

NUMBER 45 - WHORF

STEM SERIES IN MA

MAYA HIEROGLYPHS.

NJAMIN LEE

ND CERTAIN

30

STEM SERIES IN MAYA AND CERTAIN MAYA HIEROGLYPHS

by

Benjamin Lee Whorf

1930

MICROFILM COLLECTION OF
MANUSCRIPTS ON MIDDLE AMERICAN
CULTURAL ANTHROPOLOGY

No. 45

UNIVERSITY OF CHICAGO LIBRARY
CHICAGO, ILLINOIS

1956

TABLE OF CONTENTS

I.	Introduction	1
II.	Grammatical Setting	2
III.	The Stem-Series Situation	3
IV.	Comparative Linguistics of Stem Series in Maya and Quiche	8
V.	Series with Final Consonants	9
VI.	Analysis of Hieroglyphic Texts ...	10
VII.	The Series MA- in Maya and Quiche.	14
VIII.	Phonetic Clues from Aztec	17
IX.	Characters for M and MA in Maya Writing	20

+ 10 figures in text

Note: This Ms. was found among Whorf family papers by J. B. Carroll. It is a revision of a paper read before the Linguistic Society of America, Cleveland meeting, December 1929. It was further revised and published as The Phonetic Value of Certain Characters in Maya Writing (1933).

Notes by Edward Sapir on Ms. of "Stem Series in Maya and Certain
Maya Hieroglyphs."

Page 1: This looks like a very suggestive paper and seems, so far as I, not a Maya scholar, can see, to open up tangible leads for Maya glyph decipherment. I am glad Tozzer offers to publish it in the Cambridge Peabody Museum series, a good place.

I think you ought by all means to get in closer touch with Andrade and Morley and their work.

Page 1: Re ters, tres: These would not be considered different roots but simply 2 different ablaut forms of one root: ter- + "determinative" -s-. "Base" *teres- > *térs- or *trés-.

Page 2: Even squash and swash really rhyme historically. The vowel was [darkened (?)] because of -w- element preceding; cf. wash : ash, [?] with old a (A.S. es) vowel.

Does "fluttering or quavering" of the vowel mean broken vowel, i.e. vowel cut off by ' + echo vowel: e.g., le'em ?

Page 3: Some of these hi- examples seem farfetched. I think you'd make a better impression if you left out "how" and inter. particle.

Page 5: I am sorry, but I cannot honestly say I feel the cohesiveness of the sa- set as clearly as you do. "Sand," "white," "weave cloth," "much" and "dislocate," for instance, on the basis of a fundamental "dispersal" seems to me a purely subjective construction.

STE

Linguistic
1929. Disc
ideology ap
phonetic si

playing so
not forced
another lin
various ser
common simi
Indo-Europé
trek, tren,
so common a
part of com
English, ha
peculiarity
of such typ
to mention

gleam, glin
glisten, gl
("glance of
element gl-
the associa
Then there
bursting:

B. L. Whorf
329 Wolcott Hill Road
Waldenfield,
Connecticut
U. S. A.

STEM SERIES IN MAYA AND CERTAIN MAYA HIEROGLYPHS

Benjamin L. Whorf

(Paper read in outline at the meeting of the Linguistic Society of America at Cleveland, Ohio, December 30, 1929. Discussion of the parallelism between phoneticism and ideology apparent in large numbers of Maya stems and of clues to phonetic signs in the Maya hieroglyphs obtainable therefrom.)

I Introduction

It is a truism that various linguistic phenomena playing so small a part in Indo-European that the IE scholar is not forced to give them study may yet be of great importance in another linguistic stock. Thus the known body of IE roots contains various series of roots having a common phonetic element and a common similarity of meaning* (Footnote: Meillet, Les Langues Indo-Européennes p. 144 et seq., e.g. roots ter, ters, tres, trep, trek, trem, trens, all "tremble".) yet such root-series are not so common and typical as to make study of their structure a necessary part of complete IE method. Similarly various IE languages, notably English, have series of words, usually verbs, that present the same peculiarity, yet are in such a minority compared with the words not of such type that even very full accounts of the language may fail to mention them.

For instance the series glow, glare, glint, glance, gleam, glim ("douse the glim"), glimpse, glimmer, glitter, glister, glisten, gloss, glaze, glass, glare 2 ("glare ice"), glance 2 ("glance off"), glide, glib, is characterized by the common phonetic element gl- and an idea of brightness, luster, reflectiveness, with the associated ideas of polish, smoothness, and of slipping. Then there is the series in -ash with the idea of violence and bursting: flash, dash, bash (one's head against), plash, splash.

lash, slash, gash, gnash, hash, mash, smash, ^{clash}crash, rash, and without the rhyme, squash, swash.

In IE such phenomena may not be of fundamental importance, but in the Maya language of Yucatan we have the different situation that such words are in a majority instead of a small minority. The greater part of the simple stems or "roots" belong to such series, so that the whole vocabulary is pervaded with relations between phonetic form and ideational content so extensive that they have to be reckoned with.

II Grammatical Setting

Maya belongs to the Maya-Quiche stock, a closely-knit stock whose tongues all show near resemblance. Maya (and what is here said of it applies in a general way to the other tongues) is a language based on a stock of monosyllabic stems or roots. These stems are subject to reduplication of opening syllable (lem to lelem), to a reduplication, fluttering, or quavering of the vowel (lem to leem, al to aal), in Quiche to reduplication of closing syllable (ker to kerer), to attachment of a few prefixes, and to attachment of a large number of suffixes mostly of derivational and conjugational use. Most suffixes have invariable vowels, yet one of the most common is -l connected by the vowel of the stem (nak - nakal, lub - lubul, em - emel), while certain derivational suffixes -q, -s, -t, -m, -b, now show such a vowel and now drop it (wasq, wasq; wayas, wais; oqot, oqt; awat, aut; olom, olm; aqab, aqb).

At present there is no published list of the simple stems. The "Diccionario de la lengua Maya" by Juan Pio Perez (1866-77), the largest dictionary at present in print, gives in alphabetic order tense and voice forms such as qalal, qalah, qalnah, qaltah, qaltal, qalsah, qalbesah, qaltšahal, etc. These are grammar forms of the

secondary st
added qalaa
qalan, qalan
is readily i
meaning of t
a dictionary

are found to
all the simp
find that th
work".

BI-SERIES:]
glottalized
bik be yield
zigzag, wave
bits' throttl
drag, trail,
bil wear out
semantemes be
surmised but
to be spun"
to indicate
So also the
could be from
insects, and
the series.

be in with o

ad without

al

different

all

belong to

relations

hat they

sely-knit

what is

es) is a

These

to lelen),

lem to leem,

(ker to kerer),

ge number

Most suffixes

ected by

, while

such a vowel

aut;

simple

sz (1866-77),

etic order

qaltal,

of the

secondary stems gal, galt, gals, galbes, qaltšah, to which may be added gallaah, gallaant, qalkun, qalkuns, qalkunt, galba, galbil, qalan, qalankil, from which the primary or simple stem gal, "close", is readily isolated, for such suffixes have little effect on the meaning of the stem. I have been for some time engaged in building up a dictionary of such simple monosyllabic stems.

III The Stem-Series Situation

The nature of the groups into which these simple stems are found to fall can best be shown by some examples. If we collect all the simple stems in the Perez dictionary beginning with bi- we find that the great majority of them exemplify the idea "move, agitate, work".

BI-SERIES: bin go, bit'*(^{consonant} footnote: A ~~KKK~~ followed by (') denotes a ^{consonant} glottalized or "fortis" ~~KKK~~)pinch or work with thumb and fingers, bik be yielding, pliant, big vibrate, undulate, go like snake, twist, zigzag, wave, brandish, bis pick up, carry, bis trace, trail, bits' throttle, strangle, work into shape, mould, bil slue around, drag, trail, turn, bil hem(along edge), bind over edge, bil trail, track, bil wear out, age. After this list we come to a few monosyllabic semantemes back of which a verbal meaning akin to the list may be surmised but is not positively known; e.g. bi "bunch of cotton about to be spun" and bil "bone ashes for roughening spinners' hands" seem to indicate a meaning "spin" and if so could be included in the series. So also the stems bik, biš, both "how", and bi- interrogative particle, could be from "going, way". This leaves only big perforate, as by insects, and bil "hairless dog" as simple bi-words less clearly in the series.

The series ta- is imbued with a sense of "join, merge, be in with or amid, be connected, continuous", as follows:

TA-SERIES: ta bring, come, tah to, unto, whither, tah swim, float; stew, boil, tah knock; particle in comp. denoting force, tap adorn, tap' knock together, tab unite, tie, bind; delude, tab roots, rays, relationship; put out roots, tam while, meanwhile, tam sink, sound, go or be deep, deepen, tan midst, middle, breast, width, tan presence, tan present-time particle, tan toward, tat fine, forming smooth mass, of powders, tak put down in, under, between; stake down, wedge, mix, hide, guard, tak until, tag bring together, join, unite, adhere to, add to; touch, incite, provoke, tag stratify, rank, order; layers, covers, ranks, tats' straighten, righten, tag level, smooth, tal touch, feel of, tal succeed one another, tal come; bring.

Outside this series Perez records under ta- only ta clear out, evacuate, defecate, exonerate, and tat father (but of. tab). Brinton mentions a tak "bend".

The series pi- is filled with the idea of a sort of expansion: throw out, fling off, unloose, widen, spread over, wrap around.

PI-SERIES: pip plumpness (of birds), pim be thick, thicken, pit slip off, strip, clear, clean, slip, slide, loose, lighten, pit blow (nose), pik push, throw down, hurl, totter, tumble, fall, pik to fan, winnow, pik- out new teeth, pik much, many, pik skirt, piq throw, dash, break, scatter, shake, brandish; be wounded; fall far; fall back or retire to a distance, piq- particle of violence and force, pits play ball, pits' oard, oomb, pitš pour or draw liquid from narrow aperture; draw blood, piš to wind (around), piš cover over, olose, stop, clothe, hide, pil- particle of motion away, pil wind, wrap, reel, twist; (>) thread, (>) work clothing, quilt, pi- in pihe throw wide open, from he open.

Outside the series the pi-semantemes recorded by Perez are pib oven in ground, to use one, pik kind of insect, pik 8000,

pitš kind of slightly, piš

not very long the list of element in fewer and of special terms be verb stems derive. Each lost in the appearance.

in the sense simply one st

sa- brings out disappear, sp

SA-SERIES:

sab- powder; subside, be a cost, sam dis sat' lose, sp sak- weave of be diligent; enlarge, sau neot, sai pee sal be light;

gives only sa

pitš kind of tree, pitš' kind of bird, pitš' bit of meat, pitš sweeten slightly, pis- only, pis plebeian, pis numerical counter.

For the above examples I have selected series that are not very long, yet they are typical in that each substantially covers the list of important semantemes having the characteristic phonetic element in question. The semantemes outside the series are both fewer and of lesser individual importance. They incline to be special terms of limited uses, while those in the series incline to be verb stems active as semantic centers from which hosts of words derive. Each series is not, like the English word-groups above cited, lost in the midst of a much larger vocabulary of heterogeneous appearance. Nearly the whole Maya vocabulary, as regards its "roots" in the sense of its monosyllabic semantic centers, would appear to be simply one such series after another.

Citation of a few other series is in order. The series sa- brings out all sorts of ideas of dispersal: be dispersed, disappear, spread, radiate, shine.

SA-SERIES: sah (< put away) fear; frighten, menace; hide a thing, sab- powder; soot, sap make tasteless, banish savor, sap' drain, subside, be spent, wasted, of liquids; evaporate, sam expend, pay, cost, sam disappear, sam pass time quickly, be soon, sam sand, sat' lose, spend, waste, use up, come to an end, sak- much, sak- weave cloth; cloth, sak white, sag be freely active, nimble; be diligent; itoh, sas be bright, be clear, sats' extend, stretch, enlarge, sau twine, wind, coil, tangle, sai dislocate, detach, disconnect, sai peeling; (>)thin skin, sai add on at end, fit, adjust, sai be light; lighten, sai cool or dry by evaporation, air off, air.

As sa-words less clearly a part of this series Perez gives only sa meal gruel (which might belong, as a diffusion in water),

sap a fathom (cf. "extend"), sag locust, sal skin eruptions; Tozzer gives also sau toe.

The ge-series is short, but distinctly marked by the meaning "turn, divert, change".

GE-SERIES: geb turn or go aside, slant, tip, lean, part (e.g. hair), deriv. treachery, sin, evil; gep unequal; divide unequally, slight, gen bend around, twist, curve, double up, geg hook, barb (of fish spear, etc.), geš change, exchange; disturb, confuse, getš swerve, go aside, twist, crook, be crooked, gei reproach (cf. geb). This makes seven ge-stems in the series; Perez gives three other ge-stems; gel roast, toast, (ge)-gen pig, geu skin, hide.

The series qi- is also short, but distinctly means "radiate, glow, project".

QI-SERIES: qin glow, warm; sun, sunlight, day; derivs. soreness, ache, intensity, qit scatter, strew, sow, qiq blood, bleed, qis spurt, gush, flow readily, qiš prickliness, thorns, qitš glow, be warm or hot, feel invigorated, qil glow, heat, flush, sweat; be sore, hurt, grieved. There remains in Perez qis a kind of plum.

In the series tša-, ts'a-, "come or put together, make contact, close, grip, press", the presence or absence of the fortis or glottalization denoted (') by Tozzer seems to make no difference except that the sense of force and pressure is more typical of the forms with it than of those without it. This series contains about nineteen stems, with only three or four tša- or ts'a-stems outside. In some other series the glottalization produces a complete change of meaning.

Certain series are not restricted to one vowel; for example qo-, qu- form one series strongly marked with the meaning "interior, inwardness, inward action or state", including approaching,

inserting, cu
about twenty-
the series.

the first is
WA-1-SERIES:
whatever, wai
by doubling,
wats' turn, t
fingers leave
not liquid; l
change, conve
through finge
wai-(-s deriv
wai-(-q deriv

we- "press, f
WA-WE-SERIES:
wah spout, je
wak particle
firearms, wat
weh pattering
wek scatter,
throw and squ
cord cuts in,

wak six, waga
wai here, the

Tozzer
 by the
 g. hair),
 slight,
 fish spear,
 go aside,
 s seven
 l roast,
 means
 eness,
 glow,
 at; be
 lum.
 her,
 f the
 no
 re typical
 contains
 tems
 l; for
 aning
 proaching,

inserting, cutting, biting, enclosing, contracting, and containing about twenty-two stems against about ten, mostly special terms, outside the series.

Wa- is found in two series. The characteristic idea of the first is "alternate, vary, turn, change, be transitory, fugitive".
 WA-1-SERIES: wa whether or not, or, if, whether, perhaps, wa- any, whatever, wat apply a doubling-up force, double withes, break sticks by doubling, break long things, was turn, return, change, convert, wrap, wats' turn, turn a corner; double up, wal turn over and separate with fingers leaves of a book or of plants; sift through fingers, mix things not liquid; leaf; fan, wal-(-g deriv.) turn, reverse, return, restore, change, convert, wai enclosure, cell, bed; lie in ambush, wai sift through fingers, wai disappear or be transformed by magic; witch, wai-(-s deriv.) disappear suddenly; things in dreams that disappear, wai-(-g deriv.) to dream.

The other series is wa-, we-, "project", including we- "press, force".

WA-WE-SERIES: wa stand, rise, be upright, establish, appoint, designate wah spout, jet, spurt, gush, wak burst forth or make do so, force out, wak particle of force and haste, wag burst out, explode, go off, of firearms, watš' loose, unfasten, unfold, develop, wah scatter, strew, wah pattering, as of flung grain, wet' block, impede, stop, prohibit, wek scatter, strew, sprinkle, weg scatter semi-fluids, spatter, splash, throw and squash, wets' work the face, grimace, wel bind tight till cord cuts in, cut with cord, abrade with sawing motion, saw.

Outside the wa- and wa-we- series we have wa tortillas, wak six, wašak eight, wai corrode, excoriate, like lye and caustic plants wai here, there, wetš armadillo, wetš scab, itch, weg, scab, itch,

wel maidservant, wen sleep (which resembles the meaning "dream" in the wa-series):

IV Comparative Linguistics of Stem Series in Maya and Quiche.

On applying the methods of comparative linguistics we generally find that a series with recognizably similar idea exists in the cognate tongues, even though comparison of individual words may find few apparent semantic similarities word for word. In Quiche the series wa- "alternate, turn" is not found, although what is perhaps the root of it appears in a group of three; wats be hidden as inaa thicket, wal a fan, to fan, flatter, and war sleep, Cakchiquel. war echo, the respective cognates of Maya wats turn, double, wal turn leaves, fan, and wai- magic change, dream (Maya $\chi(1) =$ Quiche χ). But the series wa-, we, "project" is strongly represented in Quiche.*

(Footnote: The Quiche of Guatemala and the Maya were in cultural contact, and as might be expected many cultural words are almost exactly the same. Quiche has not such a full published lexical authority as Perez for Maya. For this paper I have used the old Quiche-Spanish vocabulary published by Brasseur de Bourbourg.)

WA-WE-SERIES, QUICHE: wa stand, erect, wa to hunger (projective, outreaching kinaesthesia); meal, food, bread (which explains Maya wa tortillas), wai meal, tortilla, wah overflow, run over; drool, wap open up a trench or drain, wat feed (= wa), wan to strike, to nail, wak first grinding of maize, wag wander, stroll, wag row boat, wag drool, was crunch, eat something that crackles (cf. wets and wetš), watš face, front, forward; appearance, likeness; watch; feign, pretend; dream, watš bear fruit, wal arise, stand, war watch with someone (projective kinaesthesia) weh eat tortillas (cf. wets, wetš and breaking-up ideas we- in Maya), wep urge, spur on, wep stick, like wax (cf. wek & wal), wen watch, be like a sentinel, wek add, wek clean, wek plough, weg be hoarse (cf. next), wets crackle like toasted tortillas, wetš crumble, wel unload, unburden.

stems given a
wae here, we
the study of
conjunction v
element of th
essential cog
sometimes the
(M wal fan, C
ideas (M watš
< project, t
closely simil

influence on
characterized
constant. Fo

three familie
from the gene
that the voca
the arrange
ideas that th
phoneticism,

Outside this series in Quiche, beside the three "turn" stems given above, my vocabulary lists only wak turkey, wag soak up, wae here, we yes, wes loincloth. It would seem that we cannot pursue the study of comparative linguistics very far in this family except in conjunction with the stem series; that in many cases it is the constant element of the series rather than the individual stem that is the essential cognate base shared by the compared tongues, and that while sometimes the same idea results from the same treatment of this element (M wal fan, Q wal fan), more often the same treatment produces divergent ideas (M watš' loose, unfasten, Q watš face, & in gen. exposure, both < project, throw forth), or again different treatment may develop closely similar ideas (Q wel unload, unburden, M watš unfasten, etc.).

V Series with Final Consonants

In Maya the final consonant also often has a distinct influence on the meaning exemplified in certain extensive and decidedly characterized series in which this final consonant is the phonetic constant. For example:

-q "movement, agitation, energy, vivacity, glow".

-p'(not -p) "break, separate, end".

-tš'(not tšš) "pressure, force, press down, deform".

It is particularly easy to check the characters of these three families of words from the Perez dictionary. It will be seen from the generality with which all the above-described relations hold that the vocabulary must be pervaded with cross-relations that connect the arrangement of the speech-sounds in the stems with the nature of the ideas that the stems express. To a great extent ideology follows phoneticism, or vice versa.

VI Analysis of Hieroglyphic Texts

Mayan hieroglyphic texts show such frequent repetition of the same comparatively small number of elements as to suggest phoneticism of some grade or other. At least we seem to be dealing with a highly analytic form of writing. At the same time the closeness of the hieroglyphs to a pictorial form and a certain similarity to the Aztec tlauiztli or insignia suggest that they are at least not far removed from the status of signs with an ideological import. But if the language is of such nature that ideology and phonetios run more or less parallel, a system of writing that started out by being ideographic could quickly and naturally achieve phoneticism, and that without wholly losing its ideographic character. If this is the character of the writing, the recognition in the texts of certain of the constant bases of stem series, such as sa-, ta-, qi-, that is their identification with certain recurring signs in the texts, may be feasible where recognition of individual words or stems would not be. With a few such identifications as starting points, decipherment of individual words might follow where such decipherments could not be made without some such starting point.

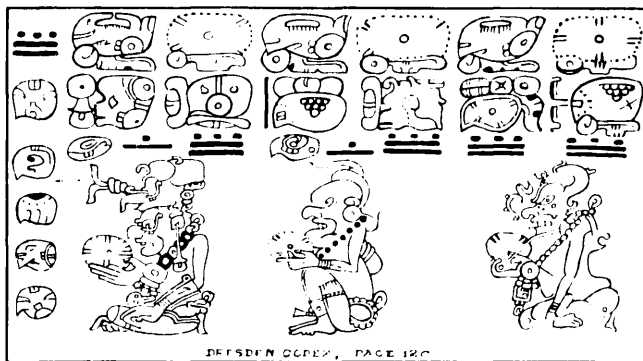
Fig. 1 shows a typical page from the tonalamatl section of the Dresden Codex, a Maya manuscript of probably not so great antiquity as to bar the supposition that its language is Maya little different from the earliest forms recorded after the Conquest. Unlike the rest of the Codex, this section is practically without mathematics. Various divisions of the tonalamatl*, (Footnote: Nahuatl "chart of days", the Aztec term for the period, which has in modern times been rendered into Maya as tzolkin, though we do not know what the Maya themselves called it) the ritual and augural period of

Fig. 1

repetition
 largest
 dealing
 le
 in
 they are
 leological
 r and
 t started

character.
 the texts
 ta-, qi-,
 the
 or stems
 points,
 ppherments

tl section
 great
 a little
 t.
 thout
 : Nahuatl
 modern
 now what
 d of



260 days, are stated by successions of bar-dot numerals, in connection with columns of day-signs at their left. Each division has a picture and a text, usually of four glyph-blocks. It is essentially a picture-book about the tonalamatl. In my drawing I have exaggerated the size of the text in proportion to the pictures. These pictures occur in sets in which a number of different gods are shown all performing the same action, as here they are all holding out the radiating sign that is known to mean sun and day.

In order to designate any desired glyph-block in a text I shall number the glyph-blocks in each horizontal line from left to right, and call the top line A, the one below it B. Left to right and from top down have long been known to be the directions of Maya writing. The order of reading the text has been determined to be A1, A2, B1, B2; A3, A4, B3, B4; etc. - all four glyph-blocks above a picture are read before proceeding to the blocks above the next picture. It seems to me probable that the principle of the writing is that of a complicated syllabary with numerous polyphones and homophones (like the Sumerian syllabary in this respect) and with certain approximations to alphabeticism. This view is also, I believe, the one held more or less tentatively by most scholars in the field, including Morley, Spinden, Teeple, and Blom.

It has long since been determined by Schellhas that certain hieroglyphs occur regularly with the pictures of certain gods, and so may be considered to be their names in the text. Thus the glyphs B1-B2 together denote the "Roman-nosed god" who appears in the picture below them. Similarly B3-B4 denote the next deity and B6 the third one, though B5 on the other hand is not a part of his name but rather some common linguistic element.

the pictures
but that simi
actions which
to certain ob
complete enov
glyph-blocks
of the pictur

often be made
A2 - object,
A5 - verb, A
The object gl
the object th
each title p
broadest sen
left in each
the same, an
on the natur
attention. (C
of the three
with the han

essential pa
snail-like f
of reaching
the hand. F
drawn the co

connection
 a picture
 a
 generated
 pictures
 all
 the

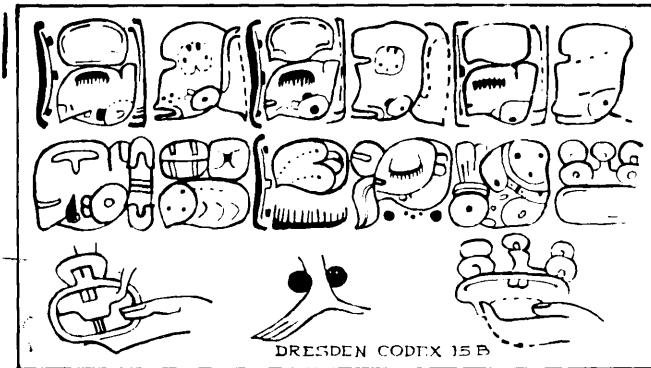
 in a
 from
 Left to
 tions of
 ined to
 oks above
 next
 writing
 and
 with
 I believe,
 e field,
 s that
 tain gods,
 s the
 rs in the
 nd B6 the
 name but

Now I find that the parallelism between the text and the pictures is not confined to the name-glyphs of the different gods, but that similarly there are certain signs that correspond to certain actions which the gods are shown performing and others that answer to certain objects that they are shown handling. The parallel is complete enough for one to say that the text of usually four glyph-blocks above each picture is essentially a descriptive title of the picture.

I next find that linguistic analysis of the text may often be made to this extent: e.g. in the case of Fig. 1; A1 - verb, A2 - object, B1, B2 - subject; A3 - verb, A4 - object, B3, B4 - subject; A5 - verb, A6 - object, B5 - frequent particle(?), B6 - subject. The object glyphs A2, 4, 6, are the same, and essentially the same as the object the three deities are holding, the sun sign. Assuming that each title probably contains a verb, understanding the term in its broadest sense as whatever names an action, there is only one sign left in each to be the verb, namely A1, 3, 5. These three glyphs are the same, and the action in the three pictures is the same. It is on the nature of this sign and related signs that I wish to focus attention. On the assumption that it answers to the common act depicted of the three deities it might mean holding, holding out, or passing with the hand.

Actually, comparison of other texts shows that the essential part of this sign, that is the main ellipse above the snail-like foot or base, is usually associated with pictured actions of reaching out the hand or arm either with or without an object in the hand. Fig. 2 shows Dresden Codex 15B except that I have not drawn the complicated pictures of the gods, but only the action or

[12 a]



gesture depic
A2 - unknown
(the "Long-No
B3 - unknown,
B5 - subject,

the sign in w
shows us that
depicting a h
gesture. In
metamorphosed
a head, with
appearance of
hand, as a ha
the prominent
peculiarly ty
usually one o
shows seven p
this in Dresd
actions consi
some further

"hold out" or
metamorphosed
more nearly t
glyph-block i
only a compon
of the stem s

gesture depicted of each. The textual analysis is A1 - verb, A2 - unknown constant element, probably part of verb, B1 - subject (the "Long-Nosed God"), B2 - demonstrative(?); A3 - verb, A4 - constant, B3 - unknown, B4 - subject (the "Death God"); A5 - verb, A6 - constant, B5 - subject, B6 - object (held out in hand of subject).

The lower part of the verb glyph here will be noted as the sign in which we are interested. Comparison with other glyphs shows us that this sign is only a form of a very common Maya character depicting a human hand, usually in a sort of pinching or grasping gesture. In the present case the hand is very conventionalized, and metamorphosed after a characteristic manner of Maya art style into a head, with the space under the grasping fingers assuming the appearance of a closed and lash-fringed eye. The position of the hand, as a hand, has become anatomically impossible, yet there remains the prominent and unmistakable thumb, and a sort of wrist-ornament peculiarly typical of this hand-sign, a circle with a central dot and usually one or two marginal tabs. Codex Tro-Cortesianus Plate VIa shows seven pictures and in the text seven verbs of the same form as this in Dresden 15B except that the thumb is indistinguishable; the actions consist of holding out various objects. Later will appear some further texts showing this sign and its outreaching gesture.

Is the simple hand-sign itself then a word meaning "hold out" or the like? No, I think not, for this sign in all its metamorphosed forms has too great a frequency to be a word; it has more nearly the order of frequency of a letter than of a word. A glyph-block is, I think, usually a word, but the hand-sign is usually only a component of the block. At this point I draw on the concept of the stem series for aid. The sign may be the common phonetic

element of a great many different words or stems forming a stem series, many of whose members have, because they are stem-series members, a similar meaning of reaching out or the like that accounts for the association of the sign with such an action. This viewpoint enables us to throw aside at this early stage of investigation the question of what words are represented in the language of the text, a question as yet insoluble in our ignorance of the text's dialect, and to concentrate simply on the question of what stem-elements may be represented, a question that comes much nearer to being answerable, for as we have seen the dialect might be anything between Maya and Quiche without much changing the general character of certain stem-elements.

VII The Series MA- in Maya and Quiche

There is one stem series, and only one, that corresponds closely both to the hand action in question and to various other uses of the hand hieroglyph. This series is ma-, with the idea "pass", covering about all the meanings assumable by the notion of "passing" in English. Because of its importance to this study I shall give all its meanings in some detail and classified under the various subdivisions of the "pass" idea which they represent. Homonyms will be given distinguishing numbers.

MA-SERIES, MAYA:

1. Passing in general: mal 1 pass, passing, chiefly as (a) pass; (b) advance; improve; before; (c) go by, miss, err; (d) times, repetitions; man 1 pass, chiefly as (a) pass (the usual word for pass, in all senses; (b) cease; (c) exceed.
2. Passing in time: -ma 3 tense suffix denoting remote past time; man 2 recur, continue (of days and time); mab 3 continue, not stop.

3. Pass, surpass, exceed: mak 2 superior; -ma 2 suffix of strong affirmation (exceedingly).
4. Passing as evanescent and negational; pass, cease, diminish, reduce: ma 1 not, no; as verb, cease, also reduce, diminish; mab 1 deny, revoke, annul; to slight; mats' (a) flatten, level; dent; (b) calm, quiet; weaken; maq 1 wear, dissolve, eat away; maš 1 crush, flatten; mai 1 reduce to fineness, pulverize, sift, filter, refine; mas wear out, wear thin, especially ropes, by friction; cricket (from sound?).
5. Pass over, cover, extend: mab 2 review, inspect, make visits to animal traps; mak 1 cover, close, stop, restrain, control; covering, lid, case, shell; pitfall; span of distance; maq 2 (crust) (a) scalp-crust; (b) cork; maq 3 tendrils.
6. Pass with hand, transfer, hand out, handle, make passes, hand-motions, wield: mah 1 lend; rent; man 3 trade; buy; mat receive a favor, a free gift; mats' 1 handle, hold in hand, wield, grasp, seize, touch; maq 4 handle, manipulate, adjust, arrange.

This finishes the ma-stems in the Perez dictionary that clearly form a series; the remaining ones being mak 3 who? maš 3 who? mah 2 groin; mah 3 soreness; man relationship term; mau maguey; mats' 1 suck; mats' 2 bran; maš 3 monkey; mats' 2 a crow; mai 2 hoof. We have now reviewed all the ma-stems in Perez, a total of 44 of reasonably distinct meanings, of which 23 or 68%, including all the common verbs, form the "pass" series, leaving 11 or 32%, mostly terms of limited use, outside the series.

It will be noted that group 6 of the series consists of stems with meanings of great similarity to the hand gestures depicted in the above-mentioned pages of the Dresden Codex. But at present it would be very premature to identify the verb of these texts with for

instance matš 1, in spite of its striking likeness to the pictured action, or with any one of these modern Maya stems. But if we find contributory evidence of a phonetic value ma attached to the hand-sign, we may then tentatively write the verb of these texts as ma-(), meaning that it belongs to the ma-series and either may or may not have another phonetic element attached. This postulates as to the meaning of the verb only that it is some nuance readily derivable from "pass"; it might not be any of the verb meanings in Perez; it might be "deal out", "hand over", "give", "extend", or it might be simply "pass".

Before looking at the contributory evidence for the value ma, let us compare the cognate tongue Quiche. The result of an examination of the old Quiche-Spanish vocabulary published by Brasseur is as follows:

Quiche contains a ma-series bearing the general idea "pass over, by, away; extend, reach, seize".

MA-SERIES, QUICHE:

1. pass over, extend, cover: mar lay or extend on ground, stretch out; be extended, be broad, flat; mal 1 ancient, mag adorn, deck (a room); (maš 1) > mašan large leaf for wrapping salt.
2. err, trespass, transgress: maq to sin; sin, blame, guilt; mat 2 disobey.
3. pass away, cease, be not, suffer loss, deteriorate, pass in time, age: ma 1 grow old, age, ma 2 loose, destroy, fray, unravel, forget, ma 3 no, not, ma- general negative prefix; mal 2 become invisible, vanish, mal 3 decayed, mouldy, man soften, mai period, cycle of time, especially of $\frac{20}{24}$ about 20 years (probably the Maya qatun).
4. make a pass to capture, strike at, reach, grab, seize, grip:

mah 1 grab, or grit teeth
matš 1 (a) st
"set on edge"

and outside t
coyol palm, p
comprises 19
question; did

Aztec language
essential und
writing, that
kinds converg
are studying
systems of wr
used almost e
system where
system with t
pictorial, ye
of them, and
nigun marks c
transliterati
surprising, f
matl (in May
(also arm), b
as the root c

ctured
 we find
 hand-sign,
 (),

ay not
 to the
 vable
 ez; it
 ght be

or the
 ult of
 d by

al idea

stretch out;
 a room);

t;

in time, age:

et,

sible, van-

time,

ip:

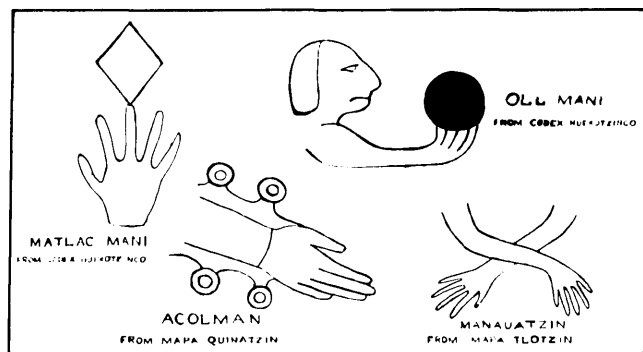
mah 1 grab, snatch, seize, mah 2 gather cacao or maize, mat 1 clench or grit teeth; be desperate, despair, mas grope, feel about, matš 1 (a) strike, (b) work on (various things), Matš 2 have teeth "set on edge" (cf. mat 1), mak pick, pluck.

The remaining Quiche na-stems cited by this vocabulary and outside the series are: nām uncle-nephew relationship, nāp coyol palm, maš 2 hard, harsh, rough, maš 3, small monkey. The series comprises 19 meanings, the remainder 4. We may now take up the question; did the hand-sign have a phonetic value, if so, what?

VIII Phonetic Clues from Aztec

We must now turn our attention to the unrelated Aztec language, and it might be said in passing that it is the essential underlying unity of Middle American culture, including writing, that allows us to make such a leap. Evidence of various kinds converges toward the view that the system of writing which we are studying was the basis of all other Middle American pre-Conquest systems of writing. The Aztec system, obviously much cruder and used almost entirely for recording proper names, is the only such system where we have post-Conquest records of words written in the system with transliterations. These Aztec hieroglyphs, crude and pictorial, yet seem like an imitation of the Maya system, while some of them, and some of the Aztec tlauiztli or heraldic devices, show ~~marks~~ marks of kinship with particular Maya glyphs. In the Aztec transliterations a hand has the phonetic value na. This is not surprising, for hand in Aztec is, in stem-form na, in full-form nahtl (in Maya hand is gab). In Aztec na does not only mean hand (also arm), but as verb catch, grab (ni-k-na, I catch it), and na as the root of this and a considerable number of other verbs,

[17a]



ma means exte
systems of hi
coincidences
over bodily
value and onl
to make this
language?

from three d
Tlotzin, post
transliterat
mani and man
Aztec verbs p
pat out tort
above-mentio
(Ten Mani) to
a numeral ar
second part
individual m
for in Aztec

the usual Ma
for which is
in which we
begins with
Aztec way of
called deer
But besides

7 a]

ma means extend, reach. Here is a coincidence between the two systems of hieroglyphs that gives food for thought. Were such coincidences points of contact whereby a sign could easily be taken over bodily from one system to the other with the same phonetic value and only a slight shift in the previous linguistic explanation to make this explanation equally obvious to the users of the second language?

Figure three presents evidence bearing on this point from three documents; Codex Huexotzinco, Mapa Quinatzin, and Mapa Tlotzin, post-Conquest records containing personal-name hieroglyphs transliterated in Roman letters. Here the hand has the values mani and man, and not simply ma. The reference is partly to the Aztec verbs mani extend, and mana, preterite man, lay, extend; pat out tortillas between hands; offer (glyph manauatzin), from above-mentioned root ma; but the glyph and name matlac mani (Ten Mani) tell of Maya origin too. Personal names beginning with a numeral are always names of days in the tonalamatl, and the second part of the name must be one of the twenty day-signs. The individual named 10 Mani had a name borrowed from some Maya dialect, for in Aztec there is no day-sign name resembling Mani.

But there is in Maya. The top drawing in Fig. 4 is the usual Maya hieroglyph of the seventh day-sign, the Maya name for which is maniq (usually spelled Manik). It is the hand-sign in which we are interested. The Aztec name of this day-sign also begins with ma, being masa(-tl). This word means deer, and the Aztec way of writing the sign is a deer's head. The sign is also called deer in most other Middle American languages except Maya. But besides meaning deer the stem masa is very ~~like~~ similar to

[19a]

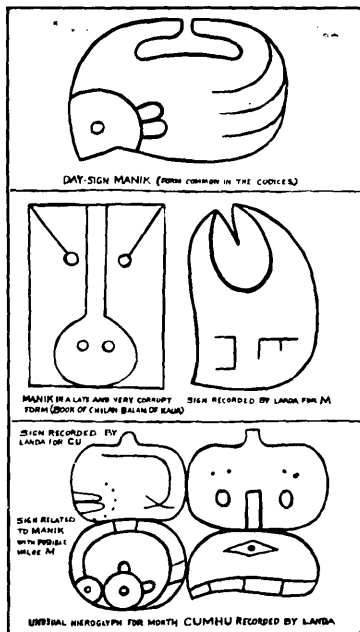


Fig. 4

a verb-stem
maga- is lin
out, hold ou
with the wor
Doctrina Cri
Palma, 1886,
Pilato; cruz
Regimen del
omo-tlayohui
o-mamazehual
nix
I have found
the Hierogly.
at Tepoztlan
"A Central M
to appear in
A body of ev
Manik, the c
phonetic val
for the mont
Maya ~~maniq~~
of a phonetic
Quiche means
name maniq of
closest reser
man, pass, by
something, fe
Also possible
stem ~~nix~~ nix
from the Quic
mentioned lat

19a] a verb-stem maso- (of which there is a variant maso-, while a variant masa- is linguistically possible if not probable), which means stretch out, hold out, especially the arm or hand, and also, usually combined with the word cruz, crucify.* (Footnote: E.g. from Catecismo de la Doctrina Cristiano, traducida al idioma Mejicano por Miguel Trinidad Palma, 1886, from the Credo: omo-tlahiyohuilti itencopa Poncio Pilato; cruztitech o-mamazealtiloc, etc. From Breve Practica, y Regimen del Confessionario de Indios, Velasquez de Cardenas, 1761, omo-tlayohuilti itlatocayopan Poncio Pilatos; cruztitech o-mamazehualtiloc, etc.) I-have-found-an-instance-of-a-hand-figure-
nik

I have found an instance of a hand-figure similar to Manik used as the Hieroglyph of the month Mazatl in an Aztec day-sign inscription at Tepoztlan, Morelos, Mexico.† (Footnote: Described in a paper; "A Central Mexican Inscription Combining Mexican and Maya Day Signs", to appear in American Anthropologist.)

A body of evidence indicates that the peculiar wrist-ornament of Manik, the circle with central dot and projecting tabs, can have the phonetic value sa. Maya students are familiar with its use as sign for the month Zac (sak) and as sign for the color white (sak). The Maya ~~sign~~ glyph for the seventh day-sign may then be susceptible of a phonetic reading ma-sa. It may be noted that the stem mag in Quiche means grope or feel about. The origin and meaning of the name maniq obtained from post-Conquest sources are unknown. The closest resemblances to it in Perez are two stems derived from man, pass, by a suffixed -q: manaq pass quickly, and manaq evanescent something, faint shadow, glimmer, ray, distant almost imperceptible echo. Also possible is a compound of the element ma- pass, handle, with the stem ~~nik~~ niq shake, wave, brandish, which could give a meaning not far from the Quiche mag; and a third possible source of the name will be mentioned later.

IX Characters for M and MA in Maya Writing

The right middle sign in Fig. 4 is given by Bishop Landa as equivalent to m, in the "alphabet" that resulted from his asking the Mayas what characters they would use to represent the sounds of the European letters. I regard it as a corrupted reproduction of a cursive Manik. Landa pictures it turned on its side, which has caused some confusion. The essential earmarks, viz. the hole enclosed by pinching fingers and vestiges of the wrist-ornament seem to be preserved in their proper relative positions. The difference from the classical Manik is still not so great as in the late form of Manik from the book of Chilán Balam of Kaua, shown in Fig. 4, in which all that remains is the finger-space conventionalized into a keyhole form. In Landa's drawings of the month hieroglyphs he does not give for the month Cumhu the classical glyph, but instead the composite glyph-block shown at the bottom of Fig. 4, which is apparently a phonetic recording of the name Cumhu. The upper left component (glyph of month Cauac) is the one cited by Landa in his "alphabet" as having the value "cu" (phon. ku), and the right half of the block is a form of the day-sign Ahau (from a stem hau or ha) which would seem to represent the syllable hu. This leaves the lower left component as the only one that could represent the element m. I would consider it a conventionalized Manik, with the wrist-ornament clear but the fingers reduced to two curving bands approaching at the top. The block may be read ku-m-hu.

I find that there are two main hieroglyphic treatments of the hand, one being the outholding or passing gesture Manik, the other the outspread palms as in the Aztec glyph mana-ua-tzin (Fig. 3). No. 1 top row of Fig. 5 shows the common glyph of the month Mac (phon. mak), the upper element of which appears to be based on a pair

ishop
 om his
 the sounds
 ction of
 h has
 e enclosed
 to be
 e from
 m of Manik
 hich all
 hole form.
 e for the
 lyph-block
 e recording
 Cauae) is
 "gu"
 day-sign
 he syllable
 at could
 ized Manik,
 curving
 e
 reatments
 k, the
 (Fig. 3).
 fac
 on a pair

[20a]

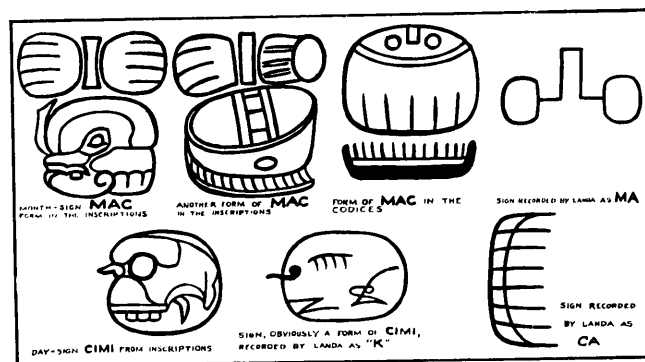


Fig. 5

of outstretched hands or paws. In this form the finger lines are merely a sketchy filling-in treatment and so may be of any number. No. 3 top row is a form from the codices with only one hand, in the outspread position and bearing a wrist ornament. No. 4 top row is a sign recorded in Landa's "alphabet" as "ma", and as comparison of the codices shows us, is simply the upper part of Mac. The lower part of Mac No. 1 is the death's head of the day-sign Cimi (phon. kimi), which I have shown separately in No. 1 of the bottom row. It is this sign in cursive form (No. 2 bottom row) that Landa records for the sound k. No. 1 top row may then be read ma-k. The bottom of Mac No. 3 top row is a comb-like sign which Landa records (No. 3 bottom row) as ca (phon. ka); so that this glyph may be read ma-ka.

No. 2 top row is a less common form of Mac. At the top is the ma component, but with both hands turned the same way, and at the bottom a form of the comb sign for ka or k. Between the two is what I take to be an ideographic determinative for mak. By referring to the ma-series above it will be seen that the stem mak means cover, close, restrain, control, and as a noun, covering, cover, lid. The middle component looks to me like a basket or pot with a lid having its top crossed by a strap-like handle. If so, the glyph may be read ma ^{MAK} -ka.

Fig. 6 shows at the top Dresden Codex page 15c., one of some texts in which the two forms of ma-sign, Manik and Mac, are united as though to confirm their common sound, much like the joining of the determinative MAK to ma in Fig. 5. The Mac is sometimes below and sometimes above the Manik, which is in head-variant form. The linguistic analysis is A1 verb, A2 object, B1,2 subject; A3 verb, A4 object, B3,4 subject. The action shown

21.

is are
number.
in the
row is
ison of
lower
phon. kimi),
it is this
for the
of Mac
bottom

At the
way,
reen the
k. By
on mak
ng, cover,
with a
the

o., one
lao, are
e the
.s

object,
shown

[21a]

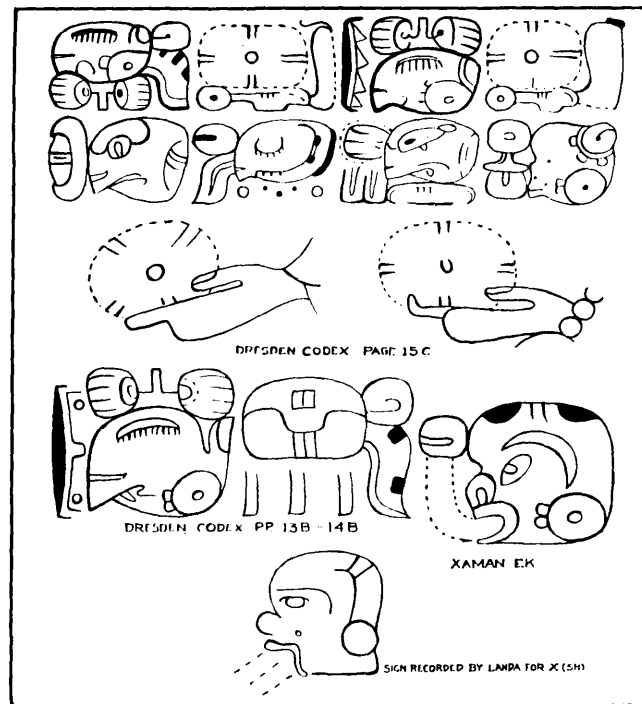


Fig. 6

in the pictures is "passing" the object, which is the "sun" sign.

The left lower part of Fig. 6 shows a verb and object from an extended passage of the Dresden Codex, 13b.-14b. In each of six pictures the verb is the same, being the Mac-Manik compound shown, with different objects and subjects. The six pictures all show the action of "passing" the objects.

The lower right shows a common name-glyph of a deity who frequently figures as subject, which glyph is another kind of head-variant of Manik. The treatment of thumb, thumbnail, and fingers may be seen in the top part of the head, the demilune enclosed by the fingers is there, and the wrist ornament. The front of the glyph has been rendered into the face of the god in question, with the thick lips and blobby nose characteristic of his pictures. The Manik treatment will lead us to expect a god with "ma" in his name. As it happens, this god has long since been identified by Schellhas as the god of the North and the North Star, called by the Maya "North Star", "Xaman Ek" (phon. šaman eq). The lowermost sign ⁱⁿ Fig. 6 shows that the Maya used the face of this god šaman ("north") to denote a sound like old Spanish š (so Landa), that is š. The lips and nose on this sign are quite peculiar to him. His name-glyph is then a fusion of his own š-sign with ma, with the added feature that it is pictographically determinative of him, and so may be read š-ma SAMAN.

Here we lose sight of the "passing" ideas of the ma-series that I take to have been the ideographic origin of the ~~sign~~ ma-sign, and the sign becomes a purely phonetic character. The same thing is still more strikingly shown in Fig. 7, reproducing Codex Tro-Cortesianus p. 113d. This is one of two similar pictures, comparison of which

22.

sign.

nd object

n each of

ound

es all

a deity

ind of

and

ne

The front

question,

ictures.

In his

sd by

l by

vermost

l šaman

that is š.

His

the

rim, and

the ma-series

ma-sign,

thing is

)-Cortesianus

f which

[22a]

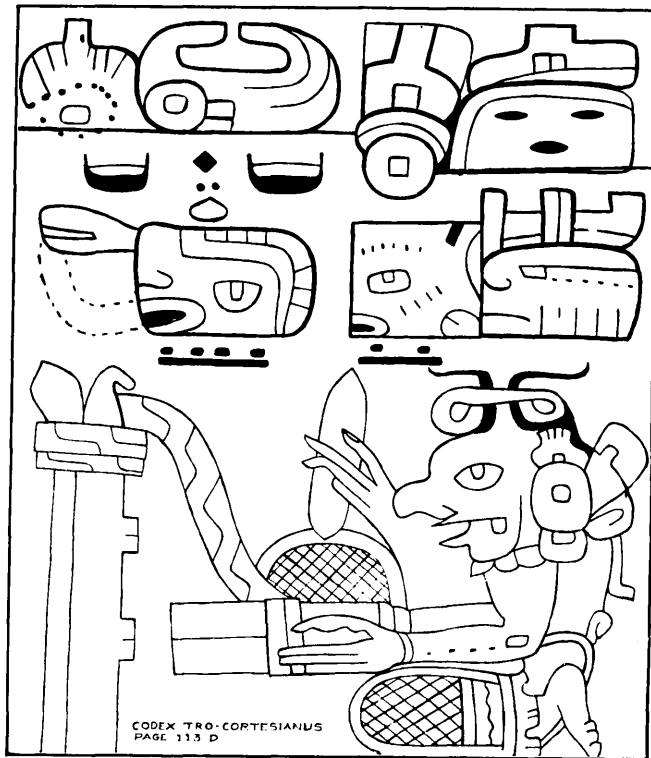


Fig 7.

shows the analysis of the text to be A1 verb, A2 object, B1,2 subject. The action in the pictures is that of weaving on the primitive lap loom, as the Aztec Indian housewives to-day weave girdles. The verbs for both pictures are alike and their second components are "na". The first component is a sign for which I have a considerable body of evidence to show that it has a phonetic value "ya". Maya students will recall that it is the superfix of the glyphs of the months Yax (yaš) and Yaxkin (yašqin) in the codices. The verb then reads ya-na. Yama or yamah would be a preterite or possibly an aorist of the transitive conjugation of a verb with stem yam. The most common stem yam in Perez means between, interstice, and as verb interpose, insert, force between, get caught between. This is the action shown - the subject is inserting the shuttle and its thread into the warp or running it between the warp threads.

The first part of the object glyph is the sign related to the Manik wrist-ornament that would seem to have the phonetic value sa. It appears in the exact form it has as sign of the month Zac (sak), and so might have here the value sak. The after part of the glyph is a form of the day-sign Ahau. My evidence is that Ahau is a polyphonic character and that one of its values is that of l. Maya students will recall its use as superfix of the sign for east, li-qin. So it is possible to read this object-glyph as sak-l. But sakal is the Maya word for woven cloth (v. series sa- "disperse, spread, etc." supra). Hence I translate this text: "He did the inserting into the cloth, did X (name of subject deity)."

Turning back now to Fig. 2; glyph B1, subject, is the name-glyph of the "Long-Nosed God", one of the chief Maya codex gods, who is now generally regarded as the same as the late Maya god

Kukulcan (ph
The glyph is
chink under
This T-like
the second d
nearly all t
day-sign is
wind, his he
second day-s
used to help
but that in
the unknown
How we know
Ah Macik (ph
winds*. (Foo
Hieroglyphs,
wind, from m
served would
Middle Ameri
he served.
called quetz
were quequet
have been th
wind", or si
Kukulcan (as
take it that
"Kukulcan" t
this god. I

,2 subject.
 ve lap
 The verbs
 "na".
 le body
 students
 uths
 reads
 rist
 most
 verb
 is the
 thread
 gn
 the
 sign of
 The
 evidence
 values
 f the
 st-glyph
 eries sa-
 kt:
 t deity)."
 t, is the
 dex gods,
 god

Kukulcan (phon. quulkan), who is the same as the Aztec Quetzalcoatl.
 The glyph is the head-variant of Manik with a suffix and with the
 chink under the fingers converted into a figure like the letter T.
 This T-like mark is well known to every student of things Maya as
 the second day-sign, Ik (phon. iq). The word iq means wind, and in
 nearly all the other Middle American tongues, including Aztec, this
 day-sign is also named Wind. Now Quetzalcoatl was the god of the
 wind, his head with a trumpet-mouth being the Aztec glyph for the
 second day-sign. It is natural then that we should find the iq-sign
 used to help denote Kukulcan. My evidence is that Ik is polyphonous,
 but that in this case its phonetic value may well be iq. Neglecting
 the unknown value of the suffix, we can then read ma--iq- in the name.
 Now we know that a certain kind of priest among the Maya was called
 Ah Macik (phon. h-mak-ik) and that his business was to conjure the
 winds*. (Footnote: Morley, Introduction to the Study of the Maya
 Hieroglyphs, p. 20.) The word means he who covers or controls the
 wind, from mak cover, restrain, control. The god whom such a priest
 served would certainly be the wind god. It was quite general in
 Middle America for a priest to be called by the same name as the god
 he served. Thus in Mexico the priest of Quetzalcoatl was himself
 called quetzalcoatl as his title, and in the plural all such priests
 were quequetzalcoatl. Conversely the priest called h-mak-ik might well
 have been the priest of a god called h-mak-ik "he who controls the
 wind", or simply mak-ik. This then could have been another name for
 Kukulcan (as Ehecatl, wind, was another name for Quetzalcoatl); and I
 take it that it is this name or some very similar one, and not
 "Kukulcan" that is written in the hieroglyphs commonly associated with
 this god. It is possible that the hand-sign plus its suffix equals

[24a]

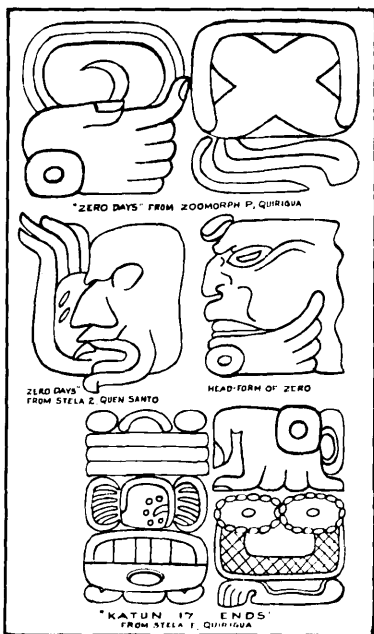


Fig. 8.

mak. It is a "pass", and the one who passes of the name M

in the date is substitution stating number of zeros; thus the cycles, six k and second day "zero days", other a late found that the words out of and the general not, the pre In the number and the glyphs compare such "no clothes" head-variant right middle head-variant

inscriptions announces the end of the

2a } mak. It is also possible that the hand-sign here equals mal or man "pass", and that one form of the deity's name was mal-iq or man-iq, he who passes out or deals out the winds, which could be the source of the name Manik attached to this sign.

Next in consideration come the uses of the hand-sign in the date inscriptions. First, it is used as a sign for zero in substitution for the more usual rosette-like sign for zero, in stating numbers. A Maya number had its unused terms filled out with zeros; thus the period nine cycles six katuns would be stated "nine cycles, six katuns, zero tuns, zero uinals, zero days". The first and second drawings of Fig. 8 show the hand for zero in stating "zero days", one from an early date on Zoomorph P at Quirigua, the other a late date from Quen Santo. On analyzing the ma-series we found that the dominant idea "pass" developed a notable group of words out of the "passing away" nuance, plain ma being a verb cease, and the general negative particle - the interjection noi, the adverb not, the preposition without, and the adjective no, not a, not any. In the numbers then the hand-sign ma is simply phonetic for ma "no", and the glyph-blocks cited are to be read ma qin "no days". We may compare such common Maya expressions as ma qaba "no name", ma buk "no clothes", etc. More common than the plain hand for zero is a head-variant in which a hand replaces the lower jaw - as shown in right middle of Fig. 8. This form follows the analogy of the head-variant numerals.

Declarations of the end of a time period in the inscriptions have long been deciphered. The "ending sign" that announces the fact is often the hand-sign, as in the declaration of the end of the seventeenth katun from Stela E, Quirigua, shown at the

[25a]

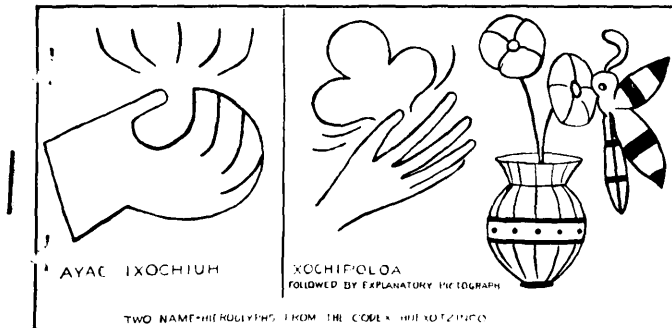


Fig. 9

bottom of Fig
or "has cease
other verbs i
man pass, ma
will be neces
phonetic, and

hand-sign was
and therein a
Out of a cons
in that langu
ma or the wor
Yet the Codex
a hand in the
ayac. Ayac n
of a calyx ov
scribe has tr
On the right
addition of s
xochipoloa, v
"he perishes
lack, fail, }
a vase, prey

hieroglyphs
The katun, a
period that
a cycle of 20

bottom of Fig. 8. This is very likely ma used as a verb; "ceases" or "has ceased", but at the same time it might be any one of several other verbs in the ma-series, such as mal "passes" or "has passed", man pass, mab annul, mas wear out. To determine the exact form it will be necessary to find out whether the lower part of the glyph is phonetic, and if so what its value is.

This negational and terminational value of the hand-sign was evidently taken over into the cruder Aztec sign-system, and therein acquired new phonetic values based on the Nahuatl tongue. Out of a considerable familiarity with Aztec I can see no connection in that language between negational ideas and either the syllable ma or the word for hand. The negative particle in Aztec is a-. Yet the Codex Huexotzinco (Fig. 9 left) shows a hieroglyph in which a hand in the pinching position of Manik has the phonetic value ayac. Ayac means (a) nobody, none, (b) to be no longer. The indication of a calyx over the hand is the sign for xochitl flower, and the scribe has transliterated ayac ixochiuh "nobody's flower". On the right we have essentially the same hieroglyph with the addition of an ideographic determinative used to express the name xochipolca, which could mean either "he destroys the flowers" or "he perishes like a flower". The hand here has the value polca lose, lack, fail, perish, destroy; the determinative is a cut flower in a vase, preyed on by an insect.

We also should consider the hand as a component of hieroglyphs of time periods longer than the katun (phon. qatun). The katun, a little less than twenty years, was the longest Maya period that a man could live through. The next higher period was a cycle of 20 katuns, and its glyph like all time-period glyphs

[26a]

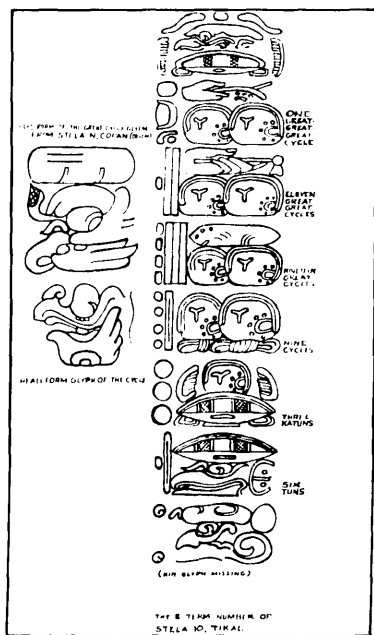


Fig. 10

had two forms
marked by a h
shows this he
without-head
forms of the
head form of
immense perio
necessarily o
of the next t
only from the
Each shows pr
those too lox
mathematical
in the head f
hypothesis th
might be call
began with ma
and from the
jaw stands f
linguistic f
(2) mak 2 me
to denote re
continue, of
recur daily,
and especial

any of these
it is highly

a]

had two forms, head form and without-head form. The head form is marked by a hand for the lower jaw. Fig. 10 bottom of left column shows this head form, while beside it in the long column is the without-head form. Next above these are the head and without-head forms of the next higher period or "great cycle" of 20 cycles. The head form of this period also bears the hand. The glyphs of these immense periods, too long to be used in actual chronology, were necessarily of theoretical use only and are very rare. The glyphs of the next two vigesimal places, 8000 and 160,000 katuns, are known only from the Tikal inscription shown in the long column of Fig. 10. Each shows prominently the hand-sign. So all the higher periods, those too long to be lived through and as it were obtained by mathematical extrapolation, are distinguished by the hand-sign either in the head form or in the only form known. In terms of a phonetic hypothesis this amounts to saying that these periods all had or might be called by names that contained "ma", and that probably began with ma- judging from the Tikal glyphs where the hand is on top and from the analogy of the head form for zero where the hand for a jaw stands for initial ma. With this may be compared the following linguistic facts: (1) the verb man pass, also means surpass, exceed; (2) mak 2 means "superior"; (3) ma acts as a verbal particle (suffixed) to denote remote past, long elapsed time; (4) man 2 means recur, continue, of days and time, and forms compounds like manqin(-t-ah) recur daily, continue day after day; (5) in Quiche mai means time-period and especially the katun.

While present evidence does not permit us to say that any of these forms is present as such in the higher period-glyphs, it is highly probable that the phase of the ma "pass" idea that means

passing by, ex
words represer

The sign known
sun (gin), and
down, and gin.
First, it is :
the Sumerian
tši as well a
Secondly, it :
form, meaning
"no sun", is
in later time

this paper to
By studying t
the sign may
the content i
words and con
come to comp
instance I f:

common am-a.
l(a) ^{lem} -m tš:

The discussi
be deferred
these other

28.

in the

problem.

of the

, lie

present.

es, as in

the value

lected.

similar

en simply

obsolete

used in

signs.

parently

which

tinguish

when we

es. For

side more

=

b len shine).

st however

some of

930)