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## DISCUSSIONS IN EGYPTOLOGY: GUIDELINES

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## CHEOPS'S PYRAMID: A NEW DATING USING THE LATEST ASTRONOMICAL DATA

By Robert G. Bauval

It is well known that there are two shafts which emanate from the King's Chamber in the Cheops Pyramids and which have been shown to have a religious significance <1>. In 1964, Badawi and Trimble proved that the southern shaft had been directed to the central star in Orion's Belt (Alnilam) in c. 2600 BC, and that the northern shaft was directed 1 above the Celestial Pole <2>. The slopes of the shafts were then given as 44°30' 00" for the southern shaft, and 31°00' 00" for the northern shaft. These values have been quoted on numerous occasions by other Egyptologists and astronomers. The notion of cultic function usually given was that the southern shaft was directed to "Sah-Osiris", into whose heavenly domain the "soul" (Ba) of the dead king was to become "established"; and the northern shaft was directed to Alpha Draconis and the "imperishable" stars (the circumpolars) in general to which the dead king wished to be identified with.

I have always maintained, however, that these conclusions, although on the main sound, had the unsavoury result of providing not one, but two, "stellar destinies" (rather in opposite directions, as well) to the "soul" of the dead king and, consequently, produced a sense of cultic *uncertainties* in the Pyramid Texts which, in my opinion, is erroneous and which do not do justice to the texts themselves -nor indeed to the very powerful cult to which they belong i.e. the Pyramid Cult. Although I do completely agree that the southern shaft was directed to "Orion-Osiris" in order for the "soul" of the dead king to join this special and favoured region of the sky "beside his Father, beside Orion in the sky" (PT 2180), I maintain, however, that the function of the northern shaft fixed the bearing and time with Alpha Draconis that the observation was made and might have had a cultic significance with Rer or Tuat, the Hippopotamus-goddess who was the protectress of divine pregnancy and birth. This was discussed in detail by me in a previous issue of Discussions In Egyptology <DE 16, 1990, p.21-28>.

Fresh and very accurate evidence received only a few days ago, show that the slopes of the shafts used by Badawi and Trimble and others after them were not quite exact. These were recently measured by a German engineer using the latest techniques available, and the slopes were found to be, 32°28' 16" for the northern shaft, and 45°00' 00" for the southern shaft <3>. This immediately suggests to me a younger age for the monument. Fig. 1 shows the computer output for the upper culmination of Alpha Draconis at 32°28' 16", which gives a date of c.2425 BC. Fig. 2 shows the computer output for the upper culmination of Orion's Belt, showing that the star Alnitak is precisely 45°00' 00" altitude on the meridian at the near date of c. 2475 BC <4>.

## CONCLUSIONS:

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If one agrees with the consensus -as I emphatically do- that the shafts are "astronomical" and have a cultic functions, then the conclusion is inevitable. In my opinion, *the age of the Great Pyramid must be re-dated to 2475-2425 BC, thus c.2450 BC.* <5>.

## NOTES:

1. For a full discussion, see Discussions In Egyptology, vol. 13, 1989, pp.7-18 "A Master Plan For the Three Pyramids of Giza based on the configuration of the Three Stars of the Belt Of Orion" by R.G. Bauval.

2. A.Badawi 'The Stellar Destiny of Pharaoh and the so-called Air-shafts of Cheops's Pyramid' in Mit. der Inst. fur Orient. (Akad. der Wiessen. Zu Berlin) Band 10, 1964, pp.189-206. Also V. Trimble 'Investigation concerning the so-called Air-shafts in Cheops's pyramid' in Ibid., pp.183-7.

3. Telefaxed by R. Gantenbrink in early April 1993, the engineer in charge of the work on the shafts in Khufu's pyramid under the aegis of the German Institute in Cairo. Formal introductions were made by R. Stadelmann, director of the German Institute, who kindly arranged the meetings on the 6th March 1993 and for the values of the slope of the shaft to be provided. Those for the Queen's Chamber (see DE 16, pp.21) were not yet available.

4. The printouts are by SKYGLOBE Version 5. Also rigorous calculations in SKY CATALOGUE 2000.0 vol. 1, 1982 ed., p.xiii-xiv were used as check (see also DE 13, p.11 note 8).

5. Full discussion in a book, The Orion Mystery, co-authored by A. Gilbert and due out in July 1993 (Solos Press).

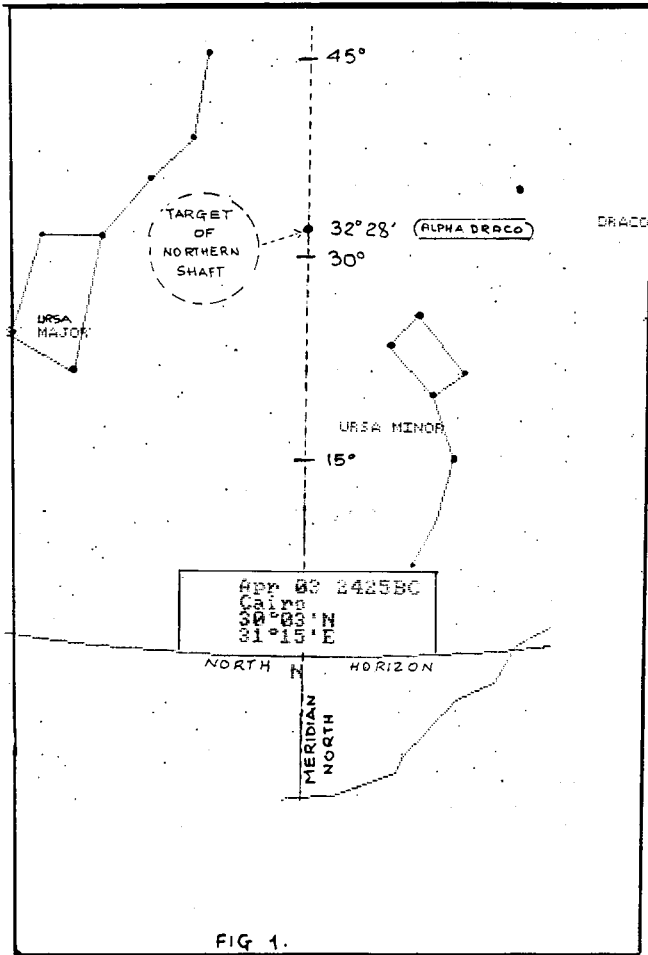


FIG. 1.

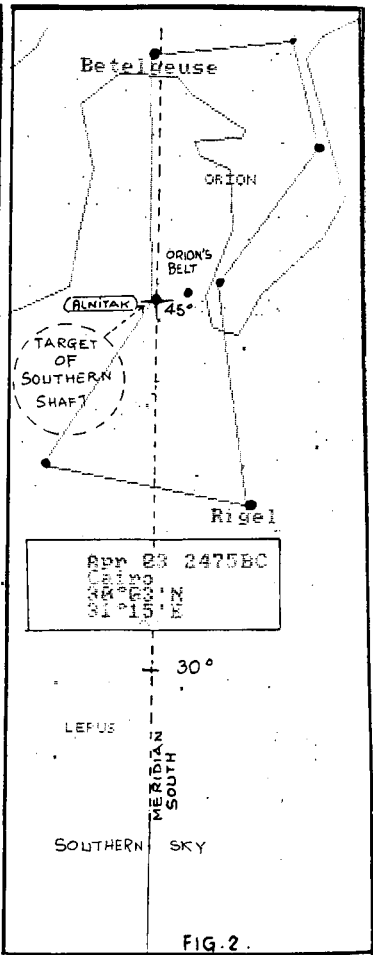


FIG. 2.