ANALYSES CONCERNING THE IMPOSSIBILITY OF FIXING A DATE FOR BUILDING THE GREAT PYRAMID OF KHUFU







THE ERUPTION



الجيزة تختار عيدها القومى يوم بناء هرم خوفو الجيرة قرجي الاحتفال بعيدها القومي الجديد.. ولجنة من "الآثار" وجامعة القاهرة للتأكد من التاريخ الجيزة تُلْعى الاحتفال بعيدها القومى «الجديد» بعد هجوم الأثريين على تاريخ بناء الهرم

'.....good for amateurs' speculations'

Regardless of all the above said;

THE MAGNIFECENCE OF THE GREAT PYRAMID OF KHUFU, IS

AN IMPUTUS: FOR DEEPER RESEARCH

SIMPLY

By analyzing the procedure in the press releases we can see:

Assuming that the building project started on the first day of the flood during year one of Khufu's reign

IS SPECULATION

And from available chronologies a date for Khufu's accession

CAN NEVER BE PRECISE

Accordingly the heliacal rising of Sirius, (of that year), was interpolated from astronomical data by adding 30 days the river rose on

DATE = 23 AUGUST BP 4479

THIS IS A CONCLUSION BASED ON UNRELIABLE EVIDENCE

CONSEQUENTLY, IN MY OPENION, IT IS IMPOSSIBLE TO FIX A DATE FOR BUILDING THE GREAT PYRAMID OF KHUFU

HOWEVER, I HAVE BEEN INFORMED THAT FURTHER RESEARCH IS UNDERWAY AIMING AT THE <u>POSSIBILITY</u> OF A DATE

ARGUMENTS

DID THE EGYPTIANS START BUILDING ON THE FIRST DAY OF THE FLOOD ? OR WERE THERE OTHER CONSIDERATIONS ?

LET US REVIEW SOME HINTS ON THE GREAT PYRAMID MAGNIFISENCE

It is logical to consider that a pyramid project is born with a **DECISION** followed by **PREPARATIONS** before starting.

THE DECISION

was made following a tradition of the royal ancestors and the capability to undertake

But building the Great pyramid was more ambitious

Pyramids built before king Snofru used small limestone blocks quarried locally and could be transported on donkey back

At his Bent and Red pyramids building blocks became bigger and were possibly dragged on long sloping ramps. That is why these pyramids are located 2 kilometers from the cultivation

The great pyramid was on the plateau close to the cultivation and 40 meters above, with no space for longitudinal ramps

PREPARATIONS

Had to considers not only economical recourses, but also:

Present KNOWLEDGE Disciplined MANPOWER Skilled CRAFTS They were needed to fulfill

Four pyramid properties:

A correct shape. A stable edifice. An inclusion of ancestral traditions. And the religious demands .

It is unfortunate for pyramid science to know so little on:

THE PLANNING OF A PYRAMID, EXCEPT FOR SOME IRRELEVANT ONES. THE LOGISTICS AND ORGANIZATION OF THE BUILDING PROCESS. THE BUILDING TECHNIQUES. THE ADMINISTRATION OF THE PROJECT.

THE ACTUAL BUILDING

We have to take into consideration: quarrying, safe transportation, shaping, lifting and placing each block into its final position

With enough man power and enough supplies of mortar and tools etc.

All these activities were under tight supervision to preserve the correctness of the procedure

KNOWLEDGE on orientation





Orientation perfected

Orientation varied

THE MSP HEBENU was built at a location the Small Dipper ceased to be circumpolar





THE MSP EL GHENIMIYA Was built at locations where *Meskhetyu* ceased to be circumpolar



THE MSP NUBT could be orientated to *Peret Sopdet* at the time of their construction THE MSP ELEPHANTINE could be orientated to *Wepet Renpet* at the time of construction an important day of **the civil calendar**





~16¹⁄₄⁰±³⁄₄⁰ is the declination of Sunrise at *Wepet Renpet* ca. 2570±30 B.C.

THE LAYER MONUMENT AT ELEPHANTINE



THE MSP SINKI would be an early example of





THE MSP EL KULA Is another example of corner orientation



THE LAYER MONUMENT. EL KULA

ARCHAEOASTRONOMICAL INVESTIGATIONS BY JUAN A. BELMONTE





Seila would be the first pyramid in Egypt to be correctly orientated to the cardinal points.



KNOWLEDGE on orientation was perfected at Seila



The 2 stele in the eastern chapel of the minor step pyramid at Seila may have been aligned with J. Belmonte's calculation of a Simultaneous meridian transit of Phecda and Megrez signalling almost accurately due-north in the case of Seila

SHAPES





ASTRAL ORIENTATION

URSA MAJOR



The 2 stele in the eastern chapel may have been aligned with a Simultaneous meridian transit of Phecda and Megrez signalling almost accurately due-north in the case of Seila

AQUIRED EXPERIENCE AT DAHSHUR



SAFETY OF LOGISTICS An example at the dam at Wadi Garawi



The dam at Wadi Garawi was built to prevent flash floods





SKILLED CRAFT

The flood plain was at least 4 meters lower than it is today. The building site was 40 meters above



Trial passages - Subway crossing – Block of masonry and Causeway- G1X - Ramp



REMAINS OF THE CAUSEWAY AND THE BLOCK OF MASONRY IN 1875





THE BLOCK OF MASONRY WAS BUILT WITH THE SAME BLOCKS USED AT THE RED AND GREAT PYRAMIDS

Snofru Red masonry







Khufu masonry



AMAZINGI EVEN BY POBOTS

The great pyramid of Khufu was built of limestone blocks of an average volume of one m³ weighing 2.5 metric tons

2.6 million blocks

This figure comes from the volume of a pyramid being base² X height /3, (230²X148/3)

2,600,000 m³.

The Turin Canon tells us that Khufu reigned for

23 years.

Assuming that the pyramid was built every day of the 23 years of his reign, then we have of building

8395 days .

Working hours for humans should be 10 hours a day, then we have 83,950 hours or

5,037,000 minutes.

To install 2,600,000 blocks in 5,037,000 minutes by robots they have to install

ONE BLOCK, EVERY, LESS THAN TWO MINUTES. (1.94 MIN)

By man power the actual procedure was not like this; it had to be much faster rate at the start and slower towards the finish

ORGANIZED MAN POWER HAD TO KEEP UPTHE INTENCITY REQUIRED

KNOWEDGE and skilled craft





THE TRIAL PASSAGE Is a revolutionary achievement of perfect angles of slope and accurate measurement tunneled in the bed rock

The Bent and Great pyramids were built on rock formations where long corridors can be tunneled. While this cannot be achieved at Meidum and the Red pyramids because of their sand and loose gravel foundations.



RELIGIOUS DEMANDS

UPPER WORLD, SUN CULT (superstructure) NETHER WORLD, OSIRIAN CULT (substructure) ASTRAL CULT, CIRCOMPOLAR REGION (polar corridor) CULT OF THE DEAD KING (pyramid complex components)



CULT OF THE SUN AND STARS

WESTERLY DISPOSED CHAMBERS OF HUNI? SNOFRU AND KHUFU



Huni? rock cut chamber Brick pyramid Snofru Red pyramid built chamber

Khufu lower rock cut chamber



SKILLED CRAFT





A pyramid hardly begun G1X and a longitudinal construction ramp

WHY IS THE CHRONOLOGY NOT PRECISE



Ludwig Borchardt; el-Lahûn (Papyrus Berlin 10012), Clagett, Marshall, "Ancient Egyptian Science: Calendars, Clocks and Astronomy", *American Philosophical Society,* 1995, page 321.

The heliacal rising of Sirius on a particular day of the seventh year of Senusert III can be placed *circa* 1872 BC

CHRONOLOGIES PRECEDING KING SENUSERT III OF THE XII DYNASTY, CAN NEVER PRDUCE EXACT DATES

KINGS BETWEEN KHUFU AND SENUSERT III

Fragmentary lists from the Old to the Middle Kingdom



Number of kings from the Turin Canon : 67

Column	Number of kings	Total
3	17	67
4	26	Kings from Khufu
5	24	TO SERUSERT III

Abydos list of Ramses II in the British Museum



Names **lost** before and after the 5th and 6th dynasties

Extract from the Saqqara king list 24 kings



CHRONOLOGY fourth dynasty

#	Abydos		Saqqara			Turin		Turin Reign
1	# 20 Snofru		#16 Snofr	u		# 3-9 Snofru	1	24 years
2	# 21 Khufu		#17 Khuf	ù		# 3-10 Lost		23 years
3	# 22 Djedef	ra	# 18 Djede	efra		# 3-11 Lost		8 years
4	# 23 Khafra		# 19f			# 3-12 Khaf	ra	Lost
5	Om		# 20 Lost			# 3-13 Lost		Lost
6	Om		Om			Om		Om
7	# 24 Menku	# 24 Menkura # 21 Lost				# 3-14 Lost		18 or 28 y
8	#25 Shepse	# 25 Shepseskaf # 22 Lost				# 3-15 Lost		4 years
9	Om		# 23 Lost			# 3-16 Lost		2 years
10	Om		# 24 Lost			Om		Om
#	Horus Name	Contemp Nam	es	Nomen	Nel	oty	Golden Horus	Wadi Hammamt
1	Nebmaat	Snofru		Snofru	Neł	omaat	Snofru	
2	Medjedu	Khenun	nkhufu	Medjedr		Medjedr	Khufu	#1 Khufu
3	Kheper	Djedefra		Djedefra	Khe	eper	Djedefra	# 2 Djedefra
4	Userib	Khafra		Khafra	Userem		?	# 3 Khafra
5	Horus?	?		?	?		?	#4 Hordjedef
6	Horus?	?		?	?		?	# 5 Bafra
7	Kakhet	Menkaura		?	Ка		?	
8	Shepseskhet	eskhet Shepseskaf		Shepseskaf	Shepses		?	
9	Horus?	?		?	?		?	
10	Horus?	?		?	?		?	

#	Manetho Af.	Reigns	Maneto Er.	Reigns
1	#1 Soris	29 years	# 11 Sirius	18 years
2	# 2 Suphis	63 years	# 12 Chnumbos, or # 15 Saophis I	22 or 29 years
3	# 5 Ratoises	25 years	#13 Rayosis	13 years
4	# 3 Suphis	66 years	# 16 Saophis II	27 years
5	Om	Om	Om	Om
6	#6 Bicheris	22 years	# 14 Biyres	10 years
7	#4 Mencheres	63 years	# 17 Mencheres I	31 years
8	#7 Sebercheres	07 years	# 18 Mencheres II	33 years
9	#8 Thamphthis	09 years	# 19 Pammes	35 years
10	Om	Om	Om	Om

ASTRONOMICAL ACCUTECY, SIRIUS





The constellations Orion and Canes Major. The declination of Sirius is (-16°)

The Goddess Sopd has been identified with Sirius

Sothis Sopd Sirius: is mentioned in 22 utterances of the pyramid texts no mention of the <u>HELIACAL RISING IS FOUND</u>

ASTRONOMY ACURECY

THE HELIACAL RISING OF SIRIUS 2009 AD

Date	Sun rise GMT	Rising of Sirius GMT
Jul.26 th	03-15	03-11
Jul.27 th	03-16	03-07
Jul.28th	03-16	03-03
Jul.29 th	03-16	02-59
Jul.30 th	03-18	02-55
Jul.31st	03-18	02-51



© Dr Shepherd Simpson, Galactic Astrologer

ADEL MOSTAFA, (AAST) NAUTICAL ALMANAC 2009, THE RISING OF SIRIUS AT DR: 30° N; 30° E ON JULY 25TH THE SUN AND SIRIUS RISE AT THE SAME TIME AT 03-15 GMT ON JULY 26TH SIRIUS CAN BE SEEN FLICKERING ON THE HORIZON 4 MINUTES BEFORE SUNRISE

THE NILE FLOOD



THE GODDESS SOPDET FOLLOWED BY THE GODDESS ANQET AT DENDERA IN A CELESTIAL BARK POURING THE NILE FLOOD WATERS

HELIACAL RISEING OF SIRIUS B.C. 3500– A.D. 500

Bradley E. Schaefer, JHA, XXXI 2000 150

V	D81/27*	L.P. D. t
Year	DSVE*	Julian Date
3500 в.с.	87.8	July 16.4
3000 в.с.	92.3	July 16.9
2500 в.с.	95.8	July 16.6
2000 в.с.	100.3	July 17.3
1500 в.с.	104.8	July 17.8
1000 в.с.	108.2	July 17.2
500 в.с.	112.9	July 18.2
A.D. 1	117.3	July 18.3
A.D. 500	123.0	July 20.3

^{*}Listed in the number of days since the time of the vernal equinox on which Sirius will heliacally rise from a latitude of 30° north for an extinction coefficient of 0.35 magnitude per air mass

If we have a correct chronological date, we can interpolate the approximate day of the flood of the river Nile Astronomical precision + uncertain chronology + speculative Nile flood CANNOT FIX A DATE FOR BUILDING THE GREAT PYRAMID

UTTFRANCF 515 **PYRAMID TEXTS**

PYRAMID TEXT Transcription by Kurt Sethe 作品上一片做十方 第三口。这小时间。 御口 ーた世行 ーまたの えいまう W500 4-12個千丁-あ二日= 511日 Speech \$15 (School Sug. 198). 2 713-1122 LIZERIC 1 33 all 1114 + 3+54 DVISIT 1713-1133 33 JE 2- 7 1SAC TUBALLYS 3 X CE + 1128-14 3-44 11-12-12 Furles-11-88 2 1b WW WOOD 3-41 (2/100+2 ペーシー につ ギョーはとーしっぽ 4 11.854001 3-44 5- 2 20122 ッサンカー にっ モーリリンーリータ Test. -----12 3-44 5-325 (2) EDW XX 41 D * [1011] デキー1コムの ヨュニー育 1015170-15115252-A I Ast-OL Astt-OL A - 3- GO 4-2140 111117-20-0024 -15 x 1-1-001 1-115-CE 111111190-00=1x -15 Sec. 44 -t- 11-11-10-10-15 -tm 2 20-02-31 10-5511 1 3-10 TOLL HE-1001 ALASSAN LINE KI 4 3-151 GO x 15-411 CEL 2 00102 14 22 22 201 5240 1-24- 478 1 au 10 T TOLLING ATTAIN 520 1-24= ACT BUCK WELLEST x any 14 -2012 -20 1-2#-TOELL 29 MELLA TICK 2 0012 1-1 1924 5-240 125 1 "to# a 212571-+++ A 021-21- 1824 -240 1-242 x to Cale "stop-ytower ま おんのにし、立口ニン アン州に のいれの 1 MATH COLL 1-MAT 1+ # 111 1 475 CO + INY= 528 0430 1 (の)() *立八二 ~ 2 !!! ~ ~ !! 御 = 00 (一曲 = (会 211 2 イマー ニニノーイニ アノルアンの 2 UA-17 81-21# 1 4 61 2=1- - 10 * WYCE #=1-1= = -11150 * THA ELT- -- 15 1+ Aug. 47

Press releases report that: وقد ورد ذكر ظهور نجم الشعري اليمانية مَنذ ظهور متون الأهرام (الفقرة 515) في هرم ونيس في الأسرة الخامسة (2312 ق.م)

8-118-

2- 13:00-

Kingh anto

- Kindanto

5-39

112.100

THE .I CEL

HAL

Pvramid Text Translation by Raymond Faulkner

The king is to be ferried across and fed

\$1176 O sounding-poles' of Horus, O wings of Thoth, ferry me across, do not leave § 1177 me2 boatless.1 Give me bread, give me beer, from this your bread of eternity, § 1178 from this your beer of everlasting,1 for I am he who belongs to the two obelisks of Ret which are on earth, and I belong to the two sphinxes of Ret which are in the sky. an and more out carrie the

The king serves Rec

§ 1179 I go on the reed-floats of the sky which are before Ret, bearing this jar of Rec's cold water which cleanses Upper Egypt before Ret when he goes up § 1180 from his horizon. I am bound for the Field of Life, the abode of Ret in the firmament, I have found the Celestial Serpent,3 the daughter of Anubis, who met me with these four nmst-jars of hers with which the heart of the § 1181 great god was refreshed on that day of awakening,1 and she refreshes therewith § 1182 my heart for me for life; she cleanses me, she censes me. I receive my meal4 from what is in the granary of the great god, I am clothed by the Imperishable Stars, I preside at the head of the Two Conclaves, and I sit in the seat of those who are equipped with (good) reputation.

1. For smr cf. CT i, 267f; v. 147a.

2. Cf. the older text of M: also § 1181a (P).

3. Assuming a derivation from kbhw 'firmament'.

4. St here is the prefix of Concise Dict. 206-7.

الفقرة 515 غير واردة في هرم اوناس

UTTERANCE 262

THE PYRAMID OF UNAS

Utterance 262

\$327 To say: Ignore not Unas, O god! Thou knowest him for he knows thee, for he knows thee. Ignore not Unas, O Re! \$328 Thou knowest him for he knows thee. Ignore not Unas, O Re! It is to be said to thee -"Greatest one of all the annihilated." Ignore not Unas, O Thoth! \$329 Thou knowest him for he (also) knows thee. Ignore not Unas, O Thoth. It is to be said to thee - "The one in peace." Ignore not Unas, O Horus of Sothis! \$\$30 Thou knowest him for he (also) knows thee. Ignore not Unas, O Horus of Sothis! It is to be said to thee - "Unfortunate one." Ignore not Unas, O Thou who art in the Duat! \$331 Thou knowest him for he knows thee. Ignore not Unas, O Thou who art in the Duat! It is to be said to thee - "He who awakes in good health." Ignore not Unas, O Bull of Heaven! \$892 Thou knowest him for he knows thee. Ignore not Unas, O Bull of Heaven! It is to be said to thee - "This Neheh-star." See, Unas comes, see, Unas comes! \$833 See Unas has gone up! Unas, however, comes not by himself, it is an embassy which came to him. Unas has passed by his dangerous place, \$334 the fury of the great sea avoided him. His fare is not taken in the Great Ferryboat. The Shrine of the Great Ones could not ward him off the road of the Sehedu-stars. \$335 See, then Unas has reached the height of Heaven! He has seen his Self in the Night Barge; it is Unas who rowed on it. He has recognized his SwellingUraeus in the Morning Barg it was Unas who has bailed it out.

§336 The People of Light bore witness for him; the hail showers of the sky took hold of him. They let Unas ascend to Re.

UTTERANCE 515 IS NOT MENTIONED BY PIANKOFF IN THE PYRAMID OF UNAS

A plate accompanying a press release shows some columns from the South wall of the Antechamber of the pyramid of UNAS, this is utterance #262 where spell # 330 asks "Horus of Sothis not to ignore Unas" by Piankoff. ("Be not aware of me Har-Sopd" by Faulkner)

> in both utterances 262 and 515 there is NO MENTION of the HELIACAL RISING OF SIRIUS

EPITOME

ANALYSES CONCERNING THE IMPOSSIBILITY OF A DATE FOR BUILDING THE PYRAMID OF KHUFU

The 23rd of August was determined on the assumptions that the builders began this immense undertaking on the first day of the first inundation after the accession of Khufu.

Believing that was the case, they sought the date of *the Nile flood*. They knew that it comes approximately one month after the *helical rising of Sirius* (HRS). Thus, they made up a date for that: From the results, using full power of modern astronomy, of B.E. Schaefer, "The heliacal rise of Sirius and ancient Egyptian chronology", in the JHA xxxi (2000), 149–55 and a selected date for the reign of Khufu in BC 2470 from an acceptable chronology; a calculated HRS was derived. Accordingly the river rose on a date = 23 August BP 4479

The dates in all the chronologies of the ancient Egyptian literature are flexible before Senusert III. Thus, we cannot match any point of these flexible chronologies, with Schaefer's exact dates of the HRS. Moreover we do not have a final king list of the Old Kingdom; and definitely of the 4th dynasty where the number of kings is probably missing 2 names.

The date of building the Great Pyramid cannot be based on guessing that it was built on an uncertain date of a first flooding day.

I believe that any degree of precision is missing. A pyramid project begins with a designs and preparations before actual work on the site starts. The design takes capabilities into consideration; preparations take economy into consideration, and work on the site needs surveyors and astronomers. The flood comes later and helps with manpower and transportation of material. Here I remind myself that our knowledge on some subjects of pyramid science: planning, logistics, building techniques and administration; is lacking much evidence.