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	
					Morley-AIttSotMH.pdfp43.fig24
					tzi:<ka.<BAHLAM:HAAB>.ka>
					
					 
					Morley-AIttSotMH.pdfp43.fig24
					tzi:<ka.<XOOK:HAAB>.ka>
					
					 
					Morley-AIttSotMH.pdfp43.fig24
					tzi:<ka.<IXIIM:HAAB>.ka>
					
					 
					Morley-AIttSotMH.pdfp43.fig24
					tzi:<ka.<BAHLAM:HAAB>.ka>
					
					 
					Morley-AIttSotMH.pdfp43.fig24
					tzi:<ka.<CHAN:HAAB>.ka>
					
					• 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 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”.
					  ○ It is often found at the very start of an inscription on a stela.
					  ○ The simplest form of the opening of such an inscription, i.e. the Initial Series is:
					  ▪ ISIG.

- 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.
  - 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).
- 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, 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:

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

11	Sak-sihoom	Sak	CHAN = “snake”	“A sackful of snakes” (MHD “blcodes contains AC6a” gives 460 hits of bllogosyll = kan – but only 5 of them are in an ISIG, and only one of the 5 is clearly associated with month YAX)
12	Chak-sihoom	Keh	TOK	With the four “SIHOOM (rain god) months”, CHAK is the “greatest” – the greatest rain god ➔ “storm” = TOK. See SIHOOM and TOK in the CMGG.
13	Mak	Mak	IK’ – variants (2): • A. Abstract variant of IK’ = “wind”: • B. God-head variant of “3” (which has an infixed IK’).	Muck is icky.
14	Uniw	K’ank’in	Variants (2): • A. Abstract variant: “double-arch”. • B. Head variant: monster head CHAPAAT? with the characteristics of two fangs curving backwards, hanging from the top of the mouth (at the end of the snout)	The K’-K’ of K’ank’in suggests: the two fangs of the centipede and the “double arches”.
15	Muwaan	Muwan	K’UH	The Bird Deity is divine.
16	Pax	Pax	SIBIK.TE’ = <PAX-deity-head> = no mandible, instead, a scroll to the right, some touching dots attached under the cruller around the eye (= head version of logogram-TE’)	“A Passion for Ink” ➔ SIBIK
17	K’anasiiy	K’ayab	“TMG” / JUUN IXIIM	ka-na-si (Hokkien) ➔ “The Young Maize God keeps dying”
18	Hul-ohl	Kumk’u	CHAN = “snake”, with optional infixed BIH The mouth is closed compared to the snake for Sak, where the mouth is open.	Most important reptile, so comes last MHD maps both the one in QRGStC and the one in COLSPan (Zürich Panel) to MHD.AC8a, which, in other contexts is the head variant of BIH. But neither of these concrete examples have a quincunx infixed in the top of the head.
19	Wayhaab	Wayeb	UH?	A search in MHD on “blsem contains ISIG/Wayeb” yields three hits. Unfortunately, in two of them, the patron infixed in the ISIG is too eroded to tell what it is. In the third case, MHD speculates that it might be the moon glyph UH (which the uneroded infixed glyph does indeed look like). Unfortunately, this would “clash” with the patron of Ch’en (month 9), for which there is a sufficient number of uneroded examples to establish that its patron is UH). The month of Wayeb very rarely appears as the first or major event of an inscription anyway because it was considered to be an unlucky month. Events recorded in inscriptions were usually rituals and victories and these would generally not have occurred in the 5 days of the unlucky month of Wayeb.

- As almost all the HAAB months have 20 days, the patron infixed in the ISIG will change every 20 days (after 5 days if the month is Wayeb).

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DNIG	V		M	utz’akaj	 MC.p54.r1.c.1 u:TZ’AK:ka:AJ  MC.p54.r1.c2 <u.TZ’AK.ka>:AJ

- 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.
- The basic (and most common) variant is a single glyph consisting of abstract intertwined strands (does anyone know the meaning / iconographic origin?). 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 = <ka.TUUN.ka>.HAAB are not read as combinations / compounds with **KAB** etc or **TUUN** etc, but instead as the single word *pas* or *winikhatab*, 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.
- Variants:
  - A. Light & Darkness.
  - B. Sky & Earth.
  - C. Blue-green & Yellow (= Primordial & Precious).
  - D. Wind & Water.
  - E. Cloud & Water.
  - F. Star & Moon.
  - G. Sun & Moon.
  - H. Male & Female.
  - I. Leaf & Food.
  - J. Darkness & Penitence.
  - K. Bloodletter & Blood.
  - L. Claw and Tooth.
  - M. Other.

K&L.p40
TZ’AK = K’IN.AK’AB

TOK.p35.r2.c1
TZ’AK = K’IN.AK’AB

= BMM9,p21.r3.c2
TZ’AK = K’IN.AK’AB

TOK.p35.r4.c4
AK’AB.K’IN

MC.p54.r2.c.1
u.<<K’IN.AK’AB>:AJ>

Skidmore-ULoENR.p24.fig1 (Grube)
NAR Altar 2 D6
u:TZ’AK:wi

Stuart-TIfTXIX.p100.pdfp52.fig71b
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

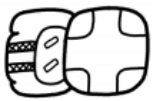
TZ'AK = CHAN.KAB


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

TZ'AK TZ'AK u.<TZ'AK:AJ>

- 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

TZ'AK TZ'AK u.<TZ'AK:AJ>

- 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

TZ'AK u.<TZ'AK:AJ>

- 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 = "FEMALE"."MALE" TZ'AK

- 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.

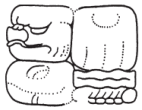
TOK.p35.r5.c1
TZ’AK = KOKAN:CH’ICH’

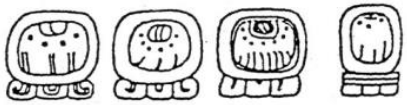
Stuart-TIfTXIX.p100.pdfp52.fig71g
TNA M.20 D1
<u.TZ’AK>:AJ

- 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. • CPN HS1 Step 42: "food" and "water"? • PAL Tablet of the 96 Glyphs D8: "two skulls"?

Imix (day 1)	N	CAL-D01	D	"{YUK}IMIX" / imox? / ha'?	 MC
					
					  K&L.p57.r1.c1-c4
					  K&L.p57.r1.c6-c8
					
					  K&L.p57.r1.c5
					  IC.p14
					  Stuart
					PNG Stela 3 E2
					
					• The 1st day of the Tzolk'in calendar.
					• Do not confuse the day name IMIX with the slightly similar **IXIIM** = "Tonsured Maize God".
					  ○ It's almost a "swap" of the two syllables.
					  ○ 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.
					• Variants (2):
					  ○ A. Abstract – water:
					  ▪ In theory, the inside of the cartouche should be the logogram **HA'** = "water" (a cross-hatched circle).
					  ▪ In practice, there are (many?) instances where the inside of the cartouche is the syllabogram **ba** (a circle with an arc in it).
					  ○ B. Head – the Waterlily Serpent represents water: there seems to be some variation in the element in the top half of the head:
					  ▪ A circle with a small circle in it.
					  ▪ A circle with a small crescent in it (tips pointing upwards).

Ik' (day 2)	N	CAL-D02	D	"{YUK}IK'" / ik'	

					MC  MC  MC • The 2nd day of the Tzolk'in calendar. • Variants (3): ○ A. A bold-T. ○ B. A "cursive"-T. ○ C. Head: woman's(?) head with lips and IL on the cheek, with a "cursive"-T within a cartouche, in the right side of the head.
Ak'bal (day 3)	N	CAL-D03	D	"{YUK}AK'BAL" / ak'ab?	 MC • The 3rd day of the Tzolk'in calendar. • Variants (1): ○ A. The logogram **AK'AB** in a blood cartouche.
K'an (day 4)	N	CAL-D04	D	"{YUK}K'AN"	 MC  Safronov Houston Panel B5 • The 4th day of the Tzolk'in calendar. • Variants (1): ○ A. The logogram **OHL**/**WAAJ** in a blood cartouche. • Houston Panel B5 shows a very unusual form of K'AN: ○ 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 **K'AN**. ○ 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 **K'AN**.

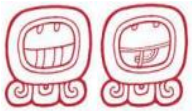
					○ It certainly helps that the glyph at B5, though not obviously K'AN, is not entirely incompatible with such a reading.
Chikchan (day 5)	N	CAL-D05	D	"{YUK}CHIKCHAN" / kan?	 MC  MC • The 5th day of the Tzolk'in calendar. • Variants (2): ○ A. Two NE-SW sloping dots. ○ B. CHAN.
Kimi (day 6)	N	CAL-D06	D	"{YUK}KIMI" / chamel?	 MC  MC • The 6th day of the Tzolk'in calendar. • Variants (2): ○ A. Mirror imaged %-sign. ○ B. CHAM = "death"
Manik (day 7)	N	CAL-D07	D	"{YUK}MANIK" / chij?	 MC • The 7th day of the Tzolk'in calendar. • Variants (1): ○ A. A syllabogram **chi** in a blood cartouche.
Lamat (day 8)	N	CAL-D08	D	"{YUK}LAMAT" / lambat?	

					MC  MC  MC • The 8th day of the Tzolk'in calendar. • Variants (3): ○ A. Abstract – full variant of **EK'**. ○ B. A "face" – divided in a top and bottom half by a slightly curved horizontal line through the middle: ▪ Top: "HIX-like": • Tiny non-touching dots along the ceiling, on the inside (= a ceiling with dotted reinforcement). • "Grass blades" along the floor. ▪ Bottom: reduced variant of **EK'** – the "bottom half" resembling two eyes and nose of a face. ○ C. Normal (profile) animal head (looking left) – divided into three sub-areas: ▪ Left: Bird head with "HIX-like" eye and S-shaped forehead ornament. ▪ Middle: an element shaped like a shepherd's crook. ▪ Right: 90 degrees anti-clockwise reduced variant of **EK'** (= the "bottom half" resembling two eyes and nose of a face, but rotated).
Muluk (day 9)	N	CAL-D09	D	"{YUK}MULUK"	 MC  MC  MC  MC

					
					Safronov
					Phoenix “Po” Panel B4
					5:MULUK
					
					• The 9th day of the Tzolk’in calendar.
					• Variants (5):
					  ○ A. **mo**.
					  ○ B. 90 degrees clockwise rotated **lo**.
					  ○ C. Gopher head: **BAAH**.
					  ○ 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.
					  ○ 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”)?

Ok (day 10)	N	CAL-D10	D	“{YUK}OK” / ok?	
					MC
					
					 
					(lost reference)
					
					 
					MC
					
					• The 10th day of the Tzolk’in calendar.
					• Variants (2):
					  ○ A. Representational – animal head:
					  ▪ The head of a dog, also read **OK**/**OOK** without the cartouche.
					  ▪ Some variants (known to be **OK**/**OOK** from calendrical calculations) can look surprisingly like a bird head.
					  ○ B. Abstract
					  ▪ I don’t know what this is derived from.

Chuwen (day 11)	N	CAL-D11	D	“{YUK}CHUWEN” / chuwen?	

					MC  MC  IC.p14.c2.r1.3  Greene PAL PT B6 9.CHUWEEN • The 11th day of the Tzolk'in calendar. • Variants (3): ○ A. Abstract **se**-like: it resembles a **se** or the variant of **cha** without feelers. ○ B. Abstract **WINIK**-like: it resembles the abstract variant of **WINIK**. ○ C. Head: IC.p14.c2.r1.3 and PAL PT B6 show a head variant of **CHUWEEN**.
Eb (day 12)	N	CAL-D12	D	"{YUK}EB"	 MC  Graham = Coll-1 YAX Stela 18 A2 • The 12th day of the Tzolk'in calendar. • Variants (1): ○ A. Skull: ▪ A skull with the expected bone jaw in the bottom left. ▪ 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. • 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).
Ben (day 13)	N	CAL-D13	D	"{YUK}BEN"	

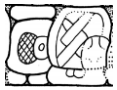
					MC   Safronov 25EMC.pdfp6.r3.c7 PNG Panel 3 A7 • The 13th day of the Tzolk'in calendar. • Variants (2): ○ A. Abstract – single horizontal line dividing the boulder outline into a top and bottom half (optionally bold): ▪ Top half: two non-touching dots in the ceiling. ▪ Bottom half, either: • Two struts, or • A single strut, with an L-shaped band from the ceiling down to halfway, the leg turning to the left, "under" the single strut. ○ B. Head: ▪ Essentially the elements of the abstract variant, in an anthropomorphic head. ▪ In the head variant, it can happen that the (sometimes slightly curved) horizontal line on two struts in **BEN** becomes a "lipped-U" (still on two struts). The normally non-touching two dots at the top of **BEN** can also merge to resemble the "**LEM**" at the top of **OHL**. When that happens, the head variant of **BEN** and the head variant of **OHL** 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 **BEN**, but without the blood-cartouche). Context is the best guide in such extreme cases.
Ix (day 14)	N	CAL-D14	D	"{YUK}IX" / hix?	 MC     Montgomery = Coe&Benson-TMRPaDO.p12.fig4 = MHD (Houston) = Safronov DO - Unprovenanced Wall Panel B5 • The 14th day of the Tzolk'in calendar. • Variants (2): ○ A. Full-frontal jaguar head: resembles/identical to the logogram **HIX**. ○ 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 & Benson drawing and even more so in the Houston and Safronov drawings.
Men (day 15)	N	CAL-D15	D	"{YUK}MEN" / tz'ikin?	 MC.1

					
					MC.2
					• The 15th day of the Tzolk'in calendar.
					• Variants (2):
					  ○ A. Representational:
					  ▪ The head of a bird. Perhaps just the logogram TZ'IKIN in a blood cartouche.
					  ▪ A "LEM" in the top of the head.
					  ▪ An "ajaw band"?
					  ○ 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.
					• BeliaevEtAl-PAEdPF6.p197.pdfp206.Transcripción.l+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.
					• Do not confuse the (Yucatec) day-name *Men* (TZ'IKIN in Classic Maya) with the (Yucatec) month-name *Xul* (CHIKIN in Classic Maya – sometimes TZIKIN?).

Kib (day 16)	N	CAL-D16	D	"{YUK}KIB"	
					MC
					• The 16th day of the Tzolk'in calendar.
					• Variants (1) - features:
					  ○ Resembles an inverted **OHL** within the blood cartouche.
					  ○ Instead of two struts at the top (above the inverted lipped-u) cross-hatched or otherwise, the area *between* the two struts is cross-hatched.
					  ○ 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.

Kaban (day 17)	N	CAL-D17	D	"{YUK}KABAN" / kab?	
					MC
					• The 17th day of the Tzolk'in calendar.
					• Variants (1) - features:
					  ○ Typically, a cross-hatched circle in the top left, protected on the right by a curved arc ending in a roughly vertical squiggle.
					  ○ Typically a cross-hatched circle, protected on the top and left by a curved arc ending in a roughly horizontal squiggle.
					• Very similar to KAWAK:
					  ○ In KAWAK, the top left element is replaced by "stalactite" / "bunch of grapes".
					  ○ In KAWAK, the bottom right element is replaced by a "pond".
					• AT-YT2021-lecture22.t0:33:30: *Kaban* is an auspicious day.

Etz'nab (day 18)	N	CAL-D18	D	"{YUK}ETZ'NAB"	 MC  MHD.ZCM  MC • The 18th day of the Tzolk'in calendar. • Variants (2): ○ A. There is just an "X"/ "diagonal cross", consisting of two wavy lines, each with many tiny waves. ▪ There is a variant of **TOOK'** = "flint" which has a similar "wavy-X" in the centre. ○ B. Iconographic origin unknown: ▪ Left: • Approximately a vertical rectangle, but with a very slightly wider top half, creating a slightly protrusive "beak" on the left. • A "pond" (with dotted protector) in the bottom right. ▪ Right: • A much narrower vertical rectangle with the two ends marked off (and slightly wider than the middle section of the rectangle). • With a dotted reinforcement on the right wall.
Kawak (day 19)	N	CAL-D19	D	"{YUK}KAWAK" / chahuk?	 MC • The 19th day of the Tzolk'in calendar. • Variants (1) - features: ○ Typically, a "stalactite" / "bunch of grapes" in the top left, though this can be missing. ▪ Top: triangle of touching-dots. ▪ Bottom: squiggly vertical line. ○ Typically a "pond" in the bottom right (can be slightly raise, to be slightly higher on the right wall). ▪ Cross-hatched circle: some of the bottom right of the circle is *always* 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. ▪ A dotted arc on the outside of the cross-hatched circle. • Very similar to KABAN: ○ 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. ○ 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. • There is a full syllabogram-only spelling of **cha**-**hu**-**ku** ➔ *chahuk* = "lightning", but it's unclear to me whether that has any relationship to the tentatively proposed Classical Maya word for the day name Kawak. ○ The words *kawak* and *chahuk* do have some phonetic resemblance, though it's unclear to me if they truly are etymologically related.

					○ 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.
Ajaw (day 20)	N	CAL-D20	D	“{YUK}AJAW” / ajaw	 MC  MC  MC  MC • The 20th day of the Tzolk’in calendar. • Variants (4): ○ A. (Full-frontal) “la-face” or “ajaw-face”: resembles / identical to **XAAK**/**SAAK**, signifying a seed. ○ B. (Typical) **AJAW** head: the representational variant of **AJAW** – 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”. ○ C. Full-figure: the full-figure variant of **AJAW**. ○ D. Vulture: the head of a vulture, with the very distinctive hooked beak.
Pop (month 1)	N	CAL-M01	B	k’an jalaw / k’an jalbu / {YUK}pop	 MC.1 <<[K’AN]JAL>:wa>.bu>  MC.2 <[K’AN]JAL>:bu  Gronemeyer

					TRT Wooden Box N2
					<5:WI'>.<<[K'AN]JAL>:bu>
					
					• The 1st month of the Haab calendar.
					• The most common spelling is **K'AN**-**JAL**-**wa**:
					  ○ MC.2 and TRT Wooden Box N2b are examples with the less common spelling, with a **bu** rather than a **wa** ending.
					  ○ MC.1 is an example of an even more unusual spelling, with both **wa** and **bu**.

Wo (month 2)	N	CAL-M02	B	ihk'at / {YUK}wo	
					MC
					IHK'.<AT:ta>
					
					• The 2nd month of the Haab calendar.
					• Either:
					  ○ **AT** is a logogram whose meaning has been lost, so *ihk'at* = "black <something>", or
					  ○ **AT** is being used as a rebus to write the word *ihk'at*, whose meaning has also been lost (and where the *ihk'* does not mean "black").
					Given that *ihk'at* and *chakat* 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 *ihk'at* and *chakat* with independent meanings, when *ihk'* and *chak* themselves mean "black" and "red".

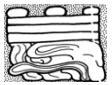
Sip (month 3)	N	CAL-M03	B	chakat / {YUK}sip	
					MC
					CHAK:AT:ta
					
					• The 3rd month of the Haab calendar.
					• Either:
					  ○ **AT** is a logogram whose meaning has been lost, so *chakat* = "great/red <something>", or
					  ○ **AT** is being used as a rebus to write the word *chakat*, whose meaning has also been lost (and where the *chak* does not mean "great"/"red").
					Given that *ihk'at* and *chakat* 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 *ihk'at* and *chakat* with independent meanings, when *ihk'* and *chak* themselves mean "black" and "red".

Sotz' (month 4)	N	CAL-M04	B	suutz' / {YUK}sotz'	 MC SUUTZ' • The 4th month of the Haab calendar. • Iconographically, a leaf-nosed bat.

Sek (month 5)	N	CAL-M05	S	kasew / {YUK}sek	 MC.1 ka:se:wa  MC.2 ka:se:wa  MC.3 <ka[se]>:wa  Safronov BPK SS5 B1 9.<<ka[*se]{w}>>  Coll-1 YAX Lintel 10 E5b (bottom) 2.<<<ka[*se]>:wa>> • The 5th month of the Haab calendar. • MC.2 uses the known “skull” variant of **se**. • While normally spelled **ka**-**se**-**wa** with the “comb” variant of **ka**, 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). ○ In such cases, the **se** would quite naturally be infixed in the **ka**. ○ In the case of BPK SS5 B1, the *-w* is underspelled.
Xul (month 6)	N	CAL-M06	B	chikin / {YUK}xul	 MC CHIKIN • The 6th month of the Haab calendar. • This comes from **CHIK** = “coati” (perhaps used as a rebus) + **ni** ➔ *chikin*. This should help in remembering that it’s not *ch’ikin* nor *chik’in*. • Do not confuse this CHIKIN in Classic Maya (Yucatec month-name *Xul*) with the phonetically similar TZ’IKIN in Classic Maya (Yucatec day-name *Men*). ○ **CHIKIN** will almost always have an end phonetic complement **ni**. ○ **MEN/TZ’IKIN** end in *-n* but will never have an end phonetic complement **ni** because day names are enclosed in the “blood” cartouches, and never have initial or end phonetic complements.
Yaxk’in (month 7)	N	CAL-M07	B	yaxk’in	 MC <YAX:K’IN>.ni • The 7th month of the Haab calendar.

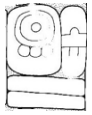
Mol (month 8)	N	CAL-M08	S	mol	 MC.1 mo[lo]  MC.2 mo[lo]  YAX Stela 1 A3 • The 8th month of the Haab calendar (syllabogram-only spelling). • YAX Stela 1 A3 has a syllabogram spelling <mo[lo]:wa> with a **wa** which is rarely seen.
Ch'en (month 9)	N	CAL-M09	B	ihk' sihoom / {YUK}ch'en	 MC.1 IHK'.<SIHOOM:ma>  MC.2 IHK':SIHOOM  AT-E1168-lecture19.assignment10 TIK Temple 1 B3 • The 9th month of the Haab calendar. • The TIK Temple 1 B3 example has the "darkness" of the IHK' infixed in the SIHOOM.
Yax (month 10)	N	CAL-M10	B	yax sihoom / {YUK}yax	 MC.1 YAX.<SIHOOM:ma> or YAX.<[SIHOOM]ma>  MC.2 YAX:SIHOOM:ma • The 10th month of the Haab calendar.
Sak (month 11)	N	CAL-M11	B	sak sihoom / {YUK}sak	 MC SAK.<SIHOOM:ma>

					• The 11th month of the Haab calendar.
Keh (month 12)	N	CAL-M12	B	chak sihoom / {YUK}keh	 MC CHAK.SIHOOM • The 12th month of the Haab calendar.
Mak (month 13)	N	CAL-M13	S	mak	   MC.1 ma:ka MC.2 ma:MAHK MC.3 ma:ka • The 13th month of the Haab calendar (syllabogram-only spelling). • MC.2 is actually a “rebus” spelling, with the logogram MAHK spelling *mak*, but here, we’re treating it like a pseudo-syllabogram, for the sake of simplicity.
K’ank’in (month 14)	N	CAL-M14	L	uniw / {YUK}k’ank’in	  MC.1 UN:ni:wa MC.2 UN:<[ni]wa> • The 14th month of the Haab calendar. • Variants (2): ○ A. Avocado vine: ▪ The roots, stem, and branches of the vine are shown. ▪ The round seed of the avocado is shown (usually cross-hatched). ○ B. Mammal (dog?) head: ▪ A mammal ear in the top right. ▪ Open mouthed, with a few teeth showing.
K’ank’in (month 14)	N	CAL-M14	S	uniw / {YUK}k’ank’in	 Coll-1 YAX HS3 Step 1 D1a 17.<<u:ni>.wa> • YAX HS3 Step 1 D1a is a (rare?) example of the month-name *Uniw* with a full syllabogram-spelling.

Muwaan (month 15)	N	CAL-M15	L	muwaan	 MC.1 MUWAAN.ni  Safronov Houston Panel C7 • The 15th month of the Haab calendar.
Muwaan (month 15)	N	CAL-M15	S	muwaan	 MC.2 mu:wa:ni • The 15th month of the Haab calendar (syllabogram-only spelling).

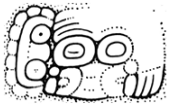
Pax (month 16)	N	CAL-M16	L	pax	
					MC.1 = K&H.p59.pdfp61.#7.1
					PAX
					 
					TOK.p12.r4.c3
					PAAX
					
					 
					MC.2 = K&H.p59.pdfp61.#7.2
					
					 
					Graham
					YAX Lintel 47 B3
					
					• The 16th month of the Haab calendar.
					• Variants (2):
					  ○ A. Abstract/boulder: **PAX**-feelers above, going into a (boulder variant of) **HAAB**.
					  ○ B. Realistic: **PAX**-feelers above, going into the head of a toad/iguana.
					• YAX Lintel 47 B3 is quite an aberrant form, known to be **PAX** from calendrical calculations (e.g. the LC of the inscription relating to this HAAB date).

Pax (month 16)	N	CAL-M16	S	pax	 MC.3 = K&H.p59.pdfp61.#7.3 pa:xi • The 16th month of the Haab calendar (syllabogram-only spelling).
K'ayab (month 17)	N	CAL-M17	B	k'anasiiy / {YUK}k'ayab	 MC.1 <<[K'AN]a>:si>.ya  wikisource • The 17th month of the Haab calendar. • While **K'AN**-**a**-**si**-**ya** is the most common spelling, there are variants ending in -**wa** (https://en.wikisource.org/wiki/An_Introduction_to_the_Study_of_the_Maya_Hieroglyphs/Chapter_3).
Kumk'u (month 18)	N	CAL-M18	B	hulohl / {YUK}kumk'u	 MC.1 HUL:OHL:la • The 18th month of the Haab calendar.
Wayeb (month 19)	N	CAL-M19	B	wayhaab / {YUK}wayeb	 MC.1 WAY:HAAB • The 19th month of the Haab calendar. • 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 (20 x 18) + 5 = 365 days, which better approximates a solar year of 365.24219 days.

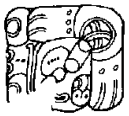
Glyph-A – part of the SS	N	CAL-SSA	P	"Glyph-A"	 Safronov CRN Panel 3 B8 20.9  Graham NAR Stela 24 C6 20.10  Martin&Tokovinine NAR Stela 26 B7 20:10  Greene PAL TC A13 20:10  Stuart PAL T19 South Side B7 <20:ki>.9  Greene PAL TFC A12 20.10  Greene PAL TS B12 20:10  Safronov Phoenix ('Po') Panel D1 20:10  Stuart PNG Panel 2 F2 20.9  Safronov PNG Panel 3 F1 20.10  Coll-1 (Stuart) PNG Stela 1 F2 20.10  Stuart PNG Stela 3 A7 <20:ki>.9  Stuart PNG Stela 8 A8 20.10  Montgomery PNG Stela 36 B7 20:9  W. Coe TIK Stela 3 B6 20.9  Graham YAX Lintel 29 D3 <20.ki>:10  Safronov Zürich Panel C8 <20:ki>.9 • Glyph-A forms one of the standard components of the SS. • 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: ○ The "20" is hence always present – it's only a question of whether the **WINIK** stands alone or has an end phonetic complement of **ki**. ○ The other glyph is hence either "9" or "10": ▪ In the case of "9", it seems to be mostly the "bar-and-dot" form of "9". ▪ In the case of "10", it can be either the two bars of the "bar-and-dot" form, or the skull variant. See Glyph-C for why lunations have either 29 or 30 days.
Glyph-B – part of the SS	N	CAL-SSB	P	"Glyph-B"	 MHD (Stuart) CRN Panel 1 B7 u.<<ch'o{k}>+K'ABA'>  Safronov = MHD (Ringle) CRN Panel 3 A8 u.<<ch'o{k}>+K'ABA'>  MHD (Schele) CPN Stela 5 East Altar A8 Glyph-X.<u:<<CH'OK[ko]>+K'ABA'>>  MHD (Schele) CPN Stela 10 A8  MHD (Schele) CPN Stela 13 B7  MHD (Fash) CPN Stela N

<u:<<ch'o[ko]>+K'ABA'>>.<*20:9> u.<<CH'OK[ko]>+K'ABA'> u.<<ch'o[ko]>+K'ABA'>

MHD (von Euw)
NAR Stela 13 F7
u.<<ch'o:ko>+K'ABA'>



MHD (Graham)
NAR Stela 29 F7
u.<<CH'OK[ko]>+K'ABA'>



MHD (Schele)
PMT Panel 1
u.<<ch'o[ko]>+K'ABA'>

MHD (Safronov)
PNG Panel 3 E1
u.<<ch'o[ko]>+K'ABA'>

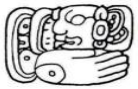
MHD (Tokovinine)
YAX Stela 6
<u:<<ch'o[ko]>+K'ABA'>>.<20:9>

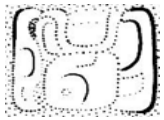
- Glyph-B forms one of the standard components of the SS.
- It's a standard, "formulaic" phrase and is overwhelmingly *uch'ok k'aba'* = his youth(ful) name.
  - A search in MHD on "blsem contains Glyph B" yields 263 hits.
  - A search in MHD on "blsem contains Glyph B" and "blengl does not contain young" yields 42 hits.
    - Of these 42 hits, adding "bllogosyll equals _" gives 24 hits, leaving 18 with an actual attempted reading.
    - Of the 18 hits of "blsem contains Glyph B" and "blengl does not contain young" and "bllogosyll does not equal _", the two "arms" of **K'ABA'** embrace:
      - Syllabogram **a** (to explicitly spell the final glottal stop of K'ABA'): 2 hits.
      - Muluk-**u** (syllabogram **lo** rotated 90 degrees clockwise): 3 hits.
      - K'UH (the "default" element embraced by the two arms of **K'ABA'**): 2 hits.
      - Other (glyph is visible but it's uncertain what is written): 4 hits.
      - Eroded or no drawing: 7 hits.

  In other words, practically all occurrences of Glyph-B are *uch'ok k'aba'*.
- 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 youthful name" (= Glyph-B) without giving the name (= Glyph-X) wouldn't make any sense.
- The examples give the full range of variation in the ways of writing Glyph-B:
  - With the logogram **CH'OK**:
    - If the **ko** end phonetic complement is present, then it is always written infixed along the bottom, under the "spectacles" and covering the "teeth".
  - With the syllabograms **ch'o** and **ko**:
    - The **ko** can be infixed (covering the ear, on the right of the entire head, or even covering the mouth).
    - The **ko** can be below the **ch'o**.
    - The **ko** can be to the right of the **ch'o**.

  It goes without saying that the u can be above or to the left of the rest.

Glyph-C overview – part of the SS	N	CAL-SSC0	M	"Glyph-C overview"	   (lost reference) DG / KIMI (lost reference) TMG / IXIIM (lost reference) JGU / CHUWAJ • Glyph-C forms one of the standard components of the SS. • It consists of one of these 3 godheads, surrounded by other elements: ○ A number between 1 and 6. ○ One of the 3 god-heads (= Glyph-C). ○ A right hand with fingers outstretched (**K'AL**). ○ The right-side reduced variant of the "moon glyph" – in this case, it's actually **UH** = "moon". • ScheleEtAl-TLSiCMI.p4: ○ 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. ○ Recognition that the JGU-head (**CHUWAJ**) may be replaced by just the eye of the jaguar (with the cruller underneath). • The general format is: <optional-**u**-or-**ta**>-<lunation-#>-<Glyph-C_n>-**K'AL**-**UH**. • There is some freedom in the placing of the lunation-#, Glyph-C, **K'AL**, and **UH**. Specifically: ○ The lunation-number is usually vertically long, along the left side, but can also horizontally long, along the top. ○ K'AL is generally at the bottom centre, the freedom lies between: ▪ <<Glyph-C>.UH>:K'AL (more common), or ▪ <<Glyph-C>:K'AL>.UH (less common) ○ Is there a possibility that the **K'AL** and **ja** might be a **HUL**, despite the placement being slightly different from the more common **HUL** which has the index finger actually pointing to / touching the moon (while the **K'AL** hand in Glyph-C doesn't point at all)? Dorota: open question, don't exclude this possibility (but not that likely). Also, Albert & Dimitri have a theory about **K'AL** being "room" as a noun rather than a verb (see below). • The three god-head glyphs are: ○ Glyph-C_1: DG = Death God (Kimi, see Bratislava workbook, with Guido Krempel & John Chuchiak on codices and gods). ○ Glyph-C_2: TMG = Tonsured Maize God (Ixiim). ○ Glyph-C_3: JGU = Jaguar God of the Underworld (Chuwaj): ▪ Note that in the slide shown in AT-YT2021-lecture21.t0:06:23, Chuwaj is transcribed with a long-a: Chuwaaj. The subscript numbers in Glyph-C_n 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). • 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. • Sergei's & Dmitri's idea: in Glyph-C **K'AL** isn't a verb, it's a noun: ○ This is known in Yucatec, and means "room". ○ A room in the sky, and there were 6 such rooms, and every month the deity in question goes to the specific room. ○ "This and this day, the TMG arrived to the x-th room". ○ There are probably no existing papers, as this is a new theory. • 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 *does* 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. ○ 29 x 6 = 174 would 3 days short of 6 real lunations =177 days.

					○ 30 x 6 = 180 would 3 days in excess of 6 real lunations = 177 days. ○ 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. ▪ 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. ▪ There are hence 6 such lunations per 177-day period = "lunar half year": • This makes sense, as 177 x 2 = 354, which is slightly less than the number of days in a year. • Alternatively, each lunation is a month, so six lunations is a "lunar half year", half of twelve lunar months. • The term "lunar half year" comes from Yesugi&Saito-GYotMSS.p2 (1991). • 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 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). • More examples are given under each of the separate Glyph-C_n, for n=1, 2, 3.
Glyph-C_1	N	CAL-SSC1	P	Glyph-C_1 / DG / Kimi	 25EMC-BHB.pdfp12.r5.c2 3.<DG:K'AL:la?>.UH  MartinEtAl-LE46dN.p682.pdfp14.fig5 (Martin&Tokovine) NAR Stela 46 A6 NAH.<DG:K'AL>.UH
Glyph-C_2	N	CAL-SSC2	P	Glyph-C_2 / TMG / Ixiim	 25EMC-BHB.pdfp12.r4.c2 2.<TMG.UH>:K'AL  25EMC-BHB.pdfp12.r5.c3 ta.6.<<TMG.UH>:K'AL>  25EMC-BHB.pdfp12.r4.c3 5:<<TMG:K'AL>.UH
Glyph-C_3	N	CAL-SSC3	P	Glyph-C_3 / JGU / Chuwaj	 25EMC-BHB.pdfp12.r3.c1 u.<<NAAH?.JGU.UH>:K'AL>  25EMC-BHB.pdfp12.r4.c1 u.<<<2:JGU>.UH>:K'AL>  25EMC-BHB.pdfp12.r3.c2 4.<<JGU.UH>:K'AL:li>  25EMC-BHB.pdfp12.r5.c1 = MC.p52 3.<<JGU.UH>:K'AL>

					 Safronov Phoenix ('Po') Panel C1 9:<JGU:.UH?>:K'AL  Graham NAR Stela 24 B6 NAH:<JGU:K'AL>.UH  Stuart-TIfTXIX.p88.pdfp89.fig61 (Stuart) PAL Temple 19 Platform - South Side <u:2>.<JGU:K'AL>.UH  Stuart-TPM.p PAL TFC B10 5.<JGU.UH>:K'AL  Schele CPN Stela 10 A6 <6:K'AL>.TMG.UH • Quite often, only the eye of the JGU is shown, as in 25EMC-BHB.pdfp12.r3.c2, 25EMC-BHB.pdfp12.r5.c1 = MC.p52. • CPN Stela 10 A6 has an unusual form of K'AL (in an unusual position). Recognized as such by MHD, with code MHD.AX3.
Glyph-F	N	CAL-SSF	P	ti'-huun	• Glyph-F forms one of the standard components of the SS. • 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). • Sources: ○ K&H doesn't give examples of Glyph-F. ○ MC examples are a strict subset of K&L – the first 5, identical, and in exactly the same order. ○ K&L have human head and full-figure variants as well. ○ TMHW.p66.#1 gives 10 variants of Glyph-F, all of which have been covered by K&L and other sources as well: .1 K&L.p66.#1.1 .2 K&L.p65.F.#2 .3 K&L.p65.F.#3 .4 K&L.p65.F.#4 .5 K&L.p65.F.#5 .6 K&L.p65.F.#6 .7 K&L.p65.F.#7 .8 K&L.p65.F.#8 .9 K&L.p65.F.#9 .10 K&L.p65.F.#10 • Variation: ○ 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.fig11.f
PNG Stela 1 A9
TI':HUUN:na

Gronemeyer-GGF.p12.fig11.l
YAX Lintel 48 D7
TI':HUUN:na

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

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

Gronemeyer-GGF.p12.fig11.b = K&L.p65.F.#7
CPN Stela A B5
TI':HUUN:na

Gronemeyer-GGF.p12.fig11.h
QRG Stela K B5
HUUN.<<"po"?.ya?>:na>

K&L.p66.F.#10 = Gronemeyer-GGF.p12.fig11.i
Site Q P. 4 A4
TI'.HUUN

Gronemeyer-GGF.p12.fig11.c = K&L.p65.F.#8
DPL Stela 5 N1
<u:TI'>.<HUUN:na>

K&L.p65.F.#6 = Gronemeyer-GGF.p12.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 "**po**" and **ya** instead of the rectangular, 3-element form of **TI'**.
- K&L.p66.F.#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.

K&L.p65.F.#5

TI':HUUN:na

Gronemeyer-GGF.p12.fig11.d
DPL Stela 8 B6
{ti'}HUUN.na

- The book variant.
- In DPL Stela 8 B6, the **TI'** has been omitted: this is rare, but possibly also in K&L.p65.F.#9 = Gronemeyer-GGF.p12.fig11.k (the "book" glyph could be read as TI' (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

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K&L.p65.F.#3

TI':hu:na

Gronemeyer-GGF.p12.fig11.e
PAL OLV Pil A B4
TI':hu:na

Gronemeyer-GGF.p12.fig11.j
YAX Lintel 26 Front E1b
TI':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.p65.F.#4
TI':HUUN:na

PAL Stela 3 A5
TI'.<HUUN:na>

- The "WINIK"-variant.
- PAL Stela 3 A5 has a head variant of **TI'**.

K&L.p65.F.#2

TI':HUUN:na

JM
CAY DO Wall Panel B6
TI':<HUUN.na>

- The Jester God variant (check that CAY example is indeed the Jester God)

Bojkowska
EMC2021-BW Workbook
CAY Altar 4
TI':HUUN

Gronemeyer-GGF.p12.fig11.g

QRG Stela A B6b
TI':HUUN:na

K&L.p65.F.#9 = Gronemeyer-GGF.p12.fig11.k

YAX Lintel 46 B3
[TI'?]HUUN:na

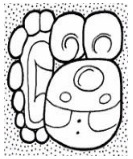
Coll-1

YAX Stela 6 A7
u.<TI':HUUN:na>

					 YAX Lintel 10 B1 <JANAAB>.<TI':HUUN:na> • The **TZ'IKIN**/bird-head (with infixed **CH'AB**) variant. • There appears to be a tendency for a "cruller" to appear in connection with the eye of the bird.
Glyph-G overview – part of the SS	N	CAL-SSG0	M	"Glyph-G overview"	• Sources: ○ Not in BMM9, TOK. ○ Extensive set in K&L. ○ MC is a strict subset of K&L. ○ One of each G1-G9 in K&H, independent of K&L/MC but some correspondences. • Glyph-G forms one of the standard components of the SS. ○ It can also occur accompanying a CR, without an SS. ○ In such cases, it may or may not be accompanied by a Glyph-F. (Get examples of this less common usage.) • The subscript numbers in Glyph-G_n, n=1, 2, 3, …, 9 represent the 9 "Lords of the Night". ○ 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 *actual* "Lords of the Night" in Classic Maya (but this may be a limitation in my reading rather than reality). ○ 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_9. Because of this: ▪ 9.15.0.0.1 has a Lord of the Night of Glyph-G_1. ▪ 9.15.0.0.2 has a Lord of the Night of Glyph-G_2. ▪ 9.15.0.0.3 has a Lord of the Night of Glyph-G_3. ▪ … ▪ 9.15.0.0.9 has a Lord of the Night of Glyph-G_9. ▪ 9.15.0.0.10 has a Lord of the Night of Glyph-G_1. ▪ 9.15.0.0.11 has a Lord of the Night of Glyph-G_2. ▪ etc … There are 18 *k'ins* in a *winal*, and 18 is a multiple of 9. Because of this, any LC = X.Y.0.0.0 will *always* have a Lord of the Night of Glyph-G_9, 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_N. • Diagnostic characteristics. Here are the *simplified* diagnostics – the details are a lot more complex (see the individual Glyph-G_n entries): ○ Glyph-G_1: 9-**CH'AM**-**K'UH** or 9-**TZAK**. The "9" is shared with Glyph-G_6. ○ Glyph-G_2: **HUL**-**TI'** or **HUL**-**SIBIK** or **HUL**-**mo**-**NAL**. The **HUL** is shared with Glyph-G_3. ○ Glyph-G_3: **HUL**-**JAN**(**AAB**). The **HUL** is shared with Glyph-G_2. ○ Glyph-G_4: 7-"head" or 7-**SIBIK**. ○ Glyph-G_5: 5-**T'AB** or 5-**T'AB**-**LEM** or 5-**CH'AM**-**LEM** or 5-**CH'AM**-**AHIIN?** or 5-**HUL**-**CH'AB**. ○ Glyph-G_6: 9-**SIM**. The "9" is shared with Glyph-G_1. ○ Glyph-G_7: **NAAH**-"left-fist"-"head" (or **NAAH**-"head" or **NAAH**-**la**) or **NAAH**-**tzi?**-**lo**-**?**-**na**. ○ Glyph-G_8: ("floppy pear") **HUL**. ○ Glyph-G_9: **ITZAM**, **YIHK'IN**, **NAL** (2 of the 3, or all 3). 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 *read* in this way. The exact reading of these glyphs remains unclear to me.

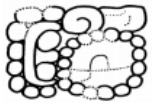
Glyph-G_1	N	CAL-SSG1	P	Glyph-G_1	 K&L.p65.G1.1 = MC.p50.G1.1  K&L.p65.G1.3  K&H.p51.TabVIII.1  Gronemeyer-GGF.p4.fig2.a&b&c  K&L.p65.G1.2 = MC.p50.G1.2  Gronemeyer-GGF.p4.fig2.d&f  Safronov Phoenix "Po" Panel A5 • Distinguishing characteristic: "9" + varying main sign (but this "9" is shared with Glyph-G_6). ○ It can be on the left or on top of the main sign. • Variants (2) of main sign – both variants can be associated with "9" and "grasping": ○ A. **CH'AM-K'UH**: ○ B. **TZAK**.
Glyph-G_2	N	CAL-SSG2	P	Glyph-G_2	 K&L.p65.G2.1 = MC.p50.G2.1  K&H.p51.TabVIII.2  TMHW1960.pdfp432.r2.c1  Gronemeyer-GGF.p5.fig3.a DPL Stela 16 A4 Glyph-G  Gronemeyer-GGF.p5.fig3.c PAL Temple XVII P. B4 Glyph-F[Glyph-G]  Gronemeyer-GGF.p5.fig3.b PAL PT M17 Glyph-F[Glyph-G]

Gronemeyer-GGF.p5.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.fig3.f
XLM P. 2 A9a



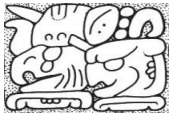
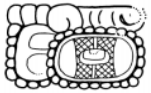
K&L.p65.G2.3 = Gronemeyer-GGF.p5.fig3.e (Mathews)
TNA Monument 30 A2

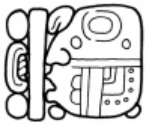
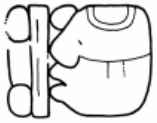
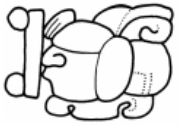
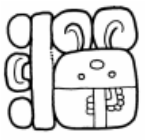
Montgomery
CAY – DO Panel 1 A6

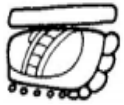
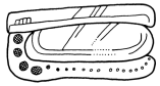
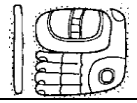
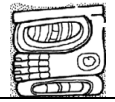
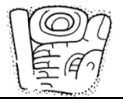
TMHW1960.pdfp432.r2.c2

TMHW1960.pdfp432.r2.c3

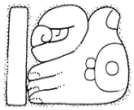
- Distinguishing characteristic: **HUL** on the left with varying main sign on the right (but this **HUL** is shared with Glyph-G_3, also on the left):
  - The HUL is an "old variant".
  - Outside: oval outline composed of many touching dots on 3 sides (top, left, and bottom)
  - Inside has variation:
    - Typically based on two stacked non-touching circles, or
    - Two slightly curved horizontal bands, or
    - "AK'AB" – rotated 90 degrees anti-clockwise.
- Variants (4) of the main sign:
  - A. Stylized face – this is given as one of the variants of **TI'**: the stylized face variant – features:
    - Top:
      - Left and right feeler, each with protector
      - Can (but doesn't have to) be omitted when infixed in Glyph-F
    - 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:
      - Top: 2-3 dots
        - If 2: touching, can appear as a single small circle divided into two parts, with bold outline or bold divider.
        - If 3: in a triangular formation, triangle pointing up (one case of 3 in a row, touching: K&H.p51.TabVIII.2).

					• Bottom: resembles the lower part of HAAB. ○ **SIBIK**-like: asymmetric, 1 example only (K&L.p65.G2.2 = MC.p50.G2.2 = Gronemeyer-GGF.p5.fig3.f). This stylized face is a rare variant of **TI'** (see **TI'**, specifically, examples TOK.p32.r5.c3 and BMM9.p21.r2.c3). ○ B. "SIBIK"-like – this one is particularly easy to confuse with Glyph-G_4, but here the distinguishing characteristic is the "old variant" of **HUL** (which is not present in Glyph-G_4). ○ C. **mo**-**NAL** – features: ▪ Top: **NAL**. ▪ Bottom: "**mo**" – a circle of tiny touching dots with a dot in the centre. ▪ Do not confuse this variant with the abstract variant of Glyph-G_3. The distinguishing characteristics are: • Glyph-G_2 (this glyph) has just a central dot (for the "**mo**") whereas Glyph-G_3 (being related to **JAN**) has four radial spokes. • Glyph-G_2 (this glyph) has a **NAL** whereas Glyph-G_3 has nothing on top. ▪ Do not confuse this variant with the **NAL**-variant of Glyph-G_9: • Glyph-G_2 (this glyph): ("old variant of **HUL**") + **NAL** + **mo**. • Glyph-G_9: **NAL** + **YIHK'IN** + (optional) **ITZAM**. ○ D. Anthropomorphic head: This one has only one example, given in TMHW1960.pdfp432.r2.c3. • The **HUL** and the main sign may or may not become detached from one another when Glyph-G is infixed in Glyph-F: ○ Detaches: no known examples (try to find some). ○ Doesn't detach: PAL Temple XVII P. B4, PAL PT M17. • Gronemeyer-GGF claims that the right top element in the variant with a stylized head (two feelers with protectors) is a variant of **NAL**, and the right bottom element is a variant of **SIBIK**, 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_2.
Glyph-G_3	N	CAL-SSG3	P	Glyph-G_3	 K&L.p65.G3.1 = Gronemeyer-GGF.p5.fig4.d Site Q P. 4 A4  Gronemeyer-GGF.p5.fig4.c PAL Stucco glyph  Gronemeyer-GGF.p5.fig4.f Yaleltsemen Cave A2  YAX Lintel 10 B1 Coll-1 Glyph-G.Glyph-F  K&L.p65.G3.4 Glyph-F[Glyph-G]  K&L.p65.G3.2 = Gronemeyer-GGF.p5.fig4.e TNA 9.17.16.10.1 Base  Gronemeyer-GGF.p5.fig4.a PAL TFC West J. B1 Glyph-F[Glyph-G]  Gronemeyer-GGF.p5.fig4.b PAL ST A9 Glyph-F[Glyph-G]

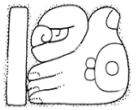
					 K&L.p65.G3.3 = MC.p50.G3.1 Glyph-F[Glyph-G]  K&H.p51.TabVIII.3 Glyph-F[Glyph-G] • Distinguishing characteristic is **JANAAB** – either the abstract or representational (bird-head) variant. • Features: ○ Left – **HUL** (or later **JUL**, as in YAX Lintel 10 B1): ▪ An "old" variant with an oval outline composed of many dots on 3 sides with variations inside. ▪ Not optional, but optionally dropped in infixing in Glyph-F. ▪ If not dropped when infixing, then doesn't infix but stays on the left. ○ Right – **JAN/JANAAB** – either the abstract or the bird head variant: ▪ See **JAN/JANAAB** for the 2 variants (abstract or bird head). ▪ The abstract variant of **JAN** has either: • A circle of dots as border. • A reinforced circle with a dotted spine. ▪ In K&L.p65.G3.2, there seems to be a **NAL**-like element above the **JANAAB** – this might however be an incorrectly drawn version of the abstract variant of **TI'**, when conflated with Glyph-F = *ti'-huun.* • The **HUL** and the **JAN/JANAAB** often but not always becomes detached from one another when Glyph-G is infixed in Glyph-F: ○ Detaches: PAL ST A9, K&L.p65.G3.3 = MC.p50.G3.1, K&H.p51.TabVIII.3. ○ Doesn't detach: PAL TFC West J. B1. • The **HUL** is absent in YAX Lintel 10 B1, the bird head is the diagnostic.
Glyph-G4	N	CAL-SSG4	P	Glyph-G4	 K&L.p65.G4.1 = MC.p50.G4.1  K&H.p51.TabVIII.4  Gronemeyer-GGF.p6.fig5.b DPL Stela 8 A6  Gronemeyer-GGF.p6.fig5.d NAR Stela 24 C4  Gronemeyer-GGF.p6.fig5.e TIK Stela 4 B3  K&L.p65.G4.2 = MC.p50.G4.2  Gronemeyer-GGF.p6.fig5.a CPN Stela A A5  Gronemeyer-GGF.p6.fig5.c IXK Stela 2 A6  Gronemeyer-GGF.p6.fig5.f TNA Monument 175 B1 • Distinguishing characteristic is the "bar-and-dot" form of "7" + main sign: ○ It can be on the left or on top of the main sign. ○ It (often) has no filler(s) in between the two external dots and can be beside or above the main sign, generally: ▪ Beside in the head variant ▪ Above in the abstract variant

					But this tendency might be an illusion caused by the small sample size. • Gronemeyer-GGF.p6.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 • Variants (2) of main sign: ○ A. Representational – the head of a (young?) male, divided into two halves by a horizontal line at nose level: ▪ Top: • A bold semi- or 3/4- or full circle – a **LEM**-like element infixed in the top of the head. • A small eye, optionally with a few tiny non-touching dots in a horizonal line to the right ▪ Bottom: • Open mouth (optionally bold lips). • 2 vertical bars (optionally with cross-hatching in between), or just two vertical lines; alternatively, an "ajaw strap". • The 2 vertical lines might just be reduced/eroded forms of the 2 vertical bars and cross-hatching, or of the "ajaw strap". ○ B. Abstract: ▪ Top: left and right feeler, each with its own protector. These are very common, but absent in, for example, IXK Stela 2 A6). ▪ Bottom – a **SIBIK**-like element with boulder outline, divided into two halves by a horizontal line: • Top half: 3 non-touching dots in a triangular formation, triangle pointing up. • 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. Do not confuse the abstract variant of Glyph-G_4 with the "face" variant of Glyph-G_2: they both have two "leaves" (or left and right feelers with protectors) on top, but Glyph-G_2 is definitely face/**HAAB**-like on the bottom, whereas Glyph-G_4 is **SIBIK**-like. More importantly, Glyph-G_4 always has a "7" associated with it, while Glyph-G_2 never has. • The representational and abstract variants are not as independent of one another as might initially appear. The representational variant has a **SIBIK**-like sub-variant (DPL Stela 8 A6, above) where: ○ The infixed **LEM**-like element in the top of the head lacks the curved internal band of **LEM** and could be seen as a bolded top dot of the abstract variant. ○ It has a "dotted ajaw strap". ○ The vertical bars of the bottom half could be seen as a fancy form of the vertical bar of the "ajaw strap".
Glyph-G_5	N	CAL-SSG5	P	Glyph-G_5	 K&L.p65.G5.1 = MC.p50.G5.1  Gronemeyer-GGF.p7.fig6.c "Hauberg Stela" A3  Gronemeyer-GGF.p7.fig6.e "Leiden Plaque" A8  K&H.p51.TabVIII.5 = Gronemeyer-GGF.p7.fig6.f PNG P. 2 D1  K&L.p65.G5.5 = Gronemeyer-GGF.p7.fig6.b CLK Stela 89 Left A4a Glyph-F[Glyph-G]    

					K&L.p65.G5.4 = Gronemeyer-GGF.p7.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.fig6.d
HIG Stela 1 A6

K&L.p65.G5.2 = MC.p50.G5.2 = Gronemeyer-GGF.p7.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 Infixed **LEM**, which, in turn, has an infixed "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 infixed 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**?.
- The "5" and the main sign can become detached from one another when Glyph-G is infixed in Glyph-F.

Glyph-G_6	N	CAL-SSG6	P	Glyph-G_6	

MHD.AXE.1&2

K&L.p65.G6.1 = MC.p50.G6.1

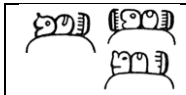
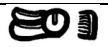
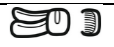
Gronemeyer-GGF.p8.fig7.a
YAX Stela 6 A6

K&H.p51.TabVIII.6

Gronemeyer-GGF.p8.fig7.a
RAZ Tablet 1 A5

- Distinguishing characteristic: "9" + (a variant of) SIM (but this "9" is shared with Glyph-G_1).
- The 9 is beside the main sign.
- Features – like SIM/Glyph-Y/"Baby K'awiil"/"beetle glyph", the main sign consists of 3 stacked parts – top, middle, bottom:
  - Top part – horizontal, "rectangular", 3-component element:
    - Left: head with long up-curving nose ~= "leaf-nosed bat head" (resembles the left component of T267).
    - Middle: washer.
    - Right: grip – a bold quarter-circle, north-east quadrant.

This 3-component element is treated in different ways by different epigraphers.

							
T267	MHD.3MB.1 K'AAS?	0267bt	0267bv	MHD.3MB.3 K'AAS?	0031bt	0031bv	MHD.3MB.2 K'AAS

- Thompson:
  - Treats it as an independent glyph – with the outline being a horizontal "rectangle".
- MHD:
  - Treats it as an independent glyph – with the outline being a horizontal "rectangle".
  - Recognizes three variants in total:
    - a 3-element variant with a bat-head on the left (MHD.3MB.1).
    - a 2-element variant with a "knot-like" element on the left (MHD.3MB.3).
    - a 3-element variant with a protected scroll on the left (MHD.3MB.2).
  - Assigns all three variants a tentative reading of **K'AAS?**.
- Bonn:
  - 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.
  - Gives no reading and hence leaves open whether 0267 and 0031 are related.

In the examples above, YAX Stela 6 A6 and RAZ Tablet 1 A5 are both Glyph-G_6, 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.

					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.pdfp122 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_6" 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_6" is an integral part of Glyph-G_6, 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_6 differs from SIM/Glyph-Y/"Baby K'awiil"/"beetle glyph": the 3-element component on the top of Glyph-G_6 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_7	N	CAL-SSG7	P	Glyph-G_7	 K&L.p65.G7.1 = MC.p50.G7.1  K&H.p51.TabVIII.7  Gronemeyer-GGF.p9.fig8.d PNG Stela 3 Back B4  K&L.p65.G7.3 = Gronemeyer-GGF.p9.fig8.a BPK Stela 2 A2 Glyph-G:ma  K&L.p65.G7.4 = Gronemeyer-GGF.p9.fig8.b CPN Stela 5 AS5 Glyph-G.ja  K&L.p65.G7.6 = Gronemeyer-GGF.p9.fig8.c PAL PT A15 Glyph-F[Glyph-G]

K&L.p65.G7.2 = MC.p50.G7.2

Gronemeyer-GGF.p9.fig8.e
QRG Stela D A8

K&L.p65.G7.5 = Gronemeyer-GGF.p9.fig8.g
YAX Lintel 29 B4a

=

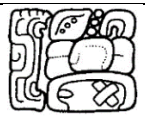
Graham
YAX Lintel 29 B4a
Glyph-G.<Glyph-F>

- Distinguishing characteristic: **NAAH** + varying main sign.
- Variants (3) of main sign:
  - A. Representational:
    - Top: left fist viewed from back of hand. The fist is very common but optional – **NAAH** is the absolute diagnostic here.
    - Bottom: young man's head with optional earspool – earspool can have three tassels (mnemonic: he's seven times a "knucklehead") – perhaps it's a young *woman's* head because:
      - The forehead ornament of K&L.p65.G7.3 is often found on women.
      - The infixed elements in K&L.p65.G7.2 resemble the "Female GI Title".

      If the head doesn't have such a left fist above it, then there may be other syllabogram complements like **ma** or **ja**. In such cases, the head is not distinctly that of a young man.
  - B. Abstract (stacked from top to bottom):
    - Short trifoliate element = **tzi?**.
    - **lo**
    - Boulder with infixed crescent pointing up (reinforced walls and ceiling)
    - **na**
  - C. **NAAH-la**.
    - The la is below the **NAAH** and is the simplest variant – the upside-down ajaw-face.
    - Dorota: Gloria in the scans p3 says it can also be **NAL**: glyph **NAL** or head variant of "2" (or something else).
    - The cases where there is a **la** at the bottom could be because of the **NAL**.
    - MHD transliterates a **na-la** and transcribes a *naahal* for BPK Stela 2 A2 and YAX Lintel 29 B4a.
- Do not confuse Glyph-G_7 and the head variant of the numeral "2":
  - What they can have in common are (on the right):
    - Top: a left-hand fist with thumb pointing up.
    - Bottom: a youthful head.
  - What distinguishes them (on the left):
    - Glyph-G_7 has **NAAH**.
    - Numeral "2" has (or rather, *can* have) **SAK**.

  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.

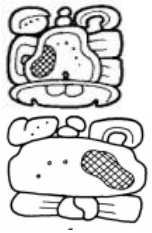
- There is a very strange variant K&L.p65.G7.7 = Gronemeyer-GGF.p9.fig8f, which has **u** instead of **NAAH**, and **TIL**:**li** which seems to have nothing to do with the other variants of Glyph-G_7 – K&L describes it as Glyph-F[Glyph-G] (the 3-part element on the top of the right side is just the reduced variant of **TI'**, from Glyph-F):

		
K&L.p65.G7.7 = Gronemeyer-GGF.p9.fig8f	Looper (Coll-2) QRG Stela E West Side A6	Tolles A6

  - This is probably because it's incorrectly drawn. Examination of the Tolles photograph provided by MHD suggest that it could be Glyph-G_8. In any case, not the **TIL**/**TILIW** proposed by GutiérrezGonzaléz-PhD.p146.pdfp159.
  - It is almost definitely based on QRG Stela E West Side A6:
    - QRG Stela is a very tall monument, so it is hard to see the top part, where A6 is located.
    - The *drawing* 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&L and Gronemeyer-GGF.
    - Photographs (and logic) suggest that it is just a **HUUN** (being the middle part of Glyph-F), with something else, presumably an infixed Glyph-G in the middle of the **HUUN**.
    - It is tempting to read the infixed element in **HUUN** as **HUL** (the "floppy pear" of Glyph-G_8), but calendrical calculations indicate that it should be Glyph-G_7.
    - There are examples of **HUUN** where the middle part resembles a KAWAK (K&L.p28.#2.3) or **LEM** (K&L.p28.#2.1) – such instances could have been the source of the misreading of central part of the **HUUN** in the middle as KAWAK.
      - Perhaps the u- is **actually** NAAH-?
      - Perhaps it's the very eroded outline of the youthful human head very commonly seen for Glyph-G_7?

      These two "amendments" would make it totally a regular Glyph-G_7 (infixed in Glyph-F).
    - In this context, the last element is **li**, which is used to indicate the intimate possession **HUUN-li**: *u-ti'-huun-il* (there are many other contexts where **HUUN** has the intimate possession ending) – this **li** further strengthened the misreading (and hence drawing) of this as **TIL**.

  - 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.
  - According to the calendar spreadsheet / program, this amended LC corresponds to Glyph-G7.

Glyph-G_8	N	CAL-SSG8	P	Glyph-G_8	 K&L.p65.G8.3 = MC.p50.G8.1 Glyph-F[Glyph-G]  K&L.p65.G8.4 = MC.p50.G8.2 Gronemeyer-GGF.p10.fig9.f 21 B4 Glyph-F[Glyph-G] F[Glyph-G]  K&H.p51.TabVIII.8 Glyph-F[Glyph-G]  Gronemeyer-GGF.p10.fig9.a CPN Stela 10 A4 Glyph-F[Glyph-G]  Gronemeyer-GGF.p10.fig9.b PAL Temple of the Cross A10 Glyph-F[Glyph-G] YAX Lintel Glyph-  K&L.p65.G8.2 = Gronemeyer-GGF.p10.fig9.e “Walter Randel Stela” B5  Martin Randel Stela B6  Martin Randel Stela D1  K&L.p65.G8.1 = Gronemeyer-GGF.p10.fig9.d SBL PT 1 D2  Gronemeyer-GGF.p10.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 ▪ The figure is seated or crouching (on the ground) and is (uncharacteristically) facing to the right. ▪ 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?)
Glyph-G9	N	CAL-SSG9	P	Glyph-G9	 K&L.p65.G9.4 = Gronemeyer-GGF.p11.fig10.b CPN Stela I D2  Gronemeyer-GGF.p11.fig10.j YAX Lintel 3 B1a  K&L.p65.G9.5 = Gronemeyer-GGF.p11.fig10.d DPL Stela 5 M1  K&L.p65.G9.7 = Gronemeyer-GGF.p11.fig10.c CPN Temple 11 N Door Glyph-F[Glyph-G] -=-=-  K&L.p65.G9.1 = MC.p50.G9.1 = Gronemeyer-GGF.p11.fig10.i TIK Stela 31 A8  K&L.p65.G9.2 = MC.p50.G9.2 • 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]

K&L.p65.G9.3 = MC.p50.G9.3

Gronemeyer-GGF.p11.fig10.g
QRG Stela F C6a

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

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

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

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

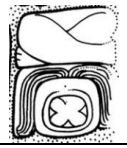
K&H.p51.TabVIII.9

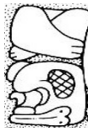
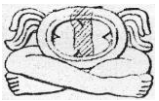
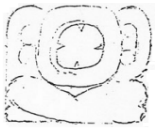
MHD CPN 107 lower step R1a

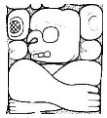
- There 3 “available” components – **NAL**, **YIHK’IN**, “old man head”/**ITZAM**, and 2 of the 3 are always present:
  - **NAL**+**YIHK’IN**, or
  - **YIHK’IN**+**ITZAM**, or
  - **NAL**+**ITZAM**

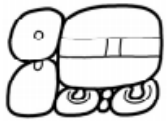
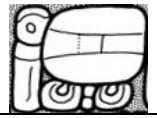
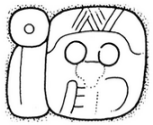
  but sometimes all three. The **ITZAM** can be just the “net headdress” or just the “old man’s head” or both.
- Do not confuse the **NAL**-variant of Glyph-G_9 with the **NAL**-variant of Glyph-G_2:
  - Glyph-G_9 (this glyph): **NAL** + **YIHK’IN**
  - Glyph-G_2: (“old variant of HUL”) + **NAL** + **mo**

Glyph-X overview – part of the SS	N	CAL-SSX	P	"Glyph-X overview"	
					26EMC-HB.pdfp14 & 27EMC-HB.pdfp14
					
					• Glyph-X forms one of the standard components of the SS.
					• 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).
					  ○ There is a correlation between the form of Glyph-X and the *combination* of the coefficient and god-head of Glyph-C.
					  ○ As there are three god-heads and each god-head has a coefficient from 1 to 6, there are 18 distinct combinations.
					  ○ There are hence (at least) 18 distinct forms of Glyph-X (with perhaps some sub-variants within each combination).
					  ○ This was first discussed in Rohark-DSdM (1996).
					  ○ 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 *21st Sergeev Reading*, in Moscow, in 2019.
					  ▪ Vepretskii-GX is a recording of this presentation.
					  ▪ This used to be publicly accessible on YouTube, but unfortunately now has restricted access.
					  It seems to me that Vepretskii independently discovered/concluded this, but he cites Rohark's paper in his presentation.
					  ○ 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.
					  ▪ The 3 god-heads are shown vertically, in 3 rows: TMG/IXIIM, JGU/CHUWAJ, DG/KIMI.
					  ▪ The 6 coefficients are shown horizontally, in 6 columns: 1, 2, 3, 4, 5, 6.
					  ▪ The corresponding Glyph-X is then shown in the table cell which is the intersection of the respective row and column.
					  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:
					  ▪ Between the HAAB patron in the ISIG and the HAAB month.
					  ▪ In Glyph-G's not matching the LC.
					  ▪ In CR's not matching LC's.
					  ▪ In CR_{n+1} not matching $CR_n + DN_n$.
					  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). Furthermore, I think the possibility cannot be excluded that there were small regionally-based differences in the correlation. This could be an explanation for *some* of the (few) discrepancies.
					• More details about each of the 18 forms of Glyph-X can be found elsewhere. See the individual forms for more information.
					• The relationship between Glyph-X and Glyph-B:
					  ○ XScheleEtAl-TLSiCMI.p6X: Glyph-X is optional, but Glyph-B never occurs without the presence of Glyph-X.

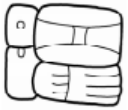
					○ Grube-FoGX.p11.para2: It has long been established that Glyph X in the Lunar Series is followed by Glyph B (Figure 19). Glyph B is only present when Glyph X is present. There are no cases of the use of Glyph B without a preceding Glyph X. In the early Classic period, such as in the early Lunar Series 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). ○ Sim: the possible combinations are: ▪ …, E, D, C, A, or ▪ …, E, D, C, X, A, or ▪ …, E, D, C, X, B, A • Summary: ○ 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 (6 x 3 = 18). ○ 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 youthful name" (= Glyph-B) without giving the name (= Glyph-X) wouldn't make any sense.
Glyph X with 1+DG	N	CAL-SSX11	P	"Glyph X with 1+DG"	 Grube-FoGX.p7.fig10a = Vepretskii.pc20210103 • Features: ○ Topped by a yu[ku]-like element. ○ Single dot. ○ L-shaped WITZ embracing K'UH with blood drops.
Glyph X with 2+DG	N	CAL-SSX12	P	"Glyph X with 2+DG"	 Grube-FoGX.p7.fig10c (Graham) YAX Lintel 47 A2 = Vepretskii.pc20210103  Coll-2 PNG Stela 3 B6 Stuart?/Montgomery?  Stuart-NDLCP E3 Stuart • Features: ○ Topped by an element resembling the reduced variant of SA'. ○ Three dots. ○ L-shaped WITZ embracing K'UH with blood drops.
Glyph X with 3+DG	N	CAL-SSX13	P	"Glyph X with 3+DG"	 

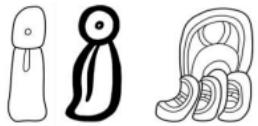
					Grube-FoGX.p8.fig13i = Love-TEG.p20.pdfp20.fig25c = Vepretskii.pc20210103.2 PNG Stela 10 B7  Grube-FoGX.p8.fig13b TIK Stela 3 A6  Grube-FoGX.p8.fig13c CPN Stela 7 B6a   Grube-FoGX.p8.fig13d = Love-TEG.p20.pdfp20.fig25g = Vepretskii.pc20210103.1 PNG Stela 1 F1  Grube-FoGX.p8.fig13g (Graham) YAX 46 F1  Grube-FoGX.p8.fig13h (Schele) = Vepretskii.pc20210103.3 PAL TFC Sanctuary Tablet / Jamb B3  Mathews = Love-TEG.p20.pdfp20.fig25e YAX Lintel 21 B6a • The PAL TFC example is referred to as "Sanctuary Tablet" by Grube-FoGX but called "Jamb" in Col-1. • Features: ○ Top: crossed legs ○ Bottom: ▪ 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"), or ▪ An element resembling a skull. • Note: Grube-FoGX.p8.fig13g & Grube-FoGX.p8.fig13h have a variant which doesn't fit into this pattern. • 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). • Dorota: no explicit knowledge about the skull, but if interchangeable with eclipse here, then it might mean the same too.
Glyph X with 4+DG	N	CAL-SSX14	P	"Glyph X with 4+DG"	  Grube-FoGX.p8.fig13j (Grube) = Love-TEG.p20.pdfp20.fig25b (Graham) = Vepretskii.pc20210103.2 COB Stela 20 A10  Love-TEG.p20.pdfp20.fig25a =? Col-2 CPN Stela E  CPN Stela E 'B1'b  Love-TEG.p20.pdfp20.fig25d PRU Stela 25

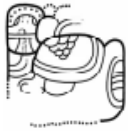
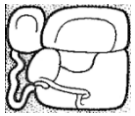
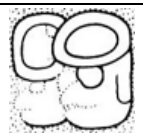
					  Grube-FoGX.p8.fig13a = Col-2 = Vepretskii.pc20210103.1 CPN Stela 63 'B10'    Love-TEG.p20.pdfp20.fig25f Stuart-TPM.p162 B11 Graham Graham PAL TS B11 PAL TS B11 YAX Lintel 29 D2   Grube-FoGX.p8.fig13e Grube-FoGX.p8.fig13f = Vepretskii.pc20210103.3 • Features: ○ Top: ▪ The "Eclipse Glyph": K'IN (sun) or UH {moon} with flanking elements (with cross-hatching). ▪ A skull-like element. ○ Bottom: crossed legs. • Note: Grube-FoGX.p8.fig13e, Grube-FoGX.p8.fig13f & Stuart-TPM.p162 B11 have a variant which doesn't fit into this pattern. • 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). • 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.
Glyph X with 5+DG	N	CAL-SSX15	P	"Glyph X with 5+DG"	      Grube-FoGX.p5.fig6a Grube-FoGX.p5.fig6b Grube-FoGX.p5.fig6c Grube-FoGX.p5.fig6d = Vepretskii.pc20210103 Grube-FoGX.p5.fig6e = TOK-3D NAR Stela 46 B6 NAR Stela 46 B6 • NAR Stela 46 B6 is from https://sketchfab.com/3d-models/estela-46-naranjo-ver-2-809e20ccd9b5442796fbb8b8584f92e6. • Features:

					○ Top: ▪ Left: SAK or something similar (optionally with infixed **le**). ▪ Right: variant of HUL (floppy pear) or MAY (deer hoof)? ○ Bottom: ▪ boulder-part of AJAW (or SIBIK?) or **ki** (all three are "visually"/"graphically" (but not semantically) related to one another). • Mnemonic: Tri-partite SIBIK with HUL
Glyph X with 6+DG	N	CAL-SSX16	P	"Glyph X with 6+DG"	 Grube-FoGX.p8.fig14a PNG Stela 12 = Vepretskii.pc20210103 <ta:IB>.<OCH:CH'AB>  = Teufel-PhD.p375 (Schele) PNG Stela 12 <ta:IB>.<OCH:CH'AB>  Grube-FoGX.p8.fig14b • Variants (2): ○ A. Quadripartite (= 4 quarters): ▪ Top left: ta. ▪ Bottom left: SIBIK. ▪ Top right: fist. ▪ Bottom right: CH'AB-like. ○ B. Vertically stacked (indistinct, not enough examples to generalize): ▪ Top: SIBIK flanked by two elements. ▪ Bottom: LEM or CH'AB. ▪ Below bottom: **ni**? • Mnemonic: quadripartite SIBIK with fist (or tripartite stacked).
Glyph X with 1+TMG	N	CAL-SSX21	P	"Glyph X with 1+TMG"	 Grube-FoGX.p9.fig16d  Grube-FoGX.p9.fig16e  Grube-FoGX.p9.fig16f = Vepretskii.pc20210103  Bojkowska CAY Altar 4 Rim R  BeliaevEtAl-LTJM Stuart CRN Panel 1 A7  

					(lost reference) MHD (Graham) IXK Stela 2 B9
					
					• Features – 2 parts – Left and Right:
					  ○ Left: "JEWEL"
					  ○ Right:
					  ▪ Top: **po**
					  ▪ Bottom: **ya**
					• Mnemonic: TMG = IXIIM = "1" ➔ *juun poy*

Glyph X with 2+TMG	N	CAL-SSX22	P	"Glyph X with 2+TMG"	 Grube-FoGX.p9.fig16a  Grube-FoGX.p9.fig16b  Grube-FoGX.p9.fig16c = Vepretskii.pc20210103  Safronov CRN Panel 3 B7
					
					• MHD reads this as two separate glyphs.
					• Features – 2 parts – Left and Right:
					  ○ Left: "JEWEL"
					  ○ Right:
					  ▪ Top: **po**
					  ▪ Bottom: **k'I** or **K'A'**
					• Mnemonic: TMG = IXIIM = "1" ➔ *juun pook'*

Glyph X with 3+TMG	N	CAL-SSX23	P	"Glyph X with 3+TMG"	 <MHD.2M4>.<MHD.ZRE>
					
					  Grube-FoGX.p9.fig16g  Grube-FoGX.p9.fig16h  Grube-FoGX.p9.fig16i  Grube-FoGX.p9.fig16j = Vepretskii.pc20210103
					
					• MHD reads this as two separate glyphs.
					• Features:
					  ○ Left (optional): "JEWEL"
					  ○ Right: 3 "LEM"-like elements dangling below a NAAH-like element
					• Mnemonic: TMG = IXIIM = "1" ➔ *juun LEM LEM LEM*

Glyph X with 4+TMG	N	CAL-SSX24	P	"Glyph X with 4+TMG"	 Grube-FoGX.p10.fig17f = Vepretskii.pc20210103  ? TIK Stela 40 A8 • Features – 2 parts – Left and Right ○ Left: MIH ○ Right: KAMIS • Mnemonic/nickname: *mih-kamis*
Glyph X with 5+TMG	N	CAL-SSX25	P	"Glyph X with 5+TMG"	 Grube-FoGX.p10.fig17a  Grube-FoGX.p10.fig17b  Grube-FoGX.p10.fig17c  Grube-FoGX.p10.fig17d  Grube-FoGX.p10.fig17e = Vepretskii.pc20210103  Stuart PNG Stela 8 A7 • Features– 2 parts – Left and Right: ○ Left: ▪ Top: **pu**. ▪ Bottom: curly element resembling a scroll/spiral or inverted question mark. ○ Right: ▪ Top: (optional) **mi**. ▪ Bottom: mostly KAMIS: • Two of them might be TZ'IKIN instead of KAMIS. • 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. ▪ Optional phonetic complement **ya**. • Mnemonic/nickname: *pu-ne-kamis*.
Glyph X with 6+TMG	N	CAL-SSX26	P	"Glyph X with 6+TMG"	 Grube-FoGX.p10.fig17k = Vepretskii.pc20210103  Grube-FoGX.p10.fig17l  Graham

					NAR Stela 23 F7 • Features: ○ Left: either CHAN:KAB or KAB:CHAN ○ Right: KAMIS: optional initial phonetic complement **ka** and/or final phonetic complement **si** • Mnemonic/nickname: *kab-chan-kamis*
Glyph X with 1+JGU	N	CAL-SSX31	P	"Glyph X with 1+JGU"	 Grube-FoGX.p3.fig3a  Grube-FoGX.p3.fig3b  Grube-FoGX.p3.fig3c = Vepretskii.pc20210103  Grube-FoGX.p3.fig3ds  Biró-PNP3.p292.fig1 Safronov PNG Panel 3 D2 • Features: ○ Bottom and right: head and open mouth of AHIIN: ▪ 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&L.p20.#1.1&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). ▪ 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). ▪ One to three teeth, but minimum of one tooth always seems to be present. ○ Top left: ▪ MIH. [Dorota: this might not be a headdress – there is no reason to think it is.] ▪ One example (Grube-FoGX.p3.fig3b) doesn't have a MIH, but something else instead. ○ Remainder (middle left): K'UH – blood drops can be very narrow, to leave more space for the K'UH head.
Glyph X with 2+JGU	N	CAL-SSX32	P	"Glyph X with 2+JGU"	 Grube-FoGX.p3.fig3e = Vepretskii.pc20210103  Grube-FoGX.p3.fig3f  Grube-FoGX.p3.fig3g  Grube-FoGX.p3.fig3h  Stuart-TIfTXIX.p61.fig34 B6 PAL TXIX Passage S-1 • 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.] • PAL TXIX Passage S-1 has a syllabogram **ni** 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?] • (Optional) an oval element containing three non-touching dots in a row is a property marker for skulls, insects, and crocodiles.
Glyph X with 3+JGU	N	CAL-SSX33	P	"Glyph X with 3+JGU"	 Grube-FoGX.p4.fig4a  Grube-FoGX.p4.fig4e  JM

					= Vepretskii.pc20210103 CAY - Unprovenanced Wall Panel   Looper = MHD (Tolles) QRG Stela E A7 <"SNB"+CHAN>.<u:<<chó[ko]>+K'ABA'>:a> • Features: SNB with infixed CH'ICH at the bottom. • 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.
Glyph X with 4+JGU	N	CAL-SSX34	P	"Glyph X with 4+JGU"	 Grube-FoGX.p4.fig4b  Grube-FoGX.p4.fig4c  Vepretskii.pc20210103 (rotated 3+JGU) • Features: SNB with infixed CH'ICH at the top
Glyph X with 5+JGU	N	CAL-SSX35	P	"Glyph X with 5+JGU"	 Grube-FoGX.p5.fig7a  Grube-FoGX.p5.fig7b = Vepretskii.pc20210103 • Features – 2 parts – Left and Right: ○ Left – 2 variants, each with 3 stacked components: ▪ A – "star"-based • Top: top half of EK' • Middle: PET/washer (optionally bold centre) • Bottom: bottom half of EK' ▪ B – "leaf"-based • Top: bi-foliate leaves ~= left and right feelers with protectors • Middle: washer with additional curved band on the top and bottom • Bottom: two horizontally touching dots, each with a (bold) tick at 12 o'clock ○ Right: TZ'IKIN (Dorota confirms it is a TZ'IKIN)

Glyph X with 6+JGU	N	CAL-SSX36	P	"Glyph X with 6+JGU"	 Grube-FoGX.p6.fig8a ji.<"K'AN":AJAW>  Grube-FoGX.p6.fig8b <"K'AN".yi>:AJAW  Grube-FoGX.p6.fig8c = Vepretskii.pc20210103 <"K'AN":"AJAW">:YAX  Grube-FoGX.p6.fig8d <"K'AN":AJAW>:ji  Grube-FoGX.p6.fig8e PNG Panel 2 "K'AN":"AJAW" • Features – three components always present (not variants): ○ 1. AJAW-like – can be: ▪ Reduced variant of AJAW (= "BEN-ICH" = BEN + **po** / **po** + BEN). ▪ "Double BENs" – note that the BEN can have unusual variants as well. ○ 2. K'AN-like – cross-hatched in 0, 2 or 4 quadrants (0 could be erosion). ○ 3. Variable last element – but all three components are "unusual variants" of their : normal" forms: ▪ **je** (hand variant) or CHIT (head variant with rabbit ear) (latter preferred by Dorota). ▪ **yi** (standard or hand variant). ▪ YAX.
Numbers	N	NUM	M	"Numbers overview"	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. Add examples from 25EMC to specific numbers. • 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". • In addition to the "bar-and-dot" notation, small and medium-sized numbers can be written as glyphs. ○ Numbers from 0 to 19 – these all have a head variant, but some have additional variants on top of that: ▪ 0: • 0 has a head variant. • 0 has a number of non-head variants: ○ Flower variant. ○ Horizontal hand variant. ○ Vertical hand variant. ○ Shell variant (mostly codices, but occasionally found in the older media). ▪ Numbers from 1 to 9: • Each of these has an *anthropomorphic* head variant, i.e. a head which is that of a god or human being – see individual numbers for their distinguishing characteristics. • The following numbers have additional "non-head" variants: ○ 1 has two additional non-head variants: ▪ Pointing index-finger variant. ▪ Jewel variant. ○ 6 has one additional non-head variant: ▪ An S-shaped element in a cartouche, with a knob at each end of the cartouche. ▪ Numbers from 10 to 19: • 10: ○ 10 has a head variant which is based on a skull, and which has (like all glyphs based on skulls) a bone-jaw. ○ 10 also has a head variant which is a conventional anthropomorphic head, but with bones in the headdress.

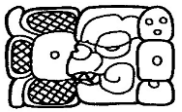
					• 11 and 12 – these do *not* have a head variant based on a skull – they each have one variant based on an anthropomorphic head. ○ 11: a head variant of KAB = "earth". ○ 12: a head variant of CHAN = "sky". 11 and 12 are the only numbers from 10 to 19 without a skull with bone jaw variant (so they are in some senses more like the numbers from 0 to 9). • 13-19: ○ 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.: ▪ 13 is a skull (representing "10") with the distinguishing characteristics of the head variant of "3" added to it. ▪ 14 is a skull (representing "10") with the distinguishing characteristics of the head variant of "4" added to it. ▪ 15 is a skull (representing "10") with the distinguishing characteristics of the head variant of "5" added to it. ▪ etc. ○ 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. ○ Numbers 20 and above: ▪ 20 is written with a moon-based glyph. ▪ Numbers from 21 to 39 are written with the 20 and 1 to 19 (with the 1 to 19 preceding the 20). ○ Numbers 40 and above (very few examples): ▪ 40, 60, 80, etc are written "multiplicatively" with the number of dots followed by the 20: • 2 dots with 20 writes 40. • 3 dots with 20 writes 60. • Etc. ▪ 41, 42, …, 61, 62, …, 81, 82, .. are written as 40, 60, 80, … followed by the relevant 1 to 19.
Number "0"	N	NB	L	mih / mihil	 K&H.p48.pdfp50.#1.2 = 25EMC.pdfp42.#4.1 MIH? / MINAN? MIH  TOK.p24.r1.c3 mi  BMM9.p5.r3.c2.3 mi  25EMC.pdfp42.#4.2 MIH  JM.p170.#3 MI  MHD.SNC.1&2 MIH / mi  1592st MIH  Sanchez-THSoHC (Polyukhovych) PAL House C HS C5-C6 / B3a 0.<K'IN:ni>

TOK.p17.r3.c3 = AT-E1168-lecture6.t0:37.12 = AT-E1168-lecture6.t0:37.40
mi MIH / mi MIH / mi

MHD.ZQ1
MIH / mi / “0”

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

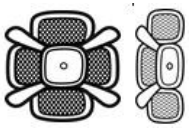


Coll-2
QRG Stela C B4
MIH.WINIK

Schele
QRG Stela C B4
MIH.WINIK

TOK.p9.r3.c3
mi

JM.p169.#5
mi / MI



0173md 0173st
mi

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). • Basic numbers (1 to 20): ○ All the basic numbers 1 to 19 (**but not 20**) have head variants (in addition to the 'bar-and-dot' forms). Three of them have additional non-head logograms: "0", "1", "6": ▪ "0" has four additional non-head logograms [plus the head variant ➔ 5 variants in total]. ▪ "1" has two additional non-head logograms [plus the head variant ➔ 3 variants in total]. ▪ "6" has one additional non-head logograms [plus the head variant ➔ 2 variants in total]. ○ "20" has no head variant, but has two non-head logograms [➔ 2 variants in total]: ▪ "Moon". ▪ "Human face". • Variants of "0" (5): ○ A. Anthropomorphic head with hand-jaw: ▪ Top: Forehead ornament resembling **HA'** or **ba**, but without the blades of grass at the bottom. ▪ Right: Complex ear with long strands of hair. ▪ Bottom: • Hand covering chin – thumb covering lips, forefinger points at ear, little finger points to back of head. • Hand (optionally) in a gesture slightly resembling "devil's horns", but with outstretched thumb. PAL House C HS C5-C6 / B3a has a CHAPAAT headdress, but the distinguishing characteristic still remains the hand-jaw. ○ B. Flower (note: not "the head of a bee" with the two long petals as "feelers", as per reference lost): ▪ Washer, surrounded by: ▪ 1 roughly rectangular and 2 roughly square petals, each: • Rounded. • Bold outline. • Cross-hatched. ▪ 2 long, thin "leaves" between the 3 petals, each optionally with a spine. ○ C. Hand holding shell: ▪ Right hand with fingers slightly or fully curled and pointing to the right, viewed from the back of the hand. ▪ Hand grasps a "**yi**". ▪ Optionally has a "**li**" or "**AK'AB**"-like element at the bottom. ○ D. Plain hand: ▪ Open right hand, viewed from the back of the hand. ▪ Fingers and thumb outstretched and pointing upwards. ▪ Optional fingernails. ▪ 2 touching dots with protector in bottom right corner (an "AK'AB"?). ○ E. Shell (mostly Codex form): ▪ Rather abstract and difficult to describe – see example. • **MIH** can also be a verb meaning "to make content", "to appease" – see Tokovinine-PaliCMN.p39.pdfp48.para3.
Number "1"	N	NB	L	juun / ju'n / jun	 K&H.p48.pdfp50.#2.2 = 25EMC.pdfp36.#7.2 JUN  TOK.p23.r1.c4 IXIIM / na  25EMC.pdfp36.#7.1&3&4 IXIIM / JUN  1568st IXIIM

K&L.p31.#6.1&2&3&4
JUN

MHD.PL1c.1&2
IXIIM

T1000a
-

TOK.p20.r3.c1
"1"

MHD.MBA.1&2
JUUN

0329st
JUUN

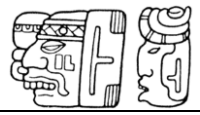
T329
-

BMM9.p10.r3.c3
HUN ("JEWEL")

1568ex
IXIIM

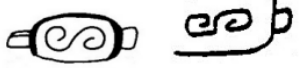
T147
-

- BMM9 is the only source to give the "JEWEL" variant, and gives the reading as *hun*. In my own usage, I have standardized to *juun* (as per Tokovinine, see below).
- K&L and 25EMC give the head variant only in connection with alternative readings for IXIIM.
- In AT-E1168-lecture6.t0:39:45, the slide shows "1" is read *juun* and "10", "13", "14", "15", … "19" are read *-lajuun*, i.e. all with a long-u (in connection with the bar-and-dot notation). K&H, 25EMC have JUN, but they never write long vowels anyway, and TOK (and Tokovinine elsewhere) consistently does. So I'm using *juun*.
- TOK.p23.r1.c4 gives only IXIIM / na, but AT-E1168-lecture6.t0:42:12-43:02: So for example number "1" - *juun* – is also a logogram for the Maize God. So the Maize God in his typical pronunciation is *Ixiim*, 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 *Juun Ixiim* 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.
- Variants of "1" (3):
  - A. Anthropomorphic head:
    - Forehead ornament is a "JEWEL" (see below)
    - Right: Complex ear with long strands of hair
    - 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
  - B. An index finger "pointing" (usually to the left or up).
  - C. "JEWEL": a longish rectangular-ish element, with two lobes at the bottom. It appears as a component in:
    - **TZUTZ** = "to complete" (not pronounced).
    - Some Glyph-X variants – the ones paired with Glyph-C = 1+TMG, 2+TMG and possibly 3+TMG (probably pronounced).
    - As the forehead ornament of IXIIM (not pronounced).
    - (Optionally) the name of (Jun) Chakaw Nahb Chan of CRN (pronounced): This usage is the main reason this glyph is listed under "1".
- MHD does not seem to have declared a code for "jewel" (or I haven't been able to find it).
- Both "1" and "8" are a young man – it's not the case that "8" is older than "1". The distinguishing feature is:
  - "1" has a "jewel" as forehead ornament.

					○ “8” has a “protected scroll” as forehead ornament.
Number “2”	N	NB	L	cha’ / ka’	 TOK.p24.r1.c1 “2” / cha’ / ka’  25EMC.pdfp31.#1.1 CHA’  MHD.PL2a.1 CHA’ / KA’  1086st CHA  T1086 -  K&H.p48.pdfp50.#3.2 = 25EMC.pdfp31.#1.2 CHA’  MHD. PL2a.2 • No glyphs given in K&L, BMM9. • TOK.p24.r1.c1 gives only “2”, but *cha’* / *ka’* given in AT-E1168-lecture6.t0:39:45 (in connection with the bar-and-dot notation). • AT-E1168-lecture6.t0:41:06-41:20: And then of course the shift between *k-* and *ch-* is an ongoing phonetical process during the entirety of the Classic period, so at some point they pronounced this number as *ka’* and then at some point in time it became *cha’*, and we don’t know exactly when it happened. • 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]. • Do not confuse Glyph-G_7 and the head variant of the numeral “2”! ○ What they have in common (on the right): ▪ Top: a left-hand fist with thumb pointing up ▪ Bottom: a youthful head ○ What distinguishes them (on the left): ▪ Glyph-G_7 has NAAH. ▪ Numeral “2” has (or rather, *can* have) SAK. 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. • Mnemonic: a fist and a head = “2”.
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 1082st T1082
					HUX / OX - -
					
					• No glyphs given in K&L, TOK, BMM9.
					• 25EMC.pdfp36.#3.1&2&3&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.
					• In AT-E1168-lecture6.t0:39:45, the slide gives *uhx / hux* for "3" (in connection with the bar-and-dot notation).
					• 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 *uk* or *wuk* or *huk*, or *uklajuun* or *wuklajuun* or *huklajuun*, same goes for *ux* or *hux* – 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.
					• 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.
					• Mnemonic: 3 o'clock is a good time to have afternoon tea with a doughnut / by getting your tooth (=IK') into a doughnut.
					• Bonn does not seem to have declared a codepoint for the head variant of "3":
					  ○ MHD.PL3 (in the form of PL3a) is a form of "3", read HUX / OX.
					  ○ The MHD Concordance matches it to T1082.
					  ○ Bonn have retained 1082xx as a Bonn number (in the form of 1082st), but have not assigned it a reading of HUX or OX.

Number "4"	N	NB	L	chan / kan	   K&H.p48.pdfp50.#5.2 = 25EMC.pdfp40.#3.4 TOK.p25.r1.c2 25EMC.pdfp40.#3.3 CHAN / KAN "4" CHAN   MHD.SN4a.1&2 T1010 CHAN / KAN - • No glyphs given in K&L, BMM9. • 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-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 *Nojol*. 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.

Number “5”	N	NB	L	ho’ / jo’	 K&H.p48.pdfp50.#6.2 = 25EMC.pdfp35.#1.2 HO’ HO’  TOK.p25.r5.c3 “5”  25EMC.pdfp35.#1.1 HO’  MHD.PA5.1&2 HO’  1742bb 1742bv HO’ HO’ • No glyphs given in K&L, BMM9. • In AT-E1168-lecture6.t0:39:45, the slide gives *jo’* for “5” (in connection with the bar-and-dot notation). • 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”.
Number “6”	N	NB	L	wak	 K&H.p48.pdfp50.#7.2 = 25EMC.pdfp50.#5.1 WAK WAK  TOK.p25.r3.c4 “6”  MHD.PH6.1 WAK  1060st WAK  T1087 -  MHD.PH6.2 WAK  T1060b -  K&L.p44.pdfp44.#2.1&2 WAK 1  TOK.p9.r3.c4 “6”  25EMC.pdfp50.#4 WAK  MHD.32N.1&2 WAK  0367st WAK  T367 -

					• No head variants given in K&L, BMM9; non-head variant not given in K&H, BMM9.
					• Variants of “6” (2):
					  ○ A. Anthropomorphic head:
					  ▪ The large round/squarish eye has an axe in it.
					  ▪ There is an interesting sub-variant, where the axe is replaced by two crossed bands (PH6.2, T1060b).
					  ○ B. Abstract:
					  ▪ A roundish rectangle with an “S” in it (the top and the bottom can be quite tightly curled).
					  ▪ Two small, squarish elements, one at each end.
					• AT-E1168-lecture6.t0:49:46: Tokovinine explicitly says that we don’t know who these gods are, for “6” and “7”.
					• K&L.p44.pdfp44.#2 says that the meaning of the non-head variant is unknown but that it substitutes with WAK ‘six’.

Number “7”	N	NB	L	huk / wuk	 K&H.p48.pdfp50.#8.2 = 25EMC.pdfp35.#2.1 HUK HUK  TOK.p25.r3.c1 “7”  MHD.ST7 .1&2 WUUK  1923st WUK • No glyphs given in K&L, BMM9. • In AT-E1168-lecture6.t0:39:45, the slide gives *wuk / huk* for “7” (in connection with the bar-and-dot notation). • 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 *uk* or *wuk* or *huk*, or *uklajuun* or *wuklajuun* or *huklajuun*, same goes for *ux* or *hux* – 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. • AT-E1168-lecture6.t0:49:46: Tokovinine explicitly says that we don’t know who these gods are, for “6” and “7”.
Number “8”	N	NB	L	waxak	 K&H.p48.pdfp50.#9.2 = K&L.p31.#1.1 = 25EMC.pdfp28.#4.2 WAXAK “8” 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 - • No glyphs given in BMM9. • K&L gives only “1” and “8” in connection with alternative readings for IXIIM and AJAN. • TOK.p23.r4.c1 gives only “8”, but *waxak* given in AT-E1168-lecture6.t0:39:45 (in connection with the bar-and-dot notation). • 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.

					• Both “1” and “8” are a young man – it’s not the case that “8” is older than “1”. The distinguishing feature is:
					  ○ “1” has a “jewel” as forehead ornament.
					  ○ “8” has a “protected scroll” as forehead ornament.

Number “9”	N	NB	L	balun / baluun / bolon	
					K&H.p48.pdfp50.#10.2 = 25EMC.pdfp30.#5.1
					BALUN BALUN
					 
					TOK.p24.r2.c2
					“9” / BOLON
					 
					MHD.PY9a.1&2&3
					BALUN
					 
					1003st
					BALUUN
					 
					T1003
					-
					• No glyphs given in K&L, BMM9.
					• Pronunciation:
					  ○ An older reading was *bolon*, hence the name of the god *Bolon Okte’ K’uh* in English.
					  ○ K&H, MHD give *balun* while Bonn gives *baluun*.
					• TOK.p24.r2.c2 gives only “9”, but *bolon* given in AT-E1168-lecture6.t0:39:45 (in connection with the bar-and-dot notation).
					• AT-E1168-lecture6.t0:50:08: And then number “9” is one of the hero twins.

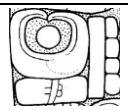
Number “10”	N	NB	L	lajuun	 K&H.p48.pdfp50.#1.4 = 25EMC.pdfp41.#1.1 LAJUN LAJUN  TOK.p22.r1.c1 “10” / CHAM  MHD.SC1a.1&2&3&4 LAJUUN  1579st -  MC.p39.c1.r10.3  MHD.MB8.1&2 “10” / LAJUUN  1744st -  B. Fash CPN Stela 3 B7 4.10 • No glyphs given in K&L, BMM9. • Features:

					○ A skull with nose-hole and bone-jaw, optionally with the "bone" property marker. ○ 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. ○ MHD reveals that there is a unique variant of "10" which consists of two hands: ▪ 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. ▪ MHD's note on this glyph is: Represents a count of ten on the digits of two hands. ▪ 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. ▪ It corresponds to Bonn's 1744st, but Bonn have not assigned it a reading. • In AT-E1168-lecture6.t0:39:45, the slide shows "1" is read *juun* and "10", "13", "14", "15", … "19" are read *-lajuun*, i.e. all with a long-u (in connection with the bar-and-dot notation). • Many prominent epigraphers have a long second syllable *lajuun*, including (but not restricted to) Prager, Stuart, and Tokovinine.
Number "11"	N	NB	L	buluch / buluk	 K&H.p48.pdfp50.#2.4 = 25EMC.pdfp30.#9.1 BULUK / BULUCH  TOK.p23.r4.c4 "11" / buluk  MHD.PN3a BULUCH / BULUK  1005st BULUCH  T1005a - • No glyphs given in K&L, BMM9. • TOK.p23.r4.c4 gives only "11", but *buluk* given in AT-E1168-lecture6.t0:39:45 (in connection with the bar-and-dot notation). • This glyph is basically the animated variant of KAB = "earth". • 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].
Number "12"	N	NB	L	lajcha' / lajchan / lajuncha' / lajunchan	 K&H.p48.pdfp50.#3.4 = 25EMC.pdfp41.#2.1 LAJUNCHAN? LAJUNCHA' / LAJUNCHAN  TOK.p24.r1.c2 "12" / lajcha'  PL6 LAJCHAN / LAJKA'  1674st LAJCHAN • No glyphs given in K&L, BMM9. • There are various pronunciations given for "12": *lajcha'*, *lajchan*, *lajuncha'*, *lajunchan*. ○ Despite the fact that many epigraphers have a long-u in *juun* and *lajuun*, the transliteration/transcription *lajuun-* in connection with "12" seems to be particularly uncommon – just the short-u is used. ○ The only hit on Google I managed to find is in Tsukamoto&Olguín-TSaA.p194.para1.l-9 (typography slightly adjusted): The upper left corner of Lintel 26 of Yaxchilan depicts **ti-12-? CHUM-KAN-JAL-wa TAB-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(?)*, "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. • TOK.p24.r1.c2 gives only "12", but *lajcha'* given in AT-E1168-lecture6.t0:39:45 (in connection with the bar-and-dot notation). • This glyph is basically the animated variant of CHAN = "sky". • 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].

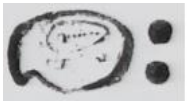
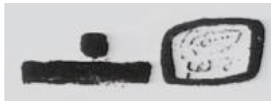
Number “13”	N	NB	L	uhxlajuun / huxlajuun	
					K&H.p48.pdfp50.#4.4 = 25EMC.pdfp49.#7.1
					UXLAJUN / OXLAJUN UXLAJUN / OXLAJUN
					
					   
					MC.p39.c2.r3.3 MHD.SS1a.1 T1031b
					HUXLAJUUN -
					
					   
					MHD.SS3a.1 T1032ab Greene
					HUXLAJUUN - HUXLAJUUN
					PAL TS A8a
					
					     
					MHD.SS2a.1&2 1031st T1031a Safronov
					PNG Panel 3 A6a
					HUXLAJUUN WITZ’ - “13”
					
					• No glyphs given in K&L, TOK, BMM9.
					• In AT-E1168-lecture6.t0:39:45, the slide shows “1” is read *juun* and “10”, “13”, “14”, “15”, … “19” are read *-lajuun*, i.e. all with a long-u (in connection with the bar-and-dot notation).
					• In AT-E1168-lecture6.t0:39:45, the slide gives *huxlajuun* for “13” (in connection with the bar-and-dot notation).
					• 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 *uk* or *wuk* or *huk*, or *uklajuun* or *wuklajuun* or *huklajuun*, same goes for *ux* or *hux* – 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.
					• Chinchilla-ItCotMG.p438.pdfp15.para1.l+6: Stuart suggests a reading for its hieroglyphic name as Juun Witz’ Nah Kan. In the hieroglyphic script, the Water-Lily Serpent served as the head variant of the number thirteen, 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.
					• 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:
					  ○ A **HUUN** (“knot”/“bow”) infixed in or covering the top of the head (MC.p39.c2.r3.3, MHD.SS1a.1).
					  ○ A **WINIK** (perhaps a variant of **HUUN**) infixed in or covering the top of the head (MHD.SS3a.1, T1032ab, PAL TS A8a).

					○ A **HA'** infixed in or covering the top of the head (MHD.SS2a.1&2, 1031st, T1031ab, PNG Panel 3 A6a). Sim: Pitts-BHPN.p133 describes this as "an avian version of the head glyph for the number 13". "A*vian*" contradicts the idea that it's the Waterlily *Serpent* – but the "beak" is probably what prompted Pitts' description. 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. The above variants *are* the variants of the Waterlily Serpent, so in fact, the Waterlily Serpent *is* the monster-head variant of "13".
Number "14"	N	NB	L	chanlajuun	 K&H.p48.pdfp50.#5.4 = 25EMC.pdfp31.#7.1 CHANLAJUN CHANLAJUN • No glyphs given in K&L, TOK, BMM9. • In AT-E1168-lecture6.t0:39:45, the slide shows "1" is read *juun* and "10", "13", "14", "15", … "19" are read *-lajuun*, i.e. all with a long-u (in connection with the bar-and-dot notation).
Number "15"	N	NB	L	ho'lajuun / jo'lajuun	 K&H.p48.pdfp50.#6.4 = 25EMC.pdfp35.#1.3 HO'LAJUN HO'LAJUN • No glyphs given in K&L, TOK, BMM9. • In AT-E1168-lecture6.t0:39:45, the slide shows "1" is read *juun* and "10", "13", "14", "15", … "19" are read *-lajuun*, i.e. all with a long-u (in connection with the bar-and-dot notation). • In AT-E1168-lecture6.t0:39:45, the slide gives *jo'lajuun* for "15" (in connection with the bar-and-dot notation).
Number "16"	N	NB	L	waklajuun	 K&H.p48.pdfp50.#7.4 = 25EMC.pdfp50.#5.2 WAKLAJUN WAKLAJUN • No glyphs given in K&L, TOK, BMM9. • In AT-E1168-lecture6.t0:39:45, the slide shows "1" is read *juun* and "10", "13", "14", "15", … "19" are read *-lajuun*, i.e. all with a long-u (in connection with the bar-and-dot notation).
Number "17"	N	NB	L	huklajuun / wuklajuun	 K&H.p48.pdfp50.#8.4 = 25EMC.pdfp35.#2.2 HUKLAJUN HUKLAJUN

					• No glyphs given in K&L, TOK, BMM9. • In AT-E1168-lecture6.t0:39:45, the slide shows "1" is read *juun* and "10", "13", "14", "15", … "19" are read *-lajuun*, i.e. all with a long-u (in connection with the bar-and-dot notation). • 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 *uk* or *wuk* or *huk*, or *uklajuun* or *wuklajuun* or *huklajuun*, same goes for *ux* or *hux* – 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.
Number "18"	N	NB	L	waxaklajuun	 K&H.p48.pdfp50.#9.4 = 25EMC.pdfp50.#6.1 WAXAKLAJUN WAXAKLAJUN • No glyphs given in K&L, TOK, BMM9. • In AT-E1168-lecture6.t0:39:45, the slide shows "1" is read *juun* and "10", "13", "14", "15", … "19" are read *-lajuun*, i.e. all with a long-u (in connection with the bar-and-dot notation).
Number "19"	N	NB	L	bolonlajuun / balunlajuun	 K&H.p48.pdfp50.#10.4 = 25EMC.pdfp30.#5.2 BALUNLAJUN? BALUNLAJUN • No glyphs given in K&L, TOK, BMM9. • In AT-E1168-lecture6.t0:39:45, the slide shows "1" is read *juun* and "10", "13", "14", "15", … "19" are read *-lajuun*, i.e. all with a long-u (in connection with the bar-and-dot notation). • In AT-E1168-lecture6.t0:39:45, the slide shows *bolonlajuun* for "19" (in connection with the bar-and-dot notation).
Number "20"	N	NB	L	k'al / winik / winak / winaak	     K&H.p78.pdfp80.r5.c4 K&L.p34.#2.1&2 = 25EMC.pdfp39.#7.1&2 = MC.p164.r3.c1 TOK.p14.r5.c2 BMM9.p12.r7.c2 JM.p144.#3 = K&L.p34.#2.1 WINAK? / K'AL K'AL / WINIK K'AL / WINIK K'AL 20 UH / WINIK   AT-E1168-lecture6.t0:51:20 AT-E1168-lecture6.t0:52:14 WINAAK 1.<WINIK:ki>

					
					AT-E1168-lecture6.t0:51:20
					
					WINAAK
					
					 
					Stuart
					PNG Stela 3 A7
					Glyph-A = <WINIK:ki>.9
					
					 
					MartinEtAl-LE46dN.p682.pdfp14
					NAR Stela 46 B7
					20:10
					
					 
					AT-E1168-lecture6.t0:51:20
					WINIK
					
					• Each of the five standard sources gives multiple pronunciations (for the meaning "20"), but the situation is complex. The readings *winik*, *winal* or *k'al* 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:
					  ○ **ki** phonetic complement ➔ *winik*.
					  ○ **la** phonetic complement ➔ *winal*.
					• In AT-E1168-lecture6.t0:52:14, Tokovinine explains that "20" can also be said as *juun winik* or *juun winaak*, i.e. 1 x "20" = 20.
					• Variants of **K'AL** = "20" (3):
					  ○ A. Moon – can also be read as **UH** = "moon"
					  ○ B. Head variant of Moon
					  ○ C. Human face – can also be **WINIK** = "human", "person"
					• Do not confuse the moon variant of **WINIK/K'AL** with the visually similar moon variant of **HUL** = "to arrive":
					  ○ **WINIK/K'AL** has a full circle in the "bay" of the moon.
					  ○ **HUL** has a semi-circle in the "bay" of the moon.
					• Do not confuse this (in the reading **K'AL**) with the homonym **K'AL** meaning "to present" (formerly "to tie" / "to bind" / "to close"), for which the glyph is a hand.

Number "20"	N	NB	S	k'al / winik / winak / winaak	 AT-E1168-lecture6.t0:51:20 k'a:la • A rare example of a pure syllabogram spelling for *k'al* = "20", given by AT-E1168-lecture6.t0:51:20: This means something like "bundle", but it also means "20".

Numbers greater than “20”	N	NB	P	“21+”	  AT-E1168-lecture6.t0:52:14 20 and 2 6 and 20 <tz’ak:bu>.li  AT-E1168-lecture6.t0:52:14 52 80 55 80 96 57 80  AT-E1168-lecture6.t0:52:14 5 and 3 x 20 = 65 • These are distinct from the higher counts of days in the DN or LC. These are actual numbers counting objects. • 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, *before* 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 *after* 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. • For numbers higher than 40, multipliers were used for the WINIK/WINAAK logogram, and the remainder was written with bars-and-dots. The multiplier could be written either by writing the WINIK/WINAAK multiple times, or by writing a multiplier using the bar-and-dot notation, connected to the WINIK/WINAAK.
Number “8000”	N	NB	L	pik / pih	    AT-E1168-lecture6.t0:54:22.(1&2&3&4) PIH:hi PIH:hi PIK/PIH PIK/PIH • At AT-E1168-lecture6.t0:54:22, Tokovinine explains that the largest known unit is “8000”, used for counting cacao beans. • AT-E1168-lecture6.t0:54.22(.3) is also given by K&L.p62.#2.9 for the calendar unit **PIK**/**PIH** = “baktun”. • 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 *bak*, but that this is just one of a number of proposals. [Sim: This is partly the motivation for (Yucatec) *baktun* = 400 years.]