






# CMGG2 : Consolidated Words and Phrases – Part 2 (Numbers and Calendar-Related Glyphs)

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English	CAT	SUBCAT	Type	Maya	Glyph examples and notes
ISIG	N		P	tzik haab	<div></div> <p>Morley-AlttSotMH.pdfp43.fig24a tzi:&lt;ka.&lt;BAHLAM:HAAB&gt;.ka&gt;</p> <div></div> <p>Morley-AlttSotMH.pdfp43.fig24b tzi:&lt;ka.&lt;XOOK:HAAB&gt;.ka&gt;</p> <div></div> <p>Morley-AlttSotMH.pdfp43.fig24c tzi:&lt;ka.&lt;IXIIM:HAAB&gt;.ka&gt;</p> <div></div> <p>Morley-AlttSotMH.pdfp43.fig24d tzi:&lt;ka.&lt;IK':HAAB&gt;.ka&gt;</p> <div></div> <p>Morley-AlttSotMH.pdfp43.fig24e tzi:&lt;ka.&lt;CHAN:HAAB&gt;.ka&gt;</p> <ul style="list-style-type: none"><li>• The ISIG = “Initial Series Introductory Glyph” is a nickname given when very little was understood about Maya glyphs. At the time, it was noticed that the inscriptions on many monuments began with this extra-large glyph, and that a very regular pattern of glyphs followed it. That pattern was dubbed the “Initial Series”, making this glyph the “Initial Series Introductory Glyph”.<ul style="list-style-type: none"><li>○ It is often found at the very start of an inscription on a stela.</li><li>○ The simplest form of the opening of such an inscription, i.e. the Initial Series is:<ul style="list-style-type: none"><li>▪ ISIG.</li><li>▪ LC – the Long Count: an “odometer” which counts the number of days since the last creation of the world 0.0.0.0.0 (sometimes written as 13.0.0.0.0) corresponding to specific day in the past, with a Julian date in 3114 BCE.</li></ul></li></ul></li></ul>

- Thie LC consists of a *baktun*, *katun*, *tuun*, *winal*, and *k'in* place.
  - The *k'in* corresponding to a day.
  - There are 20 *k'ins* in a *winal*.
  - There are 18 *winals* in a *tuun*.
  - There are 20 *tuuns* in a *katun*.
  - There are 20 *katuns* in a *baktun*.
  - Tzolk'in date – consisting of a number coefficient and a Tzolk'in day name (the Tolk'in and Haab date together form the CR = Calendar Round date).
  - SS: the Supplementary Series – *optional* information about the LC date, in *addition* to the Initial Series.
  - Haab date – consisting of a number coefficient and a Haab month name (the Tolk'in and Haab date together form the CR = Calendar Round date).
  - Most CR's consist of a Tzolk'in date and a Haab date written contiguously. However, *the CR associated with an ISIG* usually has the ISIG, the LC, the Tzolk'in date, followed by the SS, then the Haab date. I.e., the SS comes in the middle of the CR, between the Tzolk'in and Haab date. There are, however, a few instances where the SS comes after Tzolk'in date and a Haab date written contiguously (like most other CR's elsewhere in the inscription).
  - First event of the inscription.
  - Features of the ISIG – it consists of a “fixed” part and a “variable” part:
    - A. Fixed - tripartite:
      - Top: reduced variant of **tzi** (itself a trilobate element).
      - Middle:
        - Two symmetrically placed **ka** syllabograms (“teeth” pointing inwards), flanking the variable element.
        - The two **ka** elements are usually **ka**-combs but can occasionally be the full fish variant of **ka** instead.
        - As **ka**-combs they can also have a sort of “flourish” at the top end – a wavy end (probably emphasizing the fin of the fish).
      - Bottom: **HAAB**.
- There is variation in the middle and bottom – the **ka** elements can flank *only* the variable element, or they can flank both the variable element and the **HAAB** (with the variable element being stacked on top of the **HAAB**). i.e., either:
- tzi:<ka.<variable-element>.ka>:HAAB, or
  - tzi:<ka.<variable-element:HAAB>.ka>
  - B. Variable:
    - This is the patron of the HAAB-month of the CR (Tzolk'in and Haab date) corresponding to the LC.
    - The patrons are according to the following table:

#	Classic Maya name	Colonial Yucatec name	Patron	Mnemonic / Comment
1	K'an-jalaw	Pop	<b>BAHLAM</b> / <b>HIX</b>	The most important mammal, so comes first. MHD sees this as <b>HIX</b> rather than <b>BAHLAM</b> .
2	Ihk'at	Wo	<b>"JGU"</b> / <b>CHUWAJ</b>	The Underworld is a dark (= IHK') place. Alternatively: the Underworld is associated with “woe”.
3	Chakat	Sip	<b>"SNB"/MIIN</b>	The SNB sips blood which is “red” (= CHAK).
4	Suutz'	Sotz'	<b>XOOK</b>	The bat and the shark (and the crocodile) have an unusual, up-turned nose.
5	Kasew	Sek	<b>KAB</b> = “earth” or <b>CHAN</b> = “sky”	<b>Secular</b> = earth (and hence also sky).
6	Chikin	Xul	<b>LEM</b> + anthropomorphic head with a very distinctive line curving from the eye. Dorota: this special long curved line is associated with dwarfs.	XuL: L → <b>LEM</b> .
7	Yaxk'in	Yaxk'in	<b>K'IN</b> / <b>K'INICH</b>	The <i>first</i> K'IN is the most important <b>K'IN</b> .
8	Mol	Mol	<b>AK'AB</b>	Moles live in darkness.
9	Ihk'-sihoom	Ch'en	<b>UH</b> / Chac Chel  Chinchilla-ItCotMG.p434.pdfp11.para2.l-1 (date unclear) says it's the “Lunar Maize God”.	Ihk' → black → darkness, and the moon is most visible in darkness. Alternatively: <u>Ch'en</u> → <u>Chak Chel</u> → Moon Goddess.
10	Yax-sihoom	Yax	Variants (2): • A. Abstract variant: <b>EK'</b> • B. Head variant: “Venus monster”, with long pointed snout	Yax → Y, cut off the bottom of the Y → V → Venus → Chak Ek' → <b>EK'</b> (and “Venus monster” also).

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DNIG	V		M	utz'akaj	<div data-bbox="680 81 792 213"> </div> <div data-bbox="672 213 806 264"> <p>MC.p54.r1.c.1 u:TZ'AK:ka:AJ</p> </div> <div data-bbox="862 81 1001 213"> </div> <div data-bbox="851 213 999 264"> <p>MC.p54.r1.c.2 &lt;u.TZ'AK.ka&gt;:AJ</p> </div> <div data-bbox="692 293 2033 871"> <ul style="list-style-type: none"> <li>• It seems to mean “it was added up” or “it was accumulated” (= a certain time period), and it preceded the actual DN giving that time period. See elsewhere for non-calendrical usage of this verb.</li> <li>• The basic (and most common) variant is a single glyph consisting of abstract intertwined strands (<i>does anyone know the meaning / iconographic origin?</i>). However, the Classic Maya script was so flexible and creative that a series of “double glyphs” arose, to write the same word. These are all read as tz'ak irrespective of what elements are present. In the same way as PAS = KAB:K'IN:CHAN, or WINIKHAAB = &lt;ka.TUUN.ka&gt;.HAAB are not read as combinations / compounds with <b>KAB</b> etc or <b>TUUN</b> etc, but instead as the single word <i>pas</i> or <i>winikhab</i>, so too are these multi-glyph combinations read as the single word tz'ak. Some epigraphers are not keen to break these logograms down into smaller components, but prefer just to view them as a single entity. The members of each pair reflect either polar opposites, or are semantically closely related.</li> <li>• Variants: <ul style="list-style-type: none"> <li>○ A. Light &amp; Darkness.</li> <li>○ B. Sky &amp; Earth.</li> <li>○ C. Blue-green &amp; Yellow (= Primordial &amp; Precious).</li> <li>○ D. Wind &amp; Water.</li> <li>○ E. Cloud &amp; Water.</li> <li>○ F. Star &amp; Moon.</li> <li>○ G. Sun &amp; Moon.</li> <li>○ H. Male &amp; Female.</li> <li>○ I. Leaf &amp; Food.</li> <li>○ J. Darkness &amp; Penitence.</li> <li>○ K. Bloodletter &amp; Blood.</li> <li>○ L. Claw and Tooth.</li> <li>○ M. Other.</li> </ul> </li> </ul> </div> <hr/> <div data-bbox="680 935 1066 1031"> </div> <div data-bbox="669 1032 851 1085"> <p>K&amp;L.p40 TZ'AK = K'IN.AK'AB</p> </div> <div data-bbox="1104 935 1256 1031"> </div> <div data-bbox="1099 1032 1283 1085"> <p>TOK.p35.r2.c1 TZ'AK = K'IN.AK'AB</p> </div> <div data-bbox="1339 1032 1523 1085"> <p>= BMM9,p21.r3.c2 TZ'AK = K'IN.AK'AB</p> </div> <div data-bbox="680 1114 837 1214"> </div> <div data-bbox="669 1220 806 1273"> <p>TOK.p35.r4.c4 AK'AB.K'IN</p> </div> <div data-bbox="898 1110 1050 1222"> </div> <div data-bbox="893 1220 1084 1273"> <p>MC.p54.r2.c.1 u.&lt;K'IN.AK'AB&gt;:AJ&gt;</p> </div> <div data-bbox="674 1295 792 1407"> </div> <div data-bbox="669 1407 987 1436"> <p>Skidmore-ULoENR.p24.fig1 (Grube)</p> </div> <div data-bbox="1050 1295 1173 1407"> </div> <div data-bbox="1046 1407 1357 1436"> <p>Stuart-TifTXIX.p100.pdfp52.fig71b</p> </div>
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NAR Altar 2 D6  
u:TZ'AK:wi

PAL Bodega #208  
u.<TZ'AK:AJ>

- This is the juxtaposition of opposites: “light” and “dark”.
- Why the unusual ending on TZ'AK in NAR Altar 2 D6: u:TZ'AK:wi? u- usually goes with *transitive* verbs, but then with a -wa ending. The -wi is the marker for the anti-passive, in which case there is no u-. Dorota: no known explanation current – Dorota will try to find (known to be somewhere in the TOK lectures)



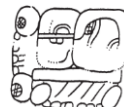
TOK.p35.r2.c2

TZ'AK = CHAN.K'AB



BMM9.p21.r3.c3

TZ'AK = CHAN.KAB



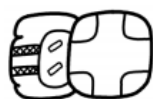
Stuart-TifTXIX.p100.pdfp52.fig71c  
CPN Temple XI East Door South Panel B4  
u.<TZ'AK:AJ>

- This is the juxtaposition of opposites: “sky” and “earth”.



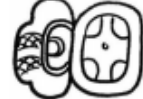
K&L.p40

TZ'AK = YAX.K'AN



TOK.p35.r3.c2

TZ'AK = YAX.K'AN



BMM9.p21.r3.c4

TZ'AK = YAX.K'AN



Greene (preliminary drawing, Mesoweb)  
PAL Temple 19 West Plate D4  
u.<TZ'AK:AJ>



Stuart-TifTXIX.p100.pdfp52.fig71a  
PAL Temple 19 West Plate D4  
u.<TZ'AK:AJ>

- This is the juxtaposition of two closely related concepts: “blue-green” and “yellow”.



K&L.p40  
PAL Tablet of 96 Glyphs G  
TZ'AK = IK'.HA'



TOK.p35.r2.c3

TZ'AK = IK'.HA'



TOK.p35.r2.c4

TZ'AK = IK'.HA'



MC.p54.r2.c2 ~ K&L.p40  
u.<TZ'AK:AJ>



Stuart-TifTXIX.p100.pdfp52.fig71d  
CPN HS1 Step 53  
u:TZ'AK:AJ

- This is the juxtaposition of two closely related concepts: “wind” and “water”.



K&L.p40



TOK.p35.r3.c3



Stuart-TifTXIX.p100.pdfp52.fig71e  
CPN Temple XI East Door North Panel C1  
u.<TZ'AK:AJ>

TZ'AK

TZ'AK

- This is the juxtaposition of two closely related concepts: “cloud” and “water”.



K&L.p40



TOK.p35.r4.c1

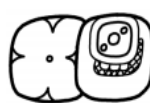


Stuart-TifTXIX.p100.pdfp52.fig71j (Schele)  
PAL Tablet of the 96 Glyphs E7  
u.<TZ'AK:AJ>

TZ'AK

TZ'AK

- This is the juxtaposition of two closely related concepts: “star” and “moon”.



TOK.p35.r3.c1



Stuart-TifTXIX.p100.pdfp52.fig71k  
ZPT Altar 1 A1  
u.<TZ'AK:AJ>

TZ'AK

- This is the juxtaposition of opposites: “sun” and “moon”.
- K&L.p40 is probably PAL Tablet of 96 Glyphs E7, and TOK.p35.r4.c1 is probably based on it.
- TOK.p35.r4.c1 is an independent example.
- Note that there are two sub-variants here: EK' + UH or K'IN + UH.



K&L.p40



TOK.p35.r4.c3



Stuart-TifTXIX.p100.pdfp52.fig71i  
CPN Temple XI East Door South Panel A1  
TZ'AK

TZ'AK

TZ'AK = “FEMALE”. “MALE”

- This is the juxtaposition of opposites: “female” and “male”.



TOK.p35.r3.c4

TZ'AK

- This is the juxtaposition of two closely related concepts: “leaf” (for wrapping the tamale) and “food” (the tamale itself).



TOK.p35.r4.c2

TZ'AK = AKAN.<another-god>

- This is the juxtaposition of two closely related concepts: “darkness” and “penitence”.
- TOK.p35.r4.c2:
  - The left half could be either the head variant of AK'AB (which can have a % -sign) or AKAN.
  - The right half could either be a head variant of CH'AB, or the logogram for a different god, i.e. this TZ'AK is two different gods combined; the infixed “la” is unusual as there is no known god with a “la” in the forehead.



TOK.p35.r5.c1

TZ'AK = KOKAN:CH'ICH'



Stuart-TifTXIX.p100.pdfp52.fig71g

TNA M.20 D1

<u.TZ'AK>:AJ

- This is the juxtaposition of two closely related concepts: “bloodletter” and “blood”.



TOK.p35.r5.c2

TZ'AK = OX:ye

- This is the juxtaposition of two closely related concepts: “claw” and “tooth” – the things which make a wild animal dangerous?.
- TOK.p35.r5.c2 – Dorota: more likely to be OX (K&L.p12.) than ICH'AAK because it doesn't have any claws at the end; note that “claw” and “tooth” fit together quite well as things used in eating meat (this interpretation confirmed by AT-E1168-lecture5.t0:55:42 – this reference is incorrect).



Stuart-TifTXIX.p100.pdfp52.fig71f

CPN HS1 Step 42

<?:OHL>.<HA'?:AJ>











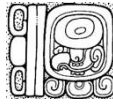


Stuart-TifTXIX.p100.pdfp52.fig71h





PAL Tablet of the 96 Glyphs D8







u.<TZ'AK>:AJ>

- These are remaining miscellaneous examples which are difficult to classify.







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|              |   |         |   |                            | <ul style="list-style-type: none"> <li>CPN HS1 Step 42: “food” and “water”?</li> <li>PAL Tablet of the 96 Glyphs D8: “two skulls”?</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Imix (day 1) | N | CAL-D01 | D | “{YUK}IMIX” / imox? / ha’? | <div>  MC  K&amp;L.p57.r1.c7-c8  MHD.XE2 </div> <div>  K&amp;L.p57.r1.c1-c4  K&amp;L.p57.r1.c6  MHD.XE1a.1&amp;2 </div> <div>  MHD.SS2c.1&amp;2 </div> <div>  K&amp;L.p57.r1.c5  IC.p14  MHD.SS4a  Stuart<br/>PNG Stela 3 E2 </div> <ul style="list-style-type: none"> <li>The 1st day of the Tzolk’in calendar.</li> <li>Do not confuse the day name IMIX with the phonetically (slightly) similar <b>IXIIM</b> = “Tonsured Maize God” (it’s almost a “swap” of the two syllables). <ul style="list-style-type: none"> <li>IMIX is not the Classic Maya pronunciation of this day name anyway – this is just the Yucatec version, used by epigraphers because the Classic Maya pronunciation is not fully clear.</li> </ul> </li> <li>Variants (3): <ul style="list-style-type: none"> <li>A. Abstract – <b>HA’</b> or <b>ba</b> in a day name cartouche: <ul style="list-style-type: none"> <li>Top – a circular element with “dot necklace” below, with the circular element being: <ul style="list-style-type: none"> <li>A cross-hatched circle: this is <b>HA’</b> in a cartouche.</li> <li>A circle with a slightly curved arc (optionally bold): this is <b>ba</b> in a cartouche.</li> </ul> </li> <li>Bottom: “blades of grass”</li> </ul> </li> <li>B. Head 1 – the Waterlily Serpent represents water, which is the connection to the abstract variant. <ul style="list-style-type: none"> <li>It’s infixed with the abstract variant of <b>HA’</b> at the top of the head.</li> </ul> </li> <li>C. Head 2 – the Waterlily Serpent represents water, which is the connection to the abstract variant. <ul style="list-style-type: none"> <li>It’s infixed with large circle in the top of the head, with a “washer” (“<b>PET</b>”) in it,</li> <li>There is yet a sub-variant of this with the “washer” replaced by a small circle with a small crescent in it (tips pointing upwards). <ul style="list-style-type: none"> <li>This variant is given in K&amp;L.p57.r1.c5.</li> <li>I haven’t been able to find it in MHD. It’s not one of the hits for “blcodes = SS4a” (a sub-variant of the “<b>PET</b>” one, see below).</li> </ul> </li> </ul> </li> </ul> </li> </ul> <p>Identifying these particular variants and sub-variants is somewhat arbitrary – one could just as easily call the difference between the abstract variant with infixed <b>HA’</b> vs. infixed <b>ba</b> as two different variants; or class Head 1 and Head 2 as a single variant, with 3 sub-variants <b>HA’/ba</b>, “washer”, or “crescent”; etc.</p> <ul style="list-style-type: none"> <li>MHD codes:</li> </ul> |












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|                |   |         |   |                        | <ul style="list-style-type: none"> <li>○ XE2: abstract variant with <b>HA'</b>.</li> <li>○ XE1: abstract variant with <b>ba</b>.</li> <li>○ SS2c: Waterlily Serpent with abstract element infixed in the top of the head.</li> <li>○ SS4a: Waterlily Serpent with "PET" infixed in top of head.</li> <li>• MHD statistics (2024-06-20) – "blengl contains IMIX" gives 187 hits, consisting of: <ul style="list-style-type: none"> <li>○ "blengl contains IMIX" and "blcodes contains XE2": 136 hits (<b>HA'</b> variant).</li> <li>○ "blengl contains IMIX" and "blcodes contains XE1": 62 hits (<b>ba</b> variant).</li> <li>○ "blengl contains IMIX" and "blcodes contains SS2c": 12 hits (Waterlily Serpent with <b>HA'</b>).</li> <li>○ "blengl contains IMIX" and "blcodes contains SS4a": 3 hits (Waterlily Serpent with <b>PET</b>).</li> <li>○ "blengl contains IMIX" and "blcodes does not contain &lt;any-of-the-above&gt;": 12 hits (unreadable, deduced from context – the glyph in the cartouche is transliterated as 000).</li> </ul> </li> </ul> <p>136 + 62 + 12 + 3 + 12 = 225. The difference between 225 and 187 is overwhelmingly due to the hits which are transliterated as XE1/XE2 because it's unclear whether the glyph in the cartouche is <b>HA'</b> or <b>ba</b>, i.e. whether the circular element at the top is a cross-hatched circle or a circle with an arc in it:</p> <ul style="list-style-type: none"> <li>○ "blengl contains IMIX" and "blcodes contains /": 38 hits (37 of them are XE1/XE2, 1 of them is SS2c/SS4a).</li> </ul> |
| Ik' (day 2)    | N | CAL-D02 | D | "{YUK}IK'" / ik'       |  <p>MC</p>  <p>MC</p>  <p>MC</p> <ul style="list-style-type: none"> <li>• The 2nd day of the Tzolk'in calendar.</li> <li>• Variants (3): <ul style="list-style-type: none"> <li>○ A. A bold-T.</li> <li>○ B. A "cursive"-T.</li> <li>○ C. Head: human head with lips and IL on the cheek, with a "bold-T" for <b>IK'</b> = "wind", "breath" within a cartouche, in the right side of the head.</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Ak'bal (day 3) | N | CAL-D03 | D | "{YUK}AK'BAL" / ak'ab? |  <p>MC</p> <ul style="list-style-type: none"> <li>• The 3rd day of the Tzolk'in calendar.</li> <li>• Variants (1): <ul style="list-style-type: none"> <li>○ A. The logogram <b>AK'AB</b> in a blood cartouche.</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |






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| K'an (day 4)     | N | CAL-D04 | D | "{YUK}K'AN"            | <br>MC<br><br>Safronov<br>Houston Panel B5<br><ul style="list-style-type: none"> <li>• The 4th day of the Tzolk'in calendar.</li> <li>• Variants (1): <ul style="list-style-type: none"> <li>◦ A. The logogram <b>OHL/WAAJ</b> in a blood cartouche.</li> </ul> </li> <li>• Houston Panel B5 shows a very unusual form of K'AN: <ul style="list-style-type: none"> <li>◦ An unclear form of the LEM-like element hanging from the ceiling is present, and the concentric circles appear to be a variation on the "lipped-U on two pillars" present in more conventional forms of <b>K'AN</b>.</li> <li>◦ We nevertheless know that this is K'AN because the LC is clear and the CR corresponding to it requires that the Tzolk'in day-name be <b>K'AN</b>.</li> <li>◦ It certainly helps that the glyph at B5, though not obviously K'AN, is not entirely incompatible with such a reading.</li> </ul> </li> </ul> |
| Chikchan (day 5) | N | CAL-D05 | D | "{YUK}CHIKCHAN" / kan? | <br>MC<br><br>MC<br><ul style="list-style-type: none"> <li>• The 5th day of the Tzolk'in calendar.</li> <li>• Variants (2): <ul style="list-style-type: none"> <li>◦ A. Two NE-SW sloping dots.</li> <li>◦ B. CHAN.</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Kimi (day 6)     | N | CAL-D06 | D | "{YUK}KIMI" / chamel?  | <br>MC<br><br>MC<br><ul style="list-style-type: none"> <li>• The 6th day of the Tzolk'in calendar.</li> <li>• Variants (2):</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |







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|               |   |         |   |                        | <ul style="list-style-type: none"> <li>○ A. Mirror imaged %-sign.</li> <li>○ B. CHAM = “death”</li> <li>• Do not confuse (the skull-variant of) KIMI with EB. They are both skull-based day names, but the distinguishing characteristic of EB is the “left half of a crescent” (with the left tip pointing down) and with a dotted protector (usually in the top right or right). This crescent is not present in KIMI, which has instead (optionally) a %-sign.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Manik (day 7) | N | CAL-D07 | D | “{YUK}MANIK” / chij?   | <br>MC <ul style="list-style-type: none"> <li>• The 7th day of the Tzolk'in calendar.</li> <li>• Variants (1): <ul style="list-style-type: none"> <li>○ A. A syllabogram <b>chi</b> in a blood cartouche.</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Lamat (day 8) | N | CAL-D08 | D | “{YUK}LAMAT” / lambat? | <br>MC<br>MC<br>MC <ul style="list-style-type: none"> <li>• The 8th day of the Tzolk'in calendar.</li> <li>• Variants (3): <ul style="list-style-type: none"> <li>○ A. Abstract – full variant of <b>EK'</b>.</li> <li>○ B. A “face” – divided in a top and bottom half by a slightly curved horizontal line through the middle: <ul style="list-style-type: none"> <li>▪ Top: “HIX-like”: <ul style="list-style-type: none"> <li>• Tiny non-touching dots along the ceiling, on the inside (= a ceiling with dotted reinforcement).</li> <li>• “Grass blades” along the floor.</li> </ul> </li> <li>▪ Bottom: reduced variant of <b>EK'</b> – the “bottom half” resembling two eyes and nose of a face.</li> </ul> </li> <li>○ C. Normal (profile) animal head (looking left) – divided into three sub-areas: <ul style="list-style-type: none"> <li>▪ Left: Bird head with “HIX-like” eye and S-shaped forehead ornament.</li> <li>▪ Middle: an element shaped like a shepherd's crook.</li> <li>▪ Right: 90 degrees anticlockwise reduced variant of <b>EK'</b> (= the “bottom half” resembling two eyes and nose of a face, but rotated).</li> </ul> </li> </ul> </li> </ul> |
| Muluk (day 9) | N | CAL-D09 | D | “{YUK}MULUK”           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

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|             |   |         |   |                 | <p>MC</p>  <p>MC</p>  <p>MC</p>  <p>MC</p>  <p>Safronov<br/>Phoenix "Po" Panel B4<br/>5:MULUK</p> <ul style="list-style-type: none"> <li>• The 9th day of the Tzolk'in calendar.</li> <li>• Variants (5): <ul style="list-style-type: none"> <li>◦ A. <b>mo</b>.</li> <li>◦ B. 90 degrees clockwise rotated <b>lo</b>.</li> <li>◦ C. Gopher head: <b>BAAH</b>.</li> <li>◦ D. Inverted vase: upside-down, very thin-lipped vase, with a "wood property marker" in the middle (= very slightly curved vertical line, going from slightly right of the centre at the top to very slightly left of centre at the bottom).</li> <li>◦ E?. Phoenix "Po" Panel B4 doesn't look like a MULUK, but the Haab date (coefficient and month-name) and the Tzolk'in coefficient all match the LC, so there is every reason to accept the day-name corresponding to the LC of this inscription. Perhaps it's a variant of the gopher head ("C")?</li> </ul> </li> </ul> |
| Ok (day 10) | N | CAL-D10 | D | "{YUK}OK" / ok? |  <p>MC</p>  <p>(lost reference)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |




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|                 |   |         |   |                            |  <p>MC</p> <ul style="list-style-type: none"> <li>The 10th day of the Tzolk'in calendar.</li> <li>Variants (2): <ul style="list-style-type: none"> <li>A. Representational – animal head: <ul style="list-style-type: none"> <li>The head of a dog, also read <b>OK/OOK</b> without the cartouche.</li> <li>Some variants (known to be <b>OK/OOK</b> from calendrical calculations) can look surprisingly like a bird head.</li> </ul> </li> <li>B. Abstract <ul style="list-style-type: none"> <li>I don't know what this is derived from.</li> </ul> </li> </ul> </li> </ul>                                                                                                                                                                                                                      |
| Chuwen (day 11) | N | CAL-D11 | D | "{YUK}CHUWEN"<br>/ chuwen? |  <p>MC</p>  <p>MC</p>  <p>IC.p14.c2.r1.3</p>  <p>Greene<br/>PAL PT B6<br/>9.CHUWEEN</p> <ul style="list-style-type: none"> <li>The 11th day of the Tzolk'in calendar.</li> <li>Variants (3): <ul style="list-style-type: none"> <li>A. Abstract <b>se</b>-like: it resembles a <b>se</b> or the variant of <b>cha</b> without feelers.</li> <li>B. Abstract <b>WINIK</b>-like: it resembles the abstract variant of <b>WINIK</b>.</li> <li>C. Head: IC.p14.c2.r1.3 and PAL PT B6 show a head variant of <b>CHUWEEN</b>.</li> </ul> </li> </ul> |
| Eb (day 12)     | N | CAL-D12 | D | "{YUK}EB"                  |  <p>MC</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |





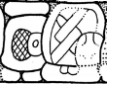

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|              |   |         |   |            |  <p>Graham = Coll-1<br/>YAX Stela 18 A2</p> <ul style="list-style-type: none"> <li>The 12th day of the Tzolk'in calendar.</li> <li>Variants (1): <ul style="list-style-type: none"> <li>A. Skull: <ul style="list-style-type: none"> <li>A skull with the expected bone jaw in the bottom left.</li> <li>In the top right or middle of the right wall: half of a horizontally oriented crescent pointing downwards (left half) with a dotted protector on the outside.</li> </ul> </li> </ul> </li> <li>The YAX Stela 18 A2 example has a crescent which is larger than in most other examples – the tip even touches the inside “floor” of the cartouche (and is, in the Coll-1 example, quite heavily cross-hatched).</li> <li>Do not confuse EB with (the skull-variant of) KIMI. They are both skull-based day names, but the distinguishing characteristic of EB is the “left half of a crescent” (with the left tip pointing down) and with a dotted protector (usually in the top right or right). This crescent is not present in KIMI, which has instead (optionally) a %-sign.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Ben (day 13) | N | CAL-D13 | D | “{YUK}BEN” |  <p>MC</p>  <p>Safronov<br/>PNG Panel 3 A7</p> <p>25EMC.pdfp6.r3.c7</p> <ul style="list-style-type: none"> <li>The 13th day of the Tzolk'in calendar.</li> <li>Variants (2): <ul style="list-style-type: none"> <li>A. Abstract – single horizontal line dividing the boulder outline into a top and bottom half (optionally bold): <ul style="list-style-type: none"> <li>Top half: two non-touching dots in the ceiling.</li> <li>Bottom half, either: <ul style="list-style-type: none"> <li>Two struts, or</li> <li>A single strut, with an L-shaped band from the ceiling down to halfway, the leg turning to the left, “under” the single strut.</li> </ul> </li> </ul> </li> <li>B. Head: <ul style="list-style-type: none"> <li>Essentially the elements of the abstract variant, in an anthropomorphic head.</li> <li>In the head variant, it can happen that the (sometimes slightly curved) horizontal line on two struts in <b>BEN</b> becomes a “lipped-U” (still on two struts). The normally non-touching two dots at the top of <b>BEN</b> can also merge to resemble the “<b>LEM</b>” at the top of <b>OHL</b>. When that happens, the head variant of <b>BEN</b> and the head variant of <b>OHL</b> can be easily confused. The presence or absence of the blood-cartouche is a good way to distinguish them, but even this is not infallible. It's rare for day-names to not have a blood-cartouche, but it does occur, as can be seen in both PNG Panel 3 A7 and 25EMC.pdfp6.r3.c7 (both being <b>BEN</b>, but without the blood-cartouche). Context is the best guide in such extreme cases.</li> </ul> </li> </ul> </li> </ul> |








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| Ix (day 14)  | N | CAL-D14 | D | "{YUK}IX" / hix?      |  <p>MC</p>  <p>Montgomery = Coe&amp;Benson-TMRPaDO.p12.fig4 = MHD (Houston) = Safronov<br/>DO - Unprovenanced Wall Panel B5</p> <ul style="list-style-type: none"> <li>• The 14th day of the Tzolk'in calendar.</li> <li>• Variants (2): <ul style="list-style-type: none"> <li>○ A. Full-frontal jaguar head: resembles/identical to the logogram <b>HIX</b>.</li> <li>○ B. Profile jaguar head: DO - Unprovenanced Wall Panel B5 is the head variant of HIX, where the "mammal ear" is more visible in the Coe &amp; Benson drawing and even more so in the Houston and Safronov drawings.</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Men (day 15) | N | CAL-D15 | D | "{YUK}MEN" / tz'ikin? |  <p>MC.1</p>  <p>MC.2</p> <ul style="list-style-type: none"> <li>• The 15th day of the Tzolk'in calendar.</li> <li>• Variants (2): <ul style="list-style-type: none"> <li>○ A. Representational: <ul style="list-style-type: none"> <li>▪ The head of a bird. Perhaps just the logogram TZ'IKIN in a blood cartouche.</li> <li>▪ A "LEM" in the top of the head.</li> <li>▪ An "ajaw band"?</li> </ul> </li> <li>○ B. Abstract: more a stylized version of the representational variant than an actual "abstract" glyph – the beak and eye of the bird head are still detectable.</li> </ul> </li> <li>• BeliaevEtAl-PAEdPF6.p197.pdfp206.Transcripción.I+6 reads the day-name "MEN" as TZ'IKIN in Classic Maya (for the transliteration and transcription), going to Men in the Spanish translation, which is the Yucatec name borrowed into Spanish and English.</li> <li>• Do not confuse the (Yucatec) day-name <i>Men</i> (TZ'IKIN in Classic Maya) with the (Yucatec) month-name <i>Xul</i> (CHIKIN in Classic Maya – <b>sometimes TZIKIN?</b>).</li> </ul> |
| Kib (day 16) | N | CAL-D16 | D | "{YUK}KIB"            |  <p>MC</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |








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|                  |   |         |   |                     | <ul style="list-style-type: none"> <li>The 16th day of the Tzol' in calendar.</li> <li>Variants (1) - features: <ul style="list-style-type: none"> <li>Resembles an inverted <b>OHL</b> within the blood cartouche.</li> <li>Instead of two struts at the top (above the inverted lipped-u) cross-hatched or otherwise, the area <i>between</i> the two struts is cross-hatched.</li> <li>The middle of the floor has a bold loop or semi-circle, while the equivalent spot in the middle of the ceiling of OHL tends to be more of a "LEM"-like full circle or oval.</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Kaban (day 17)   | N | CAL-D17 | D | "{YUK}KABAN" / kab? |  <p>MC</p> <ul style="list-style-type: none"> <li>The 17th day of the Tzol' in calendar.</li> <li>Variants (1) - features: <ul style="list-style-type: none"> <li>Typically, a cross-hatched circle in the top left, protected on the right by a curved arc ending in a roughly vertical squiggle.</li> <li>Typically a cross-hatched circle, protected on the top and left by a curved arc ending in a roughly horizontal squiggle.</li> </ul> </li> <li>Very similar to KAWAK: <ul style="list-style-type: none"> <li>In KAWAK, the top left element is replaced by "stalactite" / "bunch of grapes".</li> <li>In KAWAK, the bottom right element is replaced by a "pond".</li> </ul> </li> <li>AT-YT2021-lecture22.t0:33:30: <i>Kaban</i> is an auspicious day.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Etz'nab (day 18) | N | CAL-D18 | D | "{YUK}ETZ'NAB"      |  <p>MC</p>  <p>MHD.ZCM</p>  <p>MC</p>  <p>MHD.ZC7.1&amp;2</p>  <p>MHD (W. Coe)<br/>TIK Stela 31</p> <ul style="list-style-type: none"> <li>The 18th day of the Tzol' in calendar.</li> <li>Variants (2): <ul style="list-style-type: none"> <li>A. "Squiggly X": <ul style="list-style-type: none"> <li>MHD indicates that iconographically this glyph represents a "flint/chert".</li> <li>This is an "X"/"diagonal cross" consisting of two lines, each line with many tiny waves.</li> <li>There is a variant of <b>TOOK'</b> = "flint" which has a similar "wavy-X" in the centre.</li> </ul> </li> <li>B. "KAWAK-based": <ul style="list-style-type: none"> <li>MHD indicates that iconographically this glyph is a "'Kawak" sign with blade?" (with a question mark).</li> <li>Left: <ul style="list-style-type: none"> <li>Approximately a vertical rectangle, but with a very slightly wider top half, creating a slightly protrusive "beak" on the left.</li> <li>A "pond" (with dotted protector) in the bottom right.</li> </ul> </li> <li>Right: <ul style="list-style-type: none"> <li>A much narrower vertical rectangle with the two ends marked off (and slightly wider than the middle section of the rectangle).</li> <li>With a dotted reinforcement to the left of the right wall.</li> </ul> </li> </ul> </li> </ul> </li> </ul> |
















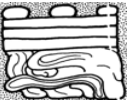
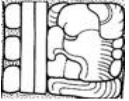
|                |   |         |   |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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|                |   |         |   |                        | <ul style="list-style-type: none"> <li>Statistics: <ul style="list-style-type: none"> <li>“Squiggly X” - search in MHD (2024-06-28) on “blcodes contains ZCM”: <ul style="list-style-type: none"> <li>The search gives 6 hits – 1 from MQL, 1 from BPK region, and 4 from YAX. Of these last 4, 2 are from one monument, and the remaining 2 from one monument each.</li> <li>Extending the search to “All - Blocks” (including the codices) gives no additional hits.</li> <li>All instances are carved on stelae, lintels, or hieroglyphic stairways.</li> </ul> </li> <li>“KAWAK-based” - search in MHD (2024-06-28) on “blcodes contains ZC7”: <ul style="list-style-type: none"> <li>The search gives 5 hits – 1 from BLK (Balakbal), 1 from TIK, and 3 from UAX.</li> <li>Extending the search to “All - Blocks” (including the codices) gives no additional hits.</li> <li>The BLK and TIK instances are carved on stelae while the three UAX instances are from a single mural.</li> </ul> </li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Kawak (day 19) | N | CAL-D19 | D | “{YUK}KAWAK” / chahuk? |  <p>MC</p> <ul style="list-style-type: none"> <li>The 19th day of the Tzolk'in calendar.</li> <li>Variants (1) - features: <ul style="list-style-type: none"> <li>Typically, a “stalactite” / “bunch of grapes” in the top left, though this can be missing. <ul style="list-style-type: none"> <li>Top: triangle of touching-dots.</li> <li>Bottom: squiggly vertical line.</li> </ul> </li> <li>Typically a “pond” in the bottom right (can be slightly raise, to be slightly higher on the right wall). <ul style="list-style-type: none"> <li>Cross-hatched circle: some of the bottom right of the circle is <i>always</i> lost to the surrounding “TV screen” (as it always touches the “TV screen” along a short arc, never at just one point). This results in only 7/8 to 1/2 a circle.</li> <li>A dotted arc on the outside of the cross-hatched circle.</li> </ul> </li> </ul> </li> <li>Very similar to KABAN: <ul style="list-style-type: none"> <li>In KABAN, the “stalactite” / “bunch of grapes” is replaced by a cross-hatched circle, protected on the right by a curved arc ending in a roughly vertical squiggle.</li> <li>In KABAN, the “pond” is replaced by a cross-hatched circle, protected on the top and left by a curved arc ending in a roughly horizontal squiggle.</li> </ul> </li> <li>There is a full syllabogram-only spelling of <b>cha-hu-ku</b> → <i>chahuk</i> = “lightning”, but it’s unclear to me whether that has any relationship to the tentatively proposed Classical Maya word for the day name Kawak. <ul style="list-style-type: none"> <li>The words <i>kawak</i> and <i>chahuk</i> do have some phonetic resemblance, though it’s unclear to me if they truly are etymologically related.</li> <li>The glyph enclosed in the blood cartouche is KAWAK = “stone”, which isn’t that closely associated with lightning. KAB (for the day name Kaban) = “earth” might have a slightly greater connection (as lightning striking the earth was perhaps thought to be a source of fertility for the earth?), but this glyph is KAWAK and not KAB anyway.</li> </ul> </li> </ul> |
| Ajaw (day 20)  | N | CAL-D20 | D | “{YUK}AJAW” / ajaw     |  <p>MC</p>  <p>MC</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |







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|               |   |         |   |                                    |  <p>MC</p>  <p>MC</p> <ul style="list-style-type: none"> <li>• The 20th day of the Tzolk'in calendar.</li> <li>• Variants (4): <ul style="list-style-type: none"> <li>◦ A. (Full-frontal) "la-face" or "ajaw-face": resembles / identical to <b>XAAK/SAAK</b>, signifying a seed.</li> <li>◦ B. (Typical) <b>AJAW</b> head: the representational variant of <b>AJAW</b> – an anthropomorphic head of a man of medium age (neither distinctly young nor old), dot on cheek (often cross-hatched), optionally with an "ajaw-band".</li> <li>◦ C. Full-figure: the full-figure variant of <b>AJAW</b>.</li> <li>◦ D. Vulture: the head of a vulture, with the very distinctive hooked beak.</li> </ul> </li> </ul> |
| Pop (month 1) | N | CAL-M01 | B | k'an jalaw / k'an jalbu / {YUK}pop |  <p>MC.1<br/>&lt;&lt;[K'AN]JAL&gt;:wa&gt;.bu&gt;</p>  <p>MC.2<br/>&lt;[K'AN]JAL&gt;:bu</p>  <p>Gronemeyer<br/>TRT Wooden Box N2<br/>&lt;5:WI'&gt;.&lt;&lt;[K'AN]JAL&gt;:bu&gt;</p> <ul style="list-style-type: none"> <li>• The 1st month of the Haab calendar.</li> <li>• The most common spelling is <b>K'AN-JAL-wa</b>: <ul style="list-style-type: none"> <li>◦ MC.2 and TRT Wooden Box N2b are examples with the less common spelling, with a <b>bu</b> rather than a <b>wa</b> ending.</li> <li>◦ MC.1 is an example of an even more unusual spelling, with both <b>wa</b> and <b>bu</b>.</li> </ul> </li> </ul>       |
| Wo (month 2)  | N | CAL-M02 | B | ihk'at / {YUK}wo                   |  <p>MC<br/>IHK'.&lt;AT:ta&gt;</p> <ul style="list-style-type: none"> <li>• The 2nd month of the Haab calendar.</li> <li>• Either: <ul style="list-style-type: none"> <li>◦ <b>AT</b> is a logogram whose meaning has been lost, so <i>ihk'at</i> = "black &lt;something&gt;", or</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |





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|                 |   |         |   |                     | <ul style="list-style-type: none"> <li>○ <b>AT</b> is being used as a rebus to write the word <i>ihk'at</i>, whose meaning has also been lost (and where the <i>ihk'</i> does not mean “black”). Given that <i>ihk'at</i> and <i>chakat</i> are two successive months of the Haab calendar, the former is almost definitely the case, as it's highly unlikely that there would be two independent words <i>ihk'at</i> and <i>chakat</i> with independent meanings, when <i>ihk'</i> and <i>chak</i> themselves mean “black” and “red”.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Sip (month 3)   | N | CAL-M03 | B | chakat / {YUK}sip   |  <p>MC<br/>CHAK:AT:ta</p> <ul style="list-style-type: none"> <li>• The 3rd month of the Haab calendar.</li> <li>• Either: <ul style="list-style-type: none"> <li>○ <b>AT</b> is a logogram whose meaning has been lost, so <i>chakat</i> = “great/red &lt;something&gt;”, or</li> <li>○ <b>AT</b> is being used as a rebus to write the word <i>chakat</i>, whose meaning has also been lost (and where the <i>chak</i> does not mean “great”/“red”).</li> </ul> </li> </ul> <p>Given that <i>ihk'at</i> and <i>chakat</i> are two successive months of the Haab calendar, the former is almost definitely the case, as it's highly unlikely that there would be two independent words <i>ihk'at</i> and <i>chakat</i> with independent meanings, when <i>ihk'</i> and <i>chak</i> themselves mean “black” and “red”.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Sotz' (month 4) | N | CAL-M04 | B | suutz' / {YUK}sotz' |  <p>MC<br/>SUUTZ'</p> <ul style="list-style-type: none"> <li>• The 4th month of the Haab calendar.</li> <li>• Iconographically, a leaf-nosed bat.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Sek (month 5)   | N | CAL-M05 | S | kasew / {YUK}sek    | <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>MC.1<br/>ka:se:wa</p> </div> <div style="text-align: center;">  <p>MC.2<br/>ka:se:wa</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;">  <p>MC.3<br/>&lt;ka[se]&gt;:wa</p> </div> <div style="text-align: center;">  <p>Safronov<br/>BPK SS5 B1<br/>9.&lt;&lt;ka[*se]{w}&gt;&gt;</p> </div> <div style="text-align: center;">  <p>Coll-1<br/>YAX Lintel 10 E5b (bottom)<br/>2.&lt;&lt;&lt;ka[*se]&gt;:wa&gt;&gt;</p> </div> </div> <ul style="list-style-type: none"> <li>• The 5th month of the Haab calendar.</li> <li>• MC.2 uses the known “skull” variant of <b>se</b>.</li> <li>• While normally spelled <b>ka-se-wa</b> with the “comb” variant of <b>ka</b>, there are occasional forms with just a fish head or full fish, e.g. MC.3, BPK SS5 B1, and YAX Lintel 10 E5b (bottom). <ul style="list-style-type: none"> <li>○ In such cases, the <b>se</b> would quite naturally be infixed in the <b>ka</b>.</li> <li>○ In the case of BPK SS5 B1, the -w is underspelled.</li> </ul> </li> </ul> |

|                   |   |         |   |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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| Xul (month 6)     | N | CAL-M06 | B | chikin / {YUK}xul        |  <p>MC<br/>CHIKIN:ni</p> <ul style="list-style-type: none"> <li>The 6th month of the Haab calendar.</li> <li>This comes from <b>CHIK</b> = “coati” (perhaps used as a rebus) + <b>ni</b> → <i>chikin</i>. This should help in remembering that it’s not <i>ch’ikin</i> nor <i>chik’in</i>.</li> <li>Do not confuse this CHIKIN in Classic Maya (Yucatec <i>month-name Xul</i>) with the phonetically similar TZ’IKIN in Classic Maya (Yucatec <i>day-name Men</i>). <ul style="list-style-type: none"> <li><b>CHIKIN</b> will almost always have an end phonetic complement <b>ni</b>.</li> <li><b>MEN/TZ’IKIN</b> end in <i>-n</i> but will never have an end phonetic complement <b>ni</b> because day names are enclosed in the “blood” cartouches, and never have initial or end phonetic complements.</li> </ul> </li> <li>Caution: the end phonetic complement <b>ni</b> also is optionally present in the 15th month of the Haab calendar – MUWAAN. <ul style="list-style-type: none"> <li>CHIKIN is a mammal head.</li> <li>MUWAAN is a bird head. Look out also for feathers in the mouth of the bird of prey.</li> </ul> </li> </ul> |
| Yaxk’in (month 7) | N | CAL-M07 | B | yaxk’in                  |  <p>MC<br/>&lt;YAX:K’IN&gt;.ni</p> <ul style="list-style-type: none"> <li>The 7th month of the Haab calendar.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Mol (month 8)     | N | CAL-M08 | S | mol                      |  <p>MC.1<br/>mo[lo]</p>  <p>MC.2<br/>mo[lo]</p>  <p>YAX Stela 18 A3<br/>14.&lt;mo[lo]&gt;:wa&gt;</p> <ul style="list-style-type: none"> <li>The 8th month of the Haab calendar (syllabogram-only spelling).</li> <li>YAX Stela 18 A3 has a syllabogram spelling &lt;mo[lo]:wa&gt; with a <b>wa</b> which is rarely seen.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Ch’en (month 9)   | N | CAL-M09 | B | ihk’ sihoom / {YUK}ch’en |  <p>MC.1<br/>IHK’.&lt;SIHOOM:ma&gt;</p>  <p>MC.2<br/>IHK’:SIHOOM</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

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|                |   |         |   |                        |  <p>AT-E1168-lecture19.assignment10<br/>TIK Temple 1 B3</p> <ul style="list-style-type: none"> <li>The 9th month of the Haab calendar.</li> <li>The TIK Temple 1 B3 example has the “darkness” of the IHK’ infixed in the SIHOOM.</li> </ul>                                                                                                                                                                                                                                                                                                                                            |
| Yax (month 10) | N | CAL-M10 | B | yax sihoom / {YUK}yax  | <div>  <p>MC.1<br/>YAX.&lt;SIHOOM:ma&gt; or YAX.&lt;[SIHOOM]ma&gt;</p> </div> <div>  <p>MC.2<br/>YAX:SIHOOM:ma</p> </div> <ul style="list-style-type: none"> <li>The 10th month of the Haab calendar.</li> </ul>                                                                                                                                                                                                                                                                                     |
| Sak (month 11) | N | CAL-M11 | B | sak sihoom / {YUK}sak  |  <p>MC<br/>SAK.&lt;SIHOOM:ma&gt;</p> <ul style="list-style-type: none"> <li>The 11th month of the Haab calendar.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Keh (month 12) | N | CAL-M12 | B | chak sihoom / {YUK}keh |  <p>MC<br/>CHAK.SIHOOM</p> <ul style="list-style-type: none"> <li>The 12th month of the Haab calendar.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Mak (month 13) | N | CAL-M13 | S | mak                    | <div>  <p>MC.1<br/>ma:ka</p> </div> <div>  <p>MC.2<br/>ma:MAHK</p> </div> <div>  <p>MC.3<br/>ma:ka</p> </div> <ul style="list-style-type: none"> <li>The 13th month of the Haab calendar (syllabogram-only spelling).</li> <li>MC.2 is actually a “rebus” spelling, with the logogram MAHK spelling <i>mak</i>, but here, we’re treating it like a pseudo-syllabogram, for the sake of simplicity.</li> </ul> |

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| K'ank'in (month 14) | N | CAL-M14 | L | uniw / {YUK}k'ank'in | <br>MC.1<br>UN:ni:wa<br><br>MC.2<br>UN:<[ni]wa> <ul style="list-style-type: none"> <li>The 14th month of the Haab calendar.</li> <li>Variants (2): <ul style="list-style-type: none"> <li>A. Avocado vine: <ul style="list-style-type: none"> <li>The roots, stem, and branches of the vine are shown.</li> <li>The round seed of the avocado is shown (usually cross-hatched).</li> </ul> </li> <li>B. Mammal (dog?) head: <ul style="list-style-type: none"> <li>A mammal ear in the top right.</li> <li>Open mouthed, with a few teeth showing.</li> </ul> </li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| K'ank'in (month 14) | N | CAL-M14 | S | uniw / {YUK}k'ank'in | <br>Coll-1<br>YAX HS3 Step 1 D1a<br>17.<u:ni>.wa> <ul style="list-style-type: none"> <li>YAX HS3 Step 1 D1a is a (rare?) example of the month-name <i>Uniw</i> with a full syllabogram-spelling.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Muwaan (month 15)   | N | CAL-M15 | L | muwaan               | <br>MC.1<br>MUWAAN.ni<br><br>MHD.BT2.1&2&3<br>MUWAHN<br><br>Safronov<br>Houston Panel C7<br>18:MUWAAN<br><br>Stuart<br>PNG Stela 3 F8<br>13.<MUWAAN:ni> <ul style="list-style-type: none"> <li>The 15th month of the Haab calendar.</li> <li>Features: <ul style="list-style-type: none"> <li>Muwaan is characterized by feathers in the mouth.</li> <li>Optional end phonetic complement <i>ni</i>.</li> </ul> </li> <li>Caution: the end phonetic complement <i>ni</i> also is optionally present in the 6th month of the Haab calendar – CHIKIN/XUL. <ul style="list-style-type: none"> <li>MUWAAN is a bird head.</li> <li>CHIKIN is a mammal head.</li> </ul> </li> <li>MHD transliterates BT2 as MUWAHN (no distinction in 3-character code nor in the transliteration between the bird of prey and the haab month name). However: <ul style="list-style-type: none"> <li>“bllgosyll contains muwan” yields 221 hits.</li> </ul> </li> </ul> |

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|                      |   |         |   |        | <ul style="list-style-type: none"> <li>o “b’logosyll contains muwan” and “blengl contains muwan” yields 114 hits (the month name).</li> <li>o “b’logosyll contains muwan” and “blengl contains muwahn” yields 67 hits (as part of a personal name/title).</li> <li>o “b’logosyll contains muwan” and “blengl does not contain muwan” and “blengl does not contain muwahn” yields 10 hits (miscellaneous uncertain items).</li> <li>• The MHD Catalog has a note under BT2.1: Usually represents supernatural bird of prey, sometimes with another bird in its mouth.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Muwaan<br>(month 15) | N | CAL-M15 | S | muwaan |  <p>MC.2<br/>mu:wa:ni</p> <ul style="list-style-type: none"> <li>• The 15th month of the Haab calendar (syllabogram-only spelling).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Pax (month 16)       | N | CAL-M16 | L | pax    | <div style="display: flex; justify-content: space-around;"> <div>  <p>MC.1 = K&amp;H.p59.pdfp61.#7.1<br/>PAX</p> </div> <div>  <p>TOK.p12.r4.c3<br/>PAAX</p> </div> </div> <div style="margin-top: 20px;">  <p>MC.2 = K&amp;H.p59.pdfp61.#7.2</p> </div> <div style="margin-top: 20px;">  <p>Graham<br/>YAX Lintel 47 B3</p> </div> <ul style="list-style-type: none"> <li>• The 16th month of the Haab calendar.</li> <li>• Variants (2): <ul style="list-style-type: none"> <li>o A. Abstract/boulder: <b>PAX</b>-feelers above, going into a (boulder variant of) <b>HAAB</b>.</li> <li>o B. Realistic: <b>PAX</b>-feelers above, going into the head of a toad/iguana.</li> </ul> </li> <li>• YAX Lintel 47 B3 is quite an aberrant form, known to be <b>PAX</b> from calendrical calculations (e.g. the LC of the inscription relating to this HAAB date).</li> </ul> |
| Pax (month 16)       | N | CAL-M16 | S | pax    |  <p>MC.3 = K&amp;H.p59.pdfp61.#7.3<br/>pa:xi</p> <ul style="list-style-type: none"> <li>• The 16th month of the Haab calendar (syllabogram-only spelling).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

|                                              |   |         |   |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------------|---|---------|---|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| K'ayab (month 17)                            | N | CAL-M17 | B | k'anasiy / {YUK}k'ayab   |  <p>MC.1<br/>&lt;&lt;[K'AN]a&gt;:si&gt;.ya</p>  <p>wikisource</p> <ul style="list-style-type: none"> <li>The 17th month of the Haab calendar.</li> <li>While <b>K'AN-a-si-ya</b> is the most common spelling, there are variants ending in <b>-wa</b> (<a href="https://en.wikisource.org/wiki/An_Introduction_to_the_Study_of_the_Maya_Hieroglyphs/Chapter_3">https://en.wikisource.org/wiki/An_Introduction_to_the_Study_of_the_Maya_Hieroglyphs/Chapter_3</a>).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Kumk'u (month 18)                            | N | CAL-M18 | B | hulohl / {YUK}kumk'u     |  <p>MC.1<br/>HUL:OHL:la</p> <ul style="list-style-type: none"> <li>The 18th month of the Haab calendar.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Wayeb (month 19)                             | N | CAL-M19 | B | wayhaab / {YUK}wayeb     |  <p>MC.1<br/>WAY:HAAB</p> <ul style="list-style-type: none"> <li>The 19th month of the Haab calendar.</li> <li>It is an irregular month, with only 5 days, while the other 18 months all have 20 days. It is believed that this was done to have <math>(20 \times 18) + 5 = 365</math> days, which better approximates a solar year of 365.24219 days.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Calendar Unit overview – the units of the LC | N | CAL-U   | P | "Calendar Unit overview" | <ul style="list-style-type: none"> <li>The 5 smallest and most basic units are: <b>K'IN</b>, <b>WINIK</b>, <b>HAAB</b>, <b>WINIKHAAB</b> (katun), <b>PIK/PIH</b> (baktun). <ul style="list-style-type: none"> <li>Unit-1. K'in: 1 day.</li> <li>Unit-2. Winik: 20 days.</li> <li>Unit-3. Haab: 360 days = 18 winiks.</li> <li>Unit-4. Winikhaab/Katun: 7,200 days = 20 haabs: <ul style="list-style-type: none"> <li>The term <i>k'atun</i> is an elided form of <i>k'al-tuun</i> = the <i>-l-</i> is dropped. [Reference: Tokovinine university lecture, exact reference lost.]</li> </ul> </li> <li>Unit-5. Pik/Baktun: 144,000 days = 20 winikhaabs/katuns: <ul style="list-style-type: none"> <li>The term <i>baktun</i> is a completely fictive name with no basis in the glyphs, as the word or root <i>ba-</i> (as an original or corrupted form) meaning "400" is not known in any modern Mayan language – it's just a convenient term which was adopted in the early years of Maya epigraphy. [Reference: Tokovinine university lecture, exact reference lost.]</li> </ul> </li> </ul> </li> </ul> <p>These are "standard" for the LC and are given in all of the 5 main pedagogical sources.</p> |



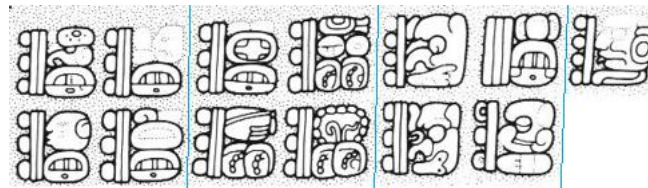
- There are 3 higher units – *piktun*, *kalabtun*, and *kinchiltun* – which are not common, but not extremely rare either. All three consist of two KAWAK's at the bottom. What distinguishes one from another is the elements at the top:
    - Unit-6. *Piktun*: 20 baktuns,
      - The element on top consists of:
        - Two scrolls, one to the left and one to the right, resembling a reduced variant of K'AHK'.
        - The two scrolls have a single "dotted protector".
        - The element is T42, which has been assigned the code 1G8 by MHD and 0042bv/0042bt by Bonn.
      - The term *piktun* is a completely fictive name with no basis in the glyphs. **However, the motivation behind this name is not known to me.**
    - Unit-7. *Kalabtun*: 20 piktuns.
      - The element on top consists of a **TZUTZ**.
      - The term *kalabtun* is a completely fictive name with no basis in the glyphs. **However, the motivation behind this name is not known to me.**
    - Unit-8. *Kinchiltun*: 20 kalabtuns.
      - The element on top consists of a **nu** and a **TZUTZ** (or a **nu** and the reduced variant of **AJAW**).
      - The term *kinchiltun* is a completely fictive name with no basis in the glyphs. **This name appears to be K'INICH + (suffix) -il (with the suppression of the middle vowel when a trisyllabic word results from compounding or suffixing), but the motivation behind this name is not known to me.**
- They are given in IC.p16 & K&L.p61. They are not given in K&H, BMM9, 25EMC, EB.
- They are also given in TMHW.pdfp416 along with glyph examples, but *kalabtun* and *kinchiltun* are given together, with their glyphs not separated.
  - The terms used are not the Classic Maya names but are nicknames given by epigraphers, for ease of reference.
  - Usage varies between *-tuun* and *-tun*, between *k'atun* and *katun*, and between *b'aktun*, *bak'tun*, and *baktun*. It seems quite pointless to attempt to document which sources use which form. I have attempted to standardize to no glottalization marking and short *-u-* in *(-)tun*, i.e. *piktun*, *kalabtun*, *kinchiltun*.
  - There are even higher units which are extremely rare. As far as I know, only one higher unit – the *alawtun* – has been given a nickname by epigraphers.
    - Unit-9. *Alawtun* is the highest *commonly* known unit with a nickname:
      - It's given on a slide shown in TOK-YT2021-lecture23.t0:12:50, as a label for that unit on a drawing of COB Stela 1.
      - This term is given in Gonzalez&Hoppan-TdIMdTeQeeM.p11.pdfp12 as *(jun)alaw* (no glyph shown in the paper).
      - It's interesting to observe that the YAX HS2 Step 7 LC has 13 calendar *units* (see below) – another 5 above *kinchiltun*:
        - "13" was a number of special significance to the Classic Maya, and for many of the higher calendar units, "13" acts in some way like "20" – it's a moment when something significant changes.
        - It's hence probably no coincidence that there are exactly 13 calendar units in this extended LC expression.
      - Many of the higher units have a **HAAB**-like element as a component at the bottom.
    - Unit-10. *Hablatun* is the unit immediately higher than the *Alawtun*. It's given at the following three sites:
      - [https://en.wikipedia.org/wiki/Mesoamerican\\_Long\\_Count\\_calendar](https://en.wikipedia.org/wiki/Mesoamerican_Long_Count_calendar)

| Long Count unit | Long Count period | Days            | Approximate Solar Years |
|-----------------|-------------------|-----------------|-------------------------|
| 1 K'in          |                   | 1               |                         |
| 1 Winal         | 20 K'in           | 20              |                         |
| 1 Tun           | 18 Winal          | 360             | 1                       |
| 1 K'atun        | 20 Tun            | 7,200           | 20                      |
| 1 B'ak'tun      | 20 K'atun         | 144,000         | 394                     |
| 1 Piktun        | 20 B'ak'tun       | 2,880,000       | 7,885                   |
| 1 Kalabtun      | 20 Piktun         | 57,600,000      | 157,704                 |
| 1 K'inchiltun   | 20 Kalabtun       | 1,152,000,000   | 3,154,071               |
| 1 Alautun       | 20 K'inchiltun    | 23,040,000,000  | 63,081,429              |
| 1 Hablatun      | 20 Alautun        | 460,800,000,000 | 1,261,628,585           |

- [https://dfns.dyalog.com/n\\_mayan.htm](https://dfns.dyalog.com/n_mayan.htm):

| The Mayan calendar uses the following units of time: |                 |    |                      |  |
|------------------------------------------------------|-----------------|----|----------------------|--|
|                                                      | days            | x\ |                      |  |
| Kin                                                  | 1               | 1  | (day)                |  |
| Uinal                                                | 20              | 20 | (month)              |  |
| Tun                                                  | 360             | 18 | (year)               |  |
| Katun                                                | 7,200           | 20 | (a "score" of years) |  |
| Baktun                                               | 144,000         | 20 |                      |  |
| Piktun                                               | 2,880,000       | 20 |                      |  |
| Kalabtun                                             | 57,600,000      | 20 |                      |  |
| Kinchiltun                                           | 1,152,000,000   | 20 |                      |  |
| Alautun                                              | 23,040,000,000  | 20 |                      |  |
| Hablatun                                             | 460,800,000,000 | 20 |                      |  |

- <https://sites.google.com/site/largenumbers/home/1-2/1-2-4-the-mayan-numerals>: For reasons that we can only speculate the Mayans wanted to go even further. Sir J. Eric Thompson has theorized that originally the Mayans had used a 13 Baktun cycle, but when they wished to continue beyond this point, they created a 20 Baktun cycle instead, to fit in better with their numeration system. Thus the Mayans created 4 more units beyond the Baktun, each 20 times greater than the previous one. We do not know the original names of these units, but Mayanists have traditionally used the terms *Piktun*, *Kalabtun*, *K'inchiltun*, and *Alawtun*, with some variations in spelling (For convenience I'll use these terms as well). There are some inscriptions that suggest that the Mayans went even further than this, though there are no official terms for units past the *Alawtun*, though the term *Hablatun* has been used for the unit just above the *Alawtun*.
- For the higher calendar units, there is the puzzling question of whether there is a factor of 13 or 20 as one goes from one unit to the next higher one. This is because of the fact that for the longer LC's, the latest creation date (4-Ajaw 8-Kum' u) is written as ... **13**. ... **13.13.13**.0.0.0.0, where we might instead expect ... **0**. ... **0.0.0.0.0.0.0**, based on a (naïve and) strict mathematical understanding of the Maya calendar system. This suggests that 13 behaves in some ways like 0, which in turn suggests that the multiplication factor is 13 instead of the expected 20.
- This question is discussed from different points of view (including the "End of the World" in 2012) in the following papers:
  - Stray-13Bv20B: a 43-page paper that reaches the conclusion that there were two different cycles, with a factor 13 and a factor 20, so *both* are in fact true.
  - Stuart-TEDoCS5: a very short paper on the Coba Stela 5.
  - Gronemeyer&MacLeod-WCHi2021: a 68-page paper on TRT Monument 6.
- Example of units up to the 13<sup>th</sup> place:



Montgomery = Coll-1

YAX HS2 Step 7 I1-O1

Extended LC = 13.13.13.13.13.13.13.9.15.13.6.9 (see below for individual unnamed units and elsewhere in the CMGG for the named ones)



Montgomery = Coll-1

YAX HS2 Step 7 K1

13.<?:K'AN:HAAB?>

*alawtun*

Unit-9

1 unit above *kinchiltun*



Montgomery = Coll-1

YAX HS2 Step 7 J2

13.<?:NAL:HAAB?>

*hablatun*

Unit-10

2 units above *kinchiltun*



Montgomery = Coll-1

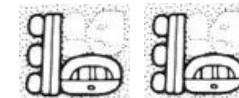
YAX HS2 Step 7 I2

13.<IXIIM?:HAAB?>

-

Unit-11

3 units above *kinchiltun*



Montgomery = Coll-1

YAX HS2 Step 7 J1

13.<<<?:>:IXIIM?:HAAB?>

-

Unit-12

4 units above *kinchiltun*



Montgomery = Coll-1








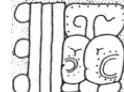





YAX HS2 Step 7 I1




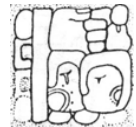

13.<WITZ?:HAAB?>





-




Unit-13

5 units above *kinchiltun*

					 <p>Looper-LW.p125.pdfp138.fig4.5          QRG Stela A D1          19.&lt;&lt;higher-calendar-unit&gt;:•&gt;&gt;          0 <i>alawtun</i></p>  <p>Looper-LW.p125.pdfp138.fig4.5          QRG Stela F D13          &lt;MIH:li&gt;.&lt;&lt;5?.K'AN&gt;:HAAB:NAL:&lt;la/•&gt;&gt;          0 5? <i>alawtun</i></p> <ul style="list-style-type: none"> <li>The unit in QRG Stela A D1 is one with a “HAAB” at the bottom. It appears to have a bird-head at the top. YAX HS2 Step 7 I1 (= Unit-13 = 5 units above <i>kinchiltun</i>) also appears to have a bird-head infixed in the top. However, it’s not clear if these two are the same unit because it’s unclear if it’s the same element infixed. They could be, or one might <b>BIH</b>-like (4 dots at the ends of an “X” equally spaced around a circle) and the other might be <b>HA’</b>-like (“dot necklace” below a circle). On the other hand, they might both be the Waterlily Serpent – there’s a variant of the Waterlily serpent with <b>HA’</b> infixed in the head, and another with a sort of “bow” or “knot” infixed the head, which might be YAX HS2 Step 7 I1 and QRG Stela A D1, respectively.</li> </ul>
calendar unit piktun, 6th highest in the LC	N	CAL-U	P	“PIKTUN”	 <p>K&amp;L.p61.#4.1&amp;2&amp;3  <i>piktun</i></p>  <p>IC.p16.pdfp20.#6.1  <i>piktun</i>:•</p>  <p>Graham          NAR Altar 1 A8          2.<i>piktun</i></p>  <p>Coll-1          PAL Temple 14 H1          18.&lt;<i>piktun</i>:ya&gt;</p>  <p>Schele          PAL TI WT C12          1.&lt;<i>piktun</i>:•&gt;</p>  <p>Schele          PAL TI WT F11          13.&lt;<i>piktun</i>:•&gt;</p>  <p>Schele          PAL TI WT H7          1.&lt;<i>piktun</i>:&lt;[la]ta&gt;&gt;</p>  <p>Coll-1 (Looper)          QRG Stela F C16 / A16          &lt;IHK':NAHB:NAL&gt;.&lt;MIH?:<i>piktun</i>&gt;</p>  <p>Montgomery = Coll-1          YAX HS2 Step 7 L2          13.<i>piktun</i></p>  <p>IC.p16.pdfp20.#6.2</p>  <p>Boot-HH.p23.pdfp23.#2.1&amp;2</p>









				<p><i>piktun</i> <i>piktun</i></p> <ul style="list-style-type: none"> <li>• Variants (2): <ul style="list-style-type: none"> <li>○ A. Abstract: <ul style="list-style-type: none"> <li>▪ Top: <b>to</b>-like element (but <i>not to</i>).</li> <li>▪ Bottom: abstract variant of <b>PIK</b>.</li> <li>▪ Optional: • three small dots at the bottom of boulder-outline glyphs. It is shown as a blue dot • in the transliteration. This element is pure decoration and doesn't contribute to the reading of the text (IC.p16.pdfp20.#6.1, PAL TI WT C12, PAL TI WT F11).</li> </ul> </li> <li>○ B. Head: <ul style="list-style-type: none"> <li>▪ Top: <b>to</b>-like element (but <i>not to</i>).</li> <li>▪ Bottom: head variant of <b>PIK</b> (bird-head with hand-jaw).</li> </ul> </li> </ul> </li> <li>• This is the 6th unit in the LC and one calendar unit above the <b>PIK/PIH</b>, i.e. it consists of 20 <b>PIK</b>'s. It is known that this calendar unit is not pronounced <i>piktun</i> – that is just a name used by epigraphers for convenience. While it's not entirely clear whether it is of itself a logogram or if it's a compound with <b>PIK/PIH</b> as part of it, the structure of the three higher units (<i>piktun</i>, <i>kalabtun</i>, and <i>kinchiltun</i>) – all with <b>PIK/PIH</b> at the bottom – suggests that it's the latter.</li> <li>• What distinguishes <i>piktun</i> from <i>pik</i> is the element at the top, which <i>resembles</i> the reduced variant of <b>to</b>. However, it is <i>not to</i>: <ul style="list-style-type: none"> <li>○ Instead, it's a left and right feeler or flames or a small shrub (for example in K&amp;L.p61.#4.1), with a <i>single</i> dot protector. <ul style="list-style-type: none"> <li>▪ In contrast, each of the feelers of <b>to</b> generally has its own protector, even if there is sometimes a single, overarching protector for the protectors themselves).</li> <li>▪ Furthermore, the feelers of <b>to</b> are very similar to one another – just a single vertical part and a round curl – and they either face in the same direction or are mirror images. In contrast, the “flames” or “leaves” of the element at the top of <i>piktun</i> are different from one another, with the left scroll “curled in” and the right scroll more of a “wave” – more like the scrolls of <b>K'AHK'</b> and with a <i>single</i> protector for the whole element.</li> </ul> </li> <li>○ This was assigned the code T42 by Thompson. <ul style="list-style-type: none"> <li>▪ T42 corresponds to MHD.1G8 and Bonn's 0042bt/0042bv.</li> <li>▪ Both MHD and Bonn do not assign a reading to this glyph.</li> <li>▪ See T42/MHD.1G8/0042bt/0042bv for more information.</li> </ul> </li> </ul> </li> <li>• Boot-HH.p23.pdfp23.para4 (on the head variant): This is the celamorphic [head] variant of the calendrical period <i>piktuun</i> (or «<i>pictun</i>») in the Initial Series (Thompson 1950: Figure 27, Nos. 1-2; compare to Thompson 1950: Figure 26, Nos. 8-14); its original Classic Maya name is unknown, as the superfix T42 remains without a decipherment.</li> </ul>
calendar unit kalabtun, 7th highest in the LC	N	CAL-U	P	<p>“KALABTUN”</p> <div>  <p>K&amp;L.p61.#3.2&amp;1&amp;3 <i>kalabtun</i></p> </div> <div>  <p>IC.p16.pdfp20.#7.1 <i>kalabtun</i></p> </div> <div>  <p>Coll-1 PAL Temple 14 *5.&lt;kalabtun:ya&gt;</p> </div> <div>  <p>Schele PAL TI WT E12 7.&lt;kalabtun:•&gt;</p> </div> <div>  </div>

				<p>Montgomery = Coll-1 YAX HS2 Step 7 K2 13. <i>kalabtun</i></p>  <p>IC.p16.pdfp20.#7.2 <i>kalabtun</i></p> <ul style="list-style-type: none"> <li>• Variants (2): <ul style="list-style-type: none"> <li>○ A. Abstract: <ul style="list-style-type: none"> <li>▪ Top: logogram <b>TZUTZ</b>.</li> <li>▪ Bottom: abstract variant of <b>PIK</b>.</li> <li>▪ Optional: • three small dots at the bottom of boulder-outline glyphs. It is shown as a blue dot • in the transliteration. This element is pure decoration and doesn't contribute to the reading of the text (PAL TI WT E12).</li> </ul> </li> <li>○ B. Head: <ul style="list-style-type: none"> <li>▪ Top: logogram <b>TZUTZ</b>.</li> <li>▪ Bottom: head variant of <b>PIK</b> (bird-head with hand-jaw).</li> </ul> </li> </ul> </li> <li>• This is the 7th unit in the LC and is one calendar unit above the <i>piktun</i>, i.e. it consists of 20 <i>piktuns</i>. It is known that this calendar unit is not pronounced <i>kalabtun</i> – this is just a name used by epigraphers for convenience. While it's not entirely clear whether it is of itself a logogram or if it's a compound with <b>PIK/PIH</b> as part of it, the structure of the three higher units (<i>piktun</i>, <i>kalabtun</i>, and <i>kinchiltun</i>) – all with <b>PIK/PIH</b> at the bottom – suggests that it's the latter, a compound.</li> <li>• What distinguishes <i>kalabtun</i> from <i>pik</i> and <i>piktun</i> is the element at the top, which appears to be <b>TZUTZ</b>.</li> </ul>
calendar unit kinchiltun, 8th highest in the LC	N	CAL-U	P	<p>"KINCHILTUN"</p>  <p>IC.p16.pdfp20.#8.1 <i>kinchiltun</i></p>  <p>Coll-1 (Looper) QRG Stela F B16a / D16a 13. <i>kinchiltun</i></p>  <p>Montgomery = Coll-1 YAX HS2 Step 7 L1 <i>kinchiltun</i></p>










					 <p>IC.p16.pdf20.#8.2 <i>kinchiltun</i></p> <ul style="list-style-type: none"> <li>• Variants (2): <ul style="list-style-type: none"> <li>○ A. Abstract: <ul style="list-style-type: none"> <li>▪ Top: <ul style="list-style-type: none"> <li>• Left: syllabogram <b>nu</b>. Two distinct variants of nu can appear in this position, making it even more likely that this is <b>nu</b>: <ul style="list-style-type: none"> <li>○ “eyeballs” <b>nu</b>, or</li> <li>○ “knot with tassels” <b>nu</b>.</li> </ul> </li> <li>• Right: logogram <b>TZUTZ</b>.</li> </ul> </li> <li>▪ Bottom: <ul style="list-style-type: none"> <li>• Abstract variant of <b>PIK</b>.</li> </ul> </li> </ul> </li> <li>○ B. Head: <ul style="list-style-type: none"> <li>▪ Top: <ul style="list-style-type: none"> <li>• Left: syllabogram <b>nu</b>. The only example shown above is with “eyeballs” <b>nu</b>.</li> <li>• Right: logogram <b>TZUTZ</b>.</li> </ul> </li> <li>▪ Bottom: <ul style="list-style-type: none"> <li>• Head variant of <b>PIK</b> (bird-head with hand-jaw).</li> </ul> </li> </ul> </li> </ul> </li> <li>• This is the 8th unit in the LC and is one calendar unit above the <i>kalabtun</i>, i.e. it consists of 20 <i>kalabtuns</i>. It is known that this calendar unit is not pronounced <i>kinchiltun</i> – this is just a name used by epigraphers for convenience. While it’s not entirely clear whether it is of itself a logogram or if it’s a compound with <b>PIK/PIH</b> as part of it, the structure of the three higher units (<i>piktun</i>, <i>kalabtun</i>, and <i>kinchiltun</i>) – all with <b>PIK/PIH</b> at the bottom – suggests that it’s the latter, a compound.</li> <li>• What distinguishes <i>kinchiltun</i> from <i>pik</i>, <i>piktun</i>, and <i>kalabtun</i> are the elements at the top, which appear to be <b>nu</b> and <b>TZUTZ</b>. There also appears to be a variant with <b>nu</b> and the reduced variant of <b>AJAW</b>.</li> </ul>
calendar unit alawltun, 9th highest in the LC	N	CAL-U	P	“ALAWTUN”	<div>  <p>Looper QRG Stela F D13 / B13 0.&lt;5?&gt;. &lt;NAL:K’AN:HAAB&gt;&gt; <i>alawltun</i></p> </div> <div>  <p>Montgomery = Coll-1 YAX HS2 Step 7 K1 13.&lt;*NAL?:K’AN:HAAB&gt; <i>alawltun</i></p> </div> <ul style="list-style-type: none"> <li>• This is the 9th unit in the LC and is one calendar unit above the <i>kinchiltun</i>, i.e. it consists of 20 <i>kinchiltuns</i>. It is known that this calendar unit is not pronounced <i>alawltun</i> – this is just a name used by epigraphers for convenience. While it’s not entirely clear whether it is of itself a logogram or if it’s a compound with <b>HAAB</b> as part of it, the structure of the units above it (all without nicknames) – all with <b>HAAB</b> at the bottom – suggests that it’s the latter, a compound.</li> <li>• What distinguishes <i>alawltun</i> from the even higher units are the elements at the top, which appear to be a <b>NAL</b> and a <b>K’AN</b>.</li> <li>• There are at least 4 further units in the LC, but these haven’t been given nicknames. They are very rare, YAX HS2 Step 7 I1-O1 is an LC which has these higher units.</li> <li>• In QRG Stela F D13 / B13 it’s unclear whether there’s a “5” coefficient for the <i>alawltun</i>, and also why there’s a “0” preceding it.</li> </ul>






Glyph-A	N	CAL-SSA	P	"Glyph-A"	<div data-bbox="678 92 808 193"></div> <div data-bbox="678 193 808 268">Safronov CRN Panel 3 B8 20.9</div> <div data-bbox="902 81 1028 193"></div> <div data-bbox="902 193 1028 268">Graham NAR Stela 24 C6 20.10</div> <div data-bbox="1144 92 1258 193"></div> <div data-bbox="1144 193 1258 268">Martin&amp;Tokovinine NAR Stela 26 B7 20:10</div> <div data-bbox="1397 81 1509 193"></div> <div data-bbox="1397 193 1509 268">Greene PAL TC A13 20:10</div> <div data-bbox="1592 81 1688 193"></div> <div data-bbox="1592 193 1688 268">Stuart PAL T19 South Side B7 &lt;20:ki&gt;.9</div> <div data-bbox="678 309 790 421"></div> <div data-bbox="678 421 790 496">Greene PAL TFC A12 20.10</div> <div data-bbox="884 309 994 421"></div> <div data-bbox="884 421 994 496">Greene PAL TS B12 20:10</div> <div data-bbox="1075 309 1189 421"></div> <div data-bbox="1075 421 1189 496">Safronov Phoenix ('Po') Panel D1 20:10</div> <div data-bbox="1346 300 1485 421"></div> <div data-bbox="1346 421 1485 496">Stuart PNG Panel 2 F2 20.9</div> <div data-bbox="1576 309 1704 421"></div> <div data-bbox="1576 421 1704 496">Safronov PNG Panel 3 F1 20.10</div> <div data-bbox="1800 309 1928 421"></div> <div data-bbox="1800 421 1928 496">Coll-1 (Stuart) PNG Stela 1 F2 20.10</div> <div data-bbox="678 539 777 639"></div> <div data-bbox="678 639 777 715">Stuart PNG Stela 3 A7 &lt;20:ki&gt;.9</div> <div data-bbox="875 528 987 639"></div> <div data-bbox="875 639 987 715">Stuart PNG Stela 8 A8 20.10</div> <div data-bbox="1093 528 1189 639"></div> <div data-bbox="1093 639 1189 715">Montgomery PNG Stela 36 B7 20:9</div> <div data-bbox="1323 528 1435 639"></div> <div data-bbox="1323 639 1435 715">W. Coe TIK Stela 3 B6 20.9</div> <div data-bbox="1547 528 1637 639"></div> <div data-bbox="1547 639 1637 715">Graham YAX Lintel 29 D3 &lt;20.ki&gt;:10</div> <div data-bbox="1783 539 1872 639"></div> <div data-bbox="1783 639 1872 715">Safronov Zürich Panel C8 &lt;20:ki&gt;.9</div> <div data-bbox="696 743 2016 959"> <ul style="list-style-type: none"> <li>• Glyph-A forms one of the standard components of the SS.</li> <li>• It gives the number of days (29 or 30) in the lunation which the date of the LC of the event associated with the ISIG falls in, i.e. it gives the number of days in the lunation of the event which the inscription opens with: <ul style="list-style-type: none"> <li>◦ The "20" is hence always present – it's only a question of whether the <b>WINIK</b> stands alone or has an end phonetic complement of <b>ki</b>.</li> <li>◦ The other glyph is hence either "9" or "10": <ul style="list-style-type: none"> <li>▪ In the case of "9", it seems to be mostly the "bar-and-dot" form of "9".</li> <li>▪ In the case of "10", it can be either the two bars of the "bar-and-dot" form, or the skull variant.</li> </ul> </li> </ul> </li> </ul> <p>See Glyph-C for why lunations have either 29 or 30 days.</p> </div>
Glyph-B	N	CAL-SSB	P	"Glyph-B"	<div data-bbox="678 1023 777 1123"></div> <div data-bbox="678 1123 777 1198">MHD (Stuart) CRN Panel 1 B7 u.&lt;&lt;ch'o{k}&gt;+K'ABA'&gt;</div> <div data-bbox="958 1023 1077 1123"></div> <div data-bbox="958 1123 1077 1198">Safronov CRN Panel 3 A8 u.&lt;&lt;ch'o{k}&gt;+K'ABA'&gt;</div> <div data-bbox="1093 1023 1211 1123"></div> <div data-bbox="1093 1123 1211 1198">= MHD (Ringle) u.&lt;&lt;ch'o{k}&gt;+K'ABA'&gt;</div> <div data-bbox="1335 1023 1440 1123"></div> <div data-bbox="1335 1123 1440 1198">MHD (Schele) CPN Stela 5 East Altar A8 Glyph-X.&lt;u.&lt;&lt;CH'OK[ko]&gt;+K'ABA'&gt;&gt;</div> <div data-bbox="678 1257 817 1358"></div> <div data-bbox="678 1358 817 1430">MHD (Schele) CPN Stela 10 A8 &lt;u.&lt;&lt;ch'o[ko]&gt;+K'ABA'&gt;&gt;.&lt;*20:9&gt;</div> <div data-bbox="1048 1257 1151 1358"></div> <div data-bbox="1048 1358 1151 1430">MHD (Schele) CPN Stela 13 B7 u.&lt;&lt;CH'OK[ko]&gt;+K'ABA'&gt;</div> <div data-bbox="1323 1235 1420 1358"></div> <div data-bbox="1323 1358 1420 1430">MHD (Fash) CPN Stela N u.&lt;&lt;ch'o[ko]&gt;+K'ABA'&gt;</div>







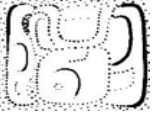





					<div>  <p>MHD (von Euw) NAR Stela 13 F7 u.&lt;&lt;ch'o:ko&gt;+K'ABA'&gt;</p> </div> <div>  <p>MHD (Graham) NAR Stela 29 F7 u.&lt;&lt;CH'OK[ko]&gt;+K'ABA'&gt;</p> </div> <div>  <p>MHD (Schele) PMT Panel 1 u.&lt;&lt;ch'o[ko]&gt;+K'ABA'&gt;</p> </div> <div>  <p>MHD (Safronov) PNG Panel 3 E1 u.&lt;&lt;ch'o[ko]&gt;+K'ABA'&gt;</p> </div> <div>  <p>MHD (Tokovinine) YAX Stela 6 &lt;u:&lt;&lt;ch'o[ko]&gt;+K'ABA'&gt;&gt;.&lt;20:9&gt;</p> </div> <ul style="list-style-type: none"> <li>• Glyph-B forms one of the standard components of the SS.</li> <li>• It's a standard, "formulaic" phrase and is overwhelmingly <i>uch'ok k'aba'</i> = his youth(ful) name. <ul style="list-style-type: none"> <li>◦ A search in MHD on "blsem contains Glyph B" yields 263 hits.</li> <li>◦ A search in MHD on "blsem contains Glyph B" and "blengl does not contain young" yields 42 hits. <ul style="list-style-type: none"> <li>▪ Of these 42 hits, adding "bllogosyll equals _" gives 24 hits, leaving 18 with an actual attempted reading.</li> <li>▪ Of the 18 hits of "blsem contains Glyph B" and "blengl does not contain young" and "bllogosyll does not equal _", the two "arms" of <b>K'ABA'</b> embrace: <ul style="list-style-type: none"> <li>• Syllabogram <b>a</b> (to explicitly spell the final glottal stop of K'ABA'): 2 hits.</li> <li>• Muluk-<b>u</b> (syllabogram <b>lo</b> rotated 90 degrees clockwise): 3 hits.</li> <li>• K'UH (the "default" element embraced by the two arms of <b>K'ABA'</b>): 2 hits.</li> <li>• Other (glyph is visible but it's uncertain what is written): 4 hits.</li> <li>• Eroded or no drawing: 7 hits.</li> </ul> </li> </ul> </li> </ul> <p>In other words, practically all occurrences of Glyph-B are <i>uch'ok k'aba'</i>.</p> <li>• Glyph-B is optionally present when Glyph-X is present, but can be absent when Glyph-X is present. However, if Glyph-B is present, then Glyph-X is always also present. This is because giving the name (= Glyph-X) doesn't require also stating that that's the name (= Glyph-B), whereas stating "(this is) his youth(ful) name" (= Glyph-B) without giving the name (= Glyph-X) wouldn't make any sense.</li> <li>• The examples give the full range of variation in the ways of writing Glyph-B: <ul style="list-style-type: none"> <li>◦ With the logogram <b>CH'OK</b>: <ul style="list-style-type: none"> <li>▪ If the <b>ko</b> end phonetic complement is present, then it is always written infixed along the bottom, under the "spectacles" and covering the "teeth".</li> </ul> </li> <li>◦ With the syllabograms <b>ch'o</b> and <b>ko</b>: <ul style="list-style-type: none"> <li>▪ The <b>ko</b> can be infixed (covering the ear, on the right of the entire head, or even covering the mouth).</li> <li>▪ The <b>ko</b> can be below the <b>ch'o</b>.</li> <li>▪ The <b>ko</b> can be to the right of the <b>ch'o</b>.</li> </ul> </li> </ul> <p>It goes without saying that the u can be above or to the left of the rest.</p> </li></li></ul>
Glyph-C overview	N	CAL-SSCO	M	"Glyph-C overview"	<div>  <p>(lost reference)</p> </div> <div>  <p>(lost reference)</p> </div> <div>  <p>(lost reference)</p> </div>



					DG / KIMI	TMG / IXIIM	JGU / CHUWAJ					
					 Looper QRG Stela A A8 <u:2>.<CHUWAJ:K'AL>.ja	 Looper QRG Stela D A16b 4:<CHUWAJ.ja>:K'AL	 Looper QRG Stela D C16b NAAH:<KIMI.ja>:K'AL	 Looper QRG Stela E B6b <3.JGU[ja]>:K'AL:li	 Looper QRG Stela E C7 <u.IXIIM.ja>:<2.K'AL:li>			
					 Looper QRG Stela F C7 u.6.<<TMG:ja>:K'AL>	 Looper QRG Stela I B5 2:JGU:K'AL	 Looper QRG Stela J B13 6.<<DG.ja>:K'AL:li>	 Looper QRG Stela K D2a <<3:DG>.ja>:K'AL				
<ul style="list-style-type: none"> <li>• Glyph-C forms one of the standard components of the SS.</li> <li>• More examples are given under each of the separate Glyph-C<sub>n</sub>, for n=1, 2, 3.</li> <li>• It consists of one of these 3 godheads, surrounded by other elements:             <ul style="list-style-type: none"> <li>◦ (Optional) <b>u</b>: QRG Stela A A8, QRG Stela E C7, QRG Stela F C7 in the examples above.</li> <li>◦ A number between 1 and 6.</li> <li>◦ One of the 3 god-heads.</li> <li>◦ A right hand with fingers outstretched (<b>K'AL</b>).</li> <li>◦ The right-side reduced variant of the “moon glyph” – <b>ja</b>.</li> <li>◦ (Optional) <b>li</b>: QRG Stela E B6b, QRG Stela E C7, QRG Stela J B13 in the examples above.</li> </ul> </li> <li>• ScheleEtAl-TLSiCMI.p4:             <ul style="list-style-type: none"> <li>◦ First realization that there are 3 heads, and that they follow one another in a cyclical pattern, with coefficients of 1, 2, 3, 4, 5, 6 for each head, before moving on to the next head.</li> <li>◦ Recognition that the JGU-head (<b>CHUWAJ</b>) may be replaced by just the eye of the JGU (with the cruller underneath) – e.g., QRG Stela I B5 in the examples above.</li> </ul> </li> <li>• The general format is: &lt;optional-u-or-ta&gt;-&lt;lunation-#&gt;-&lt;god-head&gt;-<b>K'AL</b>-ja.</li> <li>• There is some freedom in the placing of the lunation-#, god-head, <b>K'AL</b>, and <b>ja</b>. Specifically:             <ul style="list-style-type: none"> <li>◦ The lunation-number is usually vertically long, along the left side, but can also horizontally long, along the top.</li> <li>◦ <b>K'AL</b> is generally at the bottom centre, the freedom lies between:                 <ul style="list-style-type: none"> <li>▪ &lt;&lt;god-head&gt;.ja&gt;:K'AL (more common), or</li> <li>▪ &lt;&lt;god-head&gt;:K'AL&gt;.ja (less common)</li> </ul> </li> <li>◦ Is there a possibility that the <b>K'AL</b> and <b>ja</b> might be a <b>HUL</b>, despite the placement being slightly different from the more common <b>HUL</b> which has the index finger actually pointing to / touching the top part of the moon (while the <b>K'AL</b> hand in Glyph-C doesn't point at all, and the index finger is either not at all in contact with the moon (&lt;&lt;god-head&gt;.ja&gt;:K'AL), or if it is, then not with the <i>top</i> part of the moon (&lt;&lt;god-head&gt;:K'AL&gt;.ja))?                  Dorota Bojkowska: open question, don't exclude this possibility (but not that likely). Also, Albert Davletshin &amp; Dimitri Beliaev have a theory about <b>K'AL</b> being a “room” (as a noun) rather than a verb (see below).</li> </ul> </li> <li>• The three god-head glyphs are:             <ul style="list-style-type: none"> <li>◦ DG = Death God (<b>Kimi</b>, see Bratislava workbook, with Guido Krempel &amp; John Chuchiak on codices and gods).</li> <li>◦ TMG = Tonsured Maize God (Ixiiim).</li> <li>◦ JGU = Jaguar God of the Underworld (Chuwaj):                 <ul style="list-style-type: none"> <li>▪ Note that in the slide shown in AT-YT2021-lecture21.t0:06:23, Chuwaj is transcribed with a long-a: Chuwaaj.</li> </ul> </li> </ul> </li> </ul>												

					<p>The subscript numbers in Glyph-C<sub>n</sub> with n=1, 2, 3 have no particular significance. They occur cyclically, so it is purely arbitrary which one is considered 1 (though the cyclic order is of course fixed).</p> <ul style="list-style-type: none"> <li>• The exact reading of Glyph-C – with all the other elements – is not completely certain, but should include the words of the god-head: Kimi, Ixiim, Chuwaj.</li> <li>• Sergei Vepretskii &amp; Dmitri Beliaev's idea: in Glyph-C, K'AL isn't a verb, it's a noun: <ul style="list-style-type: none"> <li>○ This is known in Yucatec, and means "room".</li> <li>○ A room in the sky, and there were 6 such rooms, and every month the deity in question goes to that specific room.</li> <li>○ "This and this day, the TMG arrived to the x-th room".</li> <li>○ There are probably no existing papers, as this is a new theory.</li> </ul> </li> <li>• The time it takes to go from new moon to new moon, or from full moon to full moon) is approximately 29.5 days, and 6 x 29.5 = 177. Each (calendar) lunation is made to have a whole number of days. This is often said to be because Maya mathematics "doesn't have fractions", but it's actually because having fractions wouldn't help anyway: one still needs to have a whole number of days in a lunation. For example, Western mathematics <i>does</i> have fractions, but the 1/4 day of the 365 + 1/4 days of the time it takes for the earth to go around the sun still needs to be dealt with – one still needs to have a whole number of days in a year. <ul style="list-style-type: none"> <li>○ 29 x 6 = 174 would be 3 days short of 6 real lunations = 177 days.</li> <li>○ 30 x 6 = 180 would be 3 days in excess of 6 real lunations = 177 days.</li> <li>○ So the ideal solution is to have 3 lunations of 29 days and 3 lunations of 30 days, e.g. 29, 30, 29, 30, 29, 30 = 177 days. <ul style="list-style-type: none"> <li>▪ One could consider the 30th day of every other lunation to be the extra day, to adjust for the shortfall of the nominal 29 days in a lunation. This is almost as if every other lunation was a "leap month", in the same way as every fourth year in the Western calendar is a "leap year", to adjust for the shortfall of the nominal 365 days in a year.</li> <li>▪ There are hence 6 such lunations per 177-day period = "lunar half year": <ul style="list-style-type: none"> <li>• Calling it a "lunar half year" makes sense, as 177 x 2 = 354, which is slightly less than the number of days in a year.</li> <li>• Alternatively, each lunation is a month, so six lunations is a "lunar half year", half of twelve lunar months.</li> <li>• The term "lunar half year" comes from Yesugi&amp;Saito-GYotMSS.p2 (1991) but isn't used that often (given here just for the sake of completeness).</li> </ul> </li> </ul> </li> <li>• Glyph-C hence gives both which of the three "lunar half years" (JGU, DG, or TMG), as well as which of the 6 lunations of that "lunar half year" it is, i.e. where the date of the LC of the event indicated by the ISIG falls, in this cycle of 18 (= 6 x 3) lunar half years. Glyph-A, in turn, indicates whether that lunation (i.e. the lunation of the day which the LC of the event indicated by the ISIG) has 29 or 30 days (see also Glyph-A).</li> </ul> </li></ul>
Glyph-C <sub>1</sub>	N	CAL-SSC1	P	Glyph-C <sub>1</sub> / DG / Kimi	 <p>25EMC-BHB.pdf12.r5.c2 3.&lt;DG:K'AL:la?&gt;.UH</p>  <p>MartinEtAl-LE46dN.p682.pdf14.fig5 (Martin&amp;Tokovine) NAR Stela 46 A6 NAH.&lt;DG:K'AL&gt;.UH</p>
Glyph-C <sub>2</sub>	N	CAL-SSC2	P	Glyph-C <sub>2</sub> / TMG / Ixiim	 <p>25EMC-BHB.pdf12.r4.c2 2.&lt;TMG.UH&gt;:K'AL</p>  <p>25EMC-BHB.pdf12.r5.c3 ta.6.&lt;&lt;TMG.UH&gt;:K'AL&gt;</p>  <p>25EMC-BHB.pdf12.r4.c3 5:&lt;&lt;TMG:K'AL&gt;.UH&gt;</p>

Glyph-C <sub>3</sub>	N	CAL-SSC3	P	<p>Glyph-C<sub>3</sub> / JGU / Chuwaj</p> <div>  <p>25EMC-BHB.pdfp12.r3.c1 u.&lt;&lt;NAH?&gt;.JGU.UH&gt;:K'AL&gt;</p> </div> <div>  <p>25EMC-BHB.pdfp12.r4.c1 u.&lt;&lt;&lt;2&gt;.JGU&gt;.UH&gt;:K'AL&gt;</p> </div> <div>  <p>25EMC-BHB.pdfp12.r3.c2 4.&lt;&lt;JGU.UH&gt;:K'AL:li&gt;</p> </div> <div>  <p>25EMC-BHB.pdfp12.r5.c1 = MC.p52 3.&lt;&lt;JGU.UH&gt;:K'AL&gt;</p> </div> <div>  </div> <div>  <p>Safronov Phoenix ('Po') Panel C1 9:&lt;JGU:UH?&gt;:K'AL</p> </div> <div>  <p>Graham NAR Stela 24 B6 NAH:&lt;JGU:K'AL&gt;.UH</p> </div> <div>  <p>Stuart-TifTXIX.p88.pdfp89.fig61 (Stuart) PAL Temple 19 Platform - South Side &lt;u:2&gt;.&lt;JGU:K'AL&gt;.UH</p> </div> <div>  <p>Stuart-TPM.p PAL TFC B10 5.&lt;JGU.UH&gt;:K'AL</p> </div> <div>  <p>Schele CPN Stela 10 A6 &lt;6:K'AL&gt;.TMG.UH</p> </div> <ul style="list-style-type: none"> <li>• Quite often, only the eye of the JGU is shown, as in 25EMC-BHB.pdfp12.r3.c2, 25EMC-BHB.pdfp12.r5.c1 = MC.p52.</li> <li>• CPN Stela 10 A6 has an unusual form of K'AL (in an unusual position). Recognized as such by MHD, with code MHD.AX3.</li> </ul>
Glyph-F	N	CAL-SSF	P	<p>Glyph-F / ti' huun</p> <ul style="list-style-type: none"> <li>• Glyph-F forms one of the standard components of the SS.</li> <li>• It is a standard, "formulaic" phrase and its meaning is not entirely clear. It is sometimes translated as "the edge of the book" (whatever that means).</li> <li>• Sources: <ul style="list-style-type: none"> <li>◦ K&amp;H doesn't give examples of Glyph-F.</li> <li>◦ MC examples are a strict subset of K&amp;L – the first 5, identical, and in exactly the same order.</li> <li>◦ K&amp;L has human head and full-figure variants as well.</li> <li>◦ TMHW.pdfp432.F gives 11 examples.</li> </ul> </li> <li>• Variation:</li> </ul>

- The variants are listed roughly the order of “intuitiveness” or “appropriateness” of the element for writing the word **HUUN** (which is obviously a very subjective ranking).
- There is also variation in the form of **TI'**: either the long rectangular, 3-element variant or the head variant.
- The **na** – as a phonetic complement – is of course optional. When present, there is further variation in its form: either the basic syllabogram **na**, or the head variant.
- Initial **u**:
  - The two examples from the Randel Stela have an **u** at the start and a **li** at the end.
  - DPL Stela 5 N1 and YAX Stela 6 A7 have an **u** at the start but **no li** at the end.
 This is rare but not strange, because the full phrase is *u-ti'-huun-il*, but *-il* can always be underspelled.

- There are 6 variants of **HUUN** in the context of Glyph-F:
  - A. Knot – one of the most common variants.
  - B. Book.
  - C. **hu** – the rotated head of an Iguana – this is a syllabogram-only spelling **hu-na**.
  - D. “WINIK” (nevertheless read as **HUUN**). **WINIK** pronounced **HUUN** in a non-SS context:



IC.p22  
SAK:HUUN:K'AL tu.<u:BAAH>

- E. “Jester God”.
- F. “**TZ'IKIN**” / bird head.



K&L.p66.#1.1  
TI':HUUN:na



Gronemeyer-GGF.p12.pdfp12.fig11.f  
PNG Stela 1 A9  
TI':HUUN:na



Gronemeyer-GGF.p12.pdfp12.fig11.l = TMHW.pdfp432.F.59  
YAX Lintel 48 D7  
TI':HUUN:na



TMHW.pdfp432.F.60 = Coll-1 (Stuart)  
PNG Stela 25 A10  
TI':HUUN:na



TMHW.pdfp432.F.61  
PAL Stela 1 A6b  
TI':HUUN:na



TMHW.pdfp432.F.64 = MHD (Tokovinine)  
YAX Stela 11 O1b  
TI':HUUN:na



YAX Stela 11 N1b  
Glyph-G9.<TI':HUUN:na >



TMHW.pdfp432.F.66 = Graham  
NAR Stela 13 E5  
TI':HUUN:na





Martin  
Randel Stela A7  
u.<TI':HUUN:li>



Martin  
Randel Stela C2  
u.<TI':HUUN:li>



K&L.p66.#1.7 = Gronemeyer-GGF.p12.pdpf12.fig11.b  
CPN Stela A B5  
TI':HUUN:na



Gronemeyer-GGF.p12.pdpf12.fig11.h = TMHW.pdfp432.F.68  
QRG Stela K B5  
HUUN.<<"po"?TI':>:na>



TMHW.pdfp432.F.63  
CPN Stela 1 B5b  
TI':HUUN:na



K&L.p66.#1.10 = Gronemeyer-GGF.p12.pdpf12.fig11.i  
Site Q P. 4 A4



K&L.p66.#1.8 = Gronemeyer-GGF.p12.pdpf12.fig11.c  
DPL Stela 5 N1  
<u:TI'>.<HUUN:na>



K&L.p66.#1.6 = Gronemeyer-GGF.p12.pdpf12.fig11.a  
CPN HS Date 24  
HUUN.<TI':na>

- The knot variant: it can be an asymmetric or a symmetric knot, but asymmetric seems more common.
- YAX Lintel 48 D7 seems to have a **k'i** as the first of the 3-element component at the top.
- QRG Stela K B5 seems to have an additional "**po**" in the top left of B5b. Also, the two flanking elements of the **TI'** are crescents (with tips pointing down), making it resemble a **ya**, but from context it is clearly a **TI'**.
- K&L.p66.#1.10
  - Head variant of **TI'** (normally, the abstract 3-component variant) – the head incorporates some of the "reduced" elements of the more abstract form inside, at the top (the three small elements at the top of the more common **TI'** variant).
  - The **HUUN** is vertical, coming after the **TI'**.
- In CPN HS Date 24, the main sign is the full-figure variant of **na**, i.e., the phonetically least significant part of the spelling of *ti' huun* is the largest and most elaborate glyph in the glyph-block.
- The glyph-block reference given by TMHW.pdfp432.F.64 is YAX Stela 11 O1b, but MHD shows this as YAX Stela 11 N1b. This might be a typo on the part of TMHW, or simply a slightly different system of glyph-block labelling. In any case, these two drawings are probably of the same glyph-block on the same monument.



K&L.p66.#1.5

Tl':HUUN:na



TMHW.pdfp432.F.58  
PAL House E Fresco

Tl':HUUN:na



Gronemeyer-GGF.p12.pdpf12.fig11.d  
DPL Stela 8 B6

{ti'}HUUN:na

- The book variant.
- In DPL Stela 8 B6, the **Tl'** has been omitted: this is rare, but possibly also in K&L.p66.#1.9 = Gronemeyer-GGF.p12.pdpf12.fig11.k (the “book” glyph could be read as Tl' (e.g. TLA Stela B A7), but probably not in this case, because we have a **na** phonetic complement); **Sim: include Fig12 examples in this document**



K&L.p66.#1.3

Tl':hu:na



Gronemeyer-GGF.p12.pdpf12.fig11.e  
PAL OLV Pil A B4

Tl':hu:na



Gronemeyer-GGF.p12.pdpf12.fig11.j  
YAX Lintel 26 Front E1b

Tl':hu:na



TMHW.pdfp432.F.62  
YAX Lintel 56 D2b

Tl':hu:na

- The iguana/**hu** variant.
- OLV is not Oval; it is an abbreviation which is also mentioned in Emeric's *Texas Note 29 Lunar Series Achieves 100% Correlation* – p21. Coll-1, PAL- folder, there is PAL\_Olvidado.JPG, *olvidado* means “forgotten”.



K&L.p66.#1.4

Tl':HUUN:na



PAL Stela 3 A5

Tl':<HUUN:na>

- The “WINIK”-variant.
- PAL Stela 3 A5 has a head variant of Tl'.











K&L.p66.#1.2

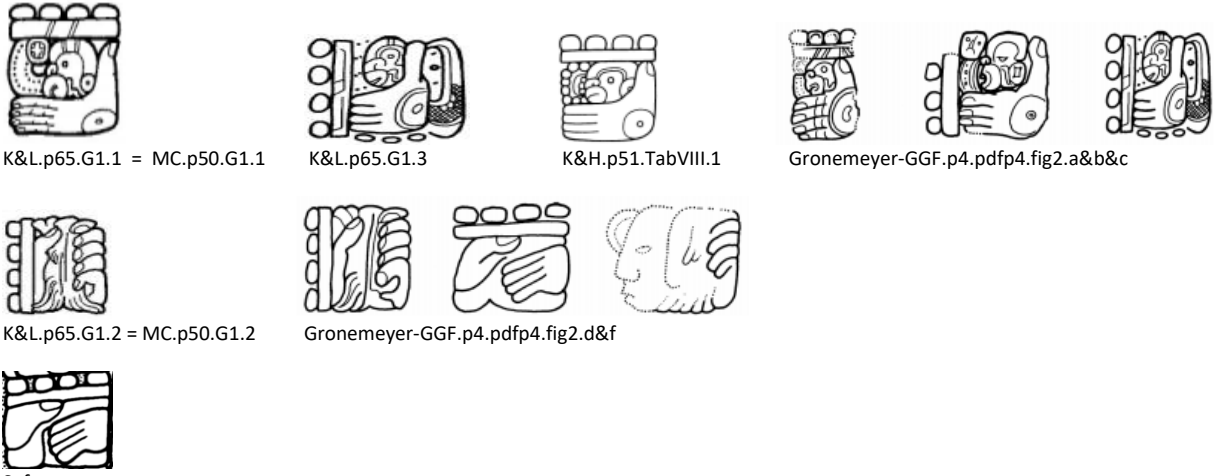

Tl':HUUN:na



JM  
CAY DO Wall Panel B6

Tl':<HUUN:na>

					<ul style="list-style-type: none"> <li>The Jester God variant (check that CAY example is indeed the Jester God, it could be the bird-head variant).</li> </ul> <hr/> <div> <div>  <p>Bojkowska (EMC <b>workbook</b>) CAY Altar 4 O TI':HUUN</p> </div> <div>  <p>Gronemeyer-GGF.p12.pdf12.fig11.g QRG Stela A B6b TI':HUUN:na</p> </div> <div>  <p>K&amp;L.p66.#1.9 = Gronemeyer-GGF.p12.pdf12.fig11.k YAX Lintel 46 B3 [TI'?]HUUN:na</p> </div> <div>  <p>Coll-1 YAX Stela 6 A7 u.&lt;TI':HUUN:na&gt;</p> </div> </div> <hr/> <div> <div>  <p>MHD (Graham) YAX Lintel 10 B1 &lt;Glyph-G3&gt;.&lt;TI':HUUN:na&gt;</p> </div> <div>  <p>TMHW.pdfp432.F.65 CPN Stela N A9 &lt;TI':HUUN&gt;.na</p> </div> <div>  <p>TMHW.pdfp432.F.67 QRG Stela F C6b / A6b TI':HUUN</p> </div> <div>  <p>= Coll-1 (Looper) QRG Stela F C6 / A6 Glyph-G9.&lt;TI':HUUN&gt;</p> </div> </div> <ul style="list-style-type: none"> <li>The TZ'IKIN/bird-head (with infixed CH'AB) variant.</li> <li>There appears to be a tendency for a "cruller" to appear in connection with the eye of the bird.</li> </ul>
Glyph-G overview	N	CAL-SSG0	M	"Glyph-G overview"	<p>[For examples, see under individual Glyph-G variants]</p> <ul style="list-style-type: none"> <li>Sources: <ul style="list-style-type: none"> <li>Not in BMM9, TOK.</li> <li>Extensive set in K&amp;L.</li> <li>MC is a strict subset of K&amp;L.</li> <li>One of each G1-G9 in K&amp;H, independent of K&amp;L/MC but some correspondences.</li> </ul> </li> <li>Glyph-G forms one of the standard components of the SS. <ul style="list-style-type: none"> <li>It can also occur accompanying a CR, without an SS.</li> <li>In such cases, it may or may not be accompanied by a Glyph-F. (Get examples of this less common usage.)</li> </ul> </li> <li>The subscript numbers in Glyph-G<sub>n</sub>, n=1, 2, 3, ..., 9 represent the 9 "Lords of the Night". <ul style="list-style-type: none"> <li>This term comes from the Aztec religion and has been borrowed by analogy – I'm not aware of there being explicit references to these nine logograms as being <i>actual</i> "Lords of the Night" in Classic Maya (but this may be a limitation in my reading rather than reality).</li> <li>The Lord of the Night changes for every K'IN, in an endless cycle of 9. So (for example), LC = 9.15.0.0.0 is 4-Ajaw 13-Yax (10 August 731 AD), with a Lord of the Night of Glyph-G<sub>9</sub>. Because of this: <ul style="list-style-type: none"> <li>9.15.0.0.1 has a Lord of the Night of Glyph-G<sub>1</sub>.</li> <li>9.15.0.0.2 has a Lord of the Night of Glyph-G<sub>2</sub>.</li> <li>9.15.0.0.3 has a Lord of the Night of Glyph-G<sub>3</sub>.</li> <li>...</li> <li>9.15.0.0.9 has a Lord of the Night of Glyph-G<sub>9</sub>.</li> <li>9.15.0.0.10 has a Lord of the Night of Glyph-G<sub>1</sub>.</li> <li>9.15.0.0.11 has a Lord of the Night of Glyph-G<sub>2</sub>.</li> <li>etc ...</li> </ul> </li> </ul> </li> </ul>

				<ul style="list-style-type: none"> <li>Because 9.15.0.0.1 has a Lord of the Night of Glyph-G<sub>1</sub> it automatically means that 9.15.0.0.0 (being the preceding day) has a Lord of the Night of Glyph-G<sub>9</sub> (the 1-9 being cyclic). There are 18 <i>k'ins</i> in a <i>winal</i>, and 18 is a multiple of 9. Because of this, any LC = X.Y.0.0.0 will <i>always</i> have a Lord of the Night of Glyph-G<sub>9</sub>, and every LC = X.Y.0.0.N (for N = 1, 2, 3, ..., 9) will always have a Lord of the Night of Glyph-G<sub>N</sub>.</li> <li>Diagnostic characteristics. Here are the <i>simplified</i> diagnostics – the details are a lot more complex (see the individual Glyph-G<sub>n</sub> entries): <ul style="list-style-type: none"> <li>Glyph-G<sub>1</sub>: 9-CH'AM-K'UH or 9-TZAK. The “9” is shared with Glyph-G<sub>6</sub>.</li> <li>Glyph-G<sub>2</sub>: HUL-TI' or HUL-SIBIK or HUL-mo-NAL. The HUL is shared with Glyph-G<sub>3</sub>.</li> <li>Glyph-G<sub>3</sub>: HUL-JAN(AAB). The HUL is shared with Glyph-G<sub>2</sub>.</li> <li>Glyph-G<sub>4</sub>: 7-“head” or 7-SIBIK.</li> <li>Glyph-G<sub>5</sub>: 5-T'AB or 5-T'AB-LEM or 5-CH'AM-LEM or 5-CH'AM-AHIIN? or 5-HUL-CH'AB.</li> <li>Glyph-G<sub>6</sub>: 9-SIM. The “9” is shared with Glyph-G<sub>1</sub>.</li> <li>Glyph-G<sub>7</sub>: NAAH-“left-fist”-“head” (or NAAH-“head” or NAAH-la) or NAAH-tzi?-lo-?-na.</li> <li>Glyph-G<sub>8</sub>: (“floppy pear”) HUL.</li> <li>Glyph-G<sub>9</sub>: ITZAM, YIHK'IN, NAL (2 of the 3, or all 3).</li> </ul> </li> </ul> <p>Caution: the diagnostics given here are the “elements” which appear in the various forms of Glyph-G. I’m not saying that those forms were necessarily <i>read</i> in this way. The exact reading of these glyphs (or “glyph-groups”) remains unclear to me.</p>
Glyph-G <sub>1</sub>	N	CAL-SSG1	P	<p>Glyph-G<sub>1</sub></p>  <p>K&amp;L.p65.G1.1 = MC.p50.G1.1      K&amp;L.p65.G1.3      K&amp;H.p51.TabVIII.1      Gronemeyer-GGF.p4.pdfp4.fig2.a&amp;b&amp;c</p> <p>K&amp;L.p65.G1.2 = MC.p50.G1.2      Gronemeyer-GGF.p4.pdfp4.fig2.d&amp;f</p> <p>Safronov Phoenix “Po” Panel A5</p> <ul style="list-style-type: none"> <li>Distinguishing characteristic: “9” + varying main sign (but this “9” is shared with Glyph-G<sub>6</sub>). <ul style="list-style-type: none"> <li>It can be on the left or on top of the main sign.</li> </ul> </li> <li>Variants (2) of main sign – both variants can be associated with “9” and “grasping”: <ul style="list-style-type: none"> <li>A. CH'AM-K'UH:</li> <li>B. TZAK.</li> </ul> </li> </ul>
Glyph-G <sub>2</sub>	N	CAL-SSG2	P	<p>Glyph-G<sub>2</sub></p>  <p>K&amp;L.p65.G2.1 = MC.p50.G2.1      K&amp;H.p51.TabVIII.2      TMHW1960.pdfp432.r2.c1</p>





Gronemeyer-GGF.p5.pdfp5.fig3.a  
DPL Stela 16 A4  
Glyph-G



Gronemeyer-GGF.p5.pdfp5.fig3.c  
PAL Temple XVII B4  
Glyph-F[Glyph-G]



Gronemeyer-GGF.p5.pdfp5.fig3.b  
PAL PT M17  
Glyph-F[Glyph-G]



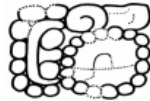
Gronemeyer-GGF.p5.pdfp5.fig3.d  
"St Louis Panel" B4  
Glyph-G



Martin-AMP.p255.fig62  
TNA Unprovenanced Column (a.k.a. BPK-LAC Unprovenanced Column) B4  
Glyph-G



K&L.p65.G2.2 = MC.p50.G2.2 = Gronemeyer-GGF.p5.pdfp5.fig3.f  
XLM P. 2 A9a



K&L.p65.G2.3 = Gronemeyer-GGF.p5.pdfp5.fig3.e (Mathews)  
TNA Monument 30 A2



Montgomery  
CAY – DO Panel 1 A6








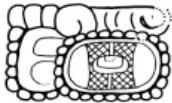











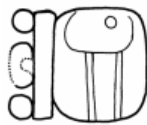
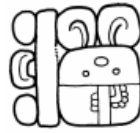
TMHW1960.pdfp432.r2.c2

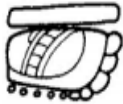
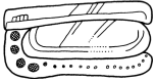





TMHW1960.pdfp432.r2.c3

- Distinguishing characteristic: **HUL** on the left with varying main sign on the right (but this **HUL** is shared with Glyph-G<sub>3</sub>, also on the left):
  - The HUL is an "old variant".
  - Outside: oval outline composed of many touching dots on 3 sides (top, left, and bottom)
  - Inside has variation:
    - Typically based on two stacked non-touching circles, or
    - Two slightly curved horizontal bands, or
    - "AK'AB" – rotated 90 degrees anticlockwise.

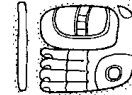
					<ul style="list-style-type: none"> <li>• Variants (4) of the main sign: <ul style="list-style-type: none"> <li>○ A. Stylized face – <b>this is given as one of the variants of TI’</b>: the stylized face variant – features: <ul style="list-style-type: none"> <li>▪ Top: <ul style="list-style-type: none"> <li>• Left and right feeler, each with protector</li> <li>• Can (but doesn’t have to) be omitted when infixed in Glyph-F</li> </ul> </li> <li>▪ Bottom: a vertically elongated boulder, divided into a top and bottom part by a slightly curved horizontal arc (pointing down); the top smaller than bottom: <ul style="list-style-type: none"> <li>• Top: 2-3 dots <ul style="list-style-type: none"> <li>○ If 2: touching, can appear as a single small circle divided into two parts, with bold outline or bold divider.</li> <li>○ If 3: in a triangular formation, triangle pointing up (one case of 3 in a row, touching: K&amp;H.p51.TabVIII.2).</li> </ul> </li> <li>• Bottom: resembles the lower part of HAAB. <ul style="list-style-type: none"> <li>○ <b>SIBIK</b>-like: asymmetric, 1 example only (K&amp;L.p65.G2.2 = MC.p50.G2.2 = Gronemeyer-GGF.p5.pdfp5.fig3.f).</li> </ul> </li> </ul> </li> </ul> </li> <li><b>This stylized face is a rare variant of TI’ (see TI’, specifically, examples TOK.p32.r5.c3 and BMM9.p21.r2.c3).</b></li> <li>○ B. “SIBIK”-like – <b>this one is particularly easy to confuse with Glyph-G<sub>4</sub>, but here the distinguishing characteristic is the “old variant” of HUL (which is not present in Glyph-G<sub>4</sub>, which has a “7” instead).</b></li> <li>○ C. <b>mo-NAL</b> – features: <ul style="list-style-type: none"> <li>▪ Top: <b>NAL</b>.</li> <li>▪ Bottom: “<b>mo</b>” – a circle of tiny touching dots with a dot in the centre.</li> <li>▪ Do not confuse this variant with the abstract variant of Glyph-G<sub>3</sub>. The distinguishing characteristics are: <ul style="list-style-type: none"> <li>• Glyph-G<sub>2</sub> (this glyph) has just a central dot (for the “<b>mo</b>”) whereas Glyph-G<sub>3</sub> (being related to <b>JAN</b>) has four radial spokes.</li> <li>• Glyph-G<sub>2</sub> (this glyph) has a <b>NAL</b> whereas Glyph-G<sub>3</sub> has nothing on top.</li> </ul> </li> <li>▪ Do not confuse this variant with the <b>NAL</b>-variant of Glyph-G<sub>5</sub>: <ul style="list-style-type: none"> <li>• Glyph-G<sub>2</sub> (this glyph): (“old variant of <b>HUL</b>”) + <b>NAL</b> + <b>mo</b>.</li> <li>• Glyph-G<sub>5</sub>: <b>NAL</b> + <b>YIHK’IN</b> + (optional) <b>ITZAM</b>.</li> </ul> </li> </ul> </li> <li>○ D. Anthropomorphic head: This variant has only one example, given in TMHW1960.pdfp432.r2.c3.</li> </ul> </li> <li>• The <b>HUL</b> and the main sign may or may not become detached from one another when Glyph-G is infixed in Glyph-F: <ul style="list-style-type: none"> <li>○ Detaches: <b>no known examples (try to find some)</b>.</li> <li>○ Doesn’t detach: PAL Temple XVII P. B4, PAL PT M17.</li> </ul> </li> <li>• Gronemeyer-GGF claims that the right top element in the variant with a stylized head (two feelers with protectors) is a variant of <b>NAL</b>, and the right bottom element is a variant of <b>SIBIK</b>, but this seems to be an attempt to impose a pattern of a maize cycle onto the Glyph-G series, not obviously applicable for Glyph-G<sub>2</sub>.</li> </ul>
Glyph-G <sub>3</sub>	N	CAL-SSG3	P	Glyph-G <sub>3</sub>	<div>  <p>K&amp;L.p65.G3.1 = Gronemeyer-GGF.p5.pdfp5.fig4.d Site Q P. 4 A4</p> </div> <div>  <p>Gronemeyer-GGF.p5.pdfp5.fig4.c PAL Stucco glyph</p> </div> <div>  <p>Gronemeyer-GGF.p5.pdfp5.fig4.f Yaleltsemen Cave A2</p> </div> <div>  <p>YAX Lintel 10 B1 Coll-1 Glyph-G.Glyph-F</p> </div> <div>  <p>K&amp;L.p65.G3.4 Glyph-F[Glyph-G]</p> </div>

					 <p>K&amp;L.p65.G3.2 = Gronemeyer-GGF.p5.pdfp5.fig4.e TNA 9.17.16.10.1 Base</p>  <p>Gronemeyer-GGF.p5.pdfp5.fig4.a PAL TFC West J. B1 Glyph-F[Glyph-G]</p>  <p>Gronemeyer-GGF.p5.pdfp5.fig4.b PAL ST A9 Glyph-F[Glyph-G]</p>  <p>K&amp;L.p65.G3.3 = MC.p50.G3.1 Glyph-F[Glyph-G]</p>  <p>K&amp;H.p51.TabVIII.3 Glyph-F[Glyph-G]</p> <ul style="list-style-type: none"> <li>• Distinguishing characteristic is <b>JANAAB</b> – either the abstract or representational (bird-head) variant.</li> <li>• Features: <ul style="list-style-type: none"> <li>◦ Left – <b>HUL</b> (or later <b>JUL</b>, as in YAX Lintel 10 B1): <ul style="list-style-type: none"> <li>▪ An “old” variant with an oval outline composed of many dots on 3 sides with variations inside.</li> <li>▪ Not optional, but optionally dropped in infixing in Glyph-F.</li> <li>▪ If not dropped when infixing, then doesn’t infix but stays on the left.</li> </ul> </li> <li>◦ Right – <b>JAN/JANAAB</b> – either the abstract or the bird head variant: <ul style="list-style-type: none"> <li>▪ See <b>JAN/JANAAB</b> for the 2 variants (abstract or bird head).</li> <li>▪ The abstract variant of <b>JAN</b> has either: <ul style="list-style-type: none"> <li>• A circle of dots as border.</li> <li>• A reinforced circle with a dotted spine.</li> </ul> </li> <li>▪ In K&amp;L.p65.G3.2, there seems to be a <b>NAL</b>-like element above the <b>JANAAB</b> – this might however be an incorrectly drawn version of the abstract variant of <b>TI'</b>, when conflated with Glyph-F = <i>ti' huun</i>.</li> </ul> </li> </ul> </li> <li>• The <b>HUL</b> and the <b>JAN/JANAAB</b> often but not always becomes detached from one another when Glyph-G is infixed in Glyph-F: <ul style="list-style-type: none"> <li>◦ Detaches: PAL ST A9, K&amp;L.p65.G3.3 = MC.p50.G3.1, K&amp;H.p51.TabVIII.3.</li> <li>◦ Doesn’t detach: PAL TFC West J. B1.</li> </ul> </li> <li>• The <b>HUL</b> is absent in YAX Lintel 10 B1, the bird head is the diagnostic.</li> </ul>
Glyph-G <sub>4</sub>	N	CAL-SSG4	P	Glyph-G <sub>4</sub>	 <p>K&amp;L.p65.G4.1 = MC.p50.G4.1</p>  <p>K&amp;H.p51.TabVIII.4</p>  <p>Gronemeyer-GGF.p6.fig5.b DPL Stela 8 A6</p>  <p>Gronemeyer-GGF.p6.fig5.d NAR Stela 24 C4</p>  <p>Gronemeyer-GGF.p6.fig5.e TIK Stela 4 B3</p>    

					<p>K&amp;L.p65.G4.2 = MC.p50.G4.2      Gronemeyer-GGF.p6.pdfp6.fig5.a      Gronemeyer-GGF.p6.pdfp6.fig5.c      Gronemeyer-GGF.p6.pdfp6.fig5.f</p> <p>CPN Stela A A5      IXK Stela 2 A6      TNA Monument 175 B1</p> <ul style="list-style-type: none"> <li>• Distinguishing characteristic is the “bar-and-dot” form of “7” + main sign: <ul style="list-style-type: none"> <li>○ It can be on the left or on top of the main sign.</li> <li>○ It (often) has no filler(s) in between the two external dots and can be beside or above the main sign, generally: <ul style="list-style-type: none"> <li>▪ Beside in the head variant</li> <li>▪ Above in the abstract variant</li> </ul> </li> </ul> <p>But this tendency might be an illusion caused by the small sample size.</p> </li> <li>• Gronemeyer-GGF.p6.pdfp6.fig5 has a typo where the figures are labelled a, b, c, e, f, g with accompanying text a, b, c, d, e, f for their sources – it’s safe to assume that e is actually d; f is actually e; and g is actually f</li> <li>• Variants (2) of main sign: <ul style="list-style-type: none"> <li>○ A. Representational – the head of a (young?) male, divided into two halves by a horizontal line at nose level: <ul style="list-style-type: none"> <li>▪ Top: <ul style="list-style-type: none"> <li>• A bold semi- or 3/4- or full circle – a <b>LEM</b>-like element infixed in the top of the head.</li> <li>• A small eye, optionally with a few tiny non-touching dots in a horizontal line to the right</li> </ul> </li> <li>▪ Bottom: <ul style="list-style-type: none"> <li>• Open mouth (optionally bold lips).</li> <li>• 2 vertical bars (optionally with cross-hatching in between), or just two vertical lines; alternatively, an “ajaw strap”.</li> <li>• The 2 vertical lines might just be reduced/eroded forms of the 2 vertical bars and cross-hatching, or of the “ajaw strap”.</li> </ul> </li> </ul> </li> <li>○ B. Abstract: <ul style="list-style-type: none"> <li>▪ Top: left and right feeler, each with its own protector. These are very common, but absent in, for example, IXK Stela 2 A6).</li> <li>▪ Bottom – a <b>SIBIK</b>-like element with boulder outline, divided into two halves by a horizontal line: <ul style="list-style-type: none"> <li>• Top half: 3 non-touching dots in a triangular formation, triangle pointing up.</li> <li>• Bottom half: an element resembling an “ajaw strap”, except that the main long curved vertical band is replaced or supplemented by a slightly curved arc of touching dots.</li> </ul> </li> </ul> </li> </ul> <p>Do not confuse the abstract variant of Glyph-G<sub>4</sub> with the “face” variant of Glyph-G<sub>2</sub>: they both have two “leaves” (or left and right feelers with protectors) on top, but Glyph-G<sub>2</sub> is definitely face/<b>HAAB</b>-like on the bottom, whereas Glyph-G<sub>4</sub> is <b>SIBIK</b>-like. More importantly, Glyph-G<sub>4</sub> always has a “7” associated with it, while Glyph-G<sub>2</sub> never has.</p> </li> <li>• The representational and abstract variants are not as independent of one another as might initially appear. The representational variant has a <b>SIBIK</b>-like sub-variant (DPL Stela 8 A6, above) where: <ul style="list-style-type: none"> <li>○ The infixed <b>LEM</b>-like element in the top of the head lacks the curved internal band of <b>LEM</b> and could be seen as a bolded top dot of the abstract variant.</li> <li>○ It has a “dotted ajaw strap”.</li> <li>○ The vertical bars of the bottom half could be seen as a fancy form of the vertical bar of the “ajaw strap”.</li> </ul> </li> </ul>
Glyph-G <sub>5</sub>	N	CAL-SSG5	P	Glyph-G <sub>5</sub>	<div>  <p>K&amp;L.p65.G5.1 = MC.p50.G5.1</p> </div> <div>  <p>Gronemeyer-GGF.p7.pdfp7.fig6.c “Hauberg Stela” A3</p> </div> <div>  <p>Gronemeyer-GGF.p7.pdfp7.fig6.e “Leiden Plaque” A8</p> </div> <div>  <p>K&amp;H.p51.TabVIII.5 = Gronemeyer-GGF.p7.pdfp7.fig6.f</p> </div> <div>  <p>K&amp;L.p65.G5.5 = Gronemeyer-GGF.p7.pdfp7.fig6.b</p> </div>



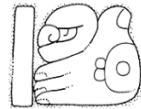
K&L.p65.G5.4 = Gronemeyer-GGF.p7.pdfp7.fig6.a = MHD (Herbert)  
"Atkins Museum Lintel" C5



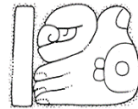
Safronov  
Houston Panel F6



MHD (Graham)  
TNA Monument 149 B



MHD (Graham)  
TNA Monument 170 D



MHD (Krempel)  
TNAMon186 B1
































K&L.p65.G5.3 = MC.p50.G5.3 = Gronemeyer-GGF.p7.pdfp7.fig6.d  
HIG Stela 1 A6







K&L.p65.G5.2 = MC.p50.G5.2 = Gronemeyer-GGF.p7.pdfp7.fig6.g  
YAX Lintel 48 C7

- Distinguishing characteristic is the "bar-and-dot" form of "5" + main sign.
  - It can be on the left or on top of the main sign.
- There are many variants of the main sign, differing considerably from one another.
- Features of the main sign: **T'AB**, **LEM**, "ladder", **CH'AB**, **HUL**, **AHIIN?**.
- Variants (6) of the main sign:
  - A. 5-**T'AB**[**LEM**["ladder"]]:
    - The **T'AB** has an Infix **LEM**, which, in turn, has an infix "ladder".
  - B. 5-**T'AB**>-**LEM**:
    - The interior of the **T'AB** is cross hatched.
    - The **LEM** is below the **T'AB**.
  - C. 5-**CH'AM**-**LEM**:
    - The **CH'AM** grasps a **LEM**.
    - There can be variation on the LEM element: it can be a regular **LEM** or be infix with a "ladder".
  - D. 5-**CH'AM**-**AHIIN?**:
  - E. 5-**HUL**-**CH'AB**:
    - The **HUL** is above the **CH'AB**.
  - F. Hard to classify – there's a **LEM**, maybe a **TZ'IKIN?**.

					<ul style="list-style-type: none"><li>The “5” and the main sign can become detached from one another when Glyph-G is infixed in Glyph-F.</li></ul>																
Glyph-G <sub>6</sub>	N	CAL-SSG6	P	Glyph-G <sub>6</sub>	<div><div></div><div>MHD.AXE.1&amp;2</div><div><div></div><div>K&amp;L.p65.G6.1 = MC.p50.G6.1</div><div></div><div>Gronemeyer-GGF.p8.pdfp8.fig7.a YAX Stela 6 A6</div><div></div><div>K&amp;H.p51.TabVIII.6</div><div></div><div>Gronemeyer-GGF.p8.pdfp8.fig7.a RAZ Tablet 1 A5</div></div><ul style="list-style-type: none"><li>Distinguishing characteristic: “9” + (a variant of) SIM (but this “9” is shared with Glyph-G<sub>1</sub>).</li><li>The 9 is beside the main sign.</li><li>Features – like SIM/Glyph-Y/“Baby K’awiiil”/“beetle glyph”, the main sign consists of 3 stacked parts – top, middle, bottom:<ul style="list-style-type: none"><li>Top part – horizontal, “rectangular”, 3-component element:<ul style="list-style-type: none"><li>Left: head with long up-curving nose ~ = “leaf-nosed bat head” (resembles the left component of T267).</li><li>Middle: washer.</li><li>Right: grip – a bold quarter-circle, north-east quadrant.</li></ul></li></ul></li></ul><p>This 3-component element is treated in different ways by different epigraphers.</p><table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>T267</td><td>MHD.3MB.1 K’AAS?</td><td>0267bt</td><td>0267bv</td><td>MHD.3MB.3 K’AAS?</td><td>0031bt</td><td>0031bv</td><td>MHD.3MB.2 K’AAS</td></tr></table><ul style="list-style-type: none"><li>Thompson:<ul style="list-style-type: none"><li>Treats it as an independent glyph – with the outline being a horizontal “rectangle”.</li></ul></li><li>MHD:<ul style="list-style-type: none"><li>Treats it as an independent glyph – with the outline being a horizontal “rectangle”.</li><li>Recognizes three variants in total:<ul style="list-style-type: none"><li>a 3-element variant with a bat-head on the left (MHD.3MB.1).</li><li>a 2-element variant with a “knot-like” element on the left (MHD.3MB.3).</li><li>a 3-element variant with a protected scroll on the left (MHD.3MB.2).</li></ul></li><li>Assigns all three variants a tentative reading of K’AAS?.</li></ul></li><li>Bonn:<ul style="list-style-type: none"><li>Treats MHD.3MB.1 and MHD.3MB.3 as “reduced variants” (0267bt and 0031bt) of much larger “full variant” glyphs (0267bv and 0031bv respectively), where these reduced variants can “peek out” above other glyphs which may cover the main part of the full variant.</li><li>Gives no reading and hence leaves open whether 0267 and 0031 are related.</li></ul></li></ul><p>In the examples above, YAX Stela 6 A6 and RAZ Tablet 1 A5 are both Glyph-G<sub>6</sub>, and they have MHD.3MB.1 and MHD.3MB.3 at the top (respectively). This implies that MHD.3MB.1 and MHD.3MB.3 are indeed just variants of one another.</p></div>									T267	MHD.3MB.1 K’AAS?	0267bt	0267bv	MHD.3MB.3 K’AAS?	0031bt	0031bv	MHD.3MB.2 K’AAS
																					
T267	MHD.3MB.1 K’AAS?	0267bt	0267bv	MHD.3MB.3 K’AAS?	0031bt	0031bv	MHD.3MB.2 K’AAS														









In the examples below, a glyph which is basically MHD.3MB.1 (i.e., a 3-element glyph with bat-head on the left) has a large main sign under it. This supports (but doesn't prove) Bonn's approach of seeing the 3-element glyph as just the top part of a larger glyph, which can be "covered up" by a different main sign, leaving just the 3-element glyph to stick out at the top.

			
Safronov PNG Panel 3 G2a	Pitts-BHPN.p122.pdftp122 PNG Altar 2 Supports D3a	Stuart-TXIX PAL Temple 19 South Side L3	Stuart-TXIX PAL Temple 19 South Side M2

- Middle part – boulder outline element, very little unity between the contained elements:
  - Indentation in the middle of the top.
  - Bold scroll hanging from the middle of the ceiling (resembling an upside-down question mark).
  - 2 slightly curved bands from the question mark to the floor (bulging slightly outwards) – in contrast to **he**, there is no lipped-u.
- Bottom part – horizontal, 3-component element (practically identical to the bottom element of "Baby K'awiil"):
  - Left: bent upper & lower leg and foot (right leg).
  - Middle: washer.
  - Right: bent upper & lower leg and foot (left leg).





How the "3-element glyph at the top of Glyph-G<sub>6</sub>" fits in with the "boulder element and two squatting legs with a 'washer' in between" remains unclear to me. I.e. it remains unclear if the "3-element glyph at the top of Glyph-G<sub>6</sub>" is an integral part of Glyph-G<sub>6</sub>, or if it is an *additional* glyph, which needs to be read separately, either before or after the "boulder element and two squatting legs with a 'washer' in between".

- Be careful how Glyph-G<sub>6</sub> differs from SIM/Glyph-Y/"Baby K'awiil"/"beetle glyph": the 3-element component on the top of Glyph-G<sub>6</sub> is "bat-head", washer (with optionally cross-hatched centre), ka-comb whereas Glyph-Y/SIM is "two arms – one on each side of K'awiil" (where the K'awiil can be reduced to just a "LEM"). This is a significant difference – about the only things they have in common are that they are both tripartite (top to bottom), and both can occur on top of a boulder with a scroll hanging from the top and legs and washer under the boulder!

Glyph-G <sub>7</sub>	N	CAL-SSG7	P	Glyph-G <sub>7</sub>
				
K&L.p65.G7.1 = MC.p50.G7.1	K&H.p51.TabVIII.7	Gronemeyer-GGF.p9.pdfp9.fig8.d PNG Stela 3 Back B4		
				
K&L.p65.G7.3 = Gronemeyer-GGF.p9.pdfp9.fig8.a BPK Stela 2 A2 Glyph-G:ma	K&L.p65.G7.4 = Gronemeyer-GGF.p9.pdfp9.fig8.b CPN Stela 5 AS5 Glyph-G:ja	K&L.p65.G7.6 = Gronemeyer-GGF.p9.pdfp9.fig8.c PAL A15 Glyph-F[Glyph-G]		
				
K&L.p65.G7.2 = MC.p50.G7.2	Gronemeyer-GGF.p9.pdfp9.fig8.e = Looper			

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				<div>    </div> <div> <div>K&amp;L.p65.G7.7 = Gronemeyer-GGF.p9.pdfp9.fig8.f</div> <div>Looper (Coll-2) QRG Stela E West Side A6</div> <div>Tolles A6</div> </div> <div> <ul style="list-style-type: none"> <li>This is probably because it's incorrectly drawn. Examination of the Tolles photograph provided by MHD suggest that it could be Glyph-G<sub>8</sub>. In any case, not the <b>TIL/TILIW</b> proposed by GutiérrezGonzález-PhD.p146.pdfp159.</li> <li>It is almost definitely based on QRG Stela E West Side A6: <ul style="list-style-type: none"> <li>QRG Stela is a very tall monument, so it is hard to see the top part, where A6 is located.</li> <li>The <i>drawing</i> by Looper of the stela itself shows that the middle of A6b is quite eroded and hence unclear – it doesn't show a definite KAWAK with an arm on each side – this is additional interpretation in K&amp;L and Gronemeyer-GGF. The Looper drawing suggests slightly that the middle element on the right is in fact <b>HUUN</b>, in particular, the “loop and tassels”, with the “loop” on the right and the two tassels on the left. The only aspect which is not <b>HUUN</b>-like is the middle, which looks more like a “cave” or “symmetric cave” (which isn't present in <b>HUUN</b>).</li> <li>Photographs (and logic) suggest that it is just a <b>HUUN</b> (being the middle part of Glyph-F), with something else, presumably an infixed Glyph-G in the middle of the <b>HUUN</b>.</li> <li>It is tempting to read the infixed element in <b>HUUN</b> as <b>HUL</b> (the “floppy pear” of Glyph-G<sub>8</sub>), but calendrical calculations indicate that it should be Glyph-G<sub>7</sub>.</li> <li>There are examples of <b>HUUN</b> where the middle part resembles a KAWAK (K&amp;L.p28.#2.3) or <b>LEM</b> (K&amp;L.p28.#2.1) – such instances could have been the source of the misreading of central part of the <b>HUUN</b> in the middle as KAWAK. <ul style="list-style-type: none"> <li>Perhaps the u- is actually <b>NAAH</b>?</li> <li>Perhaps it's the very eroded outline of the youthful human head very commonly seen for Glyph-G<sub>7</sub>?</li> </ul> </li> </ul> <p>These two “amendments” would make it totally a regular Glyph-G<sub>7</sub> (infixd in Glyph-F).</p> <ul style="list-style-type: none"> <li>In this context, the last element is <b>li</b>, which is used to indicate the intimate possession <b>HUUN-li</b>: <i>u-ti'-huun-il</i> (there are many other contexts where <b>HUUN</b> has the intimate possession ending) – this <b>li</b> further strengthened the misreading (and hence drawing) of this as <b>TIL</b>.</li> </ul> <div> <div> <div>OPERACIONES A PARTIR DE LA CUENTA LARGA</div> <div> <div>Cuenta Larga: 9. 14. 13. 4. 17</div> <div>Correlación: 584,285</div> <div>Nº Dist: 0 0 0 0 1</div> <div>Día Juliano: 1,985,862</div> <div>Nº días maya: 1,401,577</div> <div>Sumar</div> <div>Restar</div> <div>Tzolkin: 12 Ka'ban</div> <div>Ha'ab: 5 K'ayab'</div> <div>Glifo G: G7</div> <div>Tamaño Luna: 9 D</div> <div>Nº de lunación: 3 C</div> <div>Tamaño lunación: A 10</div> </div> <div> <div>LISTA DE CUENTA LARGA A PARTIR DE RUEDA DE CALENDARIO</div> <div> <div>Tzolkin: 12 Ka'ban</div> <div>Ha'ab: 5 K'ayab'</div> <div>Baktun base: 9</div> <div>Listado Cuenta Larga</div> <div>Glifos G</div> </div> </div> </div> <div> <ul style="list-style-type: none"> <li>The LC on QRG Stela E is 9.14.12.4.17, which has to be amended to 9.14.13.4.17 to give a CR of 12-Kaban 5-K'ayab.</li> <li>According to the calendar spreadsheet / program, this amended LC corresponds to Glyph-G<sub>7</sub>.</li> </ul> </div> </div></li></ul></div>
Glyph-G <sub>8</sub>	N	CAL-SSG8	P	<div>  </div> <div>K&amp;L.p65.G8.3 = MC.p50.G8.1</div>

Glyph-F[Glyph-G]



K&L.p65.G8.4 = MC.p50.G8.2  
Glyph-F[Glyph-G]



K&H.p51.TabVIII.8  
Glyph-F[Glyph-G]



Gronemeyer-GGF.p10.pdfp10.fig9.a  
CPN Stela 10 A4  
Glyph-F[Glyph-G]



Gronemeyer-GGF.p10.pdfp10.fig9.b  
PAL **Temple of the Cross** A10  
Glyph-F[Glyph-G]



Gronemeyer-GGF.p10.pdfp10.fig9.f  
YAX Lintel 21 B4  
Glyph-F[Glyph-G]



K&L.p65.G8.2 = Gronemeyer-GGF.p10.pdfp10.fig9.e  
"Walter Randel Stela" B5



Martin  
Randel Stela B6



Martin  
Randel Stela D1








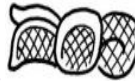




K&L.p65.G8.1 = Gronemeyer-GGF.p10.pdfp10.fig9.d  
SBL PT 1 D2



Gronemeyer-GGF.p10.pdfp10.fig9.c  
PNG Stela 14 B7a

- Distinguishing characteristic is a cross-hatched blob (characteristic of the "floppy pear" variant of **HUL**).
- Mnemonic: a pear has a basic shape of a figure "8".
- There's not much unity between the variants – the common theme is the cross-hatched blob.
- Variants (3):
  - A. The "floppy pear" variant of **HUL**.
  - B. The "floppy pear" variant of **HUL** infixed in the top of an EB-like skull:
    - The nose hole and bone-jaw of the skull are present.
    - There is a partial crescent with dotted protector on one side, as in the day name EB).
    - The ear is a "kidney" or crossed bands (in the two examples given – unclear how characteristic these are).
    - The outline of the "floppy pear" is bold, and in one instance curls up in a slight scroll.
  - C. (Perhaps?) a full human figure, with a cross-hatched blob in the body

					<ul style="list-style-type: none"> <li>▪ The figure is seated or crouching (on the ground) and is (uncharacteristically) facing to the right.</li> <li>▪ There are echoes of the bold outline of the “floppy pear” in the outline of the figure – the vertical “indentation” in the middle of the bottom of the “floppy pear” corresponds to what might be a bent leg, with the top of the indentation being the knee. (This however might be an illusion caused by too few examples – perhaps it’s only an “abstract” glyph, and the irregular right side is the edge of an obsidian blade?)</li> </ul>
Glyph-G <sub>9</sub>	N	CAL-SSG9	P	Glyph-G <sub>9</sub>	<div>  <p>K&amp;L.p65.G9.4 = Gronemeyer-GGF.p11.pdfp11.fig10.b CPN Stela I D2</p> </div> <div>  <p>Gronemeyer-GGF.p11.pdfp11.fig10.j YAX Lintel 3 B1a</p> </div> <div>  <p>K&amp;L.p65.G9.5 = Gronemeyer-GGF.p11.pdfp11.fig10.d DPL Stela 5 M1</p> </div> <div>  <p>K&amp;L.p65.G9.7 = Gronemeyer-GGF.p11.pdfp11.fig10.c CPN <b>Temple</b> 11 N Door Glyph-F[Glyph-G]</p> </div> <div> <p>--==--</p> <div>  <p>K&amp;L.p65.G9.1 = MC.p50.G9.1 = Gronemeyer-GGF.p11.pdfp11.fig10.i TIK Stela 31 A8</p> </div> <div>  <p>K&amp;L.p65.G9.2 = MC.p50.G9.2</p> </div> <div> <p>• TOK.p10.r2.c2 gives  as ITZAM; BMM9.p10.r3.c4 gives  as ITZAM – there could be some connection between the two preceding examples and all the ones below; i.e. they might be read as ITZAM-YIHK’IN or YIHK’IN-ITZAM [Dorota: this is well-established]</p> </div> <div>  <p>K&amp;L.p65.G9.3 = MC.p50.G9.3</p> </div> <div>  <p>Gronemeyer-GGF.p11.pdfp11.fig10.g QRG Stela F C6a / A6a</p> </div> </div>



Gronemeyer-GGF.p11.pdfp11.fig10.a  
CPN Stela 63 B9



Gronemeyer-GGF.p11.pdfp11.fig10.f (Looper)  
QRG Stela E D5a



Gronemeyer-GGF.p11.pdfp11.fig10.h  
TIK Stela 27 D1



K&L.p65.G9.6 = Gronemeyer-GGF.p11.pdfp11.fig10.e  
NAR HS 1 Step V J3








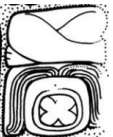
K&H.p51.TabVIII.9




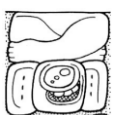





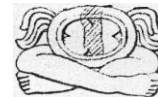

















MHD CPN 107 lower step R1a

- There 3 “available” components – **NAL**, **YIHK’IN**, “old man head”/**ITZAM**, and 2 of the 3 are always present:
  - **NAL+YIHK’IN**, or
  - **YIHK’IN+ITZAM**, or
  - **NAL+ITZAM**
 but sometimes all three. The **ITZAM** can be just the “net headdress” or just the “old man’s head” or both.
- Do not confuse the **NAL**-variant of Glyph-G<sub>9</sub> with the **NAL**-variant of Glyph-G<sub>2</sub>:
  - Glyph-G<sub>9</sub> (this glyph): **NAL** + **YIHK’IN**
  - Glyph-G<sub>2</sub>: (“old variant of HUL”) + **NAL** + **mo**
- MHD takes a different approach. MHD recognizes two distinct ways of writing the word *ihk’in* = “darken”.
  - MHD.PA8:
    - An old man’s head with an infixed **K’IN**, with the **K’IN** being “half darkened” (e.g., the right half crosshatched).
    - The “picture” field in the MHD Catalog has “aged deity with half-darkened sun headdress and foliage”. [Sim: However, there are only two examples and one of them has the foliage and the other doesn’t. At the same time, there are many real-life instances of Glyph-G<sub>9</sub> where **NAL** is read, when there’s a leaf-related element present. For this reason, it might be better just to omit the “foliage” part of the description of the glyph, and just transliterate and read a NAL → *-(n)al* when it’s present.]
  - The old man’s head and **K’IN** are treated as a single logogram **IHK’IN** = “darken” not as a combination of an old-man’s head logogram with infixed **K’IN**. I.e., the whole combination is read **IHK’IN**, rather than that the old man’s head contributes a separate and independent *ih(k’-)* to the *k’in* of the infixed darkened sun. (Though that might have been the origin of the glyph in the distant past.)
  - MHD.ZK1:
    - A (boulder outline) “half darkened” **K’IN** with (optionally) a horizontally rectangular tri-partite element on top.
    - The tri-partite element consists of three horizontally touching circles, and the two outer circles can be partially darkened.
  - These two elements are also treated as a single logogram **IHK’IN** = “darken”. I.e., the combination is read *ihk’in*, without the tri-partite contributing a separate, independent *ih(k’-)* to the *k’in* of the darkened sun. Indeed, if anything the (half-)darkening would be contributing the *ih(k’-)*, leaving no “phonetic” role for the tri-partite element.
- Whatever the analysis, the old man’s head (in the context of being Glyph-G<sub>9</sub>) is never read as **ITZAM**.

<p>Glyph-X overview</p>	<p>N</p>	<p>CAL-SSX</p>	<p>P</p>	<p>“Glyph-X overview”</p>	<div data-bbox="683 82 1585 454"> </div> <p>26EMC-HB.pdfp14 &amp; 27EMC-HB.pdfp14</p> <ul style="list-style-type: none"> <li>• Glyph-X forms one of the standard components of the SS.</li> <li>• It is now clear that there are (at least) 18 distinct forms of Glyph-B and that they can be very different from one another (i.e. have very different readings). <ul style="list-style-type: none"> <li>◦ There is a correlation between the form of Glyph-X and the <i>combination</i> of the coefficient and god-head of Glyph-C.</li> <li>◦ As there are three god-heads and each god-head has a coefficient from 1 to 6, there are 18 distinct combinations.</li> <li>◦ There are hence (at least) 18 distinct forms of Glyph-X (with perhaps some sub-variants within each combination).</li> <li>◦ This was first discussed in Rohark-DSdM (1996).</li> <li>◦ Subsequent attempts at analysing Glyph-X came to other conclusions but the idea of 18 distinct forms correlating with the 3 god-heads of Glyph-C x the 6 coefficients of each god-head was worked on by Sergei Vepretskii, who presented his results at the <i>21st Sergeev Reading</i>, in Moscow, in 2019. <ul style="list-style-type: none"> <li>▪ Vepretskii-GX is a recording of this presentation.</li> <li>▪ This used to be publicly accessible on YouTube, but unfortunately now has restricted access.</li> </ul> </li> </ul> </li> </ul> <p>It seems to me that Vepretskii independently discovered/concluded this, but he cites Rohark’s paper in his presentation.</p> <ul style="list-style-type: none"> <li>◦ This correlation is now quite well accepted, and can be found in 26EMC-HB.pdfp14 and 27EMC-HB.pdfp14. This correlation is shown in the example above. <ul style="list-style-type: none"> <li>▪ The 3 god-heads are shown vertically, in 3 rows: TMG/IXIIM, JGU/CHUWAJ, DG/KIMI.</li> <li>▪ The 6 coefficients are shown horizontally, in 6 columns: 1, 2, 3, 4, 5, 6.</li> <li>▪ The corresponding Glyph-X is then shown in the table cell which is the intersection of the respective row and column.</li> </ul> </li> </ul> <p>There are definitely instances of Glyph-C (plus coefficient) and Glyph-X which don’t fit the above correlation. However they are relatively few in number. This is no different from the occasional discrepancies which appear, between the “theoretical model” (as worked out by epigraphers) and what is seen in reality, in the inscriptions. Such discrepancies could be:</p> <ul style="list-style-type: none"> <li>▪ Between the HAAB patron in the ISIG and the HAAB month.</li> <li>▪ In Glyph-G’s not matching the LC.</li> <li>▪ In CR’s not matching LC’s.</li> <li>▪ In <math>CR_{n+1}</math> not matching <math>CR_n + DN_n</math>.</li> </ul> <p>None of these discrepancies detract from the soundness of the theoretical model as analysed by epigraphers. Instead, they can be taken as mistakes in the calendrical calculation at the time of carving, mistakes made by the carver, or mistakes made by the artist in drawing the inscription (e.g. where the glyphs might be eroded). <b>Furthermore, I think the possibility cannot be excluded that there were small regionally-based differences in the correlation.</b> This could be an explanation for <i>some</i> of the (few) discrepancies.</p> <ul style="list-style-type: none"> <li>• More details about each of the 18 forms of Glyph-X can be found elsewhere. See the individual forms for more information.</li> <li>• The relationship between Glyph-X and Glyph-B: <ul style="list-style-type: none"> <li>◦ ScheleEtAl-TLSiCMI.p6: Glyph-X is optional, but Glyph-B never occurs without the presence of Glyph-X.</li> <li>◦ Grube-FoGX.p11.para2: It has long been established that Glyph X in the Lunar Series is followed by Glyph B (Figure 19). Glyph B is only present when Glyph X is present. There are no cases of the use of Glyph B without a preceding Glyph X. In the early Classic period, such as in the early</li> </ul> </li> </ul>
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					<p>Lunar Series from Tikal and Uaxactun, there are inscriptions with Glyph X, but without Glyph B. The first examples of Glyph B appear at about 9.8.0.0.0 (Brussels Stela, Mayer 1978, Cat. No. 1) and 9.8.10.6.16 (Piedras Negras, Stela 25).</p> <ul style="list-style-type: none"> <li>○ Sim: the possible combinations are: <ul style="list-style-type: none"> <li>▪ ..., E, D, C, A, or</li> <li>▪ ..., E, D, C, X, A, or</li> <li>▪ ..., E, D, C, X, B, A</li> </ul> </li> <li>• Summary: <ul style="list-style-type: none"> <li>○ There are in theory at least 18 different forms of Glyph-X, each representing the name of a specific combination of a coefficient from 1 to 6 and one of 3 god-heads (<math>6 \times 3 = 18</math>).</li> <li>○ Glyph-B is optionally present when Glyph-X is present, but can be absent when Glyph-X is present. However, if Glyph-B is present, then Glyph-X is always also present. This is because giving the name (= Glyph-X) doesn't require also stating that that's the name (= Glyph-B), whereas stating "(this is) his youth(ful) name" (= Glyph-B) without giving the name (= Glyph-X) wouldn't make any sense.</li> </ul> </li> </ul>
Glyph X with 1+DG	N	CAL-SSX11	P	"Glyph X with 1+DG"	 <p>Grube-FoGX.p7.fig10a = Vepretskii.pc20210103 QRG Stela D D16a</p> <ul style="list-style-type: none"> <li>• Features: <ul style="list-style-type: none"> <li>○ Topped by a <b>yu[ku]</b>-like element. In Glyph-X with 2+DG, the equivalent of this is a <b>SA'</b>-like element.</li> <li>○ Single dot. In Glyph-X with 2+DG, the equivalent of this is three dots.</li> <li>○ L-shaped WITZ embracing K'UH with blood drops. The same element occurs in Glyph-X with 2+DG.</li> </ul> </li> </ul>
Glyph X with 2+DG	N	CAL-SSX12	P	"Glyph X with 2+DG"	<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>Grube-FoGX.p7.fig10c (Graham) YAX Lintel 47 A2 = Vepretskii.pc20210103</p> </div> <div style="text-align: center;">  <p>Coll-2 PNG Stela 3 B6 Stuart?/Montgomery?</p> </div> <div style="text-align: center;">  <p>Stuart-NDLCP.p1 CRN Panel 6 E3 Stuart</p> </div> </div> <ul style="list-style-type: none"> <li>• Features: <ul style="list-style-type: none"> <li>○ Topped by an element resembling the reduced variant of <b>SA'</b>. In Glyph-X with 1+DG, the equivalent of this is an element resembling <b>yu[ku]</b>.</li> <li>○ Three dots. In Glyph-X with 1+DG, the equivalent of this is one dot.</li> <li>○ L-shaped WITZ embracing K'UH with blood drops. The same element occurs in Glyph-X with 1+DG.</li> </ul> </li> </ul>
Glyph X with 3+DG	N	CAL-SSX13	P	"Glyph X with 3+DG"	<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <p>Grube-FoGX.p8.fig13i = Love-TEG.p20.pdfp20.fig25c = Vepretskii.pc20210103.2 PNG Stela 10 B7</p>


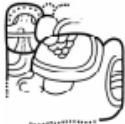



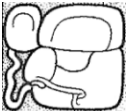


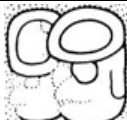





				<div>     </div> <p>Grube-FoGX.p8.fig13b TIK Stela 3 A6</p> <p>Grube-FoGX.p8.fig13c CPN Stela 7 B6a</p> <p>Grube-FoGX.p8.fig13d = Love-TEG.p20.pdfp20.fig25g = Vepretskii.pc20210103.1 PNG Stela 1 F1</p> <div>    </div> <p>Grube-FoGX.p8.fig13g (Graham) YAX 46 F1</p> <p>Grube-FoGX.p8.fig13h (Schele) = Vepretskii.pc20210103.3 PAL TFC Sanctuary Tablet / Jamb B3</p> <p>Mathews = Love-TEG.p20.pdfp20.fig25e YAX Lintel 21 B6a</p> <ul style="list-style-type: none"> <li>The PAL TFC example is referred to as “Sanctuary Tablet” by Grube-FoGX but called “Jamb” in Col-1.</li> <li>Features: <ul style="list-style-type: none"> <li>Top: crossed legs</li> <li>Bottom: <ul style="list-style-type: none"> <li>The “Eclipse Glyph”: K’IN (sun) or UH {moon} with flanking elements (“falling” flowing lines or 3 tiny dots in an oval cartouche ~ “death-oval”), <a href="#">or</a></li> <li>An element resembling a skull.</li> </ul> </li> </ul> </li> <li>Note: Grube-FoGX.p8.fig13g &amp; Grube-FoGX.p8.fig13h have a variant which doesn’t fit into this pattern.</li> <li>In Grube-FoGX.p8.fig13i, Grube-FoGX.p8.fig13j the K’IN between two “darkened” elements represents an eclipse (seen also in the Madrid, Dresden and Paris Codex).</li> <li>Dorota: no explicit knowledge about the skull, but if interchangeable with eclipse here, then it might mean the same too.</li> </ul>
Glyph X with 4+DG	N	CAL-SSX14	P	<div>     </div> <p>Grube-FoGX.p8.fig13j (Grube) = Love-TEG.p20.pdfp20.fig25b (Graham) = Vepretskii.pc20210103.2 COB Stela 20 A10</p> <div>  </div> <p>Love-TEG.p20.pdfp20.fig25d PRU Stela 25</p> <div>   </div> <p>Grube-FoGX.p8.fig13a = Col-2 = Vepretskii.pc20210103.1 CPN Stela 63 ‘B10’</p> <p>Love-TEG.p20.pdfp20.fig25a =? Col-2 CPN Stela E</p> <p>CPN Stela E ‘B1’b</p>











					 <p>Stuart-TPM.p162 B11 PAL TS B11</p>  <p>Graham PAL TS B11</p>  <p>Love-TEG.p20.pdf p20.fig25f Graham YAX Lintel 29 D2</p>  <p>Grube-FoGX.p8.fig13e</p>  <p>Grube-FoGX.p8.fig13f = Vepretskii.pc20210103.3</p> <ul style="list-style-type: none"> <li>• Features: <ul style="list-style-type: none"> <li>○ Top: <ul style="list-style-type: none"> <li>▪ The “Eclipse Glyph”: K’IN (sun) or UH {moon} with flanking elements (with cross-hatching).</li> <li>▪ A skull-like element.</li> </ul> </li> <li>○ Bottom: crossed legs.</li> </ul> </li> <li>• Note: Grube-FoGX.p8.fig13e, Grube-FoGX.p8.fig13f &amp; Stuart-TPM.p162 B11 have a variant which doesn’t fit into this pattern.</li> <li>• In Grube-FoGX.p8.fig13i, Grube-FoGX.p8.fig13j the K’IN between two “darkened” elements represents an eclipse (seen also in the Madrid, Dresden, and Paris Codex); Dresden (snake underneath), Right: Paris (turtle underneath).</li> <li>• Note that at least half of the moon is “dark” in Grube-FoGX.p8.fig13a, which is more than normal – in a conventional moon, there is darkness, but much less.</li> </ul>
Glyph X with 5+DG	N	CAL-SSX15	P	“Glyph X with 5+DG”	 <p>Grube-FoGX.p5.fig6a</p>  <p>Grube-FoGX.p5.fig6b</p>  <p>Grube-FoGX.p5.fig6c</p>  <p>Grube-FoGX.p5.fig6d = Vepretskii.pc20210103</p>  <p>Grube-FoGX.p5.fig6e = TOK-3D</p>  <p>NAR Stela 46 B6</p> <p>Stela 46 B6</p> <ul style="list-style-type: none"> <li>• NAR Stela 46 B6 is from <a href="https://sketchfab.com/3d-models/estela-46-naranjo-ver-2-809e20ccd9b5442796fbb8b8584f92e6">https://sketchfab.com/3d-models/estela-46-naranjo-ver-2-809e20ccd9b5442796fbb8b8584f92e6</a>.</li> <li>• Features: <ul style="list-style-type: none"> <li>○ Top: <ul style="list-style-type: none"> <li>▪ Left: SAK or something similar (optionally with infixed <b>le</b>).</li> <li>▪ Right: <b>variant of HUL (floppy pear) or MAY (deer hoof)?</b></li> </ul> </li> <li>○ Bottom: <ul style="list-style-type: none"> <li>▪ boulder-part of AJAW (or SIBIK?) or <b>ki</b> (all three are “visually”/“graphically” (but not semantically) related to one another).</li> </ul> </li> </ul> </li> <li>• Mnemonic: Tri-partite SIBIK with HUL</li> </ul>













Glyph X with 6+DG	N	CAL-SSX16	P	"Glyph X with 6+DG"	<div data-bbox="680 86 837 197"></div> <div data-bbox="680 207 1012 284"> <p>Grube-FoGX.p8.fig14a            PNG Stela 12 = Vepretskii.pc20210103            &lt;ta:IB&gt;.&lt;OCH:CH'AB&gt;</p> </div> <div data-bbox="1084 86 1263 197"></div> <div data-bbox="1084 207 1317 284"> <p>= Teufel-PhD.p375 (Schele)            PNG Stela 12            &lt;ta:IB&gt;.&lt;OCH:CH'AB&gt;</p> </div> <div data-bbox="1415 86 1532 197"></div> <div data-bbox="1415 207 1702 284"> <p>Looper-LW.p102.pdfp115.fig3.29            QRG Stela J A14            &lt;ta:IB&gt;.&lt;OCH:CH'AB&gt;</p> </div> <div data-bbox="689 325 761 437"></div> <div data-bbox="680 450 873 475"> <p>Grube-FoGX.p8.fig14b</p> </div> <div data-bbox="698 504 1348 810"> <ul style="list-style-type: none"> <li>• Variants (2):               <ul style="list-style-type: none"> <li>○ A. Quadripartite (= 4 quarters):                   <ul style="list-style-type: none"> <li>▪ Top left: ta.</li> <li>▪ Bottom left: <b>IB-/SIBIK</b>-like.</li> <li>▪ Top right: fist.</li> <li>▪ Bottom right: <b>CH'AB</b>-like.</li> </ul> </li> <li>○ B. Vertically stacked (indistinct, not enough examples to generalize):                   <ul style="list-style-type: none"> <li>▪ Top: <b>SIBIK/IB</b> flanked by two elements.</li> <li>▪ Bottom: <b>LEM</b> or <b>CH'AB</b>.</li> <li>▪ Below bottom: <b>ni</b>?</li> </ul> </li> </ul> </li> <li>• Mnemonic: quadripartite <b>IB</b> with fist (or tripartite stacked).</li> </ul> </div>
Glyph X with 1+TMG	N	CAL-SSX21	P	"Glyph X with 1+TMG"	<div data-bbox="680 852 837 963"></div> <div data-bbox="680 967 873 992"> <p>Grube-FoGX.p9.fig16d</p> </div> <div data-bbox="945 852 1048 963"></div> <div data-bbox="945 967 1137 992"> <p>Grube-FoGX.p9.fig16e</p> </div> <div data-bbox="1209 852 1326 963"></div> <div data-bbox="1209 967 1424 1018"> <p>Grube-FoGX.p9.fig16f            = Vepretskii.pc20210103</p> </div> <div data-bbox="1469 852 1626 963"></div> <div data-bbox="1469 967 1626 1043"> <p>Bojkowska            CAY Altar 4 Rim R</p> </div> <div data-bbox="1729 839 1859 963"></div> <div data-bbox="1729 967 1877 1043"> <p>BeliaevEtAl-LTJM            Stuart            CRN Panel 1 A7</p> </div> <div data-bbox="680 1082 819 1193"></div> <div data-bbox="680 1197 815 1222"> <p>(lost reference)</p> </div> <div data-bbox="913 1072 1061 1193"></div> <div data-bbox="913 1197 1048 1248"> <p>MHD (Graham)            IXK Stela 2 B9</p> </div> <div data-bbox="698 1276 1097 1439"> <ul style="list-style-type: none"> <li>• Features – 2 parts – Left and Right:               <ul style="list-style-type: none"> <li>○ Left: "JEWEL"</li> <li>○ Right:                   <ul style="list-style-type: none"> <li>▪ Top: <b>po</b></li> <li>▪ Bottom: <b>ya</b></li> </ul> </li> </ul> </li> <li>• Mnemonic: TMG = IXIIM = "1" → <i>juun poy</i></li> </ul> </div>
















Glyph X with 2+TMG	N	CAL-SSX22	P	"Glyph X with 2+TMG"	    <p>Grube-FoGX.p9.fig16a      Grube-FoGX.p9.fig16b      Grube-FoGX.p9.fig16c = Vepretskii.pc20210103      Safronov CRN Panel 3 B7</p> <ul style="list-style-type: none"> <li>• MHD reads this as two separate glyphs.</li> <li>• Features – 2 parts – Left and Right: <ul style="list-style-type: none"> <li>◦ Left: "JEWEL"</li> <li>◦ Right: <ul style="list-style-type: none"> <li>▪ Top: <b>po</b></li> <li>▪ Bottom: <b>k'I</b> or <b>K'A'</b></li> </ul> </li> </ul> </li> <li>• Mnemonic: TMG = IXIIM = "1" → <i>juun pook'</i></li> </ul>
Glyph X with 3+TMG	N	CAL-SSX23	P	"Glyph X with 3+TMG"	 <p>&lt;MHD.2M4&gt;.&lt;MHD.ZRE&gt;</p>     <p>Grube-FoGX.p9.fig16g      Grube-FoGX.p9.fig16h      Grube-FoGX.p9.fig16i      Grube-FoGX.p9.fig16j = Vepretskii.pc20210103</p> <ul style="list-style-type: none"> <li>• MHD reads this as two separate glyphs.</li> <li>• Features: <ul style="list-style-type: none"> <li>◦ Left (optional): "JEWEL"</li> <li>◦ Right: 3 "LEM"-like elements dangling below a NAAH-like element</li> </ul> </li> <li>• Mnemonic: TMG = IXIIM = "1" → <i>juun LEM LEM LEM</i></li> </ul>
Glyph X with 4+TMG	N	CAL-SSX24	P	"Glyph X with 4+TMG"	  <p>Grube-FoGX.p10.fig17f = Vepretskii.pc20210103      ? TIK Stela 40 A8</p> <ul style="list-style-type: none"> <li>• Features – 2 parts – Left and Right <ul style="list-style-type: none"> <li>◦ Left: MIH</li> <li>◦ Right: KAMIS</li> </ul> </li> <li>• Mnemonic/nickname: <i>mih-kamis</i></li> </ul>

Glyph X with 5+TMG	N	CAL-SSX25	P	<p>"Glyph X with 5+TMG"</p>  <p>Grube-FoGX.p10.fig17a</p>  <p>Grube-FoGX.p10.fig17b</p>  <p>Grube-FoGX.p10.fig17c</p>  <p>Grube-FoGX.p10.fig17d</p>  <p>Grube-FoGX.p10.fig17e = Vepretskii.pc20210103</p>  <p>Stuart PNG Stela 8 A7</p> <ul style="list-style-type: none"> <li>Features— 2 parts – Left and Right: <ul style="list-style-type: none"> <li>Left: <ul style="list-style-type: none"> <li>Top: <b>pu</b>.</li> <li>Bottom: curly element resembling a scroll/spiral or inverted question mark.</li> </ul> </li> <li>Right: <ul style="list-style-type: none"> <li>Top: (optional) <b>mi</b>.</li> <li>Bottom: mostly KAMIS: <ul style="list-style-type: none"> <li>Two of them might be <b>TZ'IKIN</b> instead of KAMIS.</li> <li>KAMIS has a KAWAK in the top half of the head (hence the old nickname "Stone-Headed Creature"), but in this variant of Glyph-X, the KAWAK can be replaced by LEM (does this make it K'AWIIL?) or by CHAN.</li> </ul> </li> </ul> </li> </ul> </li> <li>Optional phonetic complement <b>ya</b>.</li> <li>Mnemonic/nickname: <i>pu-ne-kamis</i>.</li> </ul>
Glyph X with 6+TMG	N	CAL-SSX26	P	<p>"Glyph X with 6+TMG"</p>  <p>Grube-FoGX.p10.fig17k = Vepretskii.pc20210103</p>  <p>Grube-FoGX.p10.fig17l</p>  <p>Graham NAR Stela 23 F7</p> <ul style="list-style-type: none"> <li>Features: <ul style="list-style-type: none"> <li>Left: either CHAN:KAB or KAB:CHAN</li> <li>Right: KAMIS: optional initial phonetic complement <b>ka</b> and/or final phonetic complement <b>si</b></li> </ul> </li> <li>Mnemonic/nickname: <i>kab-chan-kamis</i></li> </ul>
Glyph X with 1+JGU	N	CAL-SSX31	P	<p>"Glyph X with 1+JGU"</p>  <p>Grube-FoGX.p3.fig3a</p>  <p>Grube-FoGX.p3.fig3b</p>  <p>Grube-FoGX.p3.fig3c = Vepretskii.pc20210103</p>  <p>Grube-FoGX.p3.fig3ds</p>  <p>Biró-PNP3.p292.fig1 Safronov</p>

					<p>PNG Panel 3 D2</p> <ul style="list-style-type: none"> <li>Features: <ul style="list-style-type: none"> <li>Bottom and right: head and open mouth of AHIIN: <ul style="list-style-type: none"> <li>Spiral scroll (optionally bold) at the bottom right corner where the top jaw meets the bottom jaw. Note that spiral scroll is a strong indication of CHAPAAT instead of XOOK, but there are a few instances of XOOK with a spiral scroll (e.g. K&amp;L.p20.#1.1&amp;2). However, it's probably AHIIN, because the eye is a circle divided into two halves, with "crossed bands" in the "bottom" half (now the left half, because the top jaw is open).</li> <li>Eye can have the standard division into a top and bottom half, with crossed bands in the bottom half (but divided "vertically" because the jaws are open, and the head is tilted 90 degrees clockwise).</li> <li>One to three teeth, but minimum of one tooth always seems to be present.</li> </ul> </li> <li>Top left: <ul style="list-style-type: none"> <li>MIH. [Dorota: this might not be a headdress – there is no reason to think it is.]</li> <li>One example (Grube-FoGX.p3.fig3b) doesn't have a MIH, but something else instead.</li> </ul> </li> <li>Remainder (middle left): K'UH – blood drops can be very narrow, to leave more space for the K'UH head.</li> </ul> </li> </ul>
Glyph X with 2+JGU	N	CAL-SSX32	P	"Glyph X with 2+JGU"	<div>      </div> <p>Grube-FoGX.p3.fig3e = Vepretskii.pc20210103</p> <p>Grube-FoGX.p3.fig3f</p> <p>Grube-FoGX.p3.fig3g</p> <p>Grube-FoGX.p3.fig3h</p> <p>Stuart-TifTXIX.p61.fig34 B6 PAL TXIX Passage S-1</p> <ul style="list-style-type: none"> <li>Features: as with "Glyph X with 1+JGU", but with BAHLAM instead of MIH. [Dorota: this might not be a headdress – there is no reason to think it is.]</li> <li>PAL TXIX Passage S-1 has a syllabogram <b>ni</b> phonetic complement, which could be for AHIIN. [◀ Is this true? Is it possibly the human head between the head on the left and the end of the top jaw of the AHIIN?]</li> <li>(Optional) an oval element containing three non-touching dots in a row is a property marker for skulls, insects, and crocodiles.</li> </ul>
Glyph X with 3+JGU	N	CAL-SSX33	P	"Glyph X with 3+JGU"	<div>    </div> <p>Grube-FoGX.p4.fig4a</p> <p>Grube-FoGX.p4.fig4e = Vepretskii.pc20210103</p> <p>JM</p> <p>CAY - Unprovenanced Wall Panel</p> <div>   </div> <p>Looper = MHD (Tolles) QRG Stela E A7 &lt;"SNB"+CHAN&gt;.&lt;u:&lt;chó[ko]&gt;+K'ABA'&gt;:a&gt;</p> <ul style="list-style-type: none"> <li>Features: SNB with infixed CH'ICH at the bottom.</li> <li>QRG Stela E A7: from the drawing, it looks like a conflated "SNB" and CHAN, (the CHAN) being the unexpected element here. But this could be the drawing rather than the reality – the photograph doesn't help.</li> </ul>

Glyph X with 4+JGU	N	CAL-SSX34	P	"Glyph X with 4+JGU"	   <p>Grube-FoGX.p4.fig4b      Grube-FoGX.p4.fig4c      Vepretskii.pc20210103 (rotated 3+JGU)</p> <ul style="list-style-type: none"> <li>• Features: SNB with infixed CH'ICH at the top</li> </ul>
Glyph X with 5+JGU	N	CAL-SSX35	P	"Glyph X with 5+JGU"	  <p>Grube-FoGX.p5.fig7a      Grube-FoGX.p5.fig7b = Vepretskii.pc20210103</p> <ul style="list-style-type: none"> <li>• Features – 2 parts – Left and Right: <ul style="list-style-type: none"> <li>○ Left – 2 variants, each with 3 stacked components: <ul style="list-style-type: none"> <li>▪ A – "star"-based <ul style="list-style-type: none"> <li>• Top: top half of EK'</li> <li>• Middle: PET/washer (optionally bold centre)</li> <li>• Bottom: bottom half of EK'</li> </ul> </li> <li>▪ B – "leaf"-based <ul style="list-style-type: none"> <li>• Top: bi-foliate leaves ~= left and right feelers with protectors</li> <li>• Middle: washer with additional curved band on the top and bottom</li> <li>• Bottom: two horizontally touching dots, each with a (bold) tick at 12 o'clock</li> </ul> </li> </ul> </li> <li>○ Right: TZ'IKIN (Dorota confirms it is a TZ'IKIN)</li> </ul> </li> </ul>
Glyph X with 6+JGU	N	CAL-SSX36	P	"Glyph X with 6+JGU"	     <p>Grube-FoGX.p6.fig8a      Grube-FoGX.p6.fig8b      Grube-FoGX.p6.fig8c = Vepretskii.pc20210103      Grube-FoGX.p6.fig8d      Grube-FoGX.p6.fig8e  ji.&lt;"K'AN":AJAW&gt;      &lt;"K'AN".yi&gt;:AJAW      &lt;"K'AN":AJAW&gt;:YAX      &lt;"K'AN":AJAW&gt;:ji      "K'AN":AJAW"</p> <ul style="list-style-type: none"> <li>• Features – three components always present (not variants): <ul style="list-style-type: none"> <li>○ 1. AJAW-like – can be: <ul style="list-style-type: none"> <li>▪ Reduced variant of AJAW (= "BEN-ICH" = BEN + po / po + BEN).</li> <li>▪ "Double BENs" – note that the BEN can have unusual variants as well.</li> </ul> </li> <li>○ 2. K'AN-like – cross-hatched in 0, 2 or 4 quadrants (0 could be erosion).</li> <li>○ 3. Variable last element – but all three components are "unusual variants" of their : normal" forms: <ul style="list-style-type: none"> <li>▪ je (hand variant) or CHIT (head variant with rabbit ear) (latter preferred by Dorota).</li> <li>▪ yi (standard or hand variant).</li> <li>▪ YAX.</li> </ul> </li> </ul> </li> </ul>

Numbers	N	NUM	M	"Numbers overview"	<p>What follows is an overview of the glyphic forms of numbers, i.e. a classification of the existing numbers into subgroups showing a similar pattern.</p> <p>There are additional examples in 25EMC for some numbers.</p> <ul style="list-style-type: none"> <li>Any number from "1" to "19" can be expressed in the bar-and-dot notation, where a bar represents "5" and a dot represents "1".</li> <li>In addition to the "bar-and-dot" notation, small and medium-sized numbers can be written as glyphs. <ul style="list-style-type: none"> <li>Numbers from 0 to 19 – these all have a head variant, but some have additional variants on top of that: <ul style="list-style-type: none"> <li>0: <ul style="list-style-type: none"> <li>0 has a head variant.</li> <li>0 has a number of non-head variants: <ul style="list-style-type: none"> <li>Flower variant.</li> <li>Horizontal hand variant.</li> <li>Vertical hand variant.</li> <li>Shell variant (mostly codices, but occasionally found in the older media).</li> </ul> </li> </ul> </li> <li>Numbers from 1 to 9: <ul style="list-style-type: none"> <li>Each of these has an <i>anthropomorphic</i> head variant, i.e. a head which is that of a god or human being – see individual numbers for their distinguishing characteristics.</li> <li>The following numbers have additional "non-head" variants: <ul style="list-style-type: none"> <li>1 has two additional non-head variants: <ul style="list-style-type: none"> <li>Pointing index-finger variant.</li> <li>Jewel variant.</li> </ul> </li> <li>6 has one additional non-head variant: <ul style="list-style-type: none"> <li>An S-shaped element in a cartouche, with a knob at each end of the cartouche.</li> </ul> </li> </ul> </li> <li>Numbers from 10 to 19: <ul style="list-style-type: none"> <li>10: <ul style="list-style-type: none"> <li>10 has a head variant which is based on a skull, and which has (like all glyphs based on skulls) a bone-jaw.</li> <li>10 also has a head variant which is a conventional anthropomorphic head, but with bones in the headdress.</li> </ul> </li> <li>11 and 12 – these do <i>not</i> have a head variant based on a skull – they each have one variant based on an anthropomorphic head. <ul style="list-style-type: none"> <li>11: a head variant of KAB = "earth".</li> <li>12: a head variant of CHAN = "sky".</li> </ul> </li> <li>11 and 12 are the only numbers from 10 to 19 without a skull with bone jaw variant (so they are in some senses more like the numbers from 0 to 9).</li> <li>13-19: <ul style="list-style-type: none"> <li>Each of these has a head variant which is in principle the skull of "10" with the distinguishing characteristics of the head variant from 3 to 9 added to it, e.g.: <ul style="list-style-type: none"> <li>13 is a skull (representing "10") with the distinguishing characteristics of the head variant of "3" added to it.</li> <li>14 is a skull (representing "10") with the distinguishing characteristics of the head variant of "4" added to it.</li> <li>15 is a skull (representing "10") with the distinguishing characteristics of the head variant of "5" added to it.</li> <li>etc.</li> </ul> </li> <li>In addition to this, 13 has a head variant which is not based on a skull but is instead the Waterlily Serpent itself, read as "13" from context.</li> </ul> </li> <li>Numbers 20 and above: <ul style="list-style-type: none"> <li>20 is written with a moon-based glyph.</li> <li>Numbers from 21 to 39 are written with the 20 and 1 to 19 (with the 1 to 19 preceding the 20).</li> </ul> </li> <li>Numbers 40 and above (very few examples): <ul style="list-style-type: none"> <li>40, 60, 80, etc are written "multiplicatively" with the number of dots followed by the 20: <ul style="list-style-type: none"> <li>2 dots with 20 writes 40.</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li></ul></li></ul></li></ul>
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					<ul style="list-style-type: none"> <li>• 3 dots with 20 writes 60.</li> <li>• Etc.</li> </ul> <ul style="list-style-type: none"> <li>▪ 41, 42, ..., 61, 62, ..., 81, 82, .. are written as 40, 60, 80, ... followed by the relevant 1 to 19.</li> </ul>
Number "0"	N	NB	L	mih / mihl	<div>  <p>K&amp;H.p48.pdfp50.#1.2 = 25EMC.pdfp42.#4.1 MIH? / MINAN?</p> </div> <div>  <p>TOK.p24.r1.c3 mi</p> </div> <div>  <p>BMM9.p5.r3.c2.3 mi</p> </div> <div>  <p>25EMC.pdfp42.#4.2 MIH</p> </div> <div>  <p>JM.p170.#3 MI</p> </div> <div>  <p>MHD.SNC.1&amp;2 MIH / mi</p> </div> <div>  <p>1592st MIH</p> </div> <div>  <p>MHD.SNC.1 MIH / mi</p> </div> <div>  <p>Sanchez-THSoHC (Polyukhovych) PAL House C HS C5-C6 / B3a 0.&lt;K'IN:ni&gt;</p> </div> <div>  <p>Coll-1 (Looper) QRG Stela F D4 / B4 0.WINIK</p> </div> <div>  <p>Coll-1 (Looper) QRG Stela F C5 / A5 0.K'IN</p> </div> <div>  <p>TOK.p17.r3.c3 = AT-E1168-lecture6.t0:37.12 = AT-E1168-lecture6.t0:37.40 mi</p> </div> <div>  <p>MHD.ZQ1 MIH / mi / "0"</p> </div> <div>  </div> <div>  </div>



K&H.p48.pdfp50.#1.1 = K&H.p75.pdfp77.r5.c3 = K&L.p49.r5.c3

MIH? / MINAN?

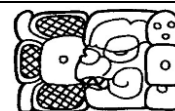
mi

mi



BMM9.p5.r3.c2.1

mi



Coll-2  
QRG Stela C B4  
MIH.WINIK



Schele  
QRG Stela C B4  
MIH.WINIK



TOK.p9.r3.c3  
mi



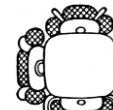
JM.p169.#5  
mi / MI



0173md  
mi



0173st



T173abc  
-



AT-E1168-lecture6.t0:50:25  
mi / MIH



AT-E1168-lecture6.t0:50:25  
mi / MIH.hi



TOK.p19.r3.c4  
mi



25EMC.pdfp3.#1.8&9  
MIH? / MINAN? / "0"



MHD.MR2.1&2&3  
mi



0807st  
mi



T807  
-



AT-E1168-lecture6.t0:50:25  
mi/MIH-li



Coll-2  
QRG Stela C B3  
<mi:li>.WINIKHAAB



Coll-2  
QRG Stela C A4  
<mi:li>.WINIKHAAB



Coll-2  
QRG Stela C A5  
<mi:li>.WINIKHAAB



Schele  
QRG Stela C B3  
<mi:\*li>.WINIKHAAB



Schele  
QRG Stela C A4  
<mi:li>.WINIKHAAB



Schele  
QRG Stela C A5  
<mi:li>.WINIKHAAB





BMM9.p5.r3.c2.2  
mi



JM.p170.#1  
mi/MI



JM.p170.#2  
mi/MI
























AT-E1168-lecture6.t0:50:25  
MIH








- Each of the five standard sources gives one or more variants, but the situation is very complex:
  - No source gives all five variants.
  - For each variant, some sources give only a **mi** or only a **MIH** reading, and some sources give both readings (but not consistently for all the variants which they do give).
  - Some sources give alternative readings besides **mi** and **MIH**, like *mihil*, *minan*:
  - It's questionable whether there is any benefit in trying to analyse which source gives which combination of readings for which variant.
    - I think it's simplest just to behave as if all variants can be either **mi** or **MIH**, and if that's too broad, then some of those will never be encountered in reality.
    - The only exception is the "shell" variant found *almost* exclusively only in the codices (see below). That one only occurs as a coefficient in calendrical phrases (i.e. as a number), never as **mi** (to spell words).











For example, TOK gives only **mi**, but **MIH** is given in AT-E1168-lecture6.t0:37.40; or JM gives both **mi/MI** (but in his time, the *-h* of *mih* was not read); K&H gives **MIH?** and **MINAN?**, both with question marks; etc.














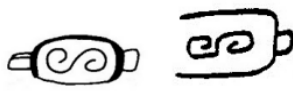


- AT-E1168-lecture6.t0:41:20-42:12- talks about the god-head variants and how most of what he proceeds to say is pure speculation: The fascinating point Maya numbers is that they also have what we call "head variants". And we actually don't know why – we don't know how the system came into being, but the first twelve numbers ["1" to "12"] have a god – some kind of supernatural being – associated with them. And as far as I know, nobody ever published an article explaining why it happens – trying to understand the symbolism [or] the significance. We don't know some of the gods of those numbers – and even if we know some of them, it's still not clear what happens. What you're going to hear now is just pure speculation – I like to speculate about my numbers. But it's kind of fascinating: it's one of those things where you can pretty much say what you want because nobody else even thinks about it. It's still such an open field, the symbolism of these characters.
- AT-E1168-lecture6.t0:51:34-52:12: And then there's a word that means "zero" – *mih* or *mihil*. And it is spelled with this four-petalled flower, sometimes with elaborate phonetic complements – this is just the hi-sign. And then there's a shell-like thing held by a hand, that's a syllable **mi** or a **MIH** [unclear]. And there's this little shell form. [It] occurs in the codices, but now we discovered some murals in Xultun – archaeologists discovered some murals at Xultun which actually used this character at the end of the Classic period. So we know it was probably in the manuscripts, but not so much in the inscriptions or the carved monuments.
- PAL House C HS has two very different systems of glyph-block labelling:
  - MHD: Four columns (A-B, C-D) and six rows (1-6) – sub-parts of very complex glyph-blocks are designated -a, -b, -c, -d (left to right, top to bottom).
  - Polyukhovych: Eight columns (A-B, C-D, E-F, G-H) and twelve rows (1-12) - sub-parts of very complex glyph-blocks get a simple glyph-block reference (but large simple glyph-blocks span rows and columns, in particular, rows do this).
- QRG Stela F has at least two systems of glyph-block labelling:
  - MHD (Looper):
    - East side: A-B.
    - West side: C-D.
  - Coll-1 (same Looper drawing, but with column labels interchanged):
    - East side: C-D.
    - West side: A-B.
- [Basic numbers \(1 to 20\):](#)
















				<ul style="list-style-type: none"> <li>○ All the basic numbers 1 to 19 (<b>but not 20</b>) have head variants (in addition to the ‘bar-and-dot’ forms). Three of them have additional non-head logograms: “0”, “1”, “6”: <ul style="list-style-type: none"> <li>▪ “0” has four additional non-head logograms [plus the head variant → 5 variants in total].</li> <li>▪ “1” has two additional non-head logograms [plus the head variant → 3 variants in total].</li> <li>▪ “6” has one additional non-head logograms [plus the head variant → 2 variants in total].</li> </ul> </li> <li>○ “20” has no head variant, but has two non-head logograms [ → 2 variants in total]: <ul style="list-style-type: none"> <li>▪ “Moon”.</li> <li>▪ “Human face”.</li> </ul> </li> <li>● Variants of “0” (5): <ul style="list-style-type: none"> <li>○ A. Anthropomorphic head with hand-jaw: <ul style="list-style-type: none"> <li>▪ Top: Forehead ornament resembling <b>HA’</b> or <b>ba</b>, but without the blades of grass at the bottom.</li> <li>▪ Right: Complex ear with long strands of hair.</li> <li>▪ Cheek, optionally, either: <ul style="list-style-type: none"> <li>• %-sign, or</li> <li>• 3 non-touching dots in a triangular formation, pointing down.</li> </ul> </li> <li>▪ Bottom: <ul style="list-style-type: none"> <li>• Hand covering chin – thumb covering lips, forefinger points at ear, little finger points to back of head.</li> <li>• Hand (optionally) in a gesture slightly resembling “devil’s horns”, but with outstretched thumb.</li> </ul> </li> </ul> <p>PAL House C HS C5-C6 / B3a has a CHAPAAT headdress, but the distinguishing characteristic still remains the hand-jaw.  There may be a variant with a head that is less anthropomorphic and more “reptile” or “bird” (MHD.SNC.1, PAL House C HS C5-C6/B3a, QRG Stela F D4/B4, QRG Stela F C5/A5).</p> </li> <li>○ B. Flower (note: not “the head of a bee” with the two long petals as “feelers”, as per <a href="#">reference lost</a>): <ul style="list-style-type: none"> <li>▪ Washer, surrounded by: <ul style="list-style-type: none"> <li>▪ 1 roughly rectangular and 2 roughly square petals, each: <ul style="list-style-type: none"> <li>• Rounded.</li> <li>• Bold outline.</li> <li>• Cross-hatched.</li> </ul> </li> <li>▪ 2 long, thin “leaves” between the 3 petals, each optionally with a spine.</li> </ul> </li> <li>○ C. Hand holding shell: <ul style="list-style-type: none"> <li>▪ Right hand with fingers slightly or fully curled and pointing to the right, viewed from the back of the hand.</li> <li>▪ Hand grasps a “<b>yi</b>”.</li> <li>▪ Optionally has a “<b>li</b>” or “<b>AK’AB</b>”-like element at the bottom.</li> </ul> </li> <li>○ D. Plain hand: <ul style="list-style-type: none"> <li>▪ Open right hand, viewed from the back of the hand.</li> <li>▪ Fingers and thumb outstretched and pointing upwards.</li> <li>▪ Optional fingernails.</li> <li>▪ 2 touching dots with protector in bottom right corner (an “<b>AK’AB</b>”?).</li> </ul> </li> <li>○ E. Shell (mostly Codex form): <ul style="list-style-type: none"> <li>▪ Rather abstract and difficult to describe – see example.</li> </ul> </li> </ul> </li> <li>● Do not confuse the head variant of <b>MIH</b> with the visually (slightly) similar (bird-)head variant of <b>PIK/PIH</b>. They are both head glyphs with a hand-jaw, but: <ul style="list-style-type: none"> <li>○ <b>MIH</b> is an anthropomorphic head while <b>PIK/PIH</b> is a bird-head.</li> <li>○ Furthermore, <b>MIH</b> can have an optional %-sign (or three non-touching dots in a triangular formation, triangle pointing downwards) and (also optionally) some skull/bone/death-like characteristics, absent from <b>PIK/PIH</b>.</li> </ul> <p>These two will generally only occur in different contexts (e.g. the former as a coefficient and the latter as a calendar unit), so there should be no confusion. But “abstractly”, when thinking about “loose glyphs” out of context, it’s easy to confuse the two.</p> </li> <li>● <b>MIH</b> can also be a verb meaning “to make content”, “to appease” – see Tokovinine-PaliCMN.p39.pdf48.para3.</li> </ul> </li></ul>
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Number “1”	N	NB	L	juun / ju’n / jun	<div>  <p>K&amp;H.p48.pdfp50.#2.2 = 25EMC.pdfp36.#7.2 JUN</p> </div> <div>  <p>TOK.p23.r1.c4 IXIIM / na</p> </div> <div>  <p>25EMC.pdfp36.#7.1&amp;3&amp;4 IXIIM / JUN</p> </div> <div>  <p>1568st IXIIM</p> </div> <div>  </div> <div>  </div> <div>  <p>K&amp;L.p31.#6.1&amp;2&amp;3&amp;4 JUN</p> </div> <div>  </div> <div>  </div> <div>  </div> <div>  <p>MHD.PL1c.1&amp;2 IXIIM</p> </div> <div>  </div> <div>  <p>T1000a -</p> </div> <div>  <p>Coll-1 (Looper) QRG Stela F D5 / B5 1.AJAW</p> </div> <div>  <p>TOK.p20.r3.c1 “1”</p> </div> <div>  <p>MHD.MBA.1&amp;2 JUUN</p> </div> <div>  <p>0329st JUUN</p> </div> <div>  <p>T329 -</p> </div> <div>  <p>BMM9.p10.r3.c3 HUN (“JEWEL”)</p> </div> <div>  <p>1568ex IXIIM</p> </div> <div>  <p>T147 -</p> </div> <div> <ul style="list-style-type: none"> <li>• BMM9 is the only source to give the “JEWEL” variant, and gives the reading as <i>hun</i>. In my own usage, I have standardized to <i>juun</i> (as per Tokovinine, see below).</li> <li>• K&amp;L and 25EMC give the head variant only in connection with alternative readings for IXIIM.</li> <li>• In AT-E1168-lecture6.t0:39:45, the slide shows “1” is read <i>juun</i> and “10”, “13”, “14”, “15”, ... “19” are read <i>-lajuun</i>, i.e. all with a long-u (in connection with the bar-and-dot notation). K&amp;H, 25EMC have JUN, but they never write long vowels anyway, and TOK (and Tokovinine elsewhere) consistently does. So I’m using <i>juun</i>.</li> <li>• TOK.p23.r1.c4 gives only IXIIM / na, but AT-E1168-lecture6.t0:42:12-43:02: So for example number “1” - <i>juun</i> – is also a logogram for the Maize God. So the Maize God in his typical pronunciation is <i>Ixiim</i>, which literally means “maize”, like in “grain”. But sometimes – actually most of the time – when he’s shown in art and is provided with a caption, he’s called “One Maize”. like “The First Maize” or just “Singular Maize”; so <i>Juun Ixiim</i> or perhaps “The Only Maize”. So you have to think of the mentality people in Mesoamerica: everything starts with corn. Corn is the main source of sustenance – there is no life, no human existence without corn. It kind of makes sense that they think of corn as being this entity that corresponds to [the] number one: in terms of their world view, that’s Number One.</li> <li>• Variants of “1” (3): <ul style="list-style-type: none"> <li>○ A. Anthropomorphic head:</li> </ul> </li> </ul> </div>
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					<ul style="list-style-type: none"> <li>Forehead ornament is a “JEWEL” (see below)</li> <li>Right: Complex ear with long strands of hair</li> <li>Middle: (optionally) a tapered slightly wavy band (tip downwards), representing the sheaf-leaf of the corn cob, plus two or three dots, representing grains of corn</li> <li>B. An index finger “pointing” (usually to the left or up).</li> <li>C. “JEWEL”: a longish rectangular-ish element, with two lobes at the bottom. It appears as a component in: <ul style="list-style-type: none"> <li>TZUTZ = “to complete” (not pronounced).</li> <li>Some Glyph-X variants – the ones paired with Glyph-C = 1+TMG, 2+TMG and possibly 3+TMG (probably pronounced).</li> <li>As the forehead ornament of IXIIM (not pronounced).</li> <li>(Optionally) the name of (Juun) Chakaw Nahb Chan of CRN (pronounced): This usage is the main reason this glyph is listed under “1”.</li> </ul> </li> <li>MHD does not seem to have declared a code for “jewel” (or I haven’t been able to find it).</li> <li>Both “1” and “8” are a young man – it’s not the case that “8” is older than “1”. The distinguishing feature is: <ul style="list-style-type: none"> <li>“1” has a “jewel” as forehead ornament.</li> <li>“8” has a “protected scroll” as forehead ornament.</li> </ul> </li> </ul>
Number “2”	N	NB	L	cha’ / ka’	<div>  <p>TOK.p24.r1.c1 “2” / cha’ / ka’</p> </div> <div>  <p>25EMC.pdfp31.#1.1 CHA’</p> </div> <div>  <p>MHD.PL2a.1 CHA’ / KA’</p> </div> <div>  <p>1086st CHA</p> </div> <div>  <p>T1086 -</p> </div> <div>  <p>K&amp;H.p48.pdfp50.#3.2 = 25EMC.pdfp31.#1.2 CHA’</p> </div> <div>  <p>MHD.PL2a.2</p> </div> <ul style="list-style-type: none"> <li>No glyphs given in K&amp;L, BMM9.</li> <li>TOK.p24.r1.c1 gives only “2”, but <i>cha’ / ka’</i> given in AT-E1168-lecture6.t0:39:45 (in connection with the bar-and-dot notation).</li> <li>AT-E1168-lecture6.t0:41:06-41:20: And then of course the shift between <i>k-</i> and <i>ch-</i> is an ongoing phonetical process during the entirety of the Classic period, so at some point they pronounced this number as <i>ka’</i> and then at some point in time it became <i>cha’</i>, and we don’t know exactly when it happened.</li> <li>AT-E1168-lecture6.t0:50:11: “11” and “12” are a total mystery, “2” is a total mystery; as far as I know [in terms of the reason for their particular god-head variants].</li> <li>Do not confuse Glyph-G<sub>7</sub> and the head variant of the numeral “2”! <ul style="list-style-type: none"> <li>What they have in common (on the right): <ul style="list-style-type: none"> <li>Top: a left-hand fist with thumb pointing up</li> <li>Bottom: a youthful head</li> </ul> </li> <li>What distinguishes them (on the left): <ul style="list-style-type: none"> <li>Glyph-G<sub>7</sub> has NAAH.</li> <li>Numeral “2” has (or rather, <i>can</i> have) SAK.</li> </ul> </li> </ul> </li> </ul> <p>These two will generally only occur in different contexts, so there should be no confusion. But “abstractly”, when thinking about “loose glyphs” out of context, it’s easy to confuse the two.</p> <ul style="list-style-type: none"> <li>Mnemonic: a fist and a head = “2”.</li> </ul>














Number “3”	N	NB	L	uhx / ux / ox / hux	 K&H.p48.pdfp50.#4.2 = 25EMC.pdfp36.#3.5 UX / OX   25EMC.pdfp36.#3.6&7 UX / OX   MHD.PL3a.1&2 HUX / OX   1082st -   T1082 -	<ul style="list-style-type: none"> <li>No glyphs given in K&amp;L, TOK, BMM9.</li> <li>25EMC.pdfp36.#3.1&amp;2&amp;3&amp;4 are the boulder variant of IK'. 25EMC seems to suggest that these too can be read as UX / OX in the context of numbers.</li> <li>In AT-E1168-lecture6.t0:39:45, the slide gives <i>uhx</i> / <i>hux</i> for “3” (in connection with the bar-and-dot notation).</li> <li>AT-E1168-lecture6.t0:40:20-41:06: There is some variation: there are two types of uncertain things. One is some initial consonants may be glides or may be not present at all, like <i>uk</i> or <i>wuk</i> or <i>huk</i>, or <i>uklajuun</i> or <i>wuklajuun</i> or <i>huklajuun</i>, same goes for <i>ux</i> or <i>hux</i> – we don’t know. Unfortunately, most of the time when numbers appear in Maya writing, they appear just as numbers – they don’t spell them phonetically, with very, very few exceptions. So when they do spell them or when they add phonetic complements, then we have some clues. It is also possible that some numbers were not spelled in exactly the same way – we have some evidence of dialects: differences in pronunciation between different Maya sites – it’s also possible that they pronounced them differently.</li> <li>AT-E1168-lecture6.t0:44:10-44:17: ... the Wind God is the patron of the number “3” – here is the head of the Wind God. [Sim: There follows a theory about three wind directions and “3” (West, North, East, excluding South because wind and rain don’t come from the South, because of the Guatemalan highlands). This seems extremely speculative to me; see Sihoom in the CMGG.</li> <li>Mnemonic: 3 o’clock is a good time to have afternoon tea with a doughnut / by getting your tooth (=IK’) into a doughnut.</li> <li>Bonn does not seem to have declared a codepoint for the head variant of “3”: <ul style="list-style-type: none"> <li>MHD.PL3 (in the form of PL3a) is a form of “3”, read HUX / OX.</li> <li>The MHD Concordance matches it to T1082.</li> <li>Bonn have retained 1082xx as a Bonn number (in the form of 1082st), but have not assigned it a reading of HUX or OX.</li> </ul> </li> </ul>
Number “4”	N	NB	L	chan / kan	 K&H.p48.pdfp50.#5.2 = 25EMC.pdfp40.#3.4 CHAN / KAN   TOK.p25.r1.c2 “4”   25EMC.pdfp40.#3.3 CHAN   MHD.SN4a.1&2 CHAN / KAN   T1010 -	<ul style="list-style-type: none"> <li>No glyphs given in K&amp;L, BMM9.</li> <li>AT-E1168-lecture6.t0:48:13-49:36 (which he admits is speculation): So the sun in Maya in terms of Maya cosmic vision has four roads. And it’s just shared by many other cultures in Mesoamerica – many other pre-Columbian cultures in the Americas. Because, when you think about it, the sun... it’s the two solstices and the two equinoxes. So the sun crosses the universe in four roads, creating the cardinal directions. The sun is this “cosmos-</li> </ul>













					<p>making thing” – its motion creates the cosmos. And in terms of how Mesoamerican people orient themselves in space, they look towards the sun. So in our West and Northern European backgrounded culture, we look towards the Polar Star – we look North. In Mesoamerica, in terms of how your body orients in space, you look East and up. So [in] all the maps, East is the upper part of the map. In the traditional Mesoamerican cosmology you follow the sun – you follow the road of the sun. So in Mayan languages, right is South: so “right” and “South” is the same word, actually – so <i>Nojol</i>. And then in the language of the Aztecs, North is actually left. So the patron god of the Aztecs is the “Hummingbird of the Left”. It’s not about his left-handedness, it’s the fact that he comes from the North. So, four roads of the sun.</p>
Number “5”	N	NB	L	ho’ / jo’	<div>  <p>K&amp;H.p48.pdfp50.#6.2 = 25EMC.pdfp35.#1.2 HO’</p> </div> <div>  <p>TOK.p25.r5.c3 “5”</p> </div> <div>  <p>25EMC.pdfp35.#1.1 HO’</p> </div> <div>  <p>MHD.PA5.1&amp;2 HO’</p> </div> <div>  <p>1742bb HO’</p> </div> <div>  <p>1742bv HO’</p> </div> <ul style="list-style-type: none"> <li>• No glyphs given in K&amp;L, BMM9.</li> <li>• In AT-E1168-lecture6.t0:39:45, the slide gives <i>jo’</i> for “5” (in connection with the bar-and-dot notation).</li> <li>• AT-E1168-lecture6.t0:49:37-49:46 (which he admits is speculation): And then you can probably say, well, the old god of the unhappy five days at the end of the year – it’s kind of reasonable that he’s the patron of number “5”.</li> </ul>
Number “6”	N	NB	L	wak	<div>  <p>K&amp;H.p48.pdfp50.#7.2 = 25EMC.pdfp50.#5.1 WAK</p> </div> <div>  <p>TOK.p25.r3.c4 “6”</p> </div> <div>  <p>MHD.PH6.1 WAK</p> </div> <div>  <p>1060st WAK</p> </div> <div>  <p>T1087 -</p> </div> <div>  <p>MHD.PH6.2 WAK</p> </div> <div>  <p>T1060b -</p> </div> <div>  <p>K&amp;L.p44.pdfp44.#2.1&amp;2 WAK<sub>1</sub></p> </div> <div>  <p>TOK.p9.r3.c4 “6”</p> </div> <div>  <p>25EMC.pdfp50.#4 WAK</p> </div>




					 MHD.32N.1&2 WAK  0367st WAK  T367 -
					<ul style="list-style-type: none"> <li>No head variants given in K&amp;L, BMM9; non-head variant not given in K&amp;H, BMM9.</li> <li>• Variants of “6” (2): <ul style="list-style-type: none"> <li>○ A. Anthropomorphic head: <ul style="list-style-type: none"> <li>▪ The large round/squarish eye has an axe in it.</li> <li>▪ There is an interesting sub-variant, where the axe is replaced by two crossed bands (PH6.2, T1060b).</li> </ul> </li> <li>○ B. Abstract: <ul style="list-style-type: none"> <li>▪ A roundish rectangle with an “S” in it (the top and the bottom can be quite tightly curled).</li> <li>▪ Two small, squarish elements, one at each end.</li> </ul> </li> </ul> </li> <li>• AT-E1168-lecture6.t0:49:46: Tokovinine explicitly says that we don’t know who these gods are, for “6” and “7”.</li> <li>• K&amp;L.p44.pdfp44.#2 says that the meaning of the non-head variant is unknown but that it substitutes with WAK ‘six’.</li> </ul>
Number “7”	N	NB	L	huk / wuk	 K&H.p48.pdfp50.#8.2 = 25EMC.pdfp35.#2.1 HUK  TOK.p25.r3.c1 “7”  MHD.ST7 .1&2 WUUK  1923st WUK
					<ul style="list-style-type: none"> <li>No glyphs given in K&amp;L, BMM9.</li> <li>• In AT-E1168-lecture6.t0:39:45, the slide gives <i>wuk / huk</i> for “7” (in connection with the bar-and-dot notation).</li> <li>• AT-E1168-lecture6.t0:40:20-41:06 : There is some variation: there are two types of uncertain things. One is some initial consonants may be glides or may be not present at all, like <i>uk</i> or <i>wuk</i> or <i>huk</i>, or <i>uklajuun</i> or <i>wuklajuun</i> or <i>huklajuun</i>, same goes for <i>ux</i> or <i>hux</i> – we don’t know. Unfortunately, most of the time when numbers appear in Maya writing, they appear just as numbers – they don’t spell them phonetically, with very, very few exceptions. So when they do spell them or when they add phonetic complements, then we have some clues. It is also possible that some numbers were not spelled in exactly the same way – we have some evidence of dialects: differences in pronunciation between different Maya sites – it’s also possible that they pronounced them differently.</li> <li>• AT-E1168-lecture6.t0:49:46: Tokovinine explicitly says that we don’t know who these gods are, for “6” and “7”.</li> </ul>
Number “8”	N	NB	L	waxak	 K&H.p48.pdfp50.#9.2 = K&L.p31.#1.1 = 25EMC.pdfp28.#4.2 WAXAK  TOK.p23.r4.c1 “8” / waxak  TOK.p23.r4.c2 AJAN  25EMC.pdfp28.#3.1 WAXAK
					 K&L.p31.#1.2&3 “8”  MHD.PL8c.1&2&3 WAXAK  1006st AJAN  T1006a -









					<ul style="list-style-type: none"> <li>No glyphs given in BMM9.</li> <li>K&amp;L gives only “1” and “8” in connection with alternative readings for IXIIM and AJAN.</li> <li>TOK.p23.r4.c1 gives only “8”, but <i>waxak</i> given in AT-E1168-lecture6.t0:39:45 (in connection with the bar-and-dot notation).</li> <li>TOK.p23.r4.c2 gives only AJAN but AT-E1168-lecture6.t0:49:55: As far as I know, nobody has ever suggested why the number “8” is associated with ripe corn – so not the Maize God as the first grain of corn, but the Maize God as a corn cob.</li> <li>Both “1” and “8” are a young man – it’s not the case that “8” is older than “1”. The distinguishing feature is: <ul style="list-style-type: none"> <li>“1” has a “jewel” as forehead ornament.</li> <li>“8” has a “protected scroll” as forehead ornament.</li> </ul> </li> </ul>
Number “9”	N	NB	L	balun / baluun / bolon	<div>  <p>K&amp;H.p48.pdfp50.#10.2 = 25EMC.pdfp30.#5.1 BALUN</p> </div> <div>  <p>TOK.p24.r2.c2 “9” / BOLON</p> </div> <div>  <p>MHD.PY9a.1&amp;2&amp;3 BALUN</p> </div> <div>  <p>1003st BALUUN</p> </div> <div>  <p>T1003 -</p> </div> <div>  <p>Coll-1 (Looper) QRG Stela F C3 / A3 9.PIK</p> </div> <ul style="list-style-type: none"> <li>No glyphs given in K&amp;L, BMM9.</li> <li>Pronunciation: <ul style="list-style-type: none"> <li>An older reading was <i>bolon</i>, hence the name of the god <i>Bolon Okte’ K’uh</i> in English.</li> <li>K&amp;H, MHD give <i>balun</i> while Bonn gives <i>baluun</i>.</li> </ul> </li> <li>TOK.p24.r2.c2 gives only “9”, but <i>bolon</i> given in AT-E1168-lecture6.t0:39:45 (in connection with the bar-and-dot notation).</li> <li>AT-E1168-lecture6.t0:50:08: And then number “9” is one of the hero twins.</li> </ul>
Number “10”	N	NB	L	lajuun	<div>  <p>K&amp;H.p48.pdfp50.#1.4 = 25EMC.pdfp41.#1.1 LAJUN</p> </div> <div>  <p>TOK.p22.r1.c1 “10” / CHAM</p> </div> <div>  <p>MHD.SC1a.1&amp;2&amp;3&amp;4 LAJUUN</p> </div> <div>  <p>1579st -</p> </div> <div>  <p>MC.p39.c1.r10.3</p> </div>

















					    <p>MHD.MB8.1&amp;2 "10" / LAJUUN</p> <p>1744st -</p> <p>B. Fash CPN Stela 3 B7 4.10</p> <ul style="list-style-type: none"> <li>No glyphs given in K&amp;L, BMM9.</li> <li>Features: <ul style="list-style-type: none"> <li>A skull with nose-hole and bone-jaw, optionally with the "bone" property marker.</li> <li>MC gives a variant which has a human or god-head with bone-jaw, and with a bone infixed (or even covering, i.e. not entirely contained in) the top of the head.</li> <li>MHD reveals that there is a unique variant of "10" which consists of two hands: <ul style="list-style-type: none"> <li>It has been assigned the 3-character MHD code of MB8, and a search in MHD on "blcodes contains MB8" reveals that it occurs only on CPN Stela 3 B7.</li> <li>MHD's note on this glyph is: Represents a count of ten on the digits of two hands.</li> <li>Iconographically, this makes a lot of sense, and it fits into the context of it being part of the coefficient of a Haab month, in turn part of the CR corresponding to one of the ISIG LC's of this monument.</li> <li>It corresponds to Bonn's 1744st, but Bonn have not assigned it a reading.</li> </ul> </li> </ul> </li> <li>In AT-E1168-lecture6.t0:39:45, the slide shows "1" is read <i>juun</i> and "10", "13", "14", "15", ... "19" are read <i>-lajuun</i>, i.e. all with a long-u (in connection with the bar-and-dot notation).</li> <li>Many prominent epigraphers have a long second syllable <i>lajuun</i>, including (but not restricted to) Prager, Stuart, and Tokovine.</li> </ul>
Number "11"	N	NB	L	buluch / buluk	     <p>K&amp;H.p48.pdfp50.#2.4 = 25EMC.pdfp30.#9.1 BULUK / BULUCH</p> <p>TOK.p23.r4.c4 "11" / buluk</p> <p>MHD.PN3a BULUCH / BULUK</p> <p>1005st BULUCH</p> <p>T1005a -</p> <ul style="list-style-type: none"> <li>No glyphs given in K&amp;L, BMM9.</li> <li>TOK.p23.r4.c4 gives only "11", but <i>buluk</i> given in AT-E1168-lecture6.t0:39:45 (in connection with the bar-and-dot notation).</li> <li>This glyph is basically the animated variant of KAB = "earth".</li> <li>AT-E1168-lecture6.t0:50:11: "11" and "12" are a total mystery, "2" is a total mystery; as far as I know [in terms of the reason for their particular (god-)head variants].</li> </ul>
Number "12"	N	NB	L	lajcha' / lajchan / lajuncha' / lajunchan	    <p>K&amp;H.p48.pdfp50.#3.4 = 25EMC.pdfp41.#2.1 LAJUNCHAN?</p> <p>LAJUNCHA' / LAJUNCHAN</p> <p>TOK.p24.r1.c2 "12" / lajcha'</p> <p>PL6 LAJCHAN / LAJKA'</p> <p>1674st LAJCHAN</p> <ul style="list-style-type: none"> <li>No glyphs given in K&amp;L, BMM9.</li> <li>There are various pronunciations given for "12": <i>lajcha'</i>, <i>lajchan</i>, <i>lajuncha'</i>, <i>lajunchan</i>. <ul style="list-style-type: none"> <li>Despite the fact that many epigraphers have a long-u in <i>juun</i> and <i>lajuun</i>, the transliteration/transcription <i>lajuun</i>- in connection with "12" seems to be particularly uncommon – just the short-u is used.</li> </ul> </li> </ul>

					<ul style="list-style-type: none"> <li>○ The only hit on Google I managed to find is in Tsukamoto&amp;Olguin-TSaA.p194.para1.l-9 (only available as extract from Google Books, typography slightly adjusted): The upper left corner of Lintel 26 of Yaxchilan depicts <b>ti-12-? CHUM-KAN-JAL-wa T'AB-yi yu-xu?-lu KAWIIL?-CHAAK? AJ-SAK-o-ka, ti lajuunchan ... chum kanjalaw t'ab[aa]y yuxul? k'awiil? chaak? aj sak[h] o'[o]k(?)</b>, “on the day 12 Eb and 0 Pop (February 8, 724 CE), this lintel is carved by K'awiil Chaak?, he of the White Valley”, which probably means he is from El Palmar.</li> <li>• TOK.p24.r1.c2 gives only “12”, but <i>lajcha'</i> given in AT-E1168-lecture6.t0:39:45 (in connection with the bar-and-dot notation).</li> <li>• This glyph is basically the animated variant of CHAN = “sky”.</li> <li>• AT-E1168-lecture6.t0:50:11: “11” and “12” are a total mystery, “2” is a total mystery; as far as I know [in terms of the reason for their particular god-head variants].</li> </ul>
Number “13”	N	NB	L	uhxlajuun / huxlajuun	 <p>K&amp;H.p48.pdfp50.#4.4 = 25EMC.pdfp49.#7.1 UXLAJUN / OXLAJUN    UXLAJUN / OXLAJUN</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>MC.p39.c2.r3.3</p> </div> <div style="text-align: center;">  <p>MHD.SS1a.1 HUXLAJUUN</p> </div> <div style="text-align: center;">  <p>T1031b -</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 20px;"> <div style="text-align: center;">  <p>MHD.SS3a.1 HUXLAJUUN</p> </div> <div style="text-align: center;">  <p>T1032ab -</p> </div> <div style="text-align: center;">  <p>Greene HUXLAJUUN PAL TS A8a</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 20px;"> <div style="text-align: center;">  <p>MHD.SS2a.1&amp;2 HUXLAJUUN</p> </div> <div style="text-align: center;">  <p>1031st WITZ'</p> </div> <div style="text-align: center;">  <p>1031st -</p> </div> <div style="text-align: center;">  <p>T1031a -</p> </div> <div style="text-align: center;">  <p>Safronov PNG Panel 3 A6a “13”</p> </div> </div> <ul style="list-style-type: none"> <li>• No glyphs given in K&amp;L, TOK, BMM9.</li> <li>• In AT-E1168-lecture6.t0:39:45, the slide shows “1” is read <i>juun</i> and “10”, “13”, “14”, “15”, ... “19” are read <i>-lajuun</i>, i.e. all with a long-u (in connection with the bar-and-dot notation).</li> <li>• In AT-E1168-lecture6.t0:39:45, the slide gives <i>huxlajuun</i> for “13” (in connection with the bar-and-dot notation).</li> <li>• AT-E1168-lecture6.t0:40:20-41:06: There is some variation: there are two types of uncertain things. One is some initial consonants may be glides or may be not present at all, like <i>uk</i> or <i>wuk</i> or <i>huk</i>, or <i>uklajuun</i> or <i>wuklajuun</i> or <i>huklajuun</i>, same goes for <i>ux</i> or <i>hux</i> – we don’t know. Unfortunately, most of the time when numbers appear in Maya writing, they appear just as numbers – they don’t spell them phonetically, with very, very few exceptions. So when they do spell them or when they add phonetic complements, then we have some clues. It is also possible that some numbers were not spelled in exactly the same way – we have some evidence of dialects: differences in pronunciation between different Maya sites – it’s also possible that they pronounced them differently.</li> </ul>

					<ul style="list-style-type: none"> <li>Chinchilla-ItCotMG.p438.pdf15.para1.l+6: Stuart suggests a reading for its hieroglyphic name as Juun Witz' Nah Kan. <a href="#">In the hieroglyphic script, the Water-Lily Serpent served as the head variant of the number thirteen</a>, and it also substituted for the HAAB' logogram. Several studies interpret it as symbolizing standing bodies of water. This may explain its association with the Maize God, who frequently appears in aquatic settings in ancient Maya art.</li> <li>There are variants of "13" not based on either bars-and-dots or a human/god head or skull; instead, there is a WITZ' (Waterlily Serpent) with, on top: <ul style="list-style-type: none"> <li>A <b>HUUN</b> ("knot"/"bow") infixed in or covering the top of the head (MC.p39.c2.r3.3, MHD.SS1a.1).</li> <li>A <b>WINIK</b> (<i>perhaps a variant of HUUN</i>) infixed in or covering the top of the head (MHD.SS3a.1, T1032ab, PAL TS A8a).</li> <li>A <b>HA'</b> infixed in or covering the top of the head (MHD.SS2a.1&amp;2, 1031st, T1031ab, PNG Panel 3 A6a). <i>Sim: Pitts-BHPN.p133 describes this as "an avian version of the head glyph for the number 13". "Avian" contradicts the idea that it's the Waterlily Serpent – but the "beak" is probably what prompted Pitts' description.</i></li> </ul> </li> </ul> <p><a href="#">This is the only number with an additional (mythological monster) head variant. All other numbers are written either with bars-and-dots or with an (anthropomorphic) head variant.</a> The above variants <i>are</i> the variants of the Waterlily Serpent, so in fact, the Waterlily Serpent <i>is</i> the monster-head variant of "13".</p>
Number "14"	N	NB	L	chanlajuun	 <p>K&amp;H.p48.pdfp50.#5.4 = 25EMC.pdfp31.#7.1 CHANLAJUN                      CHANLAJUN</p> <ul style="list-style-type: none"> <li>No glyphs given in K&amp;L, TOK, BMM9.</li> <li>In AT-E1168-lecture6.t0:39:45, the slide shows "1" is read <i>juun</i> and "10", "13", "14", "15", ... "19" are read <i>-lajuun</i>, i.e. all with a long-u (in connection with the bar-and-dot notation).</li> </ul>
Number "15"	N	NB	L	ho'lajuun / jo'lajuun	 <p>K&amp;H.p48.pdfp50.#6.4 = 25EMC.pdfp35.#1.3 HO'LAJUN                      HO'LAJUN</p> <ul style="list-style-type: none"> <li>No glyphs given in K&amp;L, TOK, BMM9.</li> <li>In AT-E1168-lecture6.t0:39:45, the slide shows "1" is read <i>juun</i> and "10", "13", "14", "15", ... "19" are read <i>-lajuun</i>, i.e. all with a long-u (in connection with the bar-and-dot notation).</li> <li>In AT-E1168-lecture6.t0:39:45, the slide gives <i>jo'lajuun</i> for "15" (in connection with the bar-and-dot notation).</li> </ul>
Number "16"	N	NB	L	waklajuun	 <p>K&amp;H.p48.pdfp50.#7.4 = 25EMC.pdfp50.#5.2 WAKLAJUN                      WAKLAJUN</p> <ul style="list-style-type: none"> <li>No glyphs given in K&amp;L, TOK, BMM9.</li> <li>In AT-E1168-lecture6.t0:39:45, the slide shows "1" is read <i>juun</i> and "10", "13", "14", "15", ... "19" are read <i>-lajuun</i>, i.e. all with a long-u (in connection with the bar-and-dot notation).</li> </ul>

Number “17”	N	NB	L	huklajuun / wuklajuun	 <p>K&amp;H.p48.pdfp50.#8.4 = 25EMC.pdfp35.#2.2 HUKLAJUN HUKLAJUN</p> <ul style="list-style-type: none"> <li>No glyphs given in K&amp;L, TOK, BMM9.</li> <li>In AT-E1168-lecture6.t0:39:45, the slide shows “1” is read <i>juun</i> and “10”, “13”, “14”, “15”, ... “19” are read <i>-lajuun</i>, i.e. all with a long-u (in connection with the bar-and-dot notation).</li> <li>AT-E1168-lecture6.t0:40:20-41:06 : There is some variation: there are two types of uncertain things. One is some initial consonants may be glides or may be not present at all, like <i>uk</i> or <i>wuk</i> or <i>huk</i>, or <i>uklajuun</i> or <i>wuklajuun</i> or <i>huklajuun</i>, same goes for <i>ux</i> or <i>hux</i> – we don’t know. Unfortunately, most of the time when numbers appear in Maya writing, they appear just as numbers – they don’t spell them phonetically, with very, very few exceptions. So when they do spell them or when they add phonetic complements, then we have some clues. It is also possible that some numbers were not spelled in exactly the same way – we have some evidence of dialects: differences in pronunciation between different Maya sites – it’s also possible that they pronounced them differently.</li> </ul>
Number “18”	N	NB	L	waxaklajuun	 <p>K&amp;H.p48.pdfp50.#9.4 = 25EMC.pdfp50.#6.1 WAXAKLAJUN WAXAKLAJUN</p> <ul style="list-style-type: none"> <li>No glyphs given in K&amp;L, TOK, BMM9.</li> <li>In AT-E1168-lecture6.t0:39:45, the slide shows “1” is read <i>juun</i> and “10”, “13”, “14”, “15”, ... “19” are read <i>-lajuun</i>, i.e. all with a long-u (in connection with the bar-and-dot notation).</li> </ul>
Number “19”	N	NB	L	bolonlajuun / balunlajuun	 <p>K&amp;H.p48.pdfp50.#10.4 = 25EMC.pdfp30.#5.2 BALUNLAJUN? BALUNLAJUN</p> <ul style="list-style-type: none"> <li>No glyphs given in K&amp;L, TOK, BMM9.</li> <li>In AT-E1168-lecture6.t0:39:45, the slide shows “1” is read <i>juun</i> and “10”, “13”, “14”, “15”, ... “19” are read <i>-lajuun</i>, i.e. all with a long-u (in connection with the bar-and-dot notation).</li> <li>In AT-E1168-lecture6.t0:39:45, the slide shows <i>bolonlajuun</i> for “19” (in connection with the bar-and-dot notation).</li> </ul>
Number “20”	N	NB	L	k’al / winik / winak / winaak	     <p>K&amp;H.p78.pdfp80.r5.c4 K&amp;L.p34.#2.1 WINAK? / K’AL</p> <p>K&amp;L.p34.#2.1&amp;2 = 25EMC.pdfp39.#7.1&amp;2 = MC.p164.r3.c1</p> <p>K’AL / WINIK K’AL / WINIK K’AL</p> <p>TOK.p14.r5.c2</p> <p>BMM9.p12.r7.c2 JM.p144.#3 =</p> <p>20 UH / WINIK</p>

				<div data-bbox="680 81 779 177"></div> <p>AT-E1168-lecture6.t0:51:20 WINAAK</p> <div data-bbox="680 256 831 352"></div> <p>AT-E1168-lecture6.t0:51:20  WINAAK</p> <div data-bbox="680 456 819 584"></div> <p>MartinEtAl-LE46dN.p682.pdfp14 NAR Stela 46 B7 20:10</p> <div data-bbox="680 687 804 799"></div> <p>AT-E1168-lecture6.t0:51:20 WINIK</p> <ul style="list-style-type: none"> <li>Each of the five standard sources gives multiple pronunciations (for the meaning “20”), but the situation is complex. The readings <i>winik</i>, <i>winal</i> or <i>k'al</i> seem to be in free variation for the number 20 (and for the calendar unit of 20 days – the Maya “month”), with the phonetic complement sometimes helping to decide: <ul style="list-style-type: none"> <li><b>ki</b> phonetic complement → <i>winik</i>.</li> <li><b>la</b> phonetic complement → <i>winal</i>.</li> </ul> </li> <li>In AT-E1168-lecture6.t0:52:14, Tokovinine explains that “20” can also be said as <i>juun winik</i> or <i>juun winaak</i>, i.e. 1 x “20” = 20.</li> <li>Variants of <b>K'AL</b> = “20” (3): <ul style="list-style-type: none"> <li>A. Moon – can also be read as <b>UH</b> = “moon”</li> <li>B. Head variant of Moon</li> <li>C. Human face – can also be <b>WINIK</b> = “human”, “person”</li> </ul> </li> <li>Do not confuse the moon variant of <b>WINIK/K'AL</b> with the visually similar moon variant of <b>HUL</b> = “to arrive”: <ul style="list-style-type: none"> <li><b>WINIK/K'AL</b> has a full circle in the “bay” of the moon.</li> <li><b>HUL</b> has a semi-circle in the “bay” of the moon.</li> </ul> </li> <li>Do not confuse this (in the reading <b>K'AL</b>) with the homonym <b>K'AL</b> meaning “to present” (formerly “to tie” / “to bind” / “to close”), for which the glyph is a hand.</li> </ul>	<div data-bbox="1043 81 1140 177"></div> <p>AT-E1168-lecture6.t0:52:14 1.&lt;WINIK:ki&gt;</p> <div data-bbox="1037 256 1151 352"></div> <p>Stuart PNG Stela 3 A7 Glyph-A = &lt;WINIK:ki&gt;.9</p>
Number “20”	N	NB	S	<p>k'al / winik / winak / winaak</p> <div data-bbox="680 1318 790 1441"></div>	

					<p>AT-E1168-lecture6.t0:51:20 k'a:la</p> <ul style="list-style-type: none"> <li>A rare example of a pure syllabogram spelling for <i>k'al</i> = "20", given by AT-E1168-lecture6.t0:51:20: This means something like "bundle", but it also means "20".</li> </ul>
Numbers greater than "20"	N	NB	P	"21+"	<div>   </div> <p>AT-E1168-lecture6.t0:52:14 20 and 2                      6 and 20 &lt;tz'ak:bu&gt;.li</p> <div>        </div> <p>AT-E1168-lecture6.t0:52:14 52      80      55      80      96      57      80</p> <div>  </div> <p>AT-E1168-lecture6.t0:52:14 5 and 3 x 20 = 65</p> <ul style="list-style-type: none"> <li>These are distinct from the higher counts of days in the DN or LC. These are actual numbers counting objects.</li> <li>At AT-E1168-lecture6.t0:52:14, Tokovinine explains that for numbers higher than "20" the native mode was to say the single digit first, <i>before</i> the "20", so: "2" and "20" for "22", "6" and "20" = for "26", etc. He further explains that one occasionally does find this order of writing. but that in most of the written texts (including the surviving manuscripts from the Postclassic period) we find it the other way around: the single digit comes <i>after</i> the "20". The speculation is that this system is very old, and inherited from another language (e.g. from the Olmecs) where the 20's were said before the single digit. So they adopted that order when writing, but when reading it out, they would read out the single digit first.</li> <li>For numbers higher than 40, multipliers were used for the WINIK/WINAAC logogram, and the remainder was written with bars-and-dots. The multiplier could be written either by writing the WINIK/WINAAC multiple times, or by writing a multiplier using the bar-and-dot notation, connected to the WINIK/WINAAC.</li> </ul>
Number "8000"	N	NB	L	pik / pih	<div>     </div> <p>AT-E1168-lecture6.t0:54:22.(1&amp;2&amp;3&amp;4) PIH:hi                      PIH:hi                      PIK/PIH                      PIK/PIH</p> <ul style="list-style-type: none"> <li>At AT-E1168-lecture6.t0:54:22, Tokovinine explains that the largest known unit is "8000", used for counting cacao beans.</li> <li>AT-E1168-lecture6.t0:54.22(.3) is also given by K&amp;L.p62.#2.9 for the calendar unit <b>PIK/PIH</b> = "baktun".</li> <li>Tokovinine points out that "1", "20", and "8000" are known in the units for counting numbers, but "400" hasn't been found up to now. There are a number of proposals for its pronunciation (if it should be found), among which <i>bak</i>, but that this is just one of a number of proposals. [Sim: This is partly the motivation for (Yucatec) <i>baktun</i> = 400 years.]</li> </ul>