

**TOWARDS A COMPARATIVE GRAMMAR
OF LINEAR A AND NIGER-CONGO**

| | | | |
|------------|--------------------|------------|--------------------|
| WA | “cloth” | gwa | “to clothe” |
| QA | “man” | kwa | “man” |
| PI | “hut” | pi | “hut” |
| WI | “calabash” | gwi | “calabash” |
| KU | “bird” | ku | “bird” |
| PA- | animate pl. | ba- | animate pl. |
| -RA | article | -la | article |
| -I | definite | -i | definite |

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PLACENAMES IN CRETE AND AFRICA

The following comparisons served as a basis for our work. The African placenames listed are from West Africa and Nigeria. We could add to this list and cite material from further afield in the Cross River and other parts of Africa.

CRETE

AFRICA

Konosos

Kono

Ida

Idah

Koumasa

Kumasi

Candia

Kandi

Minoa

Minna

Como

Comoe

Some of these names (Minoa, Ida) occur widely in the Aegean and Mediterranean. Connections with

Etruria, Italy and Sardinia are also shown by placenames on the tablets : RUMA (Roma), KOSA, KUMA, PISA, UTA. The Etruscans were Africans and spoke Niger-Congo. Greek names on the tablets include AITIKAA (Attica) and SUNI (Sunion). This is evidence for an early African trading empire on Crete.

ABBREVIATIONS

PWS Proto-Western Sudanic (Westermann 1927). Lower case. His abbreviations of language names are used in the text.

PWN Proto-Western Nigritic (Mukarovsky 1977). Upper case.

PNC Proto-Niger-Congo. Asterisked.

PBC Proto-Benue-Congo.

PCS Proto-Central Sudanic.

A Armstrong (West African Languages). **K** Koelle (Polyglotta Africana).

INTRODUCTION

What little prior knowledge we have of Linear A can be summarised briefly. *KURO* “total”, *KIRO* “deficit”, *NI* “fig”, *SA* “flax”, *MARU*

“fleece”, *WA* “cloth”, to which we can add *BI* “child” (Cretan Hieroglyphics) and *WANAX* “king” (various sources).

Most of these can be explained from Niger-Congo : *ku* “big”, *ki* “little”, *ro* = *do* “one”, “unit”, *ni*, from Swahili *tini* “fig tree”, with *ti* “tree” and *ni* “within” (fig trees being grown within a courtyard), *sa* “cut” (of flax), *ma* “mass prefix”, *ru* “cow” (*MARU* = Greek *mallos* “fleece” is also used for pelts), *bi*, an old word for “child” in Niger -Congo, *wana* (compare Swahili *bwana* “master”) used of the sacred “child king” from *GHWYAN* “child” in Niger -Congo.

Following these leads we discovered the key to the Cretan Linear A script in Western Niger-Congo signs. The tablets turned out to be written in a Niger-Congo language close to Yoruba, Nupe and the allied Kwa languages Gbe, Ga, Guang. *Kwa* means “man, slave” in the Kwa language group. A copper ingot from Haghia Triadha (168) is inscribed *NADA* for *naira* the Nigerian currency unit (lit. “give trade”). The Mi noans, it seems, have connections with Nigeria.

Words on the tablets confirmed this discovery : *ADA* “an ancient Gbe kingdom”, *ANA*- “name for Yoruba”, *AJA* “Gbe language”, *AKU* “name for Yoruba”, *AKANU* (Akan), *DASA* (near Benin), *IDA* (Idah), *IDU* (Edo), *IPA* (Ibo), *IJA* (Ijo), *UDU* (near Benin), *KUPA* (Nupe dialect), *NUPA3* (Nupe), *TAPA* (Yoruba name for Nupe), *ASU*, *IKA* (Nupoid

languages), etc.

But also *JARA* (Yor, Yarawa), *AWE* (Idomoid) *ARA*, *APU*, *ARU*, *ASE*, *IKU*, *IDU* (Platoid), *URA*, *SARE* (Kainji), *KANA* (Cross river), *DURU*- (Adamawa-Ubangi). Which takes us further east towards the Urheimat of Niger-Congo.

Modern analysis has led to a reclassification of the original Kwa language group however, combining E. Kwa with Benue-Congo. This means Bantu, a subgroup of Benue-Congo, is relevant and should be compared. Numerous Bantu language and tribal names are identifiable on the tablets. These are from a repository of ancient Niger-Congo vocabulary disseminated southward and eastward by the later Bantu expansion.

The monosyllabic Central Sudanic Group (Nilo-Saharan) lies to the north, and is now thought to be the source from which Niger-Congo came. Central Sudanic names on the tablets include : Sara, Kara, Kuka, Madi, Aja (from Bender's Group F).

Westermann (1911) related Western Sudanic to Eastern Sudanic, which is now thought to include Meroitic and Nuba. From near Meroe the tablets list : *NAQA* (Naqa), *KAWA* (Kawa), *AMARA* (Amara), *SAI* (Sai Island),

IKURI (Ikkur), *DURU* (Duru). Linear A *KASU* refers to the Kushites. Mukarovsky (1966) treated Mande as related not to Niger-Congo but to Songhay. Which supports a connection between Niger-Congo and Nilo-Saharan.

We accordingly decided to write a tentative comparative grammar of Linear A and Niger-Congo. Niger-Congo is seen as having a wider context within Westermann's "Sudanic" and Nilo-Saharan.

The grammar is tentative only because we have no external means of confirming the meaning of most words on the tablets. We can look them up in a comparative dictionary (Westermann 1927) of Proto-Western Sudanic, but do not know if we have always selected the right meaning.

To some extent we can use the evidence of Minoan artwork, which gives an insight into Minoan culture, as a control. Minoan pottery resembles that of Nubian Kerma and pre-Kerma. The Minoan obsession with cattle reminds us of the Nubian pastoralists. Minoan gold, ivory and ostrich eggs suggest an African origin for the Minoans. The bullsports also look African.

We do not know in many cases whether or not the words on the tablets are common nouns or proper names. Certainly corresponding placenames,

language names, tribal names from Africa occur in many cases. The inscriptions on the tablets are mainly lists, probably of tribal names and produce (sheep, cattle, grain, figs, flax, wine etc). To solve all the problems arising from Linear A will take decades of philological research. Our work is just a beginning.

THIS BOOK ATTEMPTS TO APPLY THE COMPARATIVE METHOD TO A SUBJECT WHERE UNKNOWN, UNCERTAINTIES AND PROBLEMS OF VARIOUS KINDS ABOUND. IT MIGHT BE REGARDED AS A TEST CASE WHICH EXPLORES THE LIMITS OF THE METHOD. THE BASIC ASSUMPTION IS THAT THE COMPARATIVE METHOD CAN BE APPLIED IN PART TO UNFAVOURABLE MATERIALS. LET THE READER JUDGE OUR ENDEAVOURS BY OUR RESULTS.

THE SIGNS

The Linear A signs evolved out of a pictography designed to catalogue objects familiar to early man or important for his survival and the workings of his economy. The Linear A Commodity Signs, eg OLIVES,

FLAX, CLOTH, are survivals from this early stage, as are the SUN and WATER signs. Other signs such as *DO* = EYE and *U* = BOAT have been rotated and are barely recognisable. Sometimes two syllabic signs are combined to form ligatures, eg *MA* + *RU* "fleece". But the ligatures must be secondary to the monosyllabic signs. The signs existed before they were used for writing.

The sign system of Linear A has affinities with Egyptian Hieroglyphics, which has been used to confirm the identification of most of the signs. In fact the forms of the signs may have been derived from the Egyptian (syllabic) script used from about 2150 BC to write foreign languages (Loprieno 1995 : 14). Some Linear A signs however, eg *WI* = CALABASH and *DA* = BUSH-KNIFE, do not occur in Hieroglyphics as we know them (Gardiner 1957). This originally led to a few wrong identifications.

Whether Linear A comes directly from a cursive form of Hieroglyphics is a matter we leave open. Certainly the phonetics of Linear A has little to do with Hieroglyphics, which is consonantal in its canonical form.

The much reduced Semitic script (a consonantary) is thought to come from Egyptian hieroglyphics, but we have found evidence that it is actually derived from the Linear A syllabary. Some similarities with the Semitic signs are to be expected.

In fact a number of the signs resemble West African signs (Griaule 1962, Dalby 1967) such as those of the Vai script (similar phonetics for a few signs). This is highly significant. But these African scripts have been extensively modified. The Vai is the most original.

A few similarities with Meroitic cursive in sign form and phonetics are also evident (Shinnie 1976 : 137 - 138). The Meroitic system of writing, developed for Nubian, has been extensively reshaped due to Egyptian influence however (Hinze 1973). In all probability we should now posit an original African syllabary as the ultimate source of Linear A.

Sumerian cannot be used to match either the sign forms or the phonetics (a few possible similarities). It uses a different system (Kramer 1963 ; Labat & Malbran-Labat 1958). But may nevertheless share a remote pictographic common origin. Some of the objects represented are the same in both. Sumerian script has formal affinities with the undeciphered Indus Script.

THE SYLLABARY

In the form in which we have it Linear A is a limited inventory of about ninety pictographs in which each sign represents a Consonant + Vowel, or a single Vowel, that is a syllabary. The monosyllabic names of the

objects depicted by the signs supply the phonetic associated with each sign. Since grammar was unknown to the scribes, these phonetics represent Nouns, but also at times Verbs. Thus BIRD has the phonetic *KU* ‘bird’, but LEGS has the phonetic *JE* ‘go’. This feature lead to some misunderstandings at first. Thus *TE* ‘c orn’ is not a noun, but is from a verb ‘cut, harvest’ (corn). The signs are not standardised. Hence variant signs apparently have the same phonetic. Both LIZARD and SWAMP = *PA*, for example.

Some of the signs have phonetics which match the names of Western Niger-Congo languages : *DE, JA, NA, KA, JA, KO, MA, RI, TU, DE, QE, QI, QA* .If sound changes and redundancy [*K = K, G* etc] were allowed for, the list could be increased. One might also include Linear B which is essentially the same script. Linear B has a sign *mo*, again a Niger-Congo language name.

The phonetic values assigned to the signs are based on the Linear B decipherment (Ventris & Chadwick 1973). The Linear B signary closely resembles Linear A and was used to write Mycenaean, an early form of Greek. The phonetic values attained by the Linear B decipherment have been transferred to Linear A, after Packard (1974), enabling us to sound the signs. In Linear B an optional resonant follows the vowel, giving CV(R). Such optional resonants at the end of roots are reconstructed by Westermann (1927) for his ‘Sudan’ (PWS) in some cases.

The phonetics associated with the signs have been matched with data from Westermann (1911 & 1927), and to a lesser extent with Mukarovsky (1977). This matching demonstrated that about fifty signs are words in a Western branch of Niger-Congo related to the monosyllabic Proto-Western Sudanic (PWS) reconstructed by Westermann, and now identified with Proto-Mande-Congo (Heine & Nurse 2000 : 39). Statistically the chances that this is an accident are astronomically small.

It probably indicates that Westermann's Proto-Western Sudanic should be dated about 3000 BC, around a thousand years before Linear A. This conclusion is based on Swadesh's glottochronological theory (Hockett 1958 : 533, see graph ; Gleason 1961 : 450 ; Heine & Nurse 2000 : 287 - 88) however and is not a precise result. Swadesh assumes a retention rate of about 81 % of basic vocabulary over a 1000 year period.

Pitch is important in the Niger-Congo language group. But there is apparently no separate system in Linear A script for marking pitch, to distinguish otherwise homophonous words. However the redundant signs marked PA_3 , RA_2 etc may have been used to indicate this distinction. Thus PA_3 is from $b\grave{a}$, but PA is from $b\acute{a}$. Similarly RA_2 is from $gw\grave{a}$, but RA from $ghw\acute{a}$.

The sign for BALANCE, no. 85 may have the phonetic *RA* or *DA* (compare *IPA 85*, Ibara). PWS *la, da, ra* “trade” has no accent, and would provide an appropriate phonetic for BALANCE. *IPA 85* might then be Ibadan. Sign 88 is probably a way of writing *RA SNAKE*. We cannot discuss this question further for lack of definite evidence.

CANAL

SKIN

LIZARD

WOMAN

PESTLE

NIGHT

TOTAL

AXE

HOE

SUN

LIFE

SNAKE

PEN

CORN

STAR

HIGH (mourn)

CLOTH

HOBBLE

POOL (drink)

HORNS

LEOPARD

SNAKE

FIRE

HUT

ARM (cut)

SHEEP

CALABASH

SAIL (air)

HEAD (of corn)

WHEEL (ring)

WATER

MILLET

BOAT

KNIFE

HOUSE

BIRD

FLAX

FIG

LEGS

HAND

DOOR

RUNNEL

EYE

PLANT

PERSON

RAM

BEETLE

WATER

HAIR

BALANCE

WATER

Identification of Linear A Signs given by Packard (1974)

THE NUMERALS

The numeral system (Brice 1961 : Table 2) is based on the hand (Stapleton 1903 : 108). The units are represented by vertical strokes : I = 1, II = 2, III = 3, IIII = 4 which are fingers of the hand. These strokes are therefore grouped in fours. The sign for "half" is a V on its side, an inverted Greek capital gamma. The phonetic is *MI*, meaning a "half" in Niger-Congo (a bent finger). "Five" is half of two hands.

This system is related to the Roman numeral system, which also comes from African handsigns, and exhibits subtractive numbers, due to the African practice of counting by subtracting cowrie shells.

For the "tens" the strokes (arms) are made horizontal. Thus – represents "ten", = represents "twenty", = - is "thirty", = = is "forty" and so on. A vigesimal system underlies this notation, but also a sexagesimal = = = . We are clearly in West Africa where these systems of numeration are used. Bronze bars served as monetary units in Africa. For 100 Linear A writes a circle O, the sign of completion, representing a closed fist. To this vertical and horizontal spikes are added to represent 1000. Bronze

rings and wheels were used as money in Africa. Evans also mentions the use of beads (Evans 1921 : I, 486 – 494, 646), which relate to the alternative use of dots for tens.

Tens are written to the left of units, hundreds to the left of tens.

Thus $O = = IIII$ represents 144. Tens are grouped in pairs (vigesimal).

Writing is from right to left, as with Egyptian hieroglyphics and other African systems. Numerals follow their enumerated nouns, as in Niger-Congo languages numerals and quantifiers usually follow their nouns. In writing totals, (*KURO* ‘big total’, *KIRO* ‘small total’), the sign + for *RO* ‘total’, or ‘unit’ is used. This resembles the Egyptian mathematical operator. Bronze crosses were a form of prestige money in Africa.

THE SOUND CORRESPONDENCES

A list of the syllabic Linear A signs follows, organised to show sound correspondences with Niger-Congo words mainly from Westermann (1927), small italics, and Mukarovsky (1977), large italics. Where an equivalent identifying Egyptian hieroglyphic exists, we have cited the reference number from Alan Gardiner's Egyptian Grammar (1957) along with our entry.

***P = P**

HAIR (G. D3)

PU = *pú 'hair'; Ewe *fu* 'hair, feather', Guang *pu* 'hair, feather', Ekoi *m-fur* 'feather', Avatime *ku-pi-o* 'hair, feather'.

***P = P**

BUSH (G. M16)

PU2 = *pú 'bush, field'; Ewe *fu* 'fallow land', Tschì *a-fu-w* 'plantation, field', Guang *i-putu* 'bush, steppe', Beri *ku-pu* 'bush', Gbe *a-pulu* 'bush', Ibo *o-furu* 'bush'.

***T = T**

DWELLING (G. 01)

TA = *ta ‘dwell’; Guang *ta* ‘to dwell’, Ga *ta* ‘to sit’, Edo *ta* ‘to place oneself’, Avatime *te* ‘to stay’.

***T = T**

THIGH (animal) (G. F2, 28) **SKIN**

TA2 = *tá ‘leg, thigh’; Ewe *a-ta* ‘thigh’, Kyama *n-ta* ‘leg’, Gwa *m-da* ‘leg’, Yoruba *i-ta* ‘thigh’, Igara *o-ta* ‘thigh’, Ekoi *e-ta* ‘thigh’, Nde *e-ta* ‘thigh’.

***T = T**

HEAD (of corn) (G. M35)

TI = *ti ‘head’; Tschì *e-ti* ‘head’, Nupe *e-ti* ‘head’, Ibo *i-si* ‘head’,

Konguang *n-ti* ‘head’, Ekoi *e-tši* ‘head’.PWN *TUI* ‘head’.Bantu *tu*

‘head’. Etuno, Ebira, Gade, Asu (= Nupoid, Blench in Bendor -Samuel 1989 : 315) *ti* ‘head of sorghum’ (Nigeria).

***T = T**

MORTAR (and pestle) (G. U32)

TU = *tù ‘to push, pound’; Ewe *tu* ‘to push, pound, build’, Tschi *tua* ‘to be stuck, fixed’, Grebo *tu* ‘to push’, Nupe *tu* ‘to build’, Ibo *tu* ‘to build’, Edo *to* ‘to push, Efik *tut, tuk* ‘to push’. PWN *TUN* ‘pestle’. PWN *TUDI* ‘mortar’. Bantu *tua* ‘to stamp’.

***T = T**

CORN (harvest) (G. M35)

TE = *tè ‘to pluck’ (harvest); Tschi *te-w* ‘to tear off, rend’, Ga *tše* ‘to pluck, rend’, Guang *tèn, tè* ‘to tear off, cut’, Nupe *te* ‘to cut a stick’, Bassa *te* ‘to cut’, Efik *tem* ‘to cut down (wood)’. PWN *TEM* ‘cut down’. Bantu *teva* ‘to cut firewood’.

***K = K**

WHEEL (Cf G. T17)

KA = *ka ‘ring’ (wheel); Tschi *e-ka* ‘ring’, Brong *n-ka* ‘ring’, Afema *n-ga* ‘ring’, Agni *n-ga* ‘ring’, Guang *ka* ‘ring’, Yo ruba *e-ka* ‘ring’, Ibo *mbwa-ka* ‘ring’ PWN *KWAT* ‘ring’. Bantu *kata* ‘ring’. Yoruba and Idoma *ka* ‘wheel’.

***K = K**

BIRD (G. G40)

KU = *ku ‘parrot’ (bird); Ewe *a-ko* ‘parrot’, Tschì *a-ko* ‘parrot’, Ga *a-ko* ‘parrot’, Guang *a-ko* ‘parrot’, Ibo *o-ku* ‘parrot’, Djarawa *a-ku* ‘parrot’. PWN *KUKI* ‘fowl’, but *GWUN*, *GWYUN* ‘bird’. Compare *ku* ‘cry’, *ku* ‘die’ (birds = spirits of the dead). Koelle has Kabanga *kuno* ‘bird’, also Bornu *ngudo* ‘bird’; Igbira *inumi* etc are due to the *n*-prefix modifying the root consonant. Proto-Mande **kuni* (Dwyer in Bendor-Samuel 1989 : 55) would reduce to *ku* with initial accentuation.

***K = K**

STAR (G. N14)

KE = *kià (*ke) ‘to dawn, to shine’; Ewe *ke* ‘to dawn, to become bright’, Tschì *k’e* ‘to become clear, visible’, Agni *k’e* ‘to dawn, day’, Ga *tše* ‘to clear up, get daylight’, Guang *ke* ‘to dawn’, Ake *ke* ‘day’, Kyama *a-ke* ‘day’, Ibo *ke* ‘to become bright’. PWN *KIA* ‘to dawn’. Bantu *kia* ‘to dawn’.

***K = K**

FEMALE GENITAL (G. N41)

KO = *kua (*ko) ‘to go’ (female genital); Ewe *ko* ‘to go’, Tschì *ko* ‘to go’, Agni *ko* ‘to go’, Mekibo *ko* ‘to go’, Ibo *ko* ‘going’, Efik *ka, ko* ‘to go’. The roots for ‘gate’ and ‘fig’ are similar, but have a *g* sound. PWN *GWO* ‘female genitals’. Bantu *go* (Meeussen) ‘pudenda’. Yoruba *a-ko* ‘scabbard’, Kpelle, Mende *ko* ‘belly’ are perhaps also relevant.

***PH = P**

GRANARY (G. O51)

PI = *pí ‘granary’, Tschì *o-fi* ‘home’, Gbe *a-pi* ‘compound, home’, Mussu *pi* ‘home, house’, Koro *e-pfi* ‘house’, Akwa *e-fi* ‘yard’. Compare PWN *PHILA* ‘millet’. Allegedly from *pi ‘darkness’.

***TH = T**

WATER (G. Aa8)

TO = *tua (*to) ‘water’, Ewe *to* ‘water’, Tschì *n-suo* ‘water’, Afema *a-su-e* ‘water’, Agni *n-zu-e* ‘water’, Guang *n-tšú* ‘water’, Obutu *n-tšú* ‘water’, Kyama *n-du* ‘water’. PWN *THUA* ‘river, water-place’. Bantu *to*.

***KH = S**

HOUSE (G. O4)

SU = *kù ‘house’, Ewe *÷o* ‘house’, Dchomé *÷uo* ‘house’, Kyama *n-ku*

‘house’, Edo *i-ku* ‘room in a house’, Kebu *ku* ‘hut, house’, Vai *ku* ‘house’, Gbi *ku* ‘house’.

***KH = S**

FLAX

SA = KHANT ‘cut’ (off) [of flax]. Ewe *ka* ‘to break’, Tschì *ka* ‘to bite’, Guang *ka* ‘to cut’, Krao *ke* ‘to cut’, Nupe *ka* ‘to cut’, Igbo *ka* ‘to carve’, Takponin *ka* ‘to cut’, Bamana *ka* ‘to cut’. A possible derivation from *ta*, *sa* ‘castrate’ should also be considered. Tschì *sa* ‘to geld’, Agni *sa* ‘castrate’.

***KW = Q**

PERSON (G. D2)

QA = *kùá ‘person, slave’ Tschì *a-kwa* ‘a male, a male slave’, Agni *a-kwa* ‘slave’, Guang *e-kpa-bi* ‘slave’, Ahlo *u-kpa* ‘slave’, Tschala *o-kpa* ‘person’. PWN *KWAL* ‘captive, prisoner’. Compare Kunama *kua*, Dinka (East Sudanic) *koi* [*kua-i*] ‘person’, *koj* ‘people’, [Khoisan *khoi* ‘man’].

TABLE OF VOICELESS PLOSIVES

Niger-Congo **P** **T** **K** **PH** **TH** **KH** **KW**

Linear A P T K P T S Q

***B = P**

LIZARD (G. G.11)

PA = *bá ‘lizard’; Ga *ba* ‘crocodile’, Gbe *ba* ‘human lizard’, Ibo *o-ba* ‘bush crocodile’, Efik *i-ba* ‘a large lizard’, Kamuku *u-ba* ‘alligator’.
Bantu →*vambi* ‘iguana’.

***D = D**

THROWING KNIFE

DA = *da ‘bush knife’; Ewe *ada* ‘a bush knife’, Tschì *adare* ‘bush knife’, Yoruba *ada* ‘a bill hook’, Nupe *ada* ‘cutlass’, Edo *ada* ‘sword’.
Ewe *dà* ‘throw’, Yoruba *da* ‘throw’. Ie a throwing knife.

***D = D**

NIGHT (G. N4)

DI = *DIM = *ti ‘black’ (night); Newole *tri-me* ‘black’, Kebu *ti* ‘to be black’, Bulom *ti* ‘black’, Krim *ti* ‘black’, Mampa *ti* ‘black’, Temne *ti* ‘very’ (dark), Wolof *tim* ‘to be dark’. PWN *DIM, TIM* ‘darkness’.

***D = D**

HOBBLE (G. V19, 21)

DU = *lu (*du) ‘knee’; Mfut *do-ru* ‘knee’, Ndob *du* ‘knee’, Kambali *o-lu* ‘knee’, Kposso *a-du-ku* ‘knee’, Mossi *du-n-di* ‘knee’, Dagomba *du-ni* ‘knee’, PWN *DUI* ‘knee’, Bantu *lu* ‘knee’.

***D = D**

EYE (G. D4)

DO = *la (*do) ‘sleep’; Tschì *da* ‘to lie, to sleep’, Guang *da* ‘to lie’, Ibo *la* ‘to sleep’, Bulom *lol* ‘to sleep’, Krim *lo* ‘to sleep’, Kissi *lo* ‘to sleep’.
PWN *DO, DUA* ‘night’.

***D = D**

BEETLE (G. L1)

DE = *lia (*de) ‘bat’; Swahili *mende* ‘cockroach’, Poto, Kele *lilema* ‘bat’ [l = d], Proto -Bantu *DEMA* ‘bat’, *BENDE* ‘spotted rat’, Kongo *nselele* ‘white ant’, Bangi *loselele* ‘white ant’, Paja *kkide* ‘scorpion’.

***G = K**

WATER (drinking)

KI = *gi ‘water’; Abe *me-gi* ‘water’, Yoruba *o-gi* ‘water’ (dialect), Ibo *i-gi* ‘water, spring’, Mbofia *i-gi* ‘water’, Bamana *gi* ‘water’. PWN *LINGI* ‘water’, *GWYEL* ‘to flow’, Bantu *ã* ‘water’.

***BH = P**

SWAMP (G. N36)

PA3 = *bà ‘swamp’; Ewe *ba* ‘mud, marsh’, Guang *o-de-ba* ‘mud’, Grebo *be* ‘slime’, Edo *i-ba* ‘mud seat’, Efik *m-bat* ‘clay, mud’. PWN *BHO* ‘be wet’.

***BH = P**

DOG (G. F12)

PO = *búá (*bo) ‘dog’; Igara *o-bia* ‘dog’, Nupe *a-ba* ‘dog’, Kukuruku *a-gwa* ‘dog’, Efik *e-bua* ‘dog’, Ibibio *e-bwa, e-gwa* ‘dog’, Barba *bo-n* ‘dog’, Tobote *ke-bo-ko* ‘dog’, Akassele *o-bo* ‘dog’, Konkomba *o-bo* ‘dog’. PWN *BHUA* ‘dog’. Bantu *vwa* ‘dog’.

***GH = S**

SAIL (G. P5)

SI = *gi ‘airspace’; Tschì *e-wi* ‘air, atmosphere, firmament’, Akpafu *ka-ye* ‘world’, Santrokofi *ka-yi* ‘world’. PWN *GHI* (*GHWYI* ?) ‘to fly’.

***GW = W**

CLOTH (G. S32)

WA = *gá ‘cloth’; Guang *wa* ‘to put on clothes’, Yoruba *wo* ‘to put on clothes’, Ibo *wa* ‘to put on (cloth)’, Temne *won* ‘to put on’. A.*gya ‘cloth’.

***GW = W**

CALABASH

WI = *gi ‘calabash’; Guang *e-we* ‘calabash’, Bowili *ka-ye* ‘calabash’, Tara *gi* ‘calabash’, Kyana *gi-yo, gi-zo* ‘calabash’, Akassle *ku-yi* ‘calabash’,

Konkomba *ke-ye-ǃ* Compare Bantu *ǃ* ‘egg’. Eggs were used as containers.

***GW = W**

SNAKESKIN, YEAR (G. I10, 12)

WE = *ge “snakeskin”; Ewe *we*, *wo* “cast off snakeskin”, Dahome
we, *we-ma*, *wo-ma*, “skin”, Tshi *were* “skin”, Ga *wolo* “skin”, Guang
were, *o-welo*, *o-wolo*, “skin”, Abure *a-we* “skin”, Akassele *tu-we* “skin”.

***GWY = J**

LEGS, GO (G. D54)

JE = *gia “go”; Ewe *yi* “go”, Ga *ya* “go”, Ibo *de* “go”, Nki *djia* “go”,
Avatime *dze* “go”, Likpe *ye* “go”, Kanyop *gia* “go”. PWN *GWIA* “go”.
Bantu *ǎa* “to go”. Bangi, Poto, Ngombe *ke* “go”. A. *gyia, Idom *a ye*,
Igbo *jhe* “go to”, Kambari *yew* • “go to”..

***GWY = J**

GATE (G. O31)

JA = *gia “go”; Ga *ya* “go”, Ibo *de* “go”, Nki *djia* “go”, Avatime *dze*
“go”, Likpe *ye* “go”, Kanyop *gia* “go”. PWN *GWIA* “go”. Bantu *ǎa* “to
go”.

A. Bini *ya*, Jukun *ya*. “go”. (Problematic A-vowel in noun, possibly an
article).

***m-GW = M**

SHEEP (G. F7, 8)

MA = *m-guà ‘sheep’; Ewe *gbo* ‘goat’, Dahome *u-gwa* ‘sheep’, Tschì *o-gwan* ‘goat’, Avatime *bwa* ‘sheep’, Baule *bwa* ‘sheep’, Zema *bwane* ‘sheep’, Afema *bwa* ‘sheep’, Ake *gba* ‘sheep’. Soko *meme* ‘goat’, Kele *mbuli* ‘goat’, Swahili *mbuzi* ‘goat’. A. *bal, mbala ‘sheep’ (Fula, S. W Mande, so Welmers). Anderson has Etulo *mmalaa*.

***m-GW = M**

LEOPARD (G.F9)

MI = *m-guí ‘leopard’; Dewoi *gbi* ‘leopard’, Kwa *gbi* ‘leopard’, Ekoi *o-gbe* ‘leopard’, Nde *n-gbe* ‘leopard’, Barba *gbi-a* ‘leopard’. PWN *GWIL* ‘leopard’. Bantu *ãwi* ‘leopard’. Swahili *nkoi*, Bangi, Kele *ngoi* ‘leopard’.

***GHW = Q**

GUINEA-CORN

QI = *gi ‘guinea -corn’; Tschì *a-wi* ‘a sort of grain’, Guang *gu-yu* ‘guinea -corn’ (dialect), Nupe *e-yi* ‘guinea -corn’, Gbe *a-wi* ‘guinea -corn’, Kupa *a-yi* ‘guinea -corn’, Bassa *a-yi* ‘guinea -corn’, Banyun *ma-gi* ‘guinea -corn’. PWN *GHIDU*, *GHIU* ‘head’. That is a ‘head of grain’. Westermann *gi* ‘head’. The *w/y* alternation shows a labiovelar.

***GHW = Q**

SUN (G. N7)

QE = *guia ‘sun’; Tschì *a-wia* ‘day’, *o-wia* ‘sun’, Agni *wa* ‘sun’ < *wia*,
Guang *o-wi*, *o-wu* ‘sun’, Abure *e-yue* ‘sun’, Yula *we* ‘sun’, Tem *we-re*,
we ‘sun’, Tsala *we-ta* ‘sun’. PWN *GHWIN* ‘sun’. Bantu *ãuya* ‘sun’.
A. (B-C) Ogoni *gbei*, Ufia *rigwe* ‘sun’, Ewe *ghe*, Fon *hue* ‘sun’.

***GHWY (m-GHWY) = R (RW ?)**

SNAKE (G. I12)

RA = *m-guà ‘snake’; Tschì *o-wo* ‘snake’, Guang *e-wo* ‘snake’, Nupe
e-wa ‘snake’, Bassa *i-wa* ‘snake’, Yala *e-gwa* ‘snake’, Koro *e-wa*
‘snake’ (pl.). PWN *GHWAKA*, *GHWYAKA* ‘snake’. Bantu *ãka*
‘snake’. Kongo *nioka*, Lolo, Ngala, Poto, Ngombe, Kele *njo*, Swahili
nyoka ‘snake’. But PWN *JAK* ‘year’ (*GWYAK* ?).

***GHWY = (m-GHWY) = R (RW ?)**

WATER (G. N35)

RA2 = *m-gia ‘water’; Abe *me-gi* ‘water’, Yoruba *o-gi* ‘water’, Ibo *u-
 ɔ* ‘water’, Akwa *a-ya* ‘river’, Bowili *ko-ya* ‘river’, Mende *yia* ‘water’.
 PWN *LINGI* ‘water’, PWN *KWAK* ‘wash’. Bantu *ōi* ‘water’. Bangi,
 Ngala, Poto *mai* ‘water’, Swahili *maji* ‘water’, Kongo *maza* ‘water’,
 Soko *haiye* ‘water’. Compare SNAKE.

***GHI = [*JH] = Z**

LIFE (G. S34)

ZA = *gia ‘blood’, *GHIA ‘blood’, Ewe *kadze* ‘blood’, (Koelle *ekagie*
 ‘blood’), Tshi *boga* ‘blood’, Guang *obuza* ‘blood’, Yoruba *ede*
 ‘blood’, Nupe *ede* ‘blood’, *egia* ‘blood’, Gbe *aga, agya* ‘blood’,
 Lefana *ubudza* ‘blood’, Ahlo *obidza* ‘blood’. Blood is life, the soul is
 blood.

TABLE OF VOICED PLOSIVES

| | | | | | | |
|--------------------|----------|----------|----------|-----------|-----------|------------|
| Niger-Congo | B | D | G | BH | GH | GW |
| | | | | | | GWY |
| Linear A | P | D | K | P | S | W J |

| | | | | |
|--------------------|-------------|------------|---------------|---------------|
| Niger-Congo | m-GW | GHW | m-GHWY | GHI/JH |
| Linear A | M | Q | R | Z |

NOTE : Westermann treats all of the voiced labiovelars with reflexes in Linear A as what would now be regarded as lenis (symbol underlined *g*). This is confirmed by Mukarovsky only for the words with Linear A graphs for *Q*. Hence our notation **GHW**. For the others we give **GW** although Westermann has *g*. They give *y/w*, so must be labiovelars.

The matter is complicated by the voiceless labiovelar *ku* = **Q** in *kùá* ‘man, slave’, also ‘neck’ (slaves throats cut, *kua* ‘kill’), Linear A *QA*. Neither Westermann nor Mukarovsky marks this as lenis. Accentuation unusual. (Note that Khoi-San has *Khoi* here, but Dinka (E. Sudanic) *koi* ‘man’). Lenition of plosives appears to be secondary in Niger-Congo. But the basis for the distinction may be something else of which we are unaware. Reflexes in *dz* = *g* = *Q* occur in some Niger-Congo languages, eg Yoruba *o-~~o~~* ‘sun’, Mbe *a-~~o~~* ‘sun’. The word for ‘head’, *gi* frequently has a

de/i- prefix which may be relevant. In any case this evidence suggests lenition of ‘head’ and ‘sun’. Unusual accents on “ man” may be due to a lost prefix.

It should be emphasised that the available reconstructions are not infallible and that Linear A is now part of the evidence.

***L = R**

HOE (G. U6)

RI = *li ‘dig, hoe’; Ewe *di* ‘to dig’, Efik *u-di* ‘grave’, Likpe *ku-di* ‘grave’. Bantu *li*, Kongo, Bangi, Ngala *tima* ‘to dig’, Lolo *cima* ‘to dig’, Poto *chima* ‘to dig’, Swahili *chimba* ‘to dig’, Ngombe *lunga* ‘to dig’.

***L = R**

HORNS (G. F45)

RU = *lu ‘horns, cow’; Ewe *lu* ‘cow’ (antelope), Agni *lu* ‘cow’, Abe *lu* ‘cow’, Avatime *o-lu* ‘antelope’, Lefana *ke-du* ‘crested antelope’, Ahlo *u-lu* ‘cow’ (antelope).

***L = R**

CROSS, TOTAL (G. Z9)

RO = *lé (*dó) ‘cross, total’; Ewe *de* ‘one’, Dahome *do-kpo* ‘one’,
Gwa *do-gbo, lo-gbo* ‘one’, Grebo *do* ‘one’, Krao *do* ‘one’, Bassa *do*
‘one’, Dewoi *do* ‘one’.

***M = M**

SHEEP

me = *me (*me) ‘sheep’, Kongo *ememe*, Soko *meme* ‘sheep’, PCS
(Bender) *meme* ‘sheep, goat’. Compare Greek *mela, mala* ‘sheep’
however and Linear A *MA* ‘sheep’ < *mba.

NOTE : The status of original *M in Proto-Niger-Congo is doubtful.

Alternation between forms of the same meaning with *m* and *n* is common.

***N = N**

FIRE (G. U28, 29)

NA = *ná ‘fire’; Ewe *na-ke* ‘firewood’, Grebo *na* ‘fire’, Krao *ne* ‘fire’,
Abriwi *na* ‘fire’, Plawi *na* ‘fire’, Tewi *na* ‘fire’, Yoruba *i-na* ‘fire’,

Nupe *e-na* ‘fire’. PWN *DINA* ‘fire’.

***N = N**

POOL, DRINK (G. N36, 37)

NU = *nu ‘drink’; Anecho *nu* ‘drink’, Dahome *nu* ‘drink’, Ga *nu* ‘drink’,

Guang *nu* ‘drink’, Edo *nwo* ‘drink’, Lefana *ni* ‘drink’, Santrokofi *ni* ‘drink’, Kposso *nua* ‘drink’. PWN *NGU* ‘to drink’. Bantu *nua* ‘mouth’. Kongo, Bangi *nua* ‘to drink’, Soko *noa* ‘to drink’, Kele, Ngombe *mwa* ‘to drink’, Swahili *nwa* ‘to drink’.

***NG = #**

AXE (G. T7)

A = *n-ka [> *nga* > *na* > *a*] ‘axe, cut’. The word for ‘cut’ is prefixed with an *n-* to show it is a noun ‘axe’. Bangi, Lolo, Ngala *ngwa* ‘adze’, Ngombe *ngwa* ‘knife’, Lolo *yanda* ‘axe’. But compare Ewe *fia* ‘axe’, Guang *e-fe* ‘axe’, Yoruba *o-pia* ‘sword’, Edo *o-pia* ‘hatchet’, Ido *o-pia*

“axe”, Nso *pfia* ‘knife’, Avatime *ka-we* ‘axe’, Santrokofi *ka-fe* ‘axe’.

PWN *KHANT* ‘to cut’. Perhaps $p > f > s$ as in Dahomey, or $p > f > \#$, as in Ga *fa* ‘red’.

***NG = #**

HAND (G. D46, 47)

I = *nú (*ni > i*) ‘hand, four’; Nupe, Bassa *gu-ni* ‘four’, Guang *he-nu* ‘hand, arm’, Likpe *ko-ni* ‘hand, arm’, Lefana *ko-nu* ‘hand’, Kandjaga *ni* ‘hand’, Dyan *ni-o* ‘hand’, Tem *ni-ka* ‘finger’, Barba *ni-kiwu* ‘hand’, Gurma *o-nu* ‘hand’. PWN *NI* ‘four’. The *ni-* forms common in E. Kwa and Benue-Congo. Elsewhere *na* is preferred (Anderson 1967 : 63). The *n* is palatalised before *i*, then lost. Basa (K) *hiye* ‘axe’, Kra (K) *nyie* ‘axe’, Gbe (K) *hiye* ‘axe’.

***NGW = #**

BOAT (G. P1)

U = *(ng) *w-ato* ‘boat’, Bangi *bwato* ‘boat’, Lolo, Poto, *watu* ‘boat’, Ngala, Ngombe *bwatu* ‘boat’, Soto, Kele *wato* ‘boat’. PWN *YAT* ‘boat’. Bantu *jato* ‘boat’. Compare Basa (K) *wo* ‘canoe’, Adampe (K)

ewu ‘canoe’, Mahi (K) *ohu* ‘canoe’. Compare Proto -Edo (Capo) *U,
 *Hu, *Hwu ‘water’.

TABLE OF LIQUIDS AND NASALS

| | | | | |
|--------------------|----------|----------|----------|-----------|
| Niger-Congo | L | M | N | NG |
| Linear A | R | M | N | # |

*A = A

AXE (G. T7)

A = *n-ka [> *nga* > *a*] ‘axe, cut’. The word for ‘cut’ is prefixed with an *n-* to show it is a noun ‘axe’. Bangi, Lolo, Ngala *ngwa* ‘adze’, Ngombe *ngwa* ‘knife’, Lolo *yanda* ‘axe’. Compare Ewe *fia* ‘axe’, Guang *e-fe* ‘axe’, Yoruba *o-pia* ‘sword’, Edo *o-pia* ‘hatchet’, Ido *o-pia* ‘axe’, Nso *pfia* ‘knife’, Avatime *ka-we* ‘axe’, Santrokofi *ka-fe* ‘axe’. Basa (K) *hiye* ‘axe’, Kra (K) *nyie* ‘axe’, Gbe (K) *hiye* ‘axe’. Loss of palatalised *ny*.

***I = I**

HAND (G. D46, 47)

I = *nú (*ni > i*) ‘hand, four’; Nupe, Bassa *gu-ni* ‘four’, Guang *he-nu* ‘hand, arm’, Likpe *ko-ni* ‘hand, arm’, Lefana *ko-nu* ‘hand’, Kandjaga *ni* ‘hand’, Dyan *ni-o* ‘hand’, Tem *ni-ka* ‘finger’, Barba *ni-kiwu* ‘hand’, Gurma *o-nu* ‘hand’. PWN *NI* ‘four’. The *ni-* forms common in E. Kwa and Benue-Congo are palatalised to *ny*. Elsewhere *na* is preferred (Anderson 1967 : 63).

***U = U**

BOAT (G. P1)

U = *(ng) *w-ato* ‘boat’, Bangi *bwato* ‘boat’, Lolo, Poto, *watu* ‘boat’, Ngala, Ngombe *bwatu* ‘boat’, Soto, Kele *wato* ‘boat’. PWN *YAT* ‘boat’. Ban tu *jato* ‘boat’. Compare Basa (K) *wo* ‘canoe’, Adampe (K) *ewu* ‘canoe’, Mahi (K) *ohu* ‘canoe’. Compare also Proto-Edo (Capo) *U, *Hu, *Hwu ‘water’.

***IA = E**

KE < *kia ‘to become day’

TE < *tia ‘to cut’

QE < *ghwia ‘sun’

***UA = O**

KO < *kua ‘to go’ (gate)

TO < *thua ‘water’

PO < *bhua ‘dog’

TABLE OF VOWELS

| | | | | | |
|---------------------------|----------|----------|----------|-----------|-----------|
| Niger-Congo | A | I | U | IA | UA |
| Linear A | A | I | U | E | O |
| (special contexts) | | e | o | | |

NOTE :*I* and *U* may change to *e* and *o* in the vicinity of *R* and *D* (retroflex), and after *Q/K*. *I* also changes to *e* at word ends. The evidence for this does not occur in the monosyllabic roots listed above, but is found in polysyllables found on the tablets : *TERESA*, *TERONI*, *QEKURE*, *KEKIRU*, *DEDI*, *DODI*, *QEPI*, *TEKI*, *TEKE* etc. These changes are carried further in Linear B. The original Niger-Congo vowels were : *A*, *I*, *U* as in Afro-Asiatic.

ANALYSIS

Analysis of the above sound correspondences shows that Linear A is close to an informal Westermann type Proto-+Kwa (25 exact matches), but also close to Proto-Western Sudanic (15 matches). Since PWS is not a real language with real phonetics this is a better result than it appears. For Proto-Bantu (Guthrie) there are 12 matches, similar to PWS, but, for Proto-Gbe (Capo) for example, only 4. We are presumably somewhere between PWS and something resembling Proto-Benue-Congo or its immediate derivatives.

The Linear A word *I* (< *ni* ‘four, hand’) has this vocalism in Kwa and Benue-Congo. The *n > ny* occurs in Gbari (Kwa), Nki, Mfut, Tivi, Afudu (B-C), Animere (TogoR). This is a precondition for the loss of the nasal. So this is good evidence for Linear A group membership. The word for ‘axe’, Linear A *A* may be due to *pi > fi > f > s > #*. In which case we have another Kwa/Benue-Congo change. For *U* ‘boat’ Koelle’s west bank examples are closest.

The tendency to assibilate Proto-Niger-Congo *t* and *k* (as in *SU* ‘house’, *SA* ‘cut’) is most pronounced in some Kwa languages. But *ku* ‘house’ goes to a fricative only in Ewe and Dahome (Kwa). The changes *IA > E* and *UA > O* are too widespread to be significant for identifying the language. However *JE* ‘go’ has this form only in Linear A, Igbo, Idoma (Kwa) Kambari (B-C), Likpe (TogoR = Kwa).

In general matches of the monosyllabic (prefixless) signs suggest the linear script was designed to write a language near the Ewe, Ga, Guang triangle. The word *kwa* ‘man, slave’, found in the Linear A sign inventory, is regarded as characteristic of the Kwa languages, but also has reflexes in other groups such as the Togo Remnant (now Kwa) and Gur, (and even, perhaps outside Niger-Congo) *MA* ‘sheep’ < *mba* recalls A. Etulo *mmalaa* (Kwa) however.

There are no Linear signs identified for *JI (as prefixed to Platoid languages : Jidda-Abu, Jibu, Jiru) or *WU (as prefixed to Gur : Wule, Platoid : Wukari, Wurbo, and N. Bantoid : Wute, Wuti, S. Bantoid : Wushi). Linear B has *ju* with a sign that appears to represent an equid or bovid (= Latin *iumentum*, *iugum*, Greek *zugon* ?), which points to Gur : Jugu, Platoid : Jukun, and N. Bantoid : Ju Ba, Ju Naare. We cannot confirm this identification. Nor the identification of *so* which appears in Linear B as the phonetic apparently assigned to a horse' s head. But *so* means 'horse' in many N -C languages, especially of the Mande Group, whence the word apparently came. Compare Soninke, name of a Mande language.

The choice of the words *SU* 'house' and *TA* 'pen' may be significant as Williamson (1989 : 263) lists the "older roots" for 'house' as *zu and *ntabu (from PBC). These are related to the Linear A forms here , which have undergone further reduction. We accordingly put Linear A lower down the tree than PBC. Williamson puts PBC in central Nigeria, but doubts it existed very long (if at all).

Linear A has partially lost the nasal prefixes lost in Ewe, Yoruba and Edo. Nupe partially preserves these prefixes (Westermann 1927: 295). In fact Linear A words for Ewe/Gbe (*QE, AJA, ADA*), Yoruba (*ANA, AKU*),

Nupe (*NUPA3*), Edo (*IDU*) occur on the tablets. Other Nigerian language names are also found (Ijo = *IJA*, Yor = *JARA*, Ato = *ATU*).

CENTRAL SUDANIC

Since Central Sudanic languages are monosyllabic we compared our data with Bender (1989). We found five or six valid identifications : *ko* ‘woman’ (better semantically than PWS), *di* ‘dig’, *meme* ‘goat, sheep’, *za* ‘meat, animal’ (compare *ZA* ‘life’), *dV* ‘sleep’, *tsa* ‘split’ (of flax ? *SA*). Niger-Congo is now thought to be an offshoot of Central Sudanic, a branch of Nilo-Saharan. As 5 examples are about 10% of our 50 signs, this suggests Linear A is 4000 or 5000 years away from Central Sudanic. This dates Proto-Central Sudanic at about 6000 BC or 7000 BC, using the Swadesh method. Our work supports a PCS ~ PNC relationship.