu* ‘five’, thus, Mrg rather does not go back to Ch **a-ten*– ‘nose’ (II.8)), Hld *čiru*, Wmd *čir*, Ngw *kwi-čir*, Bura *ku-čir*, Chb *kwu-cir*, WM *mčir*, Klb *čir*; 3 (Kr) **k-(c)in*– FG *kšin*, FK *šinu*, Kap *nši*, HF *nči*, HN, HG *nči*, HB *či* (< **kVnči*, a metath. points to an original **kVcVn*– structure, because **cin*– does not yield *nči*); 4 (Jglb) **[kV]-čín*– (< **cin*–) Gude *tšiná*, Nzn *kine*, *tšiné*, Bata (Mo) *činne*; 10 Log *x-səni*, Bud *činái*; 11 Msg *un-cuno*, Mnj *én-čín*; 12 ZB (S) *cin*, Masa (Mo) *čin*, Bnn (Kr) *čina*, Peve *čin*, Lame *čini*; E 3 Sum (L) *šén-dé*, Tum *hùn* (< **sin-um*). Cp. **çin*– ‘hear, smell’ (II.3). /Kush Elmolo *sɔɔno* ‘nose’, Saharan Zaghava *sinna*, Berti *sano*, Kanuri *kənzà* (< **kV-zVn*–, metath.) ‘nose’. A borrowing from Ch cannot be excluded, proving an initial sibilant or an affricate in PCh.

**mVç*– ‘trade’ (v.): W Wrj *məč*–, Mb, Miya *muç*–, Siri *muçu* ‘sell’; C 1 Tera *masa* ‘buy’; 2 Bura (Nm) *masə*.

**gVç*– ‘shake’: C 5 Glv (H) *gač*; 7 Mafa *gwoguc*–; 12 ZB (S) *gəsà-k* (?)

Table 22. Sibilants and sibilant affricates.

P Ch	WC	1	2	3	4	6	7	CCh	1	2	3	4	5	7	10	11	12	ECh	1	2	3	5	6	7
*-s	*-s	s,š	*-s,-z-	*-s-	*-s-s	s	*-s	*-s	*-s	*s	*-s	*-s	*-s	*-s	*s	*s	*-s	*-s	*-s	*-s	*-s	z,s	*-s	
*-ç	*-ç-	ç	*-s	*-d-	*-ç-s	s	*-ç-s	*-ç	*-ç	*ç	*-s	*-ç	(ç)	*-ç	s	s	*-s	*-s						
*-c	*-c-		*-s	(-d)	*-ç-s	s	*-c-s	*-c	*s	*-s	*-s	*-s	*-s	*c ₁	s	s	*-s,	*-s-						
*-š	*-š-	š	*-s,-š	*z,*š,i	*-z-z-	z	*-z-z-	(*)z	*z	*-z-	*z,*	*-z-	*-z-	*-z-	z		*-s	*-š	(*)s,i	(z,š)		*-d	z	(d)
*-č	*-č-	s	*-s,*-š	*-č-	*-č-s	s,č	*-č-s	-s	(*)č	(*)s	(s,č)	(*)č	*-č	s			(*)s	*-č	(č,s)	*-s		*-č-	s	(*)č
*-ĉ	*-ĉ-	ĉ	*-s,*-š	*-D-	*-ĉ-	s	*-ĉ-		(*)ĉ	(*)s	(*)ĉ	(*)ĉ	*-ĉ-		s		(c)	(*)ĉ _U	(*)ĉ	(s,č)	*-š	*-d _y	*-d	
(*)ž	(*)ž	ž	*-s,*-š	*-ž-		z,s	ž	(*)ž	*-s-			*-ž	*-ž	*-č	Budž		*-s	*-ž	Kera _d	(s)	*-ž	*-d		(*)d

1. **-ç*– > *č*– in Hausa. 2. Ch **-ç*– > *-š*– in Sura (probably, also in other languages of the group). 2. in CVSV roots all Ch sibilant affricates > masa *-s*, Ch **-ç*– > *-ž*– in CVçVC roots.

Table 23. Lateral sibilants and affricates

P C	WCh	1	2	3	4	6	7	CCh	1	2	3	4	5	7	10	11	12	ECh	1	2	3	5	6	7
* <i>-š</i>	* <i>-š</i>	– <i>l</i>	* <i>-l</i> – <i>l</i>	* <i>-ž</i> – <i>ž</i>	– <i>ž</i>	– <i>ž</i>	– <i>ž</i>	* <i>-ž</i>	* <i>-ž</i>	* <i>-ž</i>	* <i>-ž</i>	* <i>-ž</i>	* <i>-ž</i>	* <i>-ž</i>	* <i>-ž</i>	* <i>-ž</i>	* <i>-ž</i>	* <i>-l</i>	* <i>-l</i>	* <i>-l</i>	* <i>-l</i>	* <i>-l</i>	* <i>-l</i>	* <i>-l</i>
* <i>-ç</i>	* <i>-ç</i>	<i>s, š</i>	* <i>-s</i> – <i>d</i>	* <i>-š</i> – <i>š</i>	– <i>š</i>	– <i>š</i>	– <i>š</i>	* <i>-š</i>	* <i>-š</i>	* <i>-š</i>	* <i>-š</i>	* <i>-š</i>	* <i>-š</i>	* <i>-š</i>	* <i>-š</i>	* <i>-š</i>	* <i>-š</i>	* <i>-ç</i>	* <i>-ç</i>	* <i>-ç</i>	* <i>-ç</i>	* <i>-ç</i>	* <i>-ç</i>	* <i>-ç</i>
* <i>-c</i>	* <i>-c</i>	<i>s, š</i>	* <i>-s</i> – <i>d</i>	* <i>-š</i> – <i>š</i>	– <i>š</i>	– <i>š</i>	– <i>š</i>	* <i>-š</i>	* <i>-š</i>	* <i>-š</i>	* <i>-š</i>	* <i>-š</i>	* <i>-š</i>	* <i>-š</i>	* <i>-š</i>	* <i>-š</i>	* <i>-š</i>	* <i>-c</i>	* <i>-c</i>	* <i>-c</i>	* <i>-c</i>	* <i>-c</i>	* <i>-c</i>	* <i>-c</i>

1. Ch CVçVC > CCh *CVšVC–/CVžVC–.

partial reduplication); E 1 Kera *gèsé*; 3 Sum (J) *sàsəgə* (metath.).

**laç*– ‘be cold’: C 4 (Kr) Dxw *ləcúcè* ‘coldness’; 5 Mafa *lácácá’a*, *lécécé’e* ‘cold, fresh’; E 2 Kera *arse* (–rs– < *–ls–) ‘to cool’.

W **duç*– ‘stone, rock’: 1 Hs *dúúçè* ‘stone’; 2 Sura *dušu* ‘rock’// Arab *di’s*– ‘colline arrondie’.

**poħaç*– ‘scrape, notch’: W 2 **pos* ‘scrape’: Ang *pos* (cp. Mpn *pwaas*, *pwees*, Sura *pwos* ‘rub’); 3 Dera (N) *peðe* (contraction) ‘pare’; C 5 Mafa *pəhác* ‘notch’ / Arab *fhş* ‘scratch earth, dig’ // HS N 1925 **puħaç*–.

C **mVç*– ‘wash’: 2 Mrg (Kr) *mç*; 10 Msg *masa*; 12 (Kr) *Masa musu-mo* / Arab *mws* ‘wash’// HS N 1748 **mawaç*–/**mayaç*– ‘wash’.

Medial *–z–> is devoiced in sura, tera, masa groups and yields –z– or –ž– in almost all the other languages, except for E dangla and mubi. The data so far collected show a dental reflex (–d– or –d̥–) in these languages. In the bata group Ch *–z– assimilates an initial voiceless obstruent. See **b[a]z*– ‘throw’, **fVz*– ‘pierce’, **tiz*– ‘bite, pierce’, **geza* ‘main, tail’, **quzi*– ‘hunger’, **ħaz*– ‘gather’ and the following roots:

**ħazaw* ‘cloud, mist’: W 1 Hs *házóó* ‘mist’; C (Kr) ‘cloud’: 1 **hasu-mba* (–um < *om–) : Hwn *hašumbe*, Gaa *hüsəmba*, Gbn *hüsəmbā*, Boka *xusumbā’a*; 12 (Kr) *Lame házó-mbúši*.

C **kuza* ‘weakness’, **kazu* ‘to be ill’: C 5 Glv (Rp) *kuza* ‘sickness, disease, illness’, (Kr) **kuza* ‘weakness’: Glv *k(w)ùzà*, Mnd *kùzà*, Gava *kuzà*, Nak *kwəza*; 7 Mofu *kwaz* ‘become meager’; 10 Bud *kázua* ‘be ill’; E 7 cp. Mubi *kée’žú* ‘be ill’, *kā’žáu* ‘fever’ (irreg. reflex of medial –z–, can it point to Ch *k–?) Probably, related to this root is C 2 (Kr) **kuzu-ku* ‘medicin’: Bura, Mrg *kuzugu*, WM *küzügu*, Klb *küzükú*, Wmd *kuuzugu*, Hld *küzügu*/ cp. Tubu *kízi* ‘Ermüdung’.

mizi*/mazi* (pl. **maz*–) ‘husband, man’: W **mizi*: 1 Hs *míži*, pl. *mázáá* ‘husband’; 2 **miš*: Ang *mis*, *gó-mis* ‘male’, *mis-kaam* ‘great man’, Ank (Fp) *miis*, Mnt (Fp) *mes-kaam* ‘male, husband’, Mnt (J) *mēs-káam*, Sura *miš* ‘Mann’; 3 *mizi* > Krkr *məzi* ‘man, husband’, Ngm *mizi*, Maha *bo-moži* ‘man’, Bele *mihì*, Krf *mižži*, Glm *múši*, Gera *mizi*, Grm *miži* ‘husband’ [**mizi*], C 3 (Kr) FG *mazə* ‘king’; 9 Log *yule-mazi* ‘slave’ (cp. **hol*– ‘slave’); E 1 Sum (L) *mižó* ‘stranger’; 5 Bid *miidò*, pl. *mídaw* ‘man’, pl. ‘husband’ (cp. Bid *míite* ‘husband’, derived from Ch **mVt*, note, that Ch medial *–t– > –t̥– in all the dangla languages), Mig *míidi* ‘man’; 6 Mok *mózi-gú*, pl. *maz* ‘chief’; cp. 4 Sok *máážo* ‘slave’. /Jglb *mz*.

**mazi* ‘river, water’: W 4 **mazi* ‘water, watering place’: Wrj *mazə-nā*,

Kar *mazə*, Paa, Siri *maži*, Miya *mazə-n*; C 1 (Kr) TP *mižima* (assim. < **mazi-ma*) ‘lake’; 5 Gis *muzaw* ‘river’; 8 Musgoy (Kr) *máza-maza* ‘river’; E 6 Mok *mizzi* ‘rainy season’.

puz*– ‘rainy season’: W **puzaw*: 2 Ang, Chp, Mnt *pas*, Ank *pas* Mpn *tar pas*, 3 **puzaw*–: Bol *púzo*, Krk (Kl) *pusau áamu*, (L) *fəzó*, Ngm *hüzô* [fəzo*]; E **puzi*: 4 (?) Sok *pəsò*, *pezé* ‘be wet’; 5 **pudi*: Dng *pùdiya*, Mig *pídúwán*, *pídúwán*, Bid *pudè*; 7 Jegu *pide tíŋ*.

**maz(VH)*– kind of antelope: W 1 Hs *máázoo* ‘harnessed antelope’; C 10 Log *mázaa* ‘antelope’; E 5 Bid *máday* ‘gazelle ourebi’. Cp. Fula *bamaaza* ‘k. of small antelope’ (DW:59).

maza ‘earth’: W 4 Wrj *məzai*, Kar *amza*, E 1 Kera *mas-ka* ‘sandy soil’.

**biHVz*– ‘crack, cleave’: W 3 Tng *bize* ‘crack (house, pot, calabash)’; C 5 Mofu *–bəz*– ‘se fendre, se fissure’, cp. 4 (Kr) FB *biža* ‘divide’.

gaža ‘horn’: C 7 Mafa *gəza* ‘musical corne’; E 2 Kbl *gəžǎ*; 3 cp. Som *hú-gádi*.

C **tiz*– ‘guinea worm’: 4 Gude (H) *tíisà*; 7 Mafa *tíže*; 10 Log *tsázee* ‘worm’.

**bužam*– ‘beard’: W **bVmzi*– (metath.): 4 Paa (MS) *bínza* (–nz– < *–mz–); 5 (Kr) Pol *bəmzi*, Dwot *bəmzi*; C 3 (Kr) HG *žčmba* (metath.); 4 (Kr) FM *mbūžamu*, FB *mbūžāmùn*, Gude *bužāmjin*, Nzn *bužēmi*, Gudu *mə-bēžim*, Mwl *mibúdyimu* (–dyi– < *–zi–); 7 **bozom* (–om < *–um, vowel assim.): Mafa *bózòŋ-gwai* ‘beard, chin’.

C 4 **kuza* ‘slave’: 4 Bch *küsa*, Gudu *kuza*, Nzn *késé* (vowel assim.); /Akk *kizū* ‘groom, personal attendant’ (A8:487) / HS 1515 **küž*–.

Medial *–č– is preserved in Northern bauchi, matakam and dangla languages. It yielded –s– in Hausa, the same reflex is more than likely in other CCh languages (judging by the few examples so far collected). See C **dVHVč*– ‘squeeze’, **haw(V)č*– ‘river’, W **IVHač*– ‘rub’ in ch. I. The rest of Ch roots with medial *–č– is given below.

koč– ‘beans’: C 10 Kus *kóži*, Glf *koži*; E 5 Bid *kóča* ‘haricot’.

gači* ‘spear’: W 2 Ang *gašii* (nouns in the sura group have CVC structure, so it may be a borrowing); 3 **gači*: Krkr *agači*, Dera *gai*, Gera *gossa*, Glm *gass* [gas*]; 5 (Kr) Pol, Buli *gəs*, Gedi *gəsi*; 6 Ngz *ngàs*; C 1 Tera (N) *gas*, Jara *gas* /Nm **gas*, Kush Saho *gaša* // HS N **gač*– ‘spear’.

leč*– > [hV*]leč– ‘vomit’: W 3 Krf *lēcču-wo*, Glm *láss*–, Gera *liši-mò* ‘vomit’, Dera *lési-k* ‘sickness’ [**laTa/u*], E **yaleč*–: 1 Kera *hàrsé* (*–rs– < *–lč–) ‘spit, vomit’; 5 Bid *geleč* ‘vomit’.

*kača- 'divide': W 1 Hs *kásá* 'arrange in small heaps, portions'; E 5 Bid *kač* 'part, divorce' / Rift. Iraqw *qasis* 'divide'/(E:253) 1556 *kač- 'divide'. Note deglottalization in Hausa.

*pVč- (*paHVč-) 'refuse, abandon': W 1 Hs *fāsā* 'postpone to another day, abandon the idea of doing smth.'; E Bid *pòòč*, Mig *póòč* 'refuse'.

*kuč- 'near': W 1 Hs *kúsā*; 2 Sura *kús*, Mnt *kus*; 3 Krkr *kwačo*; 7 Fyer *kús*; C (Kr) 3 HF *kwusi*, HG *xuzi*, HB *γusa*; 10 Glf *gské* (partial reduplication).

W *kuči 'basket': W *kuči 'basket': 2 Ank *ta-kuši*; 6 Fyer *kiči* / Kush Kemant *kišāa* 'basket' // IS (1:365), HS N *kič- 'basket'.

*dač- (> *da'ač-) 'beat, strike': W 7 Bok *dās* 'to whip', Df *dās*; C 5 Mofu *-dač-*; E 5 Bid *òdòč* 'battere qc.(eau qui frappe contre la bord)'.

*uča- 'wait': W 3 Tng *ase*; 7 Sha *ča*; E 5 Mig *úćaw*.

C *buči (< *buči) 'squeeze' (Kr): 2 WM *bičiba*, Klb *abüči*, Hld *bičibiya*, Chb *bucā*, Mrg *bičü*; 5 Mnd *bičā-ntu-bičā* / Arab *bhṣ* 'être lourd à porter, accabler (charge), surcharger (une bête de somme)'.

W *paču 'swell': 1 cp. Hs *ḍorawa táá fāsū* 'locust-bean tree is showing signs of buds'; 4 Wrj *pəč-*, Diri *fəču*, Paa (MS) *pičüü-* (*-a- > -i- due to the long vowel in the next syllable); 7 Df *fos*.

Cp. also E 5 *mič- 'son': Mig *miičā* 'son', Bid *mico*, *mīčā* 'child' / Ug *mī* 'son', Eg (Pyr) *ms* 'child' // HS N 1769 *mič- 'son, child'.

In CVčVC- position Ch *-č- may yield -č- > -z- > Ø, for example:

*nV-[g]ačami 'cat': W 4 Paa *ngačama*, Wrj *ngayin-na*, Kar, Miya *gazam*, Dera *ngayin*, Mbu *gayin*, Cagu *gim-en*; 5 (Kr) Gdz *ngazin*; 6 Bade (Kr) *ngayam*; C 4 Nzn *bü-güžame* (Kr); E 4 Mubi *gáyómó*, Jegu *gáyám*. (Cp. 1 Sum *kožna*, Tum *kožn* 'cat' pointing to voicing of Ch *-k- in contact with *n-*: *ngačam < *nkačam). / Jglb *g2zm*.

*gačim- > gačum 'chin': W 6 Ngz, Bade *gümčí* (metath.); C 8 Daba (Jglb) *mādū-güzōm* (-z- < -s- < *-č-); E 4 Sok *gússum-dum* 'your chin'; 5 Bid *gèčimā* 'chin, beard', Mig *gáčímó* 'chin'; 7 Brg (Jglb) *gòčòm* 'chin' (-om < *im-). / Jglb *gšm*.

The palatal emphatic *-č- in medial position is still preserved only in some Northern bauchi languages (Siri, Diri, Warji). Of special interest is the dental reflex (-č-) in W bolewa and in E dangla and mubi languages. The full list of roots with medial *-č- seems to be as follows (see also b[o]č- 'excrement' (I.3) and *Hailič- 'coal' (I.8)):

*pučari 'urine': W 1 Hs *fičáarii* (-i- [= ə] < *-u- due to a long vowel in the next syllable), Gwn (Ma) *bíčári*; 4 *čəpur- (metath. < *pučari): Wrj *cəprái*, Kry *cípír*, Diri *áčəbəlá*, Miya *cəpúr*, Paa (MS) *cipúrá*, Siri *čipəri*; 5 (Kr) Dwot *bužari* (shift of emphatization and then voicing of a sibilant in intervocalic position); 6 Ngz *vəđáu*; C 12 Masa (Mo) *súmura*, Bnn (Kr) *súmarā* (< *supara < *čupara, metath., irreg. reflex of Ch -p-), (Kr) Lame *žirbír*, ZB (J) *čubúr* (metath.), (S) *dzübur* (< *čubur- < *čupur-, voicing of *-p- in intervocalic position and regressive voicing of č-); E 1 Kwn (J) *kó-čor* (< *kV-wVčor < *kV-pVčVr-), cp. Kera *kídiw* (? < *k-udiw* < *k-wudi* < *k-puči*); 2 Kbl (Cp) *čəbərá*, Lele *čóóró* (metath. and contr.); 3 Tum *bəžər*, Ndam (dJ) *buž* (*p- > b- under the influence of a medial voiced consonant); 5 Dng *pidýi*, Mig *pidýi*, Bid *pi'i*; 7 (Jglb) Jegu *píi*, Brg *fičýi*, Mubi *fāřdyé* 'urine'; 3 Sum (L) *wúúželai* 'to urine' / Jglb *pšr*, Arab *fəzz-* 'horse urine' // AA N 12 *pVč, HS N 2003 *puč-.

*po[č]- (-č-, -č) 'to clean, be clean': W 2 Sura *pwos* 'reinigen'; C 3 (Kr) FG *pšüváyí*, HF *psagü* 'cleanness'; 7 Mtk (Kr) *mpacá'a* 'cleanness', Mafa *pac-* 'sweep' / Arab *nzf* 'être, rendre pur'.

*kuč- 'nine': W 3 *kuč-: Ngm *kudi*; 4 Wrj, Kar *kuciya*, Diri *čašə*, Mbu *kuča*, Miya *kučiya*, Diri *bu-kəčuwi*; 6 Ngz *kúd-kuv-đa*; 3 (L) *-gesu. Gbr *ti-gesu*, Kbl *te-gesu* (voicing of a velar in medial position, irreg. vocalism).

*n/lač- 'squash, step on': W 1 Hs *lááčā* 'squeeze fruit to test ripeness, make finger impress on soft thing, crush smth. soft'; 3 Tng *lače* 'step on, trample'; C 7 Mafa *nac-*, *neč-* 'prendre sur la bout du doigt et en frotter' / Arab *lzz* 'presser quelqu'un', *lzy* 'frapper avec la paume de la main'.

*bač- 'trample, push': C 5 Mafa *mbác-* 'trample'; 10 Mba *bás* 'press, squeeze'; E 5 Bid *bačy-* 'to box', *bəčā-k* 'push (one another)'.

W *buči 'nail': 4 Siri *büüč*; 5 (Sm) Buli *bə'si*, Tule *bus-kii*, Zaar *biis*, Sayanči *bis*

*dVHVč- 'squeeze': C 7 Gis *doč*, Mofu *-dač-*; 8 (Kr) Daba *dič*; E 2 Tob *dásé* 'grind'; 5 *deč-: Mig *dəčdyó* 'bousculer'. (Note that variation of vocalism in CCh speaks in favour of a contraction, i.e. of a laryngeal in the middle) / Arab *d'z* 'fouler la terre'.

*kVč- 'big, tall; many': W 3 *kuč-: Tng *kude* 'big, large, plenty'; 5 (Kr) Gdz *ka-kšé* 'big'; 6 Fyer *kóos* 'hoch, lang'; C 11 Mba *kóčo* 'many, much'; E 1 Tum *kāž* 'big, tall'.

W *kič[o]r- 'fat, grease': W 1 Hs *kíčéé*; 3 *šiDor 'fat': Bol (M) *šidər*,

(Sh) *sidór*, Ngm *šidār* 'fat' [šəɖar], 5 (?) Boot (Sm, 1978) *kuts'n* 'belly' / Arab *kuzr-* 'graisse des reins' // HS N 1565 **kučer* 'fat'.

The voiced palatal affricate /ʃ/ was rather unstable in medial position; before a back vowel it merged with Ch *-ʒ-, in the auslaut – with Ch *-č-. In addition, this phoneme was of a very low frequency (in Sem too), so we can hardly speak of regular reflexes within the family. All the roots with Ch *-ʃ- are given below.

**guʃi* 'internal organ': W 1 Hs *gúʃíyáá* (pl. *gúzáàyéé*) 'internal organ of a bird'; 7 Ngz *giši*, *gəsi* 'heart'; cp 4 (Kr) FB *xùzù-mìn*, FM *xùzùmu* 'stomach' (-ʒ- < -ʃ-); 7 cp Mofu *gaʃaŋ* 'au cour, au centre'; E **guʃi*: 1 Kera *gíidə* 'stomach, belly'; 3 Ndam (dJ) *guʃ* 'stomach, belly', (L) *giʃ-am* 'Bauch' / Kusitic Xamir *gizuu* 'belly, heart', Xamta *gwazgu* 'belly', etc., Dlg (1976:271) / HS N 991 **guʃ-*.

gawuʃ-* 'hair': W 1 cp. Hs *gááši*; 3 Krkr *bá-gwáʒó* 'beard' ('hair of mouth'), cp. Glm *gúúsá* (aw[u]* > *-uu-*); 6 Ngz *guzai*; C 1 **xwasa* (< **gawasa*): Tera (N) *γos*, (Kr) TP *wəsi*, Boka *xwasá*, Gbn *wěsè*, Gaa *wašá*, Hwo *wasá*, 3 (Kr) FG *gwùʒ-am* 'beard'; 4 FJ *ngwùʒa-mìn* 'beard'; 5 (Kr) Nak *gùʒa*, Glv *gùʒá*, Gdf *gwùʒá*, Gava *gwùʒá* 'hair'; 7 Mafa *gwác*, Gis *ŋ-gwič* (< **gwači*); 12 (Kr) Masa *ɲusa-no*, ZB (S) *ngəsa*; E 7 Jegu *goʒum* 'beard'. /Nm **gasi*, JgIb **g2z-* 'hair'.

**naʒ-* 'ask, tell': C 7 Mafa *nʒ-* 'retell'; E 3 Tum *naʒ* 'bubble, chatter'; 5 Bid *inəd* / *indú* 'ask' / cp. Eg *nd* (Pyr) 'fragen um Rat' (2:370).

bVʒay 'hen': W 3 **boʒ-*: Tng *fwoʒ*, Pero *pooʒé*; C 4 FM (Kr) *bùʒéyi*.

haʒV* 'guts, intestines': W **ha-[h]aʒi-n*. 1 Hs *hánʒíí* (metath. < **haʒi-n*), (pl. *hanzaizai*) 'intestines'; 3 **haʒa/i* 'guts': Krkr *ázi*, Bol *azin*, Ngm *házi*, Krf *áʒʒó*, Glm *ási*, Gera *háza* [azi*]; 6 Sha *áʒi*; C 7 Mafa *va-yac* (< **va-hac*) 'intestines', Bld *ača* 'Eingeweide'; E 2 **kV-as-*: Lele *kásiya* 'intestines'; 1 Kwn (L) *kaʒam* 'Bauch' (< **kV-aʒa-m*); 5 **aɖ-[um]*: Mig *áádú*, Bid *aado* 'guts, intestines'; 7 Mubi (L) *háádídóó* 'guts', Jegu *aadé* 'Bauch, Magen'.

**Haʒ-/nʒa* 'sun, day': C 10 Log *sə*, Bud *aaʒi* 'sun'; 11 Mba *nʒáá* 'day'; E 'day': 3 Tum *nʒa*; 4 Sok *ʒa* / Eg *ʔd* (gr) 'Beiname der Sonne' (1:238), *ʔndw* 'Sonnenglanz' (1:207) // HS N 1086 **ʔaʒ-* 'sun'.

**hVʒ-* 'cut (hair), shave': C 7 Mofu *-həʒ-* 'shave'; E Kera *hədə* 'cut with a sickle'; 4 Sok *ači-ači* 'scheren, rasieren' / Arab *ħdd* 'cut'.

**guʒ-gaʒ-* 'gourd': W 1 Hs *gòòʒíí*; E 2 Kbl *guʒe-ga*.

C **ariʒa* 'scorpion' (Kr): 4 **ariʒa-n*: Mnd *rrʒa*, Glv *arʒá*, Gava *rinʒá*,

Zxw *ranʒá* (metath.); 7 Mafa *wərəʒá*, Mofu *aráč*, Bls *ariš*, Gis *arač* / Eg *d'r.t* (OK) 'scorpion' (5:526). Metath. in Ch ? Probably the same root as **ʒa'ir-* 'locust' (I.3).

C *gVʒa* 'sickle': 5 (Kr) Gava *giʒá*, Nak *giʒa*, 7 Mafa *gwaʒa*.

E **udun-* 'ear' (? < Ch **uʒun-*): 7 Jegu *údúné*, Bir *údún-gi* / Akk *uʒn-*, Arab *uḏn-* 'ear'.

W 3 **ta-ruʒi* 'vein': Bol (B) *tezze*, (Kr) *rwzé*, Krf *táʒí*, Glm *tà-rši*, Gera *tiizi*, Paa *tíʒi*, Bele *tóhé* [**taze/i*] / Eg (Pyr) *rwɖ* 'vein, tendon'.

II.4. Lateral sibilants and affricates.

(see Table 13 on p. 113)

Though examples with medial *-s- are not very numerous, there is no problem with the reflexes. Ch *-s- > -l- in the languages with no laterals and > -ʒ- in the languages that do have laterals. There are two exceptions: in the masa group *-s- > -s-, in some bata languages *-s- > -l-. See **Ha-paš-* 'shoulder' (I.1), **gaš-* 'fall down' (I.5), **q/kiš-* 'thrash, beat' (I.6), **waš-* 'cut, stab' (I.8) and the following roots:

**tuši-* 'pierce': W 1 Hs *tíllá* 'pierce a hole'; 3 Pero *túlo*; 5 (Kr) Buli *tušu*, Brm *tule*; C 4 (Kr) FM *tíʒi-mun*, FB *tíʒi*, Nzn *tíla-n* 'pierce', Gude (H) *tələ* 'make a hole'; 10 Bud *tel* 'stecken'; 12 ZB (S) *tíši* 'coincer'.

**baš-* 'dig; bury': W 3 Bol (L) *baal-*, Krkr *mbəl-*, Ngm *bəl-* 'bury'; 6 Ngz *bəʒu*, Bade *əbʒú* 'bury'; C 2 (Kr) Bura *bʒá* 'bury'; 7 Mafa *bəʒa* 'ecouber, déchaumer', Mofu *-baʒ-* 'to plough'; E 5 Bid *bəl-bəl* 'creuser les fourmilières pendant la famine' / Arab *nbš* 'déterrer, exhumer'.

**goš-* 'shoulder': W 2 Mnt *tán-gól*; 5 (Kr) Pol *gwəš* (-s < -ʒ-); C 4 Gude (H) *gwálá* 'upper arm'; E 4 Sok *koo-gol* id.; 5 Mig *guul* (irreg. -ū-); 7 Mubi (L) *gól*.

**giš-* 'cut', **[nV]-guš-iya* 'knife': W 2 Grk (Fp) *kiel* 'knife'; C 10 Mba *giʒa* 'cut'; (Kr) 2 Ngw *ingəʒiya*, Klb *ngúhiyá* 'knife'; 3 **ngi/uʒa*: FK *ngiʒá*, HB *ngúʒa* 'knife'; 4 Gude *ngilá*, Nzn *ngəla* 'knife'.

**koš[a]l-* 'star': W 1 5 (Kr) Geji *kyaʒil* (irreg. vocalism, ? < **koʒili* < **koʒali*), (Sm) Kir, Tala, Bələ *ŋgaš* (*ŋg-* < **nk-*); C 5 Glv (Rp) *kwákwaʒá*, (Kr) Gava *kwəʒəʒá*, Glv *kwáʒəʒá*, Nak *kwašaša*, Gdf (JgIb) *kwašálá*, E **kāl-* (< **kala-* < Ch **kašal-*): 7 Jegu *kááló*, 5 Bid *kaalo*, Mig *kalú*, Dng *kàalo*. ECh does not originate from **kyr*, as in Muk (1995:72).

**naši* 'swim': C 10 Log *lši*, *nši*, 11 Mba *niš*; E 1 Kera *léelé* (assim.), Kwn *nəl* (J); 3 Sum (J) *nəl*.

bVšVš- 'be full of water': C 7 Mafa *bažaža'a* 'plein(de liquid)'; E 5 Bid *bòlòl* 'dèborder'.

**k[o]ša* 'morning, dawn': W 3 Tng *kwale* 'dawn'; C **k[o]ža*: 3 (Kr) HN *xəšuməy* (*x* < **k*- under the influence of medial sibilant; *-um* < *-am*), HG *kašù-məy*, HF *xəžə-mo* 'morning'; 5 (Kr) Dxw *tí-kùža*, Gava *t-xuža*, *kuža* 'morning' (irreg. *-u* < *-o* after a velar), Glv (Rp) *kəž* 'to do early'.

C **xabož-* 'melon' (Kr): 2 **xwamža* (*-mž* < *-bž*): Hld *xwažaw*, Klb *xwáža*, Chb *angwáža*, Bura *hwomža*, Mrg *gumzə* (irreg. reflex of initial **x*-, probably, < **ŋg*- < **ŋx*-); 3 **xwašubo-* (metath.) > FG *xwašùhwu*, HN *xəšj-məy*, HB *xəšu-mə*, 4 **xwabužu* (< **xwabožu*): Gudu *hwóblu*, Bch *hálùbey*, FB *xwəbjžin*, FM *xwəbùlu*, FJ *xwəvili*.

Cp. C11 **gež-* 'grind': Msg *gežo*, Mnj *giži* ~ Arab *gšš* 'casser, broyer';

C 7 Mofu *žəžər* 'entourer, joindre, réunir' ~ Arab *ħšr* 'rassembler, réunir' < Sem **ħšr*).

Medial **-č-* > *-š-* in W bauchi-bade and in CCh. Reflexes in dangla, mubi (*-č-*) and in the bole group (*-d-*) prove that it was an affricate, not a sibilant in PCh. All the other W and ECh languages reflect **-č-* as *-s-*. To be absolutely sure of the reflex in the bole group we need at least a few more wide spread roots with **-č-* in medial position. See **puču* 'plait, sew', **poHač-* 'break (off)' (I.1), **t[ɔ]č-* 'cold' (I.2), **qkoč[i]p-* 'bark, shell' (I.6), **ič-*/**ač-* 'to cough', **wu-ič-* 'cough' (n.) (I.7) and the following roots.

**koča-k* 'calabash': W 1 Hs *koòsà áiki* epithet of any drum; become ripe (of round things growing in the ground); 2 Ang *kwás*, C (Kr) 3 HN *kwəškwí*, Kap *kwəšaki*; 7 Mafa *kəšah* 'fragment of a calebase'.

**koč-* 'beat, forge': W 4 Diri *kwašu*, Siri *kwaša* 'forge'; C 5 Mofu *kəš-* 'push'; E **koč-* 'beat, strike': 5 Mig *kòččó*; 6 Mok *kóssé, gússərike*.

**goča-IV* 'termit': W 4 Wrj *gwašala-na*; C 1 Tera (N) *gəhl* 'termite hill'; 5 Mafa *gəša*; E 3 Lele (Grg) *gúsi* (< **gosi*) /Nm **gəhla*.

**ruč-* 'dig, scrape': W 3 **rud-* 'scrape': Gera *ruud-*; 6 Ngz *rəšú* 'widen hole by chopping dirt from sides'; C 5 Gis *irše* 'dig', Mafa *ruša'a* 'not deep'.

buč- 'pile': W 1 Hs *búúšiyáá* 'large pile'; C 12 ZB (S) *buš* 'mettre en tas'.

awVč-* > **wáč-*/ač-* 'rise, stand up': W 3 Tng *aidi* (< **audi* < **awVci*) 'stand up, rise from the dead'; E **wáč-*/**ač-* 'stand up, rise': 1 Kwan (L) *asə*; 4 Sok *wəšə*; 5 Mig *wačaw*; 7 Jegu *uč* (< **awuč-*) / Arab *wšf* 'gravir, monter' // HS N **wača* 'stand up'.

w[e]č- 'shaft': W 3 Tng *widi* 'shaft'; C 7 Mofu *weš, áweš* 'bois de flèche', Mafa *waš* 'manche de flèche'.

**baHač-* 'strike, break': W 4 Paa (MS) *bašú* 'break, snap'; C 5 Mafa *baš-* 'strike, break (bone)', Mofu *-bəš-* 'break in pieces'; E 5 Mig *bəəčó* 'strike'.

**taču[H]-* 'break in small pieces; pound': W 3 **taču-* (< **taduH-* < **tacuH-*): Krkr *tədu* 'break, split', Dera *tədəni*; 5 (Kr) Geji *taš-ka*; 6 Ngz *tašu* 'break, scatter', Bade *taasán* 'break into pieces'; 7 Mafa *ta-taš-* 'croquer un produit dur en le cassant (sel, natron)', hardly < *taš* 'bone' as in Barreteau:352; 12 ZB (S) *nžúš* 'concasser' (*nž-* < **nt-* by assim. with the medial sibilant) / Eg *tš* (MR) 'Korn zerquetschen, mahlen', *tštš* (Med) 'zerdrücken, zerquetschen (Medikamente, Korn)' (5:329,330). Cp. C 5 Mafa *taš-* 'frapper à petit coups' (< **tač-*) ~ Arab *ntš* 'frapper'.

W 5 (Kr) **n-geči* (? < **nV-gayči*) 'chest': Gdz *ngeši*, Diri *ngəšə* // Arab *gawš-* 'breast-bone, chest'.

W 1 Hs *táási* (< Ch **ta/āč-*) 'fly' (v.) ~ Hbr *ṭwš* 'fly', Jib *ṭešš* 'jump up' / HS N 2451 **tač-* 'to fly'.

E 5 Bid *páččó* (< ECh **pac/č-* < Ch **pac/č-*) 'bifurcate' ~ Arab *fšh* 'écarter les jambes', Eg *pšš* (Pyr) 'ausspreizen' (1:560).

W 2 Mpn *paas* 'comb hair' ~ Arab *nfš* 'séparer la laine, le coton avec les doigts' // HS N 1918 **pac-* 'card, comb'.

The lateral emphatic (*-š-*) is preserved only in Northern bauchi languages; it can be traced in the case when HS *-č-* corresponds to *-š-* in CCh, Ngizim or Southern bauchi languages. Like in the initial position, Ch **-č-* > *-dy-* (or *-d-*) in dangla and mubi groups. Ch **-č-* > *-s-* (not a dental) in bole languages. So far the following explanation may be suggested. Though the "WCh prorer" languages have no laterals, there exist a few words with *š* (originating from Ch *č*) in bole languages. Judging by reflexes in Northern bauchi, PCh **-č-* > *š* > *š* (i.e., the first step was not the loss of emphasis, but desaffricatization). If the same change took place in the bole group, the sibilant (though an emphatic one) could further yield only a sibilant and nothing else, so Ch **-č-* > (*> š*) > bole *-š-* (*> -s-*) is quite natural. The non-emphatic affricate (**-č-*), on the contrary, at first had lost its lateral articulation, merged with **-c-*, and thus yielded *-d-* in the bole group.

For medial **-č-* see **bečV* 'beer' (ch.I.1), **deč-* 'short' (ch.I.2), **kač-* 'chop' (ch.I.5). The rest of the rest of the roots is given below:

**mi-čayip-* 'friend, guest' (note a very rare case of PCh **mi-* prefix preserved in all the languages): 2 **mi-zayp* (< **mi-sayp*, regular voicing of *-s-*): Sura *mi-zəp* 'Fremder', Chip (Kr) *mə-zip* 'friend', (Fp) Ank *mos*, Mnt *me-zep*, Grk *mə-dap* 'stranger'; Ang *man-zap* 'bride'; 2 **mi-ša/yi/p-*: Krkr (Kl) *šapa*, (Kr) *n-záfə* 'friend', Pero (Kr) *mi-živá* 'guest' (note the lateral

originating only from Ch *č; C 2 (Kr) *mi-šipi- (<*mi-š[ay]ipi-) 'guest': Mrg mi-šipi, Chb mē-šēbi, Wmd mē-šēpi, Klb mī-híbi, WM mi-šibi / Arab dayf- 'guest', dyf 'be a guest' // HS N 584 *čayVp- 'stranger, guest'.

*'arič- 'earth': W 4 *HVriš-: Paa (MS) rišá 'earth, ground, country', Mbu rišú, Cagu hiíše, Siri rēšú 'earth'; E *'irača (vowel metath.): 5 Bid 'irādyà 'valley' / Akk eršetu, Arab 'ard-, Jib 'erd // HS N 54 *'arič- 'earth'.

*guča-um 'cheek': W 2 Ank der-goss 'jaw'; 4 Jmb gúšà; 7 Df gāsām; C 1 (Kr) Gaa čēšē-ya, Gbn čēšá-ya (č- < k- < *g- under the influence of a medial sibilant); 5 cp. Mofu gwaš 'maxillaire inférieur'; 12 *gušo-: ngošo-no, BM gwāši-no (cp. Misme (Zime) ngušo); E *gađam-: 5 Bid gēdēémà (-e < *a- in contact with an emphatic consonant), Mig gāđumò; 7 Bir gāđáyó / Berb Ahg agz 'cheek' // HS N 866 *gač- 'cheek, chin'.

*buča 'wing': W 4 Cagu bušey; C 5 (Kr) Gava kwù-žùbà, Dxw ku-lvā (-lv- < *žb- < *šb-, voicing of *š- in a weak position).

kuča 'basket': W 1 Hs kuča; C 10 Msg kušaa.

Medial *-č- does not influence initial voiceless consonants, cp. CCh *puš- 'break into pieces' (Kr): 2 Mrg pišú, Wmd pišəw, Hld pišiná; Mr (N) pəšə; 3 HN pšē, Kap pušē, HB pušə, HF pšo, FG pša-mti / Arab fđd 'break, crush' // HS N 2004 *puč- 'break, crush'. Derived from this root is Ch *poHač- < HS *poHač- (I.1).

For HS *-č- cp. also: W 5 *m-buy/Vš-: (Sm) Tala mbeš, Geji mbuušī, Buli mbiš, Tule mbòòšə, Zaar buuš 'egg' ~ Arab bayd- 'egg' // HS N 354 *buyač-.

W 1 Hs gāāčā 'bite off' ~ Arab 'dđ 'bite off';

E 5 Bid kedý 'hurt, wound with a stone', kedy 'break', Mig kòòdo 'beat, strike' ~ Arab qyđ 'casser'.

I.4a. Secondary laterals.

In order to distinguish between primary and secondary laterals in CCh languages we need either a Semitic parallel, or W/ECh data, namely:

primary	*š	secondary	*š	primary	*č	secondary	*č
Hausa	l		z	N bauchi	š		s
bole	l		z	dangla, mubi	č		s
dangla, mubi	l		z	Sem	*š		*š

The data so far collected include only three roots with a secondary -š- (s₃ in P. Newman and H. Jungraithmayr's notation), two of them have the most reliable HS parallels with "pure" -s-.

*ha-lesi-um 'your tongue': W 1 Hs háršē, hálšē; 5 (Sm) Bgh ni-lis, Zaar rəs-ən (dial. nəsən), Grnt (Jg) laši; 9 Gdr (Mo) əržum (<*HVržum < *HVlšum < *HVls-um); 11 Msg álés, alesí, alxi, Mnj élés, Mba nášay; 10 (L) Log nši, Kus insr, 12 Masa (J) sinná, (Kr) sina-no, Lame šidí; E 5 Dng léséé; 7 Bir liisi, etc / Hbr lāšōn, Arab lisān-, Jib elsen, Jglb *ls₃ (see I.8).

*'es- > *'esas- 'bone': W 2 Sura 'es, Ang yis, Chip 'és; 3 *wV-es-k/n (wV- is a prefix of body-parts): Kkr wású, (M) Boloso-ki, Ngm oso, (Kr) 'wōšš, Maha oso-k, Krf wōššā-nyí, Gln wiišī-η, Gera wánsə-nyí, Tng wos [*'was]; 5 Grnt (Ja) yinší, (Sm) Geji 'iisii, Tule ny-əsə; C *Hesas- (< HV- 'esas-, with a body-parts prefix): 1 Tera (N) g'əš; (Kr) Boka ala, Gbn ele, Gaa ela; 3 (Kr) FG 'išu, FK 'yišu, HF 'iša, HN g'íšē; 4 Gude (H) 'ila, Bata (Jglb) ulé, Bch (Skn) uùlé, (Kr) Mwl 'éli, FB 'izu-n, FM 'izu; 5 *ša-sa: Wnd (Mo) šéé-še, Mnd (Kr) xyc-xyc, Glv (Rp) šá-sa, (Jglb): Gdf šá-sa, Dxw ša-sa; 6 Skr (Jglb) th-aš; 7 Gis 'et-eš, Mafa t-aš, Mofu tē-t-ēš, Mkt (Jglb) ášas; 10 Log aše, (Mo) háše; 12 (Kr) Lame syò, Peve so, ZB (S) úso; E 2 Lele (Grg) isii, Kbl (Cp) 'isi; 4 Sok ósse-ηgi; 5 Mig 'ássú; 6 Mok 'òssé, 7 (Jglb) Jegu 'aso, Brg 'ásó. Note 'es- > 'esas- > ša-sa, such a 'lengthening' is typical of two-radical roots with one weak consonant, preventing them from "melting away". Nothing of this kind is observable in *kas- 'bone'. Different root-structure in addition to quite irregular reflexes of the velar in case a single root would be reconstructed (cp. E 5 Mig 'ássú, Bid kasko) speak in favour of two PCh homonyms. / Jglb *ks₃.

*kasi 'bone': W 1 Hs kášíí; 4 Wrj káasuu-nà, etc.; C 11 Msg kéx-kéé, kéš-ké / Eg ks 'bone', Kush Geleba kas 'bone, leg', see I.5.

It seems that a secondary lateral appears under the influence of an initial laryngeal, in contact with -l- or with a velar.

So far we have no explanation of a secondary voiced lateral (-ž-), appearing sporadically in various CCh languages, most often - in FM and FJ. Note that it originates from Ch *-ž- and *-l-, namely:

gi[ž]- 'forge': W 3 *giz-: Ngm gizò, Gera gizə, C (Kr) 3 Kap giža 'smithing', 7 Mafa gəža; 5 Mnd (Kr) 'əžə-gžà 'smithing', 'ugža 'forgeron'; 11 Mba giš 'forge, blacksmith'.

*'a-lubi-ari 'lion' > C 4 FM lùvāri, Gude livāra, FJ žùvāri (I.8),

*Huliķu 'ulcer, pimple': FM mbù-žùgu (II.5).

II.5. Velars

Table 24.

PCh, WCh	1	2	3	4	6,7	C Ch	1	2,5	4	3,7	10, 11	12	E Ch	1,3	2	3	5,6, 7
*-k-	-k- či	*-k- či	*k ši	*k	k	-k-	*k, či	*k	*k či	*k	k	*-k- či	-k-	*k	*g, *k	*g	*k
*-k-	k, k	*-k-	*k	*k	k	-k-						*k, *g	*-k-				
*-g-	-g- -ži	*-g- *k	*g	*g	g	-g-	*g, xoC	*g, yu	*g, *ži	*g	g, k	*g	-g-	*g, ži	*g	*g, ži	*g

1.Ch *-k- > -g- in Tangale, Higi Ghye, Buduma, in lai and sumrai groups.
2. *-kw- > -gw- in glavda. 3. in contact with a sonorant *-k- usually > -g-.
4.Ch *-k- is palatalized before a front vowel. 5.In roots with an initial sibilant affricate *-k- often > -x/- in higi and glavda languages. 6. Ch *CVk- > CVhu- in musgu and masa groups.

For medial *-k- see *pok- 'husk; peel, skin'; *pVk- 'wait', *ipuki 'monkey' (I.1), C *tuk- 'taste' (I.2), C *[n]caku 'buy', *čaku 'measure', *čakwa 'pot', *žak- kind of bird. (I.3), *čuk- 'cut; knife', *čako 'calabash' (I.4); *hakVw 'stone', *urok- 'rub', *akuw- 'fire' (I.6), *rako- 'beat, fight', *rako- (?HVrako-) 'drive away', *Horak- 'be afraid; fear', *w[a]k- 'fall' (I.8), *kun-od- 'three', *čikan- 'goat' (II.8). A few more examples:

*sak- 'leg': W *seke (< *sake, probably < *sakay, vowel assim.): 3 Bol šeke, Ngm (M) šekε; 7 Sha saka'ù, Df sak-úr; C 7 Mtk (Kr) sák, Mafa sák, 10 Kus m-sáke; E 4 Sok sáka-dum 'dein Schienbein' / Jglb skr, Akk šāqu, Hbr šōq, Arab sāq- 'leg' // HS N 2179 *saq-.

C *soka (< Ch *coka, *so-> ša-), 'pot': (Kr) 3 FK, FG šaka, Fg šægga 'water pot'; 4 FJ šáku 'small pot', Bch sük-to 'large water pot'; 5 Nak šaka, Glv šəkā, Dxw sakə, Gava sək 'water pot'; 10 Kus skó 'pot', Log skwa, Bud hógu 'Kochtopf' / Hbr 'asūk 'small oil-jar', Eg st (OK) 'baking form' // HS N 404 *cok- 'vessel'.

*tik-/tak- 'divide': 3 Bol tikk-, Dera tik-, Tng tikt; C (Kr) 2 Klb atikəbíyā, Mr tikiya; 3 HN ntəkure, FK ntəkətu, HG təgəvure, FG txuvùr; 4 FM tik, FJ təkə(bi), Gudu təkēc; 5 Glv (Rp) tá-takā 'middle', tagw 'separate, divide', Dxw (Kr) takunanù 'divide' // Arab mtq 'cut in two'.

Ch *CVkVC- > CVgVC-, for example:

C (Kr) 2 *fukum 'cock': Bura fūgum, WM 'avūgum, Klb vígum, Ngw vikum, Mrg avgum, Wm fūgum.

C (Kr) 8 *r[ɔ]kum 'sickle': Bcm rokuməy, Gude rugunwa, FB rəgumun, FM rīgumu, FJ lugumwe.

*č[a]Kun- 'knife': W 2 cp. Grk long 'spear'; 3 *song- > Krf sōnge, Glm čonga (metath.); E 1 Sum (L) ságenu, Tum húgəən (-g- may come from any velar in medial position) / Hbr šakkīn 'knife'. Sem parallel points to voicing of medial *-k- in Ch // HS N 535 *čakin- 'knife'.

Note irregular -g- in *NCVk- roots:

C *mtika (< *mVtika) 'hen': (Kr) 2 Chb ntika, WM mīdigā, mtikā, Ngw ntika, Klb tīgā, Mrg mītikā; 3 FK kwōn tika.

C 2 (Kr) *mtaku (< *mVtaku) 'bush': Bura mītakū, Chb ntakū, WM mdakū, Mr mtagu, Klb táku, Wmd, Hld tagu.

The velar emphatic (*-k-) is still preserved in Hausa and in several Northern bauchi languages, though Semitic data proves that deglottalization is not a rare case in these languages. Tangale and Buduma seem to reflect Ch *-k- as -g-, but Ch *-k- as -k-. For Ch *-k- see *n-zuko- 'pierce, push' (I.3); *niḱ- 'lick'; *loḱ- 'lick, gouter' and laḱo- 'throw, sow' (I.8). Only a few roots can be added, namely:

*Huliḱu 'ulcer, pimple': W 4 Wrj riḱəi-na, Cagu riḱən, Diri uligim 'pimple'; C (Kr) *mbu/wu-liku-: 2 Wmd mbulūgu, Ngw mbilikū, Bura mbilḱū WM mbulkū 'ulcer', Chb mbilkū 'ulcer, pimple', Mrg mbilgu, Hld mbulugu, 'pimple'; 4 FJ mbulūḱiy 'ulcer, pimple', FM mbūžūgu 'pimple' (initial pref. hinders the regular *HVIVC-> HVrVC-> rVC- change); 5 Gava lugwā, Glv wulgi, Dxw lugwe, Nak wuləga 'ulcer'.

*saḱa 'carve, scrape': 1 Hs sāsāḱāá 'carpenter'; 2 Ang sak 'fell trees, cut; 6 Ngz sāsḱú 'scrape, cut off, carve'; C (Kr) 1 G šešeke 'cut, carve'; 4 Gude (H) saku 'scrape calabash' / Eg skḱ (NK) 'Holz bearbeiten' // HS 2180 *saḱ- 'cut'.

*suḱ- 'drive away, push': W 1 Hs sās-sūḱā 'drive away'; E 1 Kera sōke 'schieben, stossen' / Arab swq 'pousser devant soi' // HS *suḱ- 'push'.

*tuḱo- 'go away, run': W 1 Hs túḱā 'go away'; 2 Dera tako (irreg. vocalism) 'go away', 7 Df tōk 'run'; C 1 Hwn təkwa 'follow' // Arab taqtā q- 'rapide voyage', Kush Sidamo toḱ- 'run away' // HS *tuḱ- 'run'.

*roḱ- 'ask, beg': W 1 Hs ròḱā 'ask for smth.'; C 5 Mafa rək- 'beg, cadge'; 12 cp. ZB (S) rák 'se vanter'; E 5 Bid lók-lòk 'implorer', Mig lóllikò 'demander avec beaucoup d'insistance, prier'.

**sak*- 'plait': 1 Hs *sááká*, Gw *saka*; 2 Ang *sak*; 5 (Sm) Brm *saké*; C 11 Msg *sasaka* 'weave' / Kush Bilin *sakw*-, Xamir *sak*- 'plait, sew' (Dlg:265)/ Cohen 283, HS N 2178 **sak*- 'weave, plait'.

**daḱ*- 'pound': 1 Hs *dán-dáḱáá* 'beat, pound'; 7 Ngz *ḱəḱu*, C 1 (Kr) Hwn *dukḱun* 'beat'; 10 Mba *dák* 'dram'(v.) / Hbr, Arab *dqḱ* 'break, crush'// HS N 635 **daḱ*-/*duḱ*- 'break, pound'.

**laḱ*- 'swallow': W 1 Hs *láké* 'rapidly eat up'; E **lak*-. 1 (Ln) Mobu *sə-lake*, Ngam *sə-lage*; 3 Tum *lag* (*-g* < **-k*).

For secondary initial ejectives (*b*, *d* and *ʔ*) in roots with *-ḱ*- in word medial position see **baḱ*- 'cut', **dik*- 'build, establish; marry' and the following roots:

E **bok*- (< Ch **bok*-) 'flow': 7 Mubi *bok* 'rain' (v.); 5 Bid *bok* 'ooze' / Arab *bqḱ* 'rain'(v.) // HS N 199 **baḱ*- 'pour, flow'.

**śako*- 'want, love': W 1 Hs *zákú* 'be eager to get something'; 3 Tng *loko* 'love, want'; 7 Ngz *žákwaí* 'love, want'; E 5 Mig *dyékkó* 'aimer' (< **čako*- < **śako*-) // Arab *šwq* 'remplir quelqu'un du désir de quelque chose, exciter quelqu'un (se dit de l'amour)'.

In a cluster and in *SVḱ*- (or, rather, in **SVHVḱ*-) roots **-ḱ*- > *-x*- in CCh *tera*, *bura*, *higi* and *glavda* groups, cp. **ta*-/*aḱay*- 'thorn' (I.2) and the following root:

C 1 **cak*- 'ask'(Kr): Hwo *cáke*, Boka *saxá-ḱa*, Gbn *čəxi*, Gaa *ičuhai* / Hbr *š'q* 'shout', SAr *š'q* 'call', Kush Xamta *čawḱ*- 'ask' Dlg (1976:) // HS N 417 **ca'ak*- 'shout, ask'.

The majority of Ch languages do not distinguish between HS **-k*- and **-ḱ*- (cp. **pok*- 'husk, peel' ~ Aram (Syr) *pq* 'peel, shell'(v.), **sak*- 'leg'~ Akk *sāqu*, Arab *sāq*- 'leg', etc.). An accurate analysis of new data may confirm the development **-ḱ*- > *-k*- (but **-k*- > *-g*-) in Buduma and Higi Ghye, cp. reflexes in **sok*- 'pot' and in the following roots:

C **mu[k]w/i* 'gruel' (Kr): 3 FG *miki*, Kap *mikyé*, HG *mukəy*, HF *mukù*, 4 FB *mò/ùgin*, FJ *mwugyi*, Nak *məkùti*, Gudu *məkoəd*.

C 3 (Kr) **mu[k]V* 'squirrel': HG *mukəy*, HF *mukù*, FG *mwukùn*, FK *mukunu*, Kap *muké*, HN *məkəy*, HB *mukə*; 4 FJ *mikəni*.

Ch **-g*- > *-ḱ*- in the sumrai group. Medial **-g*- is usually devoiced in the auslaut in *sura*, *tera*, *masa* groups and in Tangale. In *CVguC*- roots Ch **-g*- > *-x*-/*-ɣ*- in CCh, cp. **čugu*- 'sit' (I.3) and the following root.

C **duguva* (? < **dugu-ba*, with the suffix of harmful animals) 'leopard': 3

(Kr) HF *duywəva*, HG *tukùvwa*, Kap *dùwəva*, FG *dùywəva* leopard', *dùgwəvə-ḱwə* hyena'; 4 (Kr) FJ *dùgùvwə*, FM *dùgùvwa*, FB *dəgùvwən*, Gudu *díva* (< **duyuva*, contraction).

For medial *-g*- see **d[i]g*- 'hoe'(n.), **dig*-/**HVdig*- 'dig' (I.2), **[n]cag*- 'carry', **čag*-/*an*- 'rise, lift', **žegi-ari* 'antelope' (I.3), **śag*- 'pierce; tooth' (I.4), **qadig*-/**qiday*- 'hoe' (n.) (I.6), **ʔag*- 'stand up, climb', **ʔag*-/**ʔog*- 'call', **ʔag*- 'beat, grind'(I.7), **yag*- 'shake' (I.8) and the following examples:

**lig*- 'lick': W 1 Hs *lá-lágíí* (modified vocalism in a reduplicated stem) 'lapping water (by a dog)'; 6 Sha *lig*, *lik* 'lick'; C (Kr) 12 Bnn *ligi-mu*, BM *liga*, Masa *liga-mo* 'swallow'; E 1 Kera *ligi* 'lick'.

**doga* 'pound, forge': W 7 Ngz *də-dgú* 'castrate an animal; beat, thrash'; C 5 'pound': (IL) Mnd *žəg-a*, Gava *ḱəgə*, Nak *dəgə-də*, Dxv (Fr) *dga*; 7 Mafa *-dag*- 'pound'; 10 Bud *doogei* 'smith'; 11 Mba *dəgá* 'tapoter, taper'; 12 Peve (Sn) *žok* 'pound' (*-ž* < **-d* before *-o*-, in absolute auslaut); E 7 Mubi (L) *dogga* 'forge'. Related to this root is probably C **dig*- 'hit' (Kr): 2 Hld *digəw*; 4 FB *digi*, FM *dig*, Gude *dig*-, note that Ngz means both 'pound' and 'beat'/Arab *dgg* 'grind to a powder'// HS N 725 **dog*- 'forge, beat'.

**čagiy*- 'hair': W 1 Hs *čágíyáá* 'the tail of an animal, used in making strings, and also in neck-bands'; 4 Cagu *gəšiya* (metath.); C 10 Glf *msege*, *mžigə* / Rift Iraqw *čaga* 'hair'.

**žigaw* 'rock, stone': W 2 Sura *žwak*, Mpn *žwak* (metath.) 'rock'; 3 Krkr (Kl) *žigawa*; 7 Ngz *žigwaí* 'rock'; C 2 Mrg (Kr) *žigá* 'stone'.

II.6 Uvulars.

Table 25.

P Ch	W Ch	1	2	3	4	7	C Ch	1	2	3	4	5	7	10	11	12	E Ch
* <i>ḱ</i>	* <i>ḱ</i>	<i>g</i>	<i>w</i> , <i>y</i>	<i>w</i> , <i>y</i>	* <i>g</i>	<i>w</i> , <i>D</i> <i>h</i>	* <i>ɣ</i>	(* <i>x</i>)	(* <i>x</i>)	* <i>ɣ</i>	* <i>ɣ</i>	* <i>ɣ</i>	* <i>h</i>	<i>ɣ</i>	<i>h</i>	(* <i>g</i>)	(* <i>-g</i>)
* <i>q</i>	* <i>k</i>	<i>k</i>	* <i>k</i>	* <i>k</i>	* <i>k</i>	<i>k</i>	(* <i>q</i>)	* <i>k</i> , * <i>x</i>	(* <i>x</i>)	* <i>q</i>	* <i>x</i>	* <i>x</i>	* <i>k</i> <i>x</i>			* <i>k</i>	* <i>-k</i>
* <i>q</i>	* <i>k</i> , * <i>q</i>	<i>k</i>	* <i>k</i>	* <i>k</i>	* <i>k</i> , (* <i>q</i>)	<i>k</i>	(* <i>q</i>)		(* <i>g</i>)	* <i>q</i> , (<i>g</i>)	* <i>ɣ</i> , <i>gw</i>	* <i>k</i>	* <i>ɣ</i> , <i>xC</i>	<i>h</i>		* <i>k</i>	* <i>-k</i>

1. Ch **m/n-qVC*- > *glavda m/ngVC*-. 2. Ch **-ḱ*- > *-g*- in E Ch lai, Sokoro, dangla, Mokilko and mubi languages.

The Ch uvular spirant yields a laryngeal or a velar spirant in C Ch, but a

velar plosive in W and E branches. In sura, bole and languages *CVh-* > *CV(V)*. HS *CVhVC-* usually yields *CV(V)C* (cp. **paHid-* 'fall, lie down' and **[p]aHud-* 'thigh' in I.1). Under special conditions **CVhVC-* > *CVγ/gVC* in the sura group. Ch **-g-* and **-h-* yield quite different reflexes in sura, bole, ron, kotoko, matakam languages. Though Ch **-g-* may > *-γ-* in CCh, the process is far from being regular and is usually observable only in one or two languages of the branch at a time. In case *γ* prevails, Ch **-h-* is being reconstructed. Of special value are reflexes in the matakam group: Ch **-h-* > *-h-*, but **-q-* and **-q̣-* > *-k-* (note that velars never > *h* in the matakam group). All the relevant roots are listed here (cp. **nah-* 'wait for', **rah-* 'fill' (I.8)).

**bohu-* 'hide': W 1 Hs *báge*; 4 Diri *bagwe*; C (Kr) 4 FM *hwùya*, Gude 'umbwugič, FB *hwuy*, FJ *hwúyye*, Nzn *bòxən*; 5 **boyu-*: Nak *bòya-boyá*, Glv *ši-bugá*, Dxx *bəyù-naya*, Gava *bùya-nàna*; E 1 Tum *bag*.

**bVh-* 'pit, cave': W 1 Hs *biigaa* 'cave'; E 6 Mok *bùugimé* 'caverne, précipice'; C 7 Mafa *bobuhw* 'largir (trou)/ Arab *bħr* 'creuser la terre'.

**buh-* 'thresh, pound': W 1 Hs *bùgáá* 'thresh, strike (with hand)'; C 5 Dxx (Fr) *mpxa* 'grind'; 9 Log *buyu*, Bud *pho* 'pound' (devoicing in contact with *x/h*).

**çih-* 'pour, wash': W 4 Wrj *çiy-* 'pour'; C 7 Mafa *çih-* 'pour (water)'; 4 Gude (H) *cəyə* 'wash'.

**nV/V-zihu-* 'rub, smear': W 6 Ngz *zà-zgə* 'rub to release an itch'; C **nziyu* 'rub': 3 **nziVγ-*: HN *nžəxu-mté*, HF *nžəyù-ntu*, HB *nžixu-ndɔ* (Kr); 5 Mafa *zuhw* (< **Vzihu-*) 'rub corn between hands'; E 6 Mok 'ássigá, 'íssigá (plural < **VzVg-* ?) '(se) frotter, masser avec de l'huile' (note CCh *nžVC-* ~ Mok 'assVC-, for WCh *mbVC-* ~ Mok 'abbVC- see I.1).

C **žah-* 'divide, half': 7 Gis *zaha* 'part'; 10 Log (L) *mzaywan* 'half'; 12 (Kr) Lame *žak*, ZB (S) *zak* (-*k* < **-g*) 'divide'.

paħo- 'rub, scratch': W 3 Tng *pagu* 'rub on, grease'; C 5 Glv (Rp) *poγw* 'scratch, bruise'.

**a[h]-* 'son, brother': W 4 Wrj *yahə* (irreg. reflex) 'brother'; C 10 Msg *ahii* 'son'//Akk *ahu*, Arab 'ah- 'brother' (Lsl:13//HS **ah-* 'brother'.

W **pa[h]-* 'close': 2 Sura *paa*, Ang *poo*, 3 Bol *fā*, Krkr *f-*; 7 Fyer *pa*, Bks *vo*, Sha *vu*, Df *voh* (irreg. reflex of the labial due to the laryngeal in word medial position)/ Akk *pehū* 'close, lock'// Nm **fū*, AA **pah* 'trap', HS N 1926 **pah-* 'close, lock'.

C 3 (Kr) HN, Kap *pəxwi* (< Ch **pVh/q-*) 'sell'// Akk *puħhu* 'exchange' (S2:876)// HS N 2023 **pVh-* 'exchange, sell'.

**wulV[h]-* 'green': W 3 Dera *wəli-wəli*; C (Kr) **wuley-*: 1 Hwn *wuley-ən*, Boka *wexa* / Eg *w'hy* (Pyr) 'be green' (1:259)//HS N 2546 **wuleh-* 'be green'.

**d[o]ħa* 'lift, stand up': W 1 Hs *đaga* 'lift'; 7 Df *duh*, Fyer *doo*, Bok *du* 'stand up'; C (Kr) 5 Dxx *dùya* (-*u* < **-o/a-* in contact with *-γ-*), Mnd *də-* 'mount, climb'.

C **ayu* 'fire': HN, Kap *γwi*, FK *ùγù* (-*u* < **-a-* in contact with *-γ-*), FG *γo*; 2 Klb *hú'ù*, Bura, Mrg *'u'u* (metath.); 10 Kus *ahú*, Glf *uu*, Bud *au* (contraction); 11 Mba *húú* (metath.) / Eg 'ħ.t (BD) 'fire' (1:17), Kush Kwadza *xa'o* 'fire' (E:263)//HS N 24 **ah-* 'fire'.

Cp. W 4 Wrj *vay-* 'loose' ~ Eg *ħh* (Pyr) 'lösen, loslassen, verlieren' (1:578) (cp. in ch. II.7. Ch **fah-* 'pour out' > W 4 *vay-*).

Ch **nVhVC-* roots usually yield **n[h]VC->ngVC-/ngVC-*, cp. **nahar-* 'become thick; fat' (I.8), **ħor-*, **nVħor-* 'to snore; snore' (I.6) and CCh 5 Mafa *ngəz-* 'throw a spear' ~ Arab *nħz* 'piquer avec un instrument pointu'.

Reflexes of Ch voiceless velars and uvulars merged in W and E Ch, in matakam, masa groups and in several higi languages (though a free variation of the kind: *γ* ~ *g* and *x* ~ *k* in the higi group cannot be excluded). In other CCh languages uvulars yielded *-γ-* or *-x-*. The most regular are reflexes in Logone and in the glavda group. Sem and Eg parallels, though not numerous, reflect Ch **-q-* and **-q̣-* as *-ħ-*. Cp. CCh **laqa* 'axe', **noqa* 'observe, see', (I.8). All the other relevant roots are listed below.

C **cVqwa* 'earth': 1 (Kr) Hwn *čəxwε-ra*, Boka *xən-sox-it* 'earth', Gaa *čəkwi-ta*, Gbn *čiyək-te* 'sand'; 10 Log *sxe* 'field' / Eg *sh.t* (Pyr) 'field', Akk *sahhu* 'meadow' (A,15:56), Arab *sahāħ-* 'bonne terre'//MiS **cVh-* 'land used as field or pasture', HS N 385 **caq-* 'earth, field'.

C **n-tiq-* 'pull': 2 (Kr) Ngw *ndixi-rta* (*nd-* < **nt-*); 3 (Kr) FK *ntixu*, HN *nti-ntikəy*; 12 ZB (S) *zik* 'drag' / Arab *nth* 'tirer, extraire, arracher'.

C 5 (Kr) **tiyu-* 'tear': Gava *tixə-mā*, Glv *txù-γarā*, Nak *tiy-dana* (probably related to the preceding root, cp. Arab *nth* 'tirer, extraire, arracher'.

**fiqu-* 'blow (wind)': W 3 Tng *puk* 'to fan'; 4 Paa *fuki*, Siri *fikuu*; 7 Sha *fuk*, Fyer *vivik* 'Feuer anblasen'; C 3 (Kr) **pxa-* (< **mfxa-*): FG *pxa-ki*, HF *pxā-ta*, HN *mpikā-te*, HB *pika-ndo*; 7 Mofu *-fā-fākw-*; 12 (Kr) Lame *fùókú* (< **fū-fuku*); 7 Mok *puukiyo* 'breathing' / Hbr *pwħ*, Arab *fwh* 'blow (wind)'// HS N 814 **fīwah-* 'blow'.

Cp. also C 5 (Kr) Dxx *təxayā* 'weave, sew', Gava *təxa-nufā* 'sew' (< Ch **tVq-*) ~ Arab *nth* 'tisser (une étoffe)'.

For medial **-q-* see **ma-q[o]ripu* 'be blind' (II.1), **ni-ra[q]-* 'bow' (I.8) and the following roots:

**puqa-* 'go (together)': W 7 Sha *pak* 'follow'; C 3 (Kr) **puk/q-* 'accompany': HG *pugà-že* HB *pikù-ndo*, HN *piku-te*, HF *byà-šo*, Kap *byà-ke* (*by-* < **py-*); 5 (Kr) 'accompany': Nak *piya-*, Gava *püya-ndála*, Glv *puyu-gà*, Mnd *püwà-n*; 7 Mofu *-pək-* 'walk'; E 6 Mok *púkké* 'aller en brousse pour faire des offrandes à l'arrivée des premières pluies (garçons et filles seulement)'.

**muqa/V/'* 'chief': W 4 Jmb *muga'a*; C **muq,a* 'king': 3 (Kr) Kap *məyɛ*, FK *ɾjyú* (< **myu* < **muγV*) 'king', *muxa* 'old man'; 4 (Kr) Dxw *müyama* 'king'; 10 Log *myai*, Bud *mei* (< **muyai* < **muqai*) / Akk *maḥā'um* 'uncle' (S,2:582), 'elder brother' (A, 10,1:85) // HS N 1801 **muqa-* 'male relative'.

**do[q]ub-* '(water) pot': W 2 **dogbo* (*-gb-* < **-kb-* < **-qb-*): Bol (B) *dogbo*, Krkr (K) *dogbo*, Tng *deguo*, C **duq,wi*: (Kr) 3 HN *dugwi*, Kap *düywi*, HG *tugwi*, FG *dəyò*, HB *dugù* 'water pot'; 5 Glv *ídüywà*, Dxw *ndüywè*, Nak *ndjywa* 'large water pot'

**zuqanV* 'gazelle': W cp. 1 Hs *zánkée* (metath., *-nk-* < **-nḱ-* < **-nq-*) 'buck duiker'; 2 Ang *zung* 'antelope'; C 2 Klb (Kr) *nzán*; 5 (Kr) **zuyan-*: Nak *ziyara*, Gava *zuyará*, Glv *zuyará*, Mnd *zuré* (contr., *-r-* < **-n-* is regular, for more examples cp.II.8); 5a Lmn (L) *zəghàaṇà*.

**qoy-* > **qoq-* 'throat, goitre': W 1 Hs *māākóókò* 'goitre'; 3 Grk (J) *γγα* 'throat'; 5 (Sm) Bgh *gway*, C 10 Log *γ'áyee* 'Kehle' // Eg *ḥḥ* (MK) 'throat' (3:331), Dahalo (EN) *k'ok'o* 'throat' // HS N 2069 **qoq-* 'throat'.

**luqo-* 'stand up, rise': W cp. 1 Hs *léékúú* 'summit (mainly applied to that of a tree)'; 7 Fyer *luk*, Sha *lugó*, Bok *luk fit* 'stand up'; C 10 **lay-* 'aufheben': Log *láywà*, Bud *lki* / Arab *lḥḥ* 'continuer à gravir une montagne'.

In case a root is not attested in CCh, only Sem parallels help to choose between an uvular and a velar, cp. **zúk/qo* 'push, move aside' ~ Arab *zhḥ* (I.3), **nawVq/k-* 'rest, live' ~ Ug *nwh*, Hbr *nwh* 'rest, be still' (I.8) and the following roots:

**tiq/k-* 'strike, kick': 1 Hs *tílká* 'hit with a stick', *tílké-tílkée* 'a fight with fists'; 6 Ngz *təkú* 'kick'; E 2 Tob *togé* 'frapper' // Arab *tyḥ* 'frapper'.

**muq/k-* 'strike, beat': W 1 Hs *mùùkàá* 'hit, strike'; E 5 Mig *mukkiyo* 'beat'/Rift Iraqw *mux-* 'fight', Akk *māḥī-tu* 'whip' (A,10.1:103), Aram (Syr) *mḥ* 'beat, flog' (< Sem **mḥ*, not < Sem **mḥd* 'break in pieces' > Hbr *mḥs*, Ug *mḥs*) // MiS **mVq-* 'to beat, to fight', HS N 1802 **muqV-* 'strike'.

**tuq/k-* 'push, pierce' (cp. **zuq-*, id.): W 3 Tng *tug-de* 'push off, drive';

7 Bok, Df *tuk* 'push'; C 12 ZB (S) *túkó* 'bouchon'; E 6 Mok *túúkè* 'pierce' / Arab *twḥ* 'entrer, penetrer et s'enfoncer dans un corps mou (doigt)'.

Judging by the following two examples, the reflex of the voiced uvular merged with that of **-q-* in higi, but yielded *-g-* in Hausa and matakam.

**cV[g]-* > **nVcV[g]-* 'pull': W 1 Hs *çiigaa* 'pluck, pull off or out'; C 3 (Kr) HK *askəy*, HF *nsixu-šò*, *sxu-nto*, Kap *nsxu-mte*; E 2 Tob *sogè* / Jibb *nisəg* 'pull, pull out hair' // HS N 1904 **nisog-* 'pull'.

**šag/g-* 'pierce, tooth': W 1 Hs *zágóó* 'harpoon used mainly for killing crocodiles', *zágá* 'canine tooth'; 7 Mafa *žagaw* 'croc d'animal', Gis *žəgə* 'pierce' / Arab *nšg* 'pierce with a spear'.

II.7.Laryngeals

Table 26.

P Ch	WCh	1	2,3	4	7	6	C C	1	2,4	3	5	7	10	12	ECh
<i>*h-</i>	<i>*h-</i>	<i>-g-</i>	<i>*y,</i> <i>*w</i>	<i>*-γ-</i>	<i>w,y</i> DB <i>h</i>	<i>w,</i> <i>y</i>	<i>-x-</i>	<i>*-x-</i>	<i>*-x-</i>	<i>*-x-</i>	<i>*-x-</i>	<i>*-h-</i>	<i>-γ-</i>	<i>*-'</i>	<i>*,</i> <i>w,y</i>
<i>*h-</i>	<i>*h-</i>	<i>*y,</i> <i>*w</i>	<i>*y,</i> <i>*w</i>	<i>*-h-</i>	<i>w,y</i> DB <i>h</i>	<i>w,</i> <i>y</i>	<i>-h-</i>		<i>*-h-</i>	Ø	<i>*-x-</i>	<i>*-h-</i>	Ø	<i>*-h-</i> <i>*-'</i>	<i>*,</i> <i>w,y</i>

In medial position three laryngeals are being reconstructed for PCh: **-h-*, **-h-* and **-'*. Reflexes of **-h-* and **-h-* differ in Hausa, Northern bauchi and in a few CCh languages. All the laryngeals yielded "alef" in E Ch. PCh roots with an emphatic consonant in initial position (**tVh-*, **cVh-*) usually yield either *tVw/w-*, *cVw/y-* or *tVh-*, *sVh-*. On secondary emphatization of *p* in *pVHVC-* roots see I.1.

For Ch **-h-* see **rahu-* 'hoe up' (I.8) and the following roots:

**čaḥo-* 'pierce, tattoo': C (Kr): 1 Gaa *čuhə-nči*, Gbn *čixwə-nči*, Boka *čuxwa-qa* 'pierce'; 3 (Kr) FG *caxwü-ti* HN *caməy*, HG *cavure* 'pierce'; 7 Gis *čah*, *cah* 'tattoo' (v.), Mofu *-čəh-* 'inciser, tatouer'; E 1 Kera *čó'é* 'pierce'

W 4 **tuḥi* 'arrow': Wrj *tuwá-ná*, Cagu *tú-n*, Mb *túú*, Miya *tu*, Siri *təyí*, Jmb *diwa*, Kariya *tu*.

**cuḥ-* 'pour': W 1 Hs *čúúgá* 'pour out'; 7 Df *šuh*; C 1 (Kr) Boka *suxwəḍə* 'river' / Arab *shḥ* 'verser, répandre (l'eau)'

**toḥ[u]-* 'push off': W 1 Hs *tóógè* 'withdraw'; 4 Wrj *təy-* 'push'; C 12 ZB (S) *tu'u* 'heurter' / Arab *nṯḥ* 'push with horns'.

W **tiyuh-/tVwuh-* 'kill': 2 Sura, Ang *tu*, Chip *to*; 4 Wrj, Mb *təy*, Kar *təy*, Cagu *tiyu*, Siri *təyə*, Jmb *tiy*; E 6 Cp. Mok *tōwwo* 'action de tuer' // Eg *t'h* (gr) 'töten' (S:234), Arab *twḥ* 'périr' // HS N 2468 **ti'uḥ-/tiwuh-* 'kill, destroy'.

tVh- 'break': C 7 Mafa *tohw-* 'break'; E 6 Mok *tùuté, tòoté* 'casser un morceau de pierre'(redupl.)/ Arab *thth* 'rompre, briser, casser'.

W 4 **çahVy/w-/ *çaw/yVh-* 'ask': Wrj *cəy-*, Kar, Miya *şiy*, Cagu *şuw*, Siri *şa* / Akk *şāhu* 'laugh' (A,16:64), Hbr *şwh*, Arab *şyh* 'shout, call'/ HS **çawah-/ *çayah-*.

**dVh-dVh-* 'bitter': C (Kr) 1 TP *dađu*, Gbn, Gaa *dəxdəx*, Boka *doxdox*; 2 Bura *diđaxu*; 5 Gava *dyexdyexa*; 7 Mtk *dədexə*; E 1 Kera *dəwədəwə*.

**diḥ-* 'cook': W 4 Mb *dəy-*, Jmb *diy* (also Cagu, Siri *duw*, Paa *du* < **duw-*, possibly < **diḥu-*); 7 Fyer, Bok *di*, Df *žih*; C (Kr) 1 TP *ndəhi* (cp. Boka *nəxdəda*, Gaa *nəxanji*, ? < **ndVx-*, **nd-* > *n-*); 8 FM *di*; 12 LP *di*.

**kah/h-* 'put down, fall': W 7 cp. Kul *kô* 'stellen'; C 4 (Kr) FJ *kəxə*, FM *kəxa* 'put down'; 10 Kus *kai* 'fall'; 12 cp. (Kr) Misme (Zime) *ka'a* 'fall'; E 1 Mobu (Ln) (pl.) *ké* 'put down'.

**pah-* > **puwah-* 'pour out': W **fah-* (irreg. reflex of Ch **p-* due to the medial laryngeal): 2 Ang *foo*, *fhoo*, 3 Gera *fūu* (< **fūwuH-*); 4 **vah-*: Cagu *vo*, *va*, Mb *vay-*; C 7 Mafa *pəha'a* 'couler abondamment'.

W 4 **tVhin-* 'tooth': Wrj *təyn-ai*, Kar *tin*, Paa *ndini*, Mb *tiino*, Cagu *diine*, Jmb *diina* / Arab *tāhin-* 'molar' (< *thn* 'moudre'). Miya *tiyim* is probably a borrowing, cp. Kanuri *tīmi* 'incissor'.

C 7 Mafa *cuwah-* 'dépecer, mettre en pièces' ~ Arab *şwh* 'fendre'.

Cp. C 10 Log *ləyéé* 'marry' ~ Arab *lhḥ* 'être rapproché (se dit de la parenté)'.

Under unknown conditions a medial laryngeal may be preserved in CVhVC structures (though in intervocalic position it usually yields a long vowel) see **/kVhōn-* 'salt' (II.8) and the following examples:

**çiH[a]r-/ *H[a]çir-* 'sand' > C 5 **siryVr-*: Mnd *šili*, Glv *süyula*, (Rp) *səyəlu*, Nak *siyle*, Dxx *žiyə* / Arab *şahrā-* 'desert' (see I.3),

**baH[o]r* 'pond, river': W 2 Sura *voyor* 'pond', Grk *voor* 'pond, rivulet', Ang *fwor* 'rivulet'; E 2 Kera *vor* 'sea, river' / Arab *baḥr-* 'sea'// HS N 305 **boḥVr-* 'sea, lake'.

For PCh medial *-h-* see **py/wah-* 'white' (note secondary emphatization of the labial), **nah-/ *nay-* 'see', **nu-nah-* 'ripen' (II.8) and the following roots:

**daw/yah-/ *dahaw/y-* 'stink, smell bad': W 1 Hs *dəoyi*; 3 Bolewa *daw*, 4 Mb *daha*, Jmb *da'a* 'stink, smell bad'; 7 Df *ma-dóh* 'smell' (n.); C (?) 10 Log *devi* 'stink' (< **dewi*); E 3 Sum *do*, Tum *dəw* 'smell' (v.); 1 (Ln) Mobu *doye*,

Ndam *doyé* 'flairer, puer'; 3 Lele *do* 'stink', Tob *dowa* 'smell' (n.); 4 Sok *dée* 'smell' (v.).

**guwah-/ *guhwa-* 'place, farm': W 4 Miya, Kariya *gwahi* 'place, town'; C 4 (Kr) **guxwa/ *gwVxa* 'farm': Nak *goxwa*, Gava *gwuxə*, Dxx *gwixə*, Glv *guxwə*.

C **cuhwa* 'back': 4 (Kr) Nak *suxwa*, Dxx *suxə*; 6 Sukur *dzax*// Arab *sahw-at-* 'back of a horse'.

**m[a]ru-hu* 'new': W4 **maru-hu*: Paa *marhwa-n*, Siri *murū-nəsi*, Wrj, Kariya *marhu-na*; 5 (Kr) Plc *miri*, (Sm) Sayanchi *muri*, *mori* Zeem *mòòri*; E 1 Kera *ki-mirwi*, Kwn (J) *múrwe*; 2 Kbl (L) *ki-murwí*; 7 Bir (Jglb) *màriyūntà* / Jglb *mrh*.

**raw-* 'intestines': W 4 **raw-hVMba rawwi*, Cagu *rohon*, Jmb *rawi*; C 12 **raw-*: (Kr) Zime *rāw*, *ráo*, Mm *lo* (*lo* < **rVH-*) 'stomack', ZB (S) *řáo* 'intestines'.

Medial 'alef' is more or less regularly preserved only in Zime and Kera, in all the other languages it either alternates with *-w-* and *-y-* or has been ousted by one of the latter. Cp. **po-* 'sweep' (I.1), **ti-un-* 'mahogany, fig tree' (II.8), **çaw/y-/ *çVwa-* 'rise' (I.4), *žaw/-* 'tie, bind', **çaw-/çiy-* 'catch, seize', **ža/w/y-* 'rope', **ci'er-* 'rope' (I.3), **ka/w-* 'speak, call' (I.4) and the following roots.

bu- 'pot': W 2 Gerka (Fp) *bu*; C 1 (Kr) TP *bu-ya*, Boka *bə-ta*, Hwn *bu-ra*, Gabin *bu-ta* / Eg *b'w* (med) 'vessel' (1:418)// HS N 318 **bu-* 'pot'.

**da-* 'place, town': W **da'a-* > 6 Ngz *daa* 'town'; 7 Sha *da* 'place'; C 2 **dayi-* (< **da'i-*) 'town': (Kr) Bura *di*, Ngw *dey*, *dí*, E 4 Sok *daa* 'house' / Kush Oromo *da'oo* 'hiding place'// HS N 592 **da-* 'place, house'.

W **da'aw-* 'pour, be wet': 2 Sura *doo*, Angas *doo* 'pour' (contraction); 4 Kariya *daa*, Jmb *da'aa* 'be wet' / Kush Somali *da-* 'to rain', Arab *ndw/y* 'être humecté, mouillé de quelque chose'// HS N 594 **da-/ *daw-* 'be wet'.

**fi-/ *fa-* 'to blow': W 2 Sura, Angas *fii*, C (Kr) 2 Bura *fia*, Margi *fi*; 10 Bud *pha*; 12 Bnn (Kr) *fə(wɔ)*, Masa *fɔ-mo*, ZB (S) *fó'ó* / Hbr *p'y* 'blow off', Kush Asa *fū-it-* 'catch one's breath', Kwadza *fi-* 'sniff' (E:151)// HS N 797 **fi-* 'blow'.

**sV-* 'swallow': C 12 **sa'a-*: Peve *sa*, Lame *na-sáà-ší*, ZB (S) *sá'á*; E 1 Sib *sya*; 5 Mig *sá'a*; 6 Mok *sí'è, só'ò* (cp. E **si'aq-* 'swallow' in II.2).

**so-/ *su-* 'wash (body)': C 12 ZB (S) *só'ó* 'se laver'; E 6 Mok *súuyé, súuyé* 'wash (body), bathe'.

II.8. Sonorants.

Table 27.

PCh WCh	1	2,3	4	6	P C Ch	1,4	2	3	5	7	10	11	12	P E Ch	1	2,3	5	6,7
$-^*m$	m	*m	*m	m	$^*-m$	*m	*m	*m	*m	*m	m	m	*m	$^*-m$	*m	*m	m	
$-^*n$	n	*n	*n	n	$^*-n$	*n	*n	*n	*n , PV_r	*n	n	n	*n	$^*-n$, $^*-l$	*n	*n , wV_l	n	
$-^*r$	r, y	*r	*r	r	$^*-r$	*r	*l	*r , $Hvr >$	r , xV_l , r/l	r , hV_l , $\hat{s}V_l$	r , hV_l	*r	$^*-r$	*r	*r	r		
$-^*l$	l, y	*l	*l , HV_r	l	$^*-l$	*l	*l	*l	*l	*l	*l	*l	*l	*l	*l	*l	l	

1. Ch *mT- > -nT-, *mK- > -nK-. 2. Ch *CVm# > CVn# in bauchi groups. 3. *um- > -uw- in the glavda group (sporadically- in other Ch languages). 4. CCh *CVnV- > CVnd- > CVr- in bura, glavda, matakam groups; *CVni- > bura Cnyi. 5. Ch *PVn- > glavda PVr-. 6. *wVn- > wVr- in ECh kera, sumrai, lai, dangla groups. 7. in roots with a laryngeal Ch *r-, *l- > -w/- in Hausa. 8. *CVCVr- > CVCVr- in the higi group.

Chadic *m- is usually preserved in CVmV roots but yields -n/- in the auslaut (cp. W *ha-puran 'blood' < Ch *ha-purami) or in contact with a dental or a velar (-md- > nd-, -mk- > -nk-, cp. *tum-k- 'sheep'). In Northern bauchi group *m- often yields -n- in contact with a sibilant or with -n-, for example:

W *rumi 'black': W3 Tng rim 'dark(ness)' Krkr (L) bə-rəm, Bol (B) buum (contraction) 'black'; 4 *Hirim-in- 'black': Kar rən-ná, Mbu rimí-na, Miya rín-ní (< *rim-ni); Miya jryim 'shadow' / Cp. Nub (Hoh) úrum, Kənzi urummi 'black'. Cp. Sk (1995:30).

Cp. a few more examples from Northern bauchi languages:

Kar, Mbu sum, Wrj sun-na, Miya su (< *sum) 'person';

Mb zama, Miya žami, Paa zən-čiki 'bird';

Kar γəməcə, Miya amas, Wrj γənçə, Mbu γənca, Paa hanši 'to laugh'.

In bura, tera and bata groups Ch *m > η in CVRVm- roots, cp. *ka-ħusami 'rat' and *kad[o]mi 'crocodile' (I.5).

A few cases of CVmVC roots show the -m- > -w- shift, for example:

*čaman- 'think, know': W 1 Hs čammaani; 2 Ang čan 'remind'; 3 Krkr čawan (< *čaman-); C *čam- 'know': 4 (Kr) Nzn cəman, FM čam; 5 Nak (Kr) cāmā-kaina, Dxw (Jglb) čaminé / Arab wzm, znn // HS N 504, 505 *čam-, *čamon- 'think, know'.

*čam- 'sour': W 1 Hs čáamí 'acidity, sourness'; 3 Tng som; 4 Wrj čan-čan, Kar šam-šam-na, Diri šan-šam, Paa cəmu-mu, Mbu šáamin, Siri cáawaani (< *čamani), Cagu čòomáma; 5 (Kr) *nžom- (< *nčam-): Sayanchi žəm, Dwot nzoŋ, Pol nzoŋ; 7 Ngz žòm; C 1 (Kr) TP šom-šom; 10 Log sém-senr, 12 ZB (S) cicəm, cumok 'acide'. Cp. Kanuri camcam 'sour' (< Ch).

*siman-/*samin- 'oil': W 4 Diri sinama (metath.); E *siwan < *siman: 1 Kwn (J) súwané, Kera son (contraction); 3 Sum (L) soane, swane, (J) swani, Tum hɔɔn, Ndam (dJ) swan; 4 Sok súnne (< *sumne) 'melted butter'; 5 Mig séwèn; 7 Mubi (J) síwín (< *sawín, vowel assim.) / Jglb *swn, Ug šmn 'butter, oil', Arab samn- 'melted butter' // MiS N 23 *šVm-Vn- '(melted) fat, butter, oil', HS N 2247 *siman- 'oil, fat'.

Ch *CVCVn- nouns yield *CVCVr- in CCh bura and glavda groups, sporadically - in matakam and kotoko. In the same languages Ch *-n- > -n- in pronouns and (not very regularly) in verbs. Examples:

*aten- 'nose': W 1 *-tini: Hs ha-nči (< ha-nti < *ha-tVn-, metath. and palatalization); 2 Ank (N) wan-tin; 3 *wu-tini: Bol, Ngm (M) wu-nti (metath.), Krkr (L) 'un-tin, Maha wo-tin, Dera (J) wá-rin, Tng wi-sin, Pero wí-ččín, Krk wù-ttíní, Grm 'ùmší (-m < -n after u-), Glm wúzí, Gera wèn-číní [*watən]; 4 *a-tin-: Cagu tən-àn, Kar tìn, Miya á-tin, Siri yir-téní, Mbu tuŋ-húú, Jmb itən, Paa (MS) 'atən; 7 Sha 'a-tón, Kul tanaw, Df tìn; C 1 (Kr) TP hə-dán-di; 5 (Kr) *xu-tera: Mnd 'uk-tàrì, Gava x(u)-tìrā, Glv (Rp) x-tərà, (Jglb) Ngweše xú-thùr, Dxw x-tiré, 5a Lam (L) x-cini; 7 Gis hə-taŋ, Mofu hé-tèr, Bld ki-teŋ, Mkt (Jglb) tír; 8 (Jglb) Daba mi-čín, Kola (Sb) mí-tyín, E cp. 1 Kwn (J) kí-neení, Kera niinə (? < *ki-tinin-); 2 Kbl (L) kindi (rather < *ki(ti)n-dV, cp. k-lan-di 'tongue'); 3 Ndam (dJ) tən, 5 *eten- (< *aten-): Bid 'eteeno, Mig 'itín, Dng (Jglb) 'étin-žín; 7 (Jglb) Bir 'étén, Mubi (L) idáánù, Jegu 'ètèn-tó. Note, that W 2, 4, as well as E 5, 3 cannot go back to Ch *KV-čín-'nose' (II.3). The situation in CCh is more complicated due to possible palatalization in all the languages. Still, FK šinu' or Log x-səni point to an original sibilant. The root-structure and the vocalism of these two words are quite different. All these facts support the reconstruction of two different roots, one of them is connected with the HS word for 'smell' / Nm *atən, Jglb *ntn.

*sin- 'tooth' > C 1 Tera (N) žin, (Kr) Hwn šānā, Gaa šena, Gbn šène, Boka šan-da: 2 (Kr) WM šir, Mrg hyir, Klb hyir, Hld xiru; 4 Bch (M) lin-to, Nzn (M) line, Gude (M) lin-žín; 5a Lmn (M) šiin, 5 Mnd (Mo) šére, (Jglb)

Dxw *širé*, Gdf *šidà*, Glv (Rp) *šér-dà*; 7 Gis *šen*, Mofu *šer*, Mtk (Kr) *šenne*; 6 Suk (M) *liin*; 10 Log *šini*, Bud *hénai*; 11 **sin-* > Mba *sín*, Msg *šin*; 12 Masa (Mo) *sáya*, (Kr) *sia-no* (< *sina-no*), BM *siino*, Bnn *sinà*, Lame *šř*, Peve *še*, ZB (S) *sé'é* (for W and E Ch see 1.4a).

**ti'un-/*ti'an-* 'mahogany, fig tree': W 2 Ang *teung* 'tree, fig tree', Sura *tiŋ* 'tree'; 3 (Sh) Gera *tyèniá*, Boltàni, Ngm *tàni*, Krf *tán*, Gera *čani* 'mahogany'; C (Kr) 1 TP *tэгэн-di*, Boka *tiin-da*, Gbn *tiyin-da*, Gaa *tín-da*, Hwo *tínà*; 3 HN *čena*, HB *čj*; 5 **ci'ur-* < **či'ur-*: Nak *cura*, Zxw *cirà*, Glv *cira*; 12 Peve *mə-čin*, Bnn *čín-dà*, Masa *čin-da* 'mahogany'// Hbr *tə'ən-ā*, Arab *ūn-* 'fig tree'//AA **tə'n* 'fig tree'.

C **suwan-di* 'squirrel': (Kr) 1 Hwo *wišišena*, Gaa *wušēna*, Gbn *wūsenē* (metath.); 2 Mrg *išedi*, Hld *saru*, WM *'izar* (contraction), Wmd *ašēdī*, Bura *šūwān-da*, Klb *šān*; 4 Gudu *žyénā*, Mwl *žóónó*.

kun-od-* 'three': W 1 Hs *úkú* (*u-* < **mu-*?, cp.CCh); 2 **kun-*: Sura, Grk, Chip *kún*, Ang, Ank *kun*; 3 **kunu*: Ngm, Maha (M) *kunu*, Bol (Mi) *kunu*, Krkr (L) *kúúnú*, Tng *kunūŋ*, Dera (J) *kúnūŋ*, Gera, Grm *kúnú* [kunu(n)*]; 4 **kVn-di*: Cagu *kédě*, Wrj *kějī*, Paa *kədú*, Jmb *kən-dí*, Mbu *kídi*, Siri (Gr) *bu-kudde*, Mbu *kídi*; 5 Jimi (G) *mwai-kan*, (Sm) Kir *ŋween*, Geji *mee-kan*, Tule *māŋ-kí*, Grnt (Ja) *mi-an*; 6 Ngz *kwán*; C **mah-kun-od* > 1 Tera (N) *kúnú*, (Kr) Gaa *max-kán*, Gbn *mah-kən*, Boka *mak-kən*; 2 Chb (Jglb) *makr*, (Kr) Mrg *ma-kür*, Wmd *ma-kirü*, Klb *má-krü*, Hld *ma-kür(ü)*; 3 (Kr) FG *máx-kan*, HF *mà-ku*, HB *mà-kə*, FK *mà-kun(u)*, Kap *máx-kunē*, HN *mà-kine*, 4 Gude (St) *má-ka*, Nzn (St) *mwɔɔ-kən*, Bch (Skn) *múwaa-kún*, Gudu (Jglb) *ma-kan*, 5 **x-kwar-Vd-* (< **x-kVn-'od-*): Glv (Rp) *x-kər-da*, (Jglb) Gdf *xə-kr-dá*, Dxw, *x-kré*, Ngweše *kxwáro* (metath. < **x-kwaro*), 5a Lam *x-kóná* (W) (note *-n-* < **-n-* in Lam); 6 Skr (Jglb) *máá-khən*, 7 Mafa *ma-kár*, Gis *maa-kar*, Mofu *máá-kār*, *mah-kār*, 8 Daba (Jglb) *mà-kaad*; 9 Gdr (Jglb) *hóó-kuu*; 10 Bud *ka-kénne*, Log *gaxə-kər*, Kus *ka-kr*, Gul *an-krá*; 12 **hin-di* (< **hV-kun-di*): (Kr) Lame *hín-žī*, *hín-čī'i*, Bnn *hin-di*, Masa (Mo) *hidi*, ZB (J) *hín-di* / Nm **kwən*, Jglb **knd*. Ch is not related to Mande *káakó*, *kárko* (cp. Mukarovsky (1995:71)).

**žin-* 'child': W **žin-* (secondary *ž-* before *-i-*): 1 cp. Hs *žín-žiri*; 4 Wrf *žina*, Miya, Kar *žin* 'son, boy'; C **bu-zin-* 'son, boy': 2 (Kr) Bura *b-žir*, Chb *žir*, Klb *žirini*, Mrg *b-žir-dá* 'son, boy'; 4 Gude (M) *uzin*, Nzn (M) *inza*; 5 (Kr) Dxw *vu-žire*, Glv *žirà*, Mnd *'ug-žuré*, Gdf (Jglb) *vú-inžà*, 5a Lmn (M) *uzan*. / Jglb **bzn*.

C **min-d-* 'liver': (Kr) 1 TP *mína-mína*, Gaa *mənə-tta*, 2 Bura *mirà*, Chb *midə*; 3 HN *mñé*, Kap *mùñé*, FG *mini*; 7 Mtk *məná-d*.

C **KV-Han-d-* 'tongue': 1 Tera (N) *γəná*, TP (Kr) *hè-yən-di*; 2 (Kr) WM *kunya-dù*, Wmd *kyeru*, Chb *kanyar*, Mrg *kyer*, (Ho) *kyar*; 3 (Kr) HF *γəni*, Kap, FG *γáni*, FK *ŋyànu*, HG *xàñe*, HN *hàñe*; 4 **gVyan-* (< **gV-Han-*): Gude (M) *gana*, Gudu (*gyoe(a)na*, (Kr) *gyánà*, Nzn *gyena*, FJ *gyənà*, FB *gyènan*; 5 Skr (Jglb) *γánái*; 8 Daba (Jglb) *gàná* / Jglb **gana* // cp. Dahalo (EN) *'ééna* 'tongue'.

On the other hand, Ch **-n-* > *-n-* in verbs and pronouns, see C **čin-* 'hear' (II.8) and the following examples:

Ch **siwun-* 'to sleep' > C (Kr) 2 Klb *ši'unyi*, WM *šini*, Bura *sunì*, Chb *šini*; 5 Mnd *šinè*, Dxw, Gava *suwanà*.

**dunoH-* 'be strong, heavy': W 2 **toHon* (metath.) 'weight': Ang *toon* 'weight', Sura *tògòn*, Mpn *tóon* 'heavy'; C 2 (Kr) Chb *djina*, Wmd *duno-ma*, Bura *dunà*, Mrg *djina-ma* 'strong'; 10 Kus *dúno*, Log *dónoo* 'strength', *dóno*, *doyon*, Bud *dúona* 'strong'; 11 Msg *ge-dan*, *ke-dan* 'strong', Mba *dónò* 'strength'; E 3 Sum (L) *dóno*; 4 Sok (L) *dúno*, (J) *dwánà* 'strong'; 5 Dng *tápà-dāŋ* 'strong' / Akk *danānu* 'be strong' (A,3:83), Eg *wdn* (Pyr) 'schwer sein, lasten' (1:390) // HS N 729 **don-* 'be strong', cp. AA N 163 **dVn* 'heaviness, load; bend, press'. Cp. Tubu *dəna*, Kanuri *dúno* 'strength', Fula *don-* 'load'.

Cp. also Glavda: *xan* 'to lie down, to sleep' ~ *xar* 'the sleep', *ina* 'he, she', *kiina* 'him, her', *kwan* 'who', *miina* 'out of him'.

Judging by the data so far collected a nominal suffix may well account for the **-n-* > *-r-* shift (**CVCn-d-* > *CVCnd-* > *CVCr-*). This suffix is attested in a number of CCh languages and probably in E Kabalay (cp. *kin-di* 'nose' and *k-lan-di* 'tongue') and Sokoro (*sáka-d-um* 'dein Shienbein', *súgul-d-um* 'dein Oberschenkel'). Here are some examples:

C 2 (Kr) Wmd *baži-dá* ~ Bura *paži*, Chb *pazi* 'friend';

C 3 (Kr) Kap *kīši* ~ FG *kšī-du* 'mat';

C 7 Bld *šuw* ~ Gis, Mofu *šuwe-d* 'knife'.

Quite numerous are nominal roots with this suffix in C 7 Mafa, namely: Ch **tuf-* 'road' > Mafa *čive-d*; Ch **ni-ra[q]-* 'bow' > Mafa *leke-d*; Ch **[p]uHar-* 'stone' > Mafa *pěrá-d* 'flat rock', *mpár-pár* 'flat stones';

Judging by the 'rock' ~ 'rocks' opposition, *-d-* might be the marker of singularity in CCh (or in PCh). Its identity with a numeral suffix **-od-* can not be excluded.

Ch **P(V)n->P(V)r-* in glavda, bura and matakam languages. Cp.:

**abun*- 'stone' > C 5 Mnd *úvra*, Dxw *vra*; 7 Mofu *lá-vàr* (I.7);

C **yufon*- 'charcoal' > 5 **yuvuni*: Lam *ùvávíni*, Glv *ghúvra*, Nak *oyvəra*, Dxw *úvure*, Gava *yúvùrà*; 8 Daba *vwùny* (II.1);

**zabu-Vn*- 'guinea-fowl' (I.3), **pan*- 'wash, bathe' (p.142).

Ch *(CV)*wVn*- (or, rather, **HVwVn*-) > (CV)*wVI*- in ECh (except for Mokilko). The full list of relevant roots is given below.

**w[on]-'on*- 'day': W 1 Hs *wúni*; C 8 Daba *wan*, Musgoy *wan*; E 2 Tob *wole*; 3 Sib *wála*; 6 Mok *'òniyó*/ cp. Eg *wny* (gr) 'Licht, leichten' (1:315).

hVwan*-/hVyan*- 'sleep' (v.) **hVwan*-[*d*]- (n.): C 'sleep' (n.) (Kr) 1 Gaa *iyena*, Gbn *'yenè*; 2 **xanyi* (Ch **n*- is preserved before -*y*-): Mr *yányi*, Wmd *yanyi*, Hld, WM *xanyi*, Klb *hány*, Ngw *hany*, Chb *xanui*, Bura *xyeni*; 3 HG *xàn-zε*, HB *xyá*, Kap *xe*; 4 FM *wanyi*, FJ *wunyi*, Gudu *wiyènu*, Gude *ηwu-ηyin*; 5 Glv (Rp) *xan* 'to sleep'; **xar*- < **xan*-[*d*]- 'sleep' (n.): Glv, Gava *xarà*, Mnd, Dxw *xara*, Glv (Rp) *xar*; 8 Daba *wan*; E 1 cp. Mobu *weye*; 2 Lame *wél* 'sleep' (v.); 5 Mig *wáláw*, Bid *wal* 'spend the night'/ Jglb *ywn*, Arab *hwn* 's'endormir'. Cp. Fula *iwaal*- 'sleep'.

**kV-hon*- 'salt': W 2 **kVγVn*: Sura *kəən*, Ang *keun*, Mpn *kəhən*, *kəən*, Mnt *k'əyən*; 6 cp. Bok *han* 'Bitterkeit'; C (Kr) 2 **wunu* (< **honu*): Mrg *wunu*, Wmd *wunəw*, Hld *wunəw*; 3 FK *uywunu*, Kap *γwùnè*; 5a Lam (M) *xwunu*; E 3 Sum (L) *wal*; 7 Mubi *úlólù*. cp. Ekoid *à-kəñ*, *a-kə'an*, *a-kə'an* (Crabb:89).

wan*- (probably, **hVwan*-/wanVh*-) 'open': W 2 Sura *wəñ* (< **wanVh*); 6 Fyer *wán* (< Sura?); E 1 Kwn (J) *welé*; 6 Mok *'ò'iné*; 7 Mubi *wen* (cp. 3 Tum *həwúl* 'to yawn').

**hawVn*- 'mix': W 4 Paa (MS) *hwina* 'mix', *hwunaa* 'stir': E 3 Tum *wəñ*, 5 Bid *'awál* 'mix'.

*[*h*]*owan*- 'to skin': W 3 **hon-d*-: Tng *wune* 'flay, skin', (Sh) Krkr *hàn-dyú*, Bol *wùn-dyú*, Krf *wòn-tú*, Glm *wùnd*- 'peel'; E 1 Kera *hole*, Ngam (Ln) *ól-te*; 2 Kbl *hál*, Lele *wál*.

Ch **CVPVn*- yields *CVPVI*- in E Ch (Mokilko included), in **PVn*- roots -*n*- is preserved. There is a few examples of the **PVn*- > *PVI*- shift in W and CCh (for Ch **nVP*- > *IVp*- see I.8). All the examples are given below.

**pan*- 'bathe, wash': W (?) 3 Tng *pali* 'bathe' (a strange case of **pVn*- > *pVI*- shift in Tangale, or a root variant, cp. C 4 Gude (H) *pulə* 'flow out'; 7 Mofu *pələ* 'verser à un seul coup'); 5 (Kr) Bgh *pan*, C 5 (Kr) 'wash': Dxw *pàrà*, Nak *par-tà-para*, Gava *pàrà*; 7 Mafa *pán*-, Mofu -*pər*- ('se) laver'; 8

(Kr) Daba *pan* 'wash body'; E **VpVI*- 'wash': 1 (Ln) Mobu *pélé*, Ngam *pèle* 'wash body'; 2 Lele *piil*, Kbl (L) *polo kozu* 'wash body', Gbr *pelée* 'washen'; 3 Sum (L) *uwialó*, Tum *pəl*; 5 Mig *'àpilò*; 6 Mok *'òpilè* 'wash things'. / Jglb -*pl*.

**zabu-Vn*- 'guinea-fowl' (see I.3) > C 12 ZB (S) *zámlà-kà* (-*ml*-< -*bl*-<-*bn*-); E **zobuli/o*: 2 Lele *simli*; 3 Tum *hibəl* (< **zibili*, vowel assim.), Ndam (dJ) *həbəl*; 5 Dng *zòpùlò*, Mig *zóbíló*; 6 Mok *sùbilò*; 7 Jegu, Bir *zóbóló*, Mubi *nèbéló*.

**wapin*- 'vomit' (v.): W 4 Cagu *pə-pənən* 'vomit'(n.); Siri *vənu*, Mb *vùn*, Jmb *vúní*, C 7 Mafa *vinéh*-; E 3 Tum *wabəl*; 6 Mok *píl-dè*/cp. Arab *'fn* 'to rot'.

C **mVn*- 'do' (Kr): 3 FK *miltu*, HK *mintidà*, HF *milito*, HK *müntε*, HB *milò*, HN *milutè*; 5 Dxw *mànyà*, Gava *mànigəná*.

W 2 **fiwan* 'rain': Mpn *fwán*, Mnt (Fp) *fiwel*, Sura, Ang *fiwan*, Grk (Fp) *fien*.

Ch **CVKVn*- nouns usually > *CVngV*, see *[*é*]*jagun*- 'knife' (II.5) and the following example:

**čikan*- (> **čank*- > *čang*-) 'goat': W 4 **čang*- 'goat': Diri *ašiká*, Cagu *šāng-én*, Mb *čāngù*; 7 Bok *šikyən* 'she-goat' (cp. also 1 Hs *činkè* 'goat excrement'); E 3 Sum (L) *čāngei* 'she-goat', Sib *čāngé* 'she-goat' (pl.). Cp. Kanuri *cágəñ* 'domestic animals which are eaten'.

Ch **-r*- > *-l*- in bura languages; Ch **CVrVC* > *CVIVC* (especially, if the last consonant is *-f*-) in all CCh languages except for *tera*, *bata*, *FG*, *FK* and *masa*; **CVCVr*- > *CVCVI*- in the *higi* group (cp. **n-kaṭuri* / **n-kuṭari* 'tail' (I.5), **ǰ[a]geari* 'antelope' (I.3), **čepar*- 'bark, shell' (I.4); note irreg. Diri *áčəbələ*, Somray *wuželai* < Ch **pučari* 'urine', Sura *šəbəl* < **čepar*- 'bark, shell'); in roots with an initial lateral Ch **-r*- sporadically > *-l*- in *glavda* and *matakam* groups; Chadic **-r*- is preserved in contact with *-b*- or *-p*- (**CVrVP*- > *CVrp*- > *CVrb*-, **CVrVP*- > *CVpr*- (see **sirap*- 'rib', etc. in II.1). Chadic **CVrVH*-/**CVHVr*- > *CV(y)*- in Hausa (see **-bariH*- 'give, sacrifice' I.1, **soHar*- 'fry' (I.3), **moHar*- 'oil' (I.8)).

Chadic *(CV)*hVr*- and *(CV)*h^rVr*- yield *γ/xVI*- in C Ch *glavda*, *bura* groups, in *Daba*, *Gidar*, *Musgu*, *Banana*, *Masa*. See **suHar*- 'fry' (I.3), **hori* 'dry up' (I.5), C **xuruf*- 'seed' (I.6), C **sipuy(V)ri* 'testiculi' (II.1), **moHar*- 'oil', **naḥar*- 'be thick' (I.8) and the following roots:

**huro*- 'steal': C 2 (Kr) Chb *xul-ti*, Klb *xül-tü*, Bura *xula*; 3 (Kr) HF *γür-ti*, FK *γüř*, Kap *γüri-xwi*, HN *γüli-šē*, HB *γuli*-, HG *xür-dε*; 4 (Kr) FJ *xələ-ku*, FM *xuru*, FB (*mà*)-*xürj-n*, Gude *xur-n*, Nzn *hij*, Bch *hüto* (<

*xVr-to), Gudu hūr-cù 'stealing', FJ xur, FM xuri, FB mčj-kə-xur, Gudu mə-hür, Mwl ùhùrò, Nzn xjréá Gude kɪ xyir-; 5 Gava (Kr) gulù-wa, Glv (Kr) γəl- (Rp) gəl, Nak (Kr) a xaylowa; 7 Gis mu-hul 'thief'; 8 Daba (Kr) xil; 9 Gidar (Mo) hal; 11 Msg hāla, Mnj hili; 12 ZB (S) ké huró, LP (Kr) hora 'steal'; E 6 Mok 'ùugirá./Nm *xəɾə, JgIb kr.

*hari 'intestines': W 4 Paa hari belly, stomach'; 6 Fyer hár 'Bauch, Unterlieb'; C *xari: Gbn wər-ta, Gaa wər-ta; 2 Wm hali, Hld xali, Klb hāli, Bura xyel, Mr yāli; 3 FG xar, HF xəri, HG, HB xāri; 7 Gis hor (Kr); 11 Mnj aruru /Akk erru 'gut'//HS 1243 *har-'intestines'.

Irregular reflexation (-d- or -l- instead of -r-) may be caused by the -d- suffix, cp. *bar-od- 'night' (I.1) and *cir-od- 'two' (I.3).

Ch *-l- is mostly preserved in Chadic languages. Ch CVHVI- roots (after syncope of the second vowel) yield CVwV in Hausa and CVrV in the Northern bauchi group, cp. *waHa/il- 'weep, sob' (I.8). On Ch *HVIVC- (yielding HIVC->IVC/rVC- in a number of Ch languages) see I.8.

Numerous Ch roots with sonorants in medial position see in Ch. I.

Appendix II.

Table 28. Angas languages

P angas	*-p	*-b	*-b	*-t	*-d	*-s	*-z	*-š	*-k	*-γ
Sura	p	b	b	t	d	s,š	z	-s#, -š	k,č	γ/g'
Mupun	p	b	b	t	d	s	z	s	k	h
Angas	p	b	b	t	d,d	s,š	z	-s#, -š	k	Ø
Chip	p	b	b	t	d,d	s,š	z	s	k,č	
Montol	p	b	b	t	d,d	s,š	z	s	k,č	γ
Gerka	p	b	b	t	d,d	t	d		k,š	γ
Ankwe	p	b	b	t	d	s		-s#, -š	k	

*CayaC, CoyoC, but CuguC, CəgəC

Table 29. Bolewa languages.

P bole	*-p	*-b	*-b	*-f	*-t	*-t	*-d	*-d	*-D	*-s	*-z	*-č	*-ž	*-k	*-g
Bolewa	p,w	b	b	t	t	d	d	d	d	s	z	š	z	k,š	g
Karekare	f	b	b	t	t	d	d	d	d	s	z	č	z	k,c*	g
Dera	p	b	b	r	r	d	r	d	w/y	w,y				k,š	g
Tangale	p	b	b	d,t	d	t	t,nd	d	d,d	s	w,Ø	s	ž	k	k
Nga mo	f	b	b	t	t		d	d	d	s	z,ž	č	z	k	g
Kirfi	(w)	b	b	p	t	t	d	d		s	s		ž	k	g
Galambu	b	b	b	b	z	z	d,ž	r	r	z,s	s		š	k	g
Gera	(w)	b	b	f	t,č	d	d	d	d	s	z		z	k	g
Geruma	p	b	b	t,š		t	d	d		s			k		g
Bele	f	b	b	t			d	d		h	h		h	k	g

Table 36. Gisiga Languages.

Pmata-kam	*-p	*-b	*-b	*-f	*-t	*-d	*-d	*-s	*-c	*-z	*-č	*-ž	*-š	*-k	*-g	*-h
Gisiga	p	(b)	b	f	t,c	d,r	d	s	s	z		-č	ž	š	k	g h
Mafa	p	b	b	f	t,c	d	d	s	s, nž	z	c, č/e	-ž/-č	ž	š	k, č	g h
Mofu	p	b	b	f	t,c	d	d	s	c, nž	z	c, č/e	-ž/-č	ž	š	k, č	g h

1. Ch *(CV)IVp->(CV)IVf-. 2. *Ch *-b->-v- in roots with initial sibilants and affricates. 3. Ch *CVfVC->CVvVC-.

Table 30. Warji languages.

P wrj	Wrj	Kar	Diri	Pa'a	Mbu	Miya	Cagu	Siri	Jmb	WCh
*-p-	p	p, IVf		p	p, IVf	p				*-p-
*-p-	p̣	p	b, b	p	(p̣)	p	p	p, p̣	b	*-p̣-
*-b-	b	b	b	b	b	b	b	b	b	*-b-
*-b-	ḅ	ḅ	ḅ	ḅ	ḅ	ḅ	ḅ	ḅ	ḅ	*-ḅ-
*-f-	f	f	f	f	f		f	f		*-f-
*-v-	v	v	v	v	v	v	v	v	v	*-b-, -f
*-t-	y	y	t		y		y	y	l	*-t-
*-t-	t, ṭ	t	t	t	t	t, ṭ	t, ṭ	t, ṭ	d	*-t-
*-d-	d, ʒi	d	d	d, ʒi	d	d	d	d	d	*-d-
*-d-	ḍ	ḍ	ḍ	ḍ	ḍ	ḍ	ḍ	ḍ	ḍ	*-ḍ-
*-s-	s, š	s, š	s, š	s, ʒi	s, ši	s, š	š	s	s	*-s-
*-c-	c	c		č	c	c	s, č	c, ču-	(ʒ)	*-c-
*-c-	ç, č	ç			š	š	(s)	ç		*-c-
*-ʒ-	z, ʒ	z, ʒi	z, ʒ	z	z, ʒ	z, ʒ	z, ʒ	z	z	*-ʒ-
*-č-	č	c	č, c		č		č		š	*-č-
*-č-	c	c	č		č	č		č	š	*-č-
-ʒ-	s	š	z	z, ʒi	(s)	š, z	z	s	s	(-ʒ-)
*-ʒ-	ʒ	ʒ	ʒ	ʒ, l	l, ʒ	l	l	ʒ	z, l	*-ʒ-
*-š-	š	š	š	š	š	š	š	š	š	*-č-
*-š-	š	š	š	š	š	š	š	š	š, š	*-č-
*-k-	k, hu	k, hu	k	k, hu	k	k	k	k	k	*-k-
*-k-	ḳ	ḳ	ḳ	ḳ, ḳ	ḳ	ḳ	ḳ	ḳ	ḳ, ḳ	*-ḳ-
*-g-	g	g	g	g	g	g	g	g	g	*-g-
(*-q-)	k	k	k	k	k, g	g	k	k	g	*-q-
*-γ-	γ	w, y	w, y		γ	w, y	w, y	γ	w, y	*-b-
*-h-	h, Ø	h, Ø	h	h, Ø	h	Ø	h	h, Ø	h	*-h-

1. Ch *ko- > kwa- in Mburku, Miya, Siri

Table 31. Tera languages

P tera	*-p	*-b	*-b	*-f	*-t	*-d	*-t	*-d	*-s	*-c	*-z	*-ʒ	*-š	*-k	*-g	*-q-	*-x	*-h
Tera	p, r	ḅ	ḅ	f	d	d	d	ḍ	s, ʒ	s, ʒ	z, ʒ	ʒ	š, ʒ	ḳ	g	xw	h	h
Hw	-f		ḅ	f	r	t	ḍ	ḍ	s	c, č	s	š		ḳ	g	k	x	
Gaa	p	p, ḅ	ḅ	f	ṭ	ṭ	ḍ	s	č	s	š	š		ḳ	g	k	h	h, x
Gbn	p	p	p̣	f	ṭ	ṭ	ḍ	s	č	s	š	š		ḳ	g	k	x, h	x
Bo-ka	p	p	ḅ	f	ṭ	ṭ	ḍ	s	s, č	s	š			ḳ, x	g	k	x	x

1. *HVb- > Tera HVv-. 2. CVt/d-tV > CVr-tV > CVr. 3. Ch *hw- > Boka xw-, Tera, Gabin, Gaanda w-.

Table 32. Bura languages.

P bura	*-p	*-p̣	*-b	*-ḅ	*-f	*-t	*-d	*-ḍ	*-s	*-c	*-z	*-ʒ	*-š	*-k	*-g	*-γ	*-x	*-h
Bura	p	p̣	(v)	ḅ	f	t	d	ḍ	s		z	ʒ	š	k	g	h	x	h
Chb	p, ḅ	ḅ	(v)	ḅ, ḅ	f, v	t	d	ḍ	s		z	ʒ	š	k	g	γ	x, γ	x
WM	p	p̣	-ḅ	-ḅ	f	t	d	ḍ	s	č	z	ʒ	š	k	g	γ	x	x
Klb	p	ḅ	ḅ	ḅ	f	t	d	ḍ	s	č	z	ʒ	š	k	g	h	h	h, 'x
Hildi	p	ḅ	ḅ	ḅ		t	d	ḍ	s	c	z	ʒ	š	k	g		x	x
Wm	p	ḅ, ḅ	ḅ	ḅ	f	t	d	ḍ	s		z	ʒ	š	k	g		x	x
Mrg	p	ḅ	ḅ	ḅ	f	t	d	ḍ	s	č	z	ʒ	š	k	g	γ		h

1. SVb- > SVv-; 2. CVb/fVC- > CVvVC-; 3. *(CV)IVp- > (CV)IVf-. 4. Ch *HVf- > HVv- in Kiba and Hildi. 5. Ch *CVdVH- > CVv- in Klb, WM, Chb.

Table 35. Mandara Languages.

Pmnd	*-p	*-b	*-ḅ	*-f	*-v	*-t	*-d	*-ḍ	*-s	*-c	*-z	*-ʒ	*-š	*-k	*-g	*-γ	*-x
Man dara	p, fu	ḅ	ḅ	f̣	v	t	ḍ	ḍ	s	c	z		ʒ̣	ṣ̌	ḳ	g̣	(ḳ) (ḥ)
Glav da	p	ḅ	ḅ, ḅ	f̣	ṿ	t	ḍ	ḍ	s	c, č̣	ẓ	ʒ̣	ṣ̌	ḳ	g̣	γ̣	x̣
Dhw	p	HVṿ	ḅ	uf̣	ṿ	t	ḍ	ḍ	s	c	ẓ	nẓ	ʒ̣	ṣ̌	ḳ	g̣	γ̣, gụ
Gava	p	ḅ	ḅ	uf̣	ṿ	t	ḍ	ḍ	s	c	ẓ	ʒ̣, ṇ	ʒ̣	ṣ̌	ḳ	g̣	γ̣
Na-kaci	p	ḅ	ḅ	uf̣	ṿ	t	ḍ	ḍ	s	c	ẓ	ʒ̣	ʒ̣	ṣ̌	ḳ	g̣	γ̣

1. Ch *(CV)IVp- > (CV)IVf-. 2. Ch *SVb- > SVv-; 2. Ch *CVbVC- > Dgwxwde CVvVC-. 3. Ch *(CV)IVb- > (CV)IVv-. 4. Ch *HVb- > HVv-. 5. Ch *HVf- > HVv- in Dgwxwde and Gava. 6. *CVvVC- > Mnd CVVC-.

Table 33. Higi Languages.

P higi	*-p	(p̣)	*-b	*-ḅ	*-f	*-t	*-d	*-ḍ	*-s	*-z	*-ʒ	*-ʒ̣	*-š	*-k	*-g	*-γ	(q̣)	*-x	(q̣)
HN	p	ḅ, p̣	ḅ	ḅ	f̣	ṭ	ḍ	ḍ	s	ẓ	ʒ̣	ʒ̣	ṣ̌	ḳ	g̣	γ̣, x̣	ḳ	x̣	ḳ
HB	p	ḅ, p̣	ḅ	ḅ	f̣	ṭ	ḍ	ḍ	s	ẓ		ʒ̣	ṣ̌	ḳ	g̣	x̣	ḳ		ḳ
Kap	p	p̣	ḅ	ḅ	f̣	ṭ	ḍ	ḍ	s	ẓ	ʒ̣	ʒ̣	ṣ̌	ḳ	g̣	γ̣	γ̣	x̣	
HG	p̣	ḅ, ḅ	(ḅ)	ḅ	f̣	ṭ	ḍ	ḍ	ẓ	ẓ		ʒ̣	ṣ̌	ḳ	g̣		g̣	x̣	
HF	p	ḅ, ḅ	ḅ	ḅ	f̣	ṭ	ḍ	ḍ	s	ẓ	ʒ̣	ʒ̣	ṣ̌	ḳ	g̣	γ̣	γ̣, g̣	x̣	x̣
FK	p	p̣	(ḅ)	ḅ	f̣	ṭ			s	ẓ	ʒ̣	ʒ̣	ṣ̌	ḳ	g̣	γ̣, x̣	γ̣		x̣
FG	p	p̣	(ḅ)	ḅ	f̣	ṭ			s	ẓ	ʒ̣	ʒ̣	ṣ̌	ḳ	g̣	γ̣	γ̣, g̣	x̣	x̣

1. Ch CVp/b/fVC- > CVvVC-; 2. *(CV)IVp- > (CV)IVf- in all the languages but Fali Kiria. 3. Ch *HVf- > HVv-. 4. P higi *-b- > -ḅ-, P higi *-v- > -ṿ- in all the languages of the group. 5. Ch *-c- > -s- in the higi group, but Ch *-nci- > n̄ci- in H Futu, Higi Ghye, Higi Baza and Higi Nkafa. 6. *-q- > HB and HN -g- in the first consonant is a voiced one.

Table 34. Bata Languages.

P	Bata	*p	*b	*b	*f	*t	(t)	*d	*d	*s	*z	*z	*z	*z	*k	*g	*g	*g	*h
F	Jilvu	-uv	b	f	t	-ci	-ci	d	d	s	z	z	z	z	k	g	g	g	x
F	Bw	-p	-b	f	t	-ci	-ci	d	d	s	z	z	z	z	k	g	g	g	x
F	Muc	-p	b	b	f	t	-ci	d	d	s	z	z	z	z	k	g	g	g	x
Gudu		b,v	b	f	t	d	d	d	d	s	z			l	s	k	g	g	h
Mwl		p	b	b	f	t	r	d	d	s				l	s	k	g		h
Bch		p	b	b		t	r	d	d	s				l	s	k	g		h
Gude		p	b	b	f	t		d	d	s	z			l	s	k	g		h
Nzan			b		f	t	d	d	d	s				l	s	k	g		x,h
gi																			

1. Ch *CVpVC- > CVbVC-. 2. Ch *CVrVp- > CVrVf-. 3. Ch *-b- > -v- before -u-. 4. Ch *CVbVC- > CVvVC-; 4. Ch *(CV)/Vb- > (CV)/Vv-. 6. Ch *HVf- > HVv-. 7. Pbat *-v- > -v- in all the languages of the group.

Table 37. Masa Languages.

P	masa	*p	(p ₁)	*b	*b	*f	*t	(t')	*d	*d	*s	*c	*s	*k	*g	(*h)	*h
Masa		-f		b		-f	t	t	d	d	s	s, č		k	g		-
Bana		-b		b	b, b	f	t	t	d	d	s	č	s	k	g		-
BM		-f	p	b	b, b	f	t		d	d	s	č	s	k	g		-
Lame		b	b	b	b	f	t	d		d	s	č	s	k	g		-
Peve		-v	b	b	b	f	t	d		d	s		s	k	g		-
Zime		p	b, b	-b	b, b	f	t	t	d	d	s	c	č	k	g	h	-
(S)		-v							d	d	s						-

1. CVrVC- > CVrVC- in Masa and Banana.

Chapter III. Vocalism.

The Proto-Chadic vowel system as reconstructed contained five short vowels (i, e, a, o, u). The problem of originally long vowels in Proto-Chadic remains unsolved (note that long vowels mostly result from a contraction, for example, in roots with a medial laryngeal). In those few cases when a long vowel is attested in all the languages and no laryngeal seems to be contained in the root, we do reconstruct a Proto-Chadic long vowel. Labialized consonants (velars and labials) in our opinion reflect an old combination of a consonant plus

Table 38. East Chadic Languages

PECh	*p	*f	*b	*b	*t	(t')	*d	*d	*s	*z	*z	*z	*z	*k	*g	(*h)	*h
P Kera	*p	*f	*b	*b	*t	(t')	*d	*d	*s	*z	*z	*z	*z	*k	*g	(*h)	*h
Kera	-p, -rb	f	b	b	t		d	d	s	z	z	z	z	k	g		
Kwan	b	(b)	b	b	t		d	d	s	z	z	z	z	k	g		
P Lai	? -*b	*b	*b	*b	*t	(t')	*d	*d	*s	*z	*z	*z	*z	*k	*g	(*h)	*h
Kbl	-b	-b	-b	-b	-t		-d	-d	-s	-z	-z	-z	-z	-k	-g		
Lele		b			d		d	d	s	z	z	z	z	k	g		
P Smr	-*b		-*b	-*b	*d		*d	*d	*s	*z	*z	*z	*z	*k	*g	(*h)	*h
Smr	b, w				d		d	d	s	z	z	z	z	k	g		
Ndam	b, -p				d		d	d	s	z	z	z	z	k	g		
Tumak	b				d		d	d	s	z	z	z	z	k	g		
Sok	p, f				(i)		d	d	s	z	z	z	z	k	g		
Dng	p				t		d	d	s	z	z	z	z	k	g		
Migbid	p				t		d	d	s	z	z	z	z	k	g		
Mok	p				t		d	d	s	z	z	z	z	k	g		
Pmubi	*p	*f	*b	*b	*t	(t')	*d	*d	*s	*z	*z	*z	*z	*k	*g	(*h)	*h
Mubi		-f	b	b	t		d	d	s	z	z	z	z	k	g		
Jegu	p, f	(i)	b		t		d	d	s	z	z	z	z	k	g		

1. in Kera, lai and somrai Ch *Cu/oba may > Cu/owa > Cu/oa; 2. Ch *-rb- > lele -rm- (not quite regular, cp. *urb- 'bark'), *-bd- > -md-, *-bn- > -ml-;

—o—. Note that, on the one hand, labialized consonants have a very narrow cooccurrence-range (very rare combinations of the *kwi-/bwi-* or *kwu-/bwu-* type arose under the influence of an *-i-* or *-u-* in the second syllable). On the other hand, many Chadic languages possess labialized dentals and sibilants as well, so we should reconstruct **sw*, **dw*, **cw*, etc. PCh **o* seems to be the lesser of two evils. The same vowel system has been reconstructed for West, Central and East Chadic.

Table 39.

	a-o	a-u	a-i	o-a	o-u	o-i	u-a	u-o	u-i	e-a	e-i	i-a	i-o	i-u
Hausa	a	a	a	wa,a	wa,a	wa,a	u	u ¹	u	e/a	i	i	i	i,u
sura	a, wa	u	i	wa,a	wa,a	wi	a ²	o,a	u,ü	e	i	i/a ³	/i,a	i,u
bole	a,wa	a ⁴	a	wa,a	wa	u	u/a	u	u	a	i	i/a	/i,a	i
North. bauchi	a	a ¹¹ wa	a	wa,a	a, wa	u	u	a	u	/a	i	i/a	/a	u
tera	(u)	a/u	i	wa, a ⁵	wa	/wa	a, wa ⁶	u	u,i	e,i		i,e/	wa	i
bura	a,wa	a/u	a	wa,a	u	u, w	u	u	i,u		i	i	u ⁷	i
higi	a,wa	a ¹¹ /u	a	wa,a	u	wu, wo	u	u	i,u	/a	i	i/a	u ⁷	u
bata	a,o	wa,a /a	a	wa,a	u	o, wu ⁶	u ⁸	u,o	u,i	e,a		i	u ⁷	i
glavda	a,wa	a ⁹	a	wa,a	u	wu, u ⁶	u, po-	u	u, i	a	i	e,a /a	wa	i
mata- kam	a	a,w	a	wa/a	u, w	wa,a	a,wa	u	u,i	e,a ¹²	e	a	a	i/u
Logone		a	a	o,a	a		u	a	e	a		e,a		
							/u,o							
Musgu		u	a/i	a	o,u	a	u/ o,a ⁶	a	i	e/a	i	/i		u
masa	a	u	a	o	u	a	u	u,o	u,i	e/a	e	i/a	(u)	u
kera	a	a	a	o/a	o,u	o	a	o	i			i	wa	
sumrai	a	u	a/i	o	a,o	o	o/a	o	u	a/e,	i	i/a	1 /wa	i,u
dangla	o,a/o	a ¹³	a/e,i	o/a,o	o,a	o	o,a/a	o	i	e,a/	e,i	i,e/ a ¹⁰	o	i

¹ *CuHoC* > *CōCV*. ² *CuHaC* > *CeC*. ³ *CiHaC* > *CiaC/CeeC/CaaC*. ⁴ Tangale *-u-*. ⁵ *-u-* after a labial consonant. ⁶ *-u-* after *w-*. ⁷ *-wa-* after *f-*. ⁸ *CuwaC* > *CwaC*. ⁹ Glavda *-a-*, *-u-*, Nakatci *-a-*, Gava, Dgwxwede *-u-* in contact with a velar or a uvular. ¹⁰ *CiyaC* > *CiC*. ¹¹ *-u-* in contact with a velar, uvular or laryngeal. ¹² Gisiga, Mafa *-a-*, Mofu *-e-*. ¹³ sometimes > *-o-* before a labial consonant.

The most characteristic feature of the Chadic vocalism is regressive vowel assimilation. The evidence showed that assimilatory processes were much stronger in the roots of the CVCVCV-type than in the CVCV-structures. The vowel *-a-* is more neutral, while *-u-* and, even more so, *-i-* exercise a very strong influence upon the vowel of the preceding syllable. It seems that in Hausa only a long vowel in the second syllable influences the first-syllable *-u-* vowel, while in the sura group and in Musgu the first-syllable vowel can be influenced by any vowel of the second syllable. That is why, before reconstructing Proto-Chadic vocalism one should distinguish between primary and assimilated vowels.

The method proposed in Orel, Stolvoba (1990) and in the present work is based on establishing correspondences between vowels of the first syllable linked to an obligatory consideration of second-syllable vowels. (For example, Hausa *-a-* corresponds to *-a-* in the sura group in **CaCa*-structures, but to *-u-* in **CaCu*-structures, in the latter case *-u-* in the sura group results from assimilation: **CaCu* > *CuC(u)*). In both cases one and the same Proto-Ch **-a-* is reconstructed). At the outset, regular correspondences have been established for not very numerous triconsonantal roots with securely attested second vowels, and after that — for biconsonantal roots. When reconstructing vowels in verbal roots only the data of West, Central Chadic and the dangla languages were taken into consideration.

There is a real possibility, of course, that new data will help to refine the reconstructions proposed in the table, or even to change some of them. It is also quite possible that certain changes will have to be introduced if and when the Proto-Chadic long vowels are reconstructed. One can only express the hope that the essential basis of the method will prove to be correct.

The upper row of the table 39 contains the most frequent combinations of the 1st and 2nd-syllable vowels (*a-i*, *a-u*, ... *u-i*); the following rows show the obtaining vowel of the first syllable in each group. A slash separates a resulting vowel in CVCV-structures from that of CVCVCV (in case they differ). Here the posited Proto-Chadic lexemes are presented either in a (CV)CVCV or a CVC-shape, where the latter variant appears only in those cases when the Proto-Chadic first-syllable vowel has been preserved in every language. Then one must suppose that the original second-syllable vowel was identical with that of the first syllable (*CaCa*, *CiCi*), or, especially in case the root is attested only in a few languages, more data is needed to specify the second-syllable vowel. For example, *-a-*, *-u-* and *-i-* of the second syllable do not influence *-a-* of the first syllable in Hausa, Mafa, Mofu, Logone, which means that the reconstructed **CaC-* shape is equivalent to a **CaCa/u/i* notation.

Concluding, we would like to make some observations concerning the classification of C and ECh languages.

1. Fali Bwagiru, Fali Jilvu and Fali Muchella show a greater degree of lexical affinity with bata, not with higi languages, sharing lexical innovations typical of the bata group (for example, **bag*- 'sheep' instead of Common Ch **tam*-, attested in higi languages). From the point of view of phonology they are also closer to bata languages. There is only one exception: languages under consideration reflect CCh **-z̥-* as *-z̄-* (which is typical of high, while in bata group Ch *-z̥-* > *-l-*). Though important, this isogloss is not decisive. First of all, in all other CCh languages **z̥* yields *z̄* as well. On the other hand, CCh **z̥* sometimes also yields *l* in Fali Jilvu or Fali Bwagiru, but never in higi. Cp., for example CCh **xašob*- 'melon' (Kr): 2 Bura *hwomza*, 3 **xwašubu* FG *xwašubwu*, HN *xaši-məy*, HB *xašu-mo*, 4. **xwažubu* (voicing of CCh **s̥* in a weak position): Bch *halubey*, FB *xwəbižin*, FM *xwabulu*, FJ *xwavili* (metath.).

2. Banana languages, as well as Musgu and Logone, reflect all the Ch uvulars as *h* or *ḥ*. In addition to lexical affinity between them the above mentioned isogloss supports their classification within a separate group of CChadic. These languages form the Riverain sub-branch of CCh in Jglb (2:348).

3. The data so far collected and analysed display considerable differences in reflexes between Northern and Southern ECh. In the Southern sub-branch we can trace Ch laryngeals, an uvular spirant and an initial *t̥*, but almost all the sibilant affricates yielded *s*. In the Northern sub-branch, on the contrary, reflexes of the uvulars merged with those of the velars and all the laryngeals yielded *ʔ*. As for Ch sibilant and lateral affricates, they seem to have been preserved even after the branch split into groups. Reconstructing of East Chadic phonology encounters difficulties in specifying Proto phonemes. Two intermediate systems being reconstructed instead of ECh, each of them will present its own variant of the reduced Proto-Chadic one. A thorough analysis of the new sumray, lai and Sokoro data is needed to answer the question whether East Chadic actually had existed or not. One more argument for restructuring ECh into two sub-branches is the absence of nominal prefixes (so typical of kera-lai-sumray) in the Northern sub-branches of East Chadic.

Our research resulted in the following classification of the Ch languages:

West Chadic	a. West Chadic proper	1. hausa (HA) 2. sura (SG) 3. bole (BT)
	b. bauchi-bade	4. Northern bauchi (NB) 5. Southern bauchi (SB) 6. bade-ngizim (BN)
Central Chadic	c. ron	7. ron (RN)
	a. [Central Chadic proper	1. tera (TR) 2. bura-margi (BM) 3. higi (HG) 4. bata (BA) 5. mandara (MD) [5a Lamang] (LM) [6. Sukur] (SU) 7. matakam (MM)

[East Chadic]	b. Riverain	8. daba (DB) [9]. Gidar] (GD) 10. kotoko (KT) 11. musgu (MU) 12. masa (MS)
	a. Southern	1. kera-kwan (KK) 2. lai (LA) 3. sumray (SM) 4. Sokoro (SK) 5. dangla (DM) 6. Mokolko (MK) 7. mubi (MT)
	b. Northern	

There is one quite essential deference between the classification of Jungraithmayr, Ibrizimow (cp. v.2:238) and ours. In the latter ron languages are not included in West Chadic Proper, but form a separate unit, because they share a number of isoglosses with languages belonging to both sub-branches (for example, like Ngizim, they reflect all the uvulars as *g*).

For lack of data on Lamang, Sukur and Gidar we hesitate to split CChadic proper into smaller parts (in Jglb it is subdivided into Gongola-Higi and Hill sub-branches). Note that Lamang data (extremely fragmentary) point to closer affinity with mandara group (Hill sub-branch), while in (Jglb) it presents a separate unit within Gongola-Higi. Since our impression may be wrong, Lamang is left unclassified within CCh proper.

3. EChadic Nanchere, Gabri, Tobanga (dial.), and Dormo have not been considered in Jglb, 1995. In Barreteau, Jungrathmayr (1990:214) they form a separate unit within the Southern branch. In the present work they are classified within one and the same group with Kabalay and Lele. The data show their special affinity in phonology and lexicon. In addition, languages under consideration seem to share one isogloss of great importance, namely, they reflect Ch *s̥*- as *s̄*- (while Ch **s̥*- yields *l*- in other ECh languages). New data will surely show whether this merging is correct or not.

Not all the problems of Chadic historical phonology have been solved, the main obstacle being lack of data. With more material at one's disposal uncertain points of the present reconstruction (general and particular) should be discussed and the rest of the Chadic languages investigated.

Bearing in mind that irregular reflexes were usually induced by affixes, further research in phonology should go hand in hand with studies in derivative morphology. (This problem is under consideration in Skn, 1995).

The reconstruction of the vocalism suggested in the present paper explains the evolution of the PCh system down to groups of languages. It seems absolutely necessary to proceed with vowel reconstructions within groups, following R.Shuh (1984) and E.Wolf (1983). The problem of Chadic long vowels also needs to be solved.

Research of the Hamito-Semitic word-stock should precede the study of transgenetic interferences between Chadic, Nilo-Saharan and Niger-Congo languages. It goes without saying that the whole Chadic data base as well as the regular correspondences should be taken into consideration. In the study of

Chadic etymologies reliable parallels within the Hamito-Semitic family should outweigh sound resemblances of Proto-Chadic roots with the items of neighbouring languages.

All these tasks having been fulfilled, a detailed description of Chadic comparative phonology should be attainable.

The reconstructed Proto-Chadic consonantal system looks as follows:

f	p	(p)	b	ḃ	m	w
	t	ṭ	d	ḍ	n	
s	c	ḥ	ʒ		r	
	č	č̣	ʒ̣		y	
š	č̣	č̣̣			l	
	k	ḳ	g			
ḃ	q	q̣	(ḡ)			
ḥ			(ʕ)			
h						

Index of Proto Chadic Roots

**abul* → **bu'al* 'tendon, vein' (22), **abuni* 'millstone' (81), **a/w/c* 'dog' (113), W **ha/wu-ac* 'tooth' (111), **ic-/ac* 'to cough' (81), **awVc* 'rise, stand up' (120), **ida-n* 'eye' (109), E **eg* 'head' (31), **afh* 'son, brother' (128), C **ayu* 'fire' (129), **akuw* 'fire' (81), **akay* 'thorn' (31), **uli* 'saliva' (31), **alu* 'pour, soak' (81), **a-luba-ri* 'lion' (89), W **am* 'arm' (80), **Vm* 'catch, seize' (80), **am* 'woman' (31), **ipuki* 'monkey' (19), **ka-HVpan* 'buffalo' (61), E **Vr* 'young girl' (30), E **uray/w* 'song' (31), **arič* 'earth' (122), C **ariža* 'scorpion' (119), **as-/es* 'come' (81), **es* 'bone' (123), **aten* 'nose' (135), E **uw* 'fire' (32), **Haž-/nža* 'sun, day' (119).

**bu* 'pot' (133), **baHač* 'strike, break' (121), **beHač* 'beer' (25), **bač* 'trample, push' (117), W **buči* 'nail' (117), **buča* 'wing' (122), **budVH* 'pour' (22), **bid-/mbj* 'say' (27), **buč-/mbj* 'wind' (26), **bid* 'make, invent' (27), **boḥu* 'hide' (128), **bVḥ* 'pit, cave' (128), **buḥ* 'thresh, pound' (128), **ba* 'well' (23), **be* 'hoe' (n.) (23), **bul-/mbul* 'say, shout' (23), **biina* 'hut, house' (21), **ban* 'to know' (27), **HVb[a]n* 'broad, large' (23), **ba'a/ra* 'child' (25), **bari* 'give, sacrifice' (25), **bur-odi* 'night' (21), **HVbar* 'recover' (23), **b[o]Hir* 'throw away' (27), **baHasu/[mb]aHasu* 'count' (27), **mbaru* 'oil' (25), **baš* 'dig, bury' (119), **ba[t]* 'cut' (24), **buṭo/mbuṭo* 'fog' (24), **bittu/[mb]jittu* 'extinguish' (27), **buṭi* 'untie' (107), **butV* 'belly, stomach' (108), **boti* (< **boti*) 'pour' (108), **buwuṭ* 'ashes' (21), **biHVž* 'crack, cleave'

'crack, cleave' (115), **b[a]ž* 'throw' (23), **bužam* 'beard' (115).

C **b[o]č* 'excrement' (24), C **buči* 'squeeze' (116), **biḥu* / **baḥu* 'pierce, stick into' (23), **buHal* 'pierce' (23), **buHal* 'break' (25), **baHal* 'be large' (23), **buHar* 'shine' (25), **buH[o]r* 'cover, bury' (25).

**cif* 'sweep' (40), **cof* 'old man, chief' (39), **[n]cag* 'carry' (40), C **cVqwa* 'earth' (129), C **caku/ncaku* 'buy' (41), C **soka* (< Ch **coka*) 'pot' (126), **cum* 'swear' (40), C **cin* 'hear' (57), **ci'er* 'rope' (39), **cir-od* 'two' (40), **[n]car* 'chief, rich' (40), **[n]caray* 'be thin, meager' (40), **nc[o]l* 'press, squeeze' (40),

**ca'y* 'plait, weave' (41), C **čabo* 'mud, silt' (42), **nc[i]b* 'sew, join' (42), **ncabu* 'cover' (103), **čagi* 'hair' (127), **cuḥ* 'pour' (131), **čaku* 'increase' (42), **čal* 'rope' (41), **ncVl* 'monkey' (42), **čim-čiyam* 'seed' (41), **čimu* 'skin' (41), **čam* 'sour' (135), **KV-čin* 'nose' (113), **čina* 'life, heart' (42), **čup* 'wash (tr.)' (41), **ncup* 'buttocks' (100), **cir* 'dew, rain' (41), **ciH[a]r-/H[a]cir* 'sand' (132).

**čad* 'cut, carve' (110), C **[č]cfan* 'guinea fowl' (105), **čag /an* 'rise, lift' (46), **čaho* 'pierce, tattoo' (131), **ča'ok/q* 'house' (47), **čul* 'seed' (46), **čala* 'pot' (46), **čal* 'rise, stand up' (46), **čela* 'cut' (46), **č[u]lib* 'wolf, jackal' (46), **čamum* 'gather, join' (46), **čin* 'send, drive away' (57), **čin* 'work, make' (59), **čeHap-/čapVH* 'catch' (46), **čer* 'cry' (v.) (46), **čar* 'rise' (47), **čVw-/čVy* 'to fish' (46)

**čib* 'spring, jump' (47), **čub* 'smash, break' (103), **č[i]fu* 'suck' (104), **čag* 'cut, split' (47), **čugu* 'sit' (48), **čih* 'pour, wash' (128), **čako* 'pot' (47), **čikan* 'goat' (139), **čijla* 'shadow' (48), **čilVm* 'be dark' (47), **čama* 'night' (47), **čaman* 'think, know' (134), **čepur* '(wild) guinea fowl' (98), **čaw-čiy* 'catch, seize' (47), **čuway* 'tail' (48).

**čib* 'beat, strike' (52), **čuk* 'cut; knife' (52), **č[a]Kun* 'knife' (125), W **čap* 'smear' (53), **čap* 'leaf' (98), **sVwop* < **čVHop* 'hair' (53), **čar* 'sweep' (52), **čaHir-/čiHar* 'friend' (53), **čo/uHar* 'root' (54), **čallar* 'moon' (54), **čaw-čiy* 'cut, scratch' (52), **čaw/y* 'stand up, rise' (52), **čaw* 'obtain, receive' (53), W **čaHwa* 'guinea corn' (53).

W4 **šuf* (< **čuf*) 'shoot' (55), **čāk* 'calabash' (54), **čim* 'sew' (54), **čam* 'be bitter' (54), **čep* 'bark' (100), **mi-čayp* 'friend, guest' (122), **čapa* 'conceal (oneself), be silent' (54), W **čar* 'split, cut' (55), **či/ur* 'pierce' (54), **či/ay* 'pour' (54), **čaw-/čey* 'squeeze, wring' (54).

**da* 'place, town' (133), C **dibu* 'hand' (38), **dac* 'cut; knife' (113), W **duč* 'stone, rock' (114), **dač* 'beat, strike' (116), **deč* 'short' (36), **dVHVč* 'squeeze' (117), **daf* 'pot' (77), **dVg* 'chest' (37), **difu* 'dark, black' (36), **doga* 'pound, forge' (127), **dig /HIVdig* 'dig' (36), **d[o]gus* 'hoe' (36), **d[o]ḥa* 'lift, stand up' (129), **nVdVk* 'lie' (v.) (37), **dak* 'pound' (126), **dVm* 'gather' (37), **d[a]m* 'sit, dwell' (37), **duno[H]* 'strong, heavy' (137), **do[q]ub* 'pot' (130), **dar* 'village enclosure' (37), **deHar* 'hunt' (n.) (37), **dir[a]c* 'press, push' (111).

*daw/yah- / *dahaw/y- 'stink' (132), *dVh dVh- 'bitter' (132), *dik- 'build, establish; marry' (38), W *del- 'go in, out' (38)

*fi' / *fa- 'to blow' (133), *fid-od- 'four' (28), *[fa]-fun-H 'hole, mouth' (28), *fiq- 'blow (wind)' (129), *fur- 'shell, bark' (28), *fur- 'rub' (28), *fir- 'scratch' (28), *foti 'roast' (106), *fat- 'to fan' (107), *fati/a 'sun' (28), *fita 'God, sky' (28), *fit-ud/t- 'mosquito' (106), *afita 'flour' (27), *fut- > *fuy/wat- 'pour' (108), *fet- 'sweep' (28), fVz- 'pierce' (29).

*gab- 'part of a building' (67), *gobar- 'person' (102), *gVc- 'shake' (113), *gači 'spear' (115), *nV-[g]ačami 'cat' (116), *goča-IV 'termite' (120), *gačim- 'chin' (116), *ga/uča-um 'cheek' (122), *giHad- 'neck' (109), *gVHVd- 'run' (110), *gufi 'knee' (104), *gulu/a 'left' (67), *guru- 'pond, river' (67), *gur- 'charcoal, ash' (67), *gaš- 'fall down, throw' (67), *giš- 'cut' (119), *goš- 'shoulder' (119), , *g/c/ta 'hoe, axe' (108), *gawuž- 'hair' (118), *guži 'internal organ' (118), *geza 'mane, tail' (67), *gaža 'horn' (115).

*g/uba 'chin, cheek' (74), *gab- 'swell, increase' (73), *gabor- 'dry, earth, sand' (73), *ga[k]a 'crow' (73), *gal-/*gol- 'child' (74), *gola 'vagina, hole' (73), *gVn- 'forbid' (73), C *γup- 'flour' (98), *gor- 'kill, punish' (73), *gora [b]- 'crow' (73), *gwa[t]- 'cave', *guu[t]- 'dig out' (73)

C *f'ub- 'faeces' (78), C *f'ub- (h-, f-) 'drink' (79), *fal- 'rise, stand up' (77), *fog- 'call' (78), *fag- 'beat, grind' (78), *fag- 'stand up, climb' (78), *f'ull- 'divide, cut in pieces' (78), *am- 'monkey' (77), *fum- 'cover' (77), W *fum- 'rise, climb' (78), *fiwum- 'bury' (77), *iyan- 'see' (78), W *far wa 'cow' (78), *f'orib- 'mix' (77), *urok- 'rub' (78), W *fayay- 'maid' (78).

*haw(V)c- 'river' (80), *had- 'be weak' (80), *hičar- 'fat' (82), *hal- 'call, ask' (80), *huwal-/*huyal-/*hulal- 'cry' (80), *hVwan- / *hVyan- 'sleep' (v.) (138), *h[ar]- 'back' (30), *hur[o]c / *ruhac 'cut' (113), *hosu 'grind' (80), *hVt- 'release, loosen' (109), *hotu 'fire' (79), *hawiy 'run' (79), *ha'y- 'town, place' (79), *hay- 'guinea corn, millet' (79), *hayi 'sew, plait' (80), *hažaw 'cloud, mist' (114), *hažV 'guts, intestines' (118).

*h/oc 'cold wind' (76), *had- 'envelop, bury, close' (110), *hafa 'sharp stick, arrow' (105), *hakVw 'stone' (75), *hVI- 'burn' (76), *h[awil]- 'year' (76), *h/a/m- 'cat' (76), *hama 'salt' (75), W *ha'Vm- 'hold, take' (75), *huy/wan- 'fill' (75), *huna- 'build' (75), *hawVn- 'mix' (138), *h[owan]- 'to skin' (138), hVp- 'swell' (76), *hapat- 'arm, wing' (77), *hari 'intestines' (140), *hur[e]p- 'trample down, pietiner' (76), *ka-[h]usami 'rat' (63), *h/es- 'faeces' (76), *hut- 'take, catch' (76), *haw-/*hay- 'belly, stomach' (75), *huway- 'buy, sell' (75), *haž- 'gather' (76), *hVž- 'cut (hair), shave' (118).

*hub- 'carriage, rot' (69), *huba 'hoe' (n.), *hoba 'cultivate' (69), *huba 'skin, bark' (70), *hubar- 'increase, grow' (69), *h/hab- 'break into pieces' (103), *ha/ub- 'to hatch' (103), *hobas- 'wild pig' (103), C *γufon- (< Ch *hufon-) 'charcoal' (105), W *holu 'slave' (69), *h[aj]- 'give' (69), *hul- 'throat' (69), *hV]leč- 'vomit' (115), *ham- 'look for' (70), *hVn- 'keep,

store' (69), W *har- 'be old' (70), *hur- 'dig', *hir- 'pit, grave, hole' (69), *huro- 'steal' (139), *hori 'dry up' (69), *hor-, *nVhor- 'to snore' (84).

*kac- 'snap, break' (114), *kuca 'abuse' (111), *kuci- 'mat; weave' (61), *koca 'quiver, pot' (111), *kača- 'divide' (116), *kuč- 'near' (116), W *kuči 'basket' (116), *kač- 'chop' (60), *kuč- 'nine' (117), *kVč- 'big, many' (117), W *kič[o]r- 'fat, grease' (117), *kad-[ami] 'crocodile' (64), *kočay- 'worm, snail' (60), *kiča 'earth' (110), *koča 'pot' (110), *kah/h- 'put down, fall' (132), *kolu 'hoe' (60), E *kil[e]m- 'darkness, shadow' (60), *kumil- 'charcoal' (60), *komu 'cow, meat' (60), *kum-od- 'three' (136), *kVhon- 'salt' (138), *ka-HVpan- 'buffalo' (61), *kirop- 'fish' (62), *ha-kuris- 'kidney' (65), *ka-[h]usami 'rat' (63), C *kus- 'hold, seize' (60), *k[o]ša 'morning, dawn' (120), *koš[a]l- 'star' (119), *ko'at- 'go, follow' (108), W *kuti 'cold (weather)' (107), *ka/ut- 'cheat' (107), *n kutari 'tail' (64), *kaw[a]y- 'fry, burn' (59), C *kuža 'weakness' (114).

*koča-k 'calebasa' (120), *koč- 'beat, forge' (120), *kodu 'testicles' (66), *h[aj]-kuni 'urine' (65), *kapp- 'sow' (66), *a/kor- 'be angry' (66), *kar- 'end, finish' (66), *kas[i] 'bone' (66), *ka'w- 'speak, call' (66).

*IV'y- 'go' (88), *IV'w/y- 'speak, cry' (88), *lab- 'soft' (88), *lub- 'be tired' (89), *HVlubi 'moisten' (90), *h[aj]-lub- 'heart, liver' (90), W *h[aj]Hač- 'rub' (89), *lač- 'be cold' (114), *n/lač- 'squash, step on' (117), *Halič- 'coal' (89), *h[aj]leč- 'vomit' (115), lig- 'lick' (127), *Huliku 'ulcer' (125), *loč- 'lick, taste' (87), *lačo- 'throw, sow' (88), *lač- 'swallow' (126), *luma 'eat hard food' (88), *luHum- 'dry season' (89), *liHupu 'harmattan' (98), *luHip- 'cover' (100), *luqo 'stand up' (130), *ha-lesi-um '(my) tongue' (88), *IVs- 'black' (90), *la/it- 'pull' (107).

*mac[i] 'give, help' (113), C *mVc- 'wash' (114), *mVc- 'trade' (113), C *ma'afa 'slave' (105), *mVd- 'speak' (109), *mal- 'star' (82), *malu- 'put down' (83), *min-d- 'liver' (137), *muqa/V/ 'chief' (130), *muq/k- 'strike, beat' (131), C *moH[a]r- 'oil' (82), *m[a]ru-hu 'new' (133), *m[o]is 'steal' (82), *mut-/*muwat- 'die' (106), *maži 'river, water' (114), *maž(VI) kind of antelope (115), *mi/azi 'husband, man' (114).

*nu/i-nah- 'ripen' (83), *nafos- 'breath' (85), *nah/y- 'see' (83), *nahar- 'become thick; fat' (84), *nič- 'lick' (84), *nim- 'weave, plait' (85), *nVm- 'tell a lie' (85), *ni[q]- 'be heavy' (85), *noqa 'see, observe' (84), *naw/yVq- 'rest, live' (85), *naši 'swim' (119), *naž- 'ask, tell' (118).

*po- 'sweep' (17), *puči/a 'ashes' (18), *pa/uči 'sun' (18), *po[č]- 'to clean, be clean' (117), W *paču 'swell' (116), *puču 'plait, sew' (17), *pučari 'urine' (117), *puč- 'hide' (18), *paHid- 'fall, lie down' (17), *poħač- 'scrape, notch' (114), *pah- 'pour out' (132), W *pa[h]- 'close' (128), *poku 'peel, skin' (17), *pVk- 'wait' (15), *pilu- 'pay, exchange' (15), *pan- 'bathe, wash' (138), *puqa- 'go (together)' (130), *ha-pura- 'blood' (19), *k/tV-pirac- 'mosquito' (18), *puri- 'untie' (15), *piis-č- 'spit' (17), *Ha-paš- 'shoulder' (19), *pas[a] 'break' (15), *patu- 'go out/in' (17), *paša 'skin' (n.) (17), *pa/y/ta- 'cut' (107).

**poHač*- 'break (off), hatch' (20), **pVč*- 'refuse, abandon' (116), **[p]aHud*- 'thigh' (21), **pih/hu*- 'pull' (21), **poHal*- 'break (through)' (20), **puHar*- 'to jump' (20), **puHer*- 'stone' (20), **paHir*- 'strip off bark' (21), **pVy/wah*- 'white' (21), **puž*- 'rainy season' (115).

**q/kiš*- 'thrash, beat' (71), **q/koč[i]p*- 'bark, shell' (70), **qad*- 'beat' (70), **qad*- 'pluck' (70), **qal*- 'run, go' (71), **qan*- 'war' (71), **qora*- 'cry, groan' (v.); 'throat', **qur*- 'voice, cry (n.)' (70), **qoram*- 'hoe, plough' (n.) (71), **qirom*- 'guinea corn; corn' (71), **qaram*- 'take by force' (71), **q/kuṛap*- 'whip' (101), **q/karVp*- 'crush, trample' (101), **qut*- 'be tired' (71), **qay*- 'bear child' (70).

qadig*-/qidag*- 'hoe' (n.) (72), W **qof*- 'hoof' (72), WCh **qaf*- 'grasp, seize' (71), C **qalum*- 'boat' (72), W4 **qam*- 'hut' (72), C **q/qom*- 'red, yellow' (73), W **qaru*- 'roast, burn' (72), **qaraw*- 'fight' (72), **ma-q[o]ripu*- 'be blind' (101), W **ha-qori*/**ha-qawVri*- 'tooth' (73), **qoy*- > **qoq*- 'throat, goitre' (130), **quzi*- 'hunger thirst' (72).

ra*- 'dig, bury' > **rahu*- 'hoe up' (86), **rV*- 'enter, go', **rVy*/rVw*- 'run' (85), **ribi*- 'rain' (86), **r[i]ab*- 'clay' (86), C **iV*/**kV-rab*- 'mud' (32), **Hurabi*- 'bark' (87), **ruč*- 'dig, scrape' (120), **roḁa*- 'rot; bad' (110), **rahu*- 'fill' (87), **rako*- 'beat, fight' (86), **H[o]rak*- 'be afraid; fear' (87), **rako*- 'drive away' (87), **roḁ*- 'ask, beg' (125), W **rumi*- 'black' (134), **rum*- 'child' (30), **rimu*- 'moisten' (86), **tV-run*- 'shadow' (31), **ni-ra[q]*- 'bow' (86), **riya*- 'arrow, bow' (87), **raw*- 'intestines' (133).

sa/i*- 'drink' (58), **sV*- 'swallow' (134), **sob*- (so'ab*-) 'suck' (103), **sida*- 'six' (110), **sid*- < **cid*- 'cut, split' (110), **sak*- 'leg' (124), **saka*- 'carve, scrape' (125), **suk*- 'drive away, push' (125), **sak*- 'plait' (125), **sila*- 'leg' (57), **sumi*- 'name' (55), **sim*-/**ku-sim*- 'ear' (56), **siman*-/**samin*- 'oil' (135), **sina* > **sinan*- 'tooth' (57), **sina*- 'field, earth' (39), **sin*- 'brother' (39), **sVHap*- (> **sap*-) 'spear' (102), C **sipuy(V)ri*- 'testiculi' (100), **sipar*- 'rib' (102), **suH[a]r*- 'fry' (37).

ša'y/w*- 'forge' (51), **ši/a*- 'cut' (50), **šab/ha*- 'fence' (50), **šab*- 'beat, strike' (50), **šamb*- 'beat, flatten' (50), **šab*- 'be wide, stretch' (102), **šo/bb*- 'make fire; warm (tr.)' (51), WCh **šamb*/šab*- 'mix, knead' (51), **suHlab*- 'cover' (51), **šabur*- kind of corn (51), **š[i]Had*- 'push, pull' (50), **šag/g*- 'pierce, tooth' (131), **šaḁo*- 'want, love' (126), **šem*- 'speak' (50), **šim/am*- 'to hunt' (51), **šam*- 'be possible, be able' (50), **šangir*- 'cattle' (51), WCh **ša/y/p*- 'cut' (51), **ša/y/p*- 'wear, put on' (51), **šap*- 'be flat' (51), **šap*- 'like, want' (51), C **šat*- 'pull' (51).

i/ojč*- 'cold' (34), **taču[H]*- 'break, pound' (121), **tuf*- 'road' (104), **tafa*- 'hand, leaf' (33), **toḁu*- 'push off' (131), W **tij/wuḁ*- 'kill' (131), **tik*-/tak*- 'divide' (124), C **tuk*- 'taste' (35), **ntukob*- 'mud' (103), **tuko*- 'go away, run' (125), **tim*- 'gather, pile up' (34), **tVm*- 'harvest guinea corn' (34), **tum-kV*- 'sheep' (33), C **tuni*- 'lion, leopard' (34), **ti'un*- 'mahogany, fig tree' (136), **tap*- 'gather, collect' (34), C

(Kr) **min-tipi*- 'friend, guest' (100), C **n-tiq*- 'pull' (129), **tuq/k*- 'push, pierce' (130), **tiq/k*- 'strike, kick' (130), **tora*- 'sweep' (35), **tar*- 'turn' (34), **turu/i*- 'rise, mount' (34), **tariy*- 'moon' (32), **tuši*- 'pierce' (119), C **tiž*- 'guinea worm' (115), **tVž*- 'bite, pierce' (34).

**tab*- 'mud' (103), **tab*- 'catch, seize' (34), **tub*- 'close, cover' (103), **tub*- 'pour, be wet' (36), **tuli*- 'rib, side' (36), **te[H]al*- 'liver, heart' (36), W **tuma*- 'sing' (36), **tup*- 'cover' (34), **turi*- 'fall' (35), E **ku-turi*- 'husband' (35), **i/ojsa*- 'sweep' (36), **tas*- 'break, thrash' (36), **taw/y*- 'look for, find' (35), **taw*- 'go' (35),

wa'y*- 'go, come' (91), **wac*- 'cut, stab' (90), wuc- 'plough' (111), **wac/ay*- 'to rot' (113), w[e]č- 'shaft' (120), **wadi*- 'faeces' (91), **w[a]k*- 'fall' (91), **waHal*- 'weep' (91), **wulV[h]*- 'green' (129), **w[o]n*-/on*- 'day' (138), **wapin*- 'vomit' (v.) (139), **wuḁi*- 'lightning' (108), **ha-wuyar*- 'neck' (91).

ya*-/yaw*- 'go' (91), **yag*- 'shake' (95), **yaw*- 'call' (91)

nV/V*-*ziḁu*- 'rub, smear' (128), **zi-uk*-/wu-žaw*- 'body' (44), **ža*-/**w/y*- 'rope' (43), **nžabun*- 'guinea-fowl' (43), **n-žuko*- 'pierce, stuck into' (44), **žV-k*- 'gather (intr.), together' (45), **žok/qu*- 'move aside' (45), WCh **nžalu*- 'pour' (84), **žVm*- 'rob, take by force' (45), **žam*- 'remind, think, remember' (45), **HVžum*- 'give; gift' (45), **HVžVm*- 'want' (44), **n-žum*- 'heart, chest' (44), **žin*- 'child' (136), **žuqanV*- 'gazelle' (130), **n-žVy*- 'sit' (44).

ži*-/w*- 'go' (48), **žub*- 'tax' (49), **žub*- 'pour, be wet' (105), **žiba*- 'beat, break' (49), **žoba*- 'follow' (48), **ž[a]geri*- 'antelope' (49), **žigaw*- 'rock, stone' (127), C **žah*- 'divide, half' (128), **ži/k/an-um*- 'chin' (49), **žal*- 'bend, turn' (49), **žar*- 'locust' (48), **ž[i]r*- 'barren, impotent' (49), **žaw*- 'tie, bind' (48).