

## STAR OF THE WEEK: THUBAN

The star Thuban in the constellation Draco (the Dragon) was the North Pole Star some 5,000 years ago, when the Egyptians were building the pyramids. Thuban is not a particularly bright star. At magnitude 3.7 and known as alpha draconis it is not even the brightest star in its constellation.

What is Thuban's connection with the pyramids of Egypt? Among the many mysteries surrounding Egypt's pyramids are the so-called "air shafts" in the Great Pyramid of Giza. **These narrow passageways were once thought to serve for ventilation as the pyramids were being built. In the 1960s, though, the air shafts were recognized as being aligned with stars or areas of sky as the sky appeared for the pyramids' builders 5,000 years ago.**

To this day, the purpose of all these passageways inside the Great Pyramid isn't clear, although some might have been connected to rituals associated with the king's ascension to the heavens. **Whatever their purpose, the Great Pyramid of Giza reveals that its builders knew the starry skies intimately. They surely knew Thuban was their Pole Star, the point around which the heavens appeared to turn.**

Various sources claim that Thuban almost exactly pinpointed the position of the north celestial pole in the year 2787 B.C. It is now known that a 26,000-year precession cycle causes the north celestial pole to move counter-clockwise relative to the backdrop stars.

**Whichever star is closest to the point in the celestial sky aligned with the northern end of the Earth axis is considered the Pole Star.** While the actual degree of tilt of the Earth axis changes very little, its axis does perform a 26,000 year "wobble" and aligns with different pole stars. Many compare this movement of Earth to the wobble of a spinning top before it falls.

Indeed, Thuban at the times of creating the pyramids, made a better pole star than our modern Polaris does. Polaris, many centuries ago was an ordinary star known by the name Phoenice. Like the Southern Hemisphere now, the Northern Hemisphere also has had long stretches without a pole star.

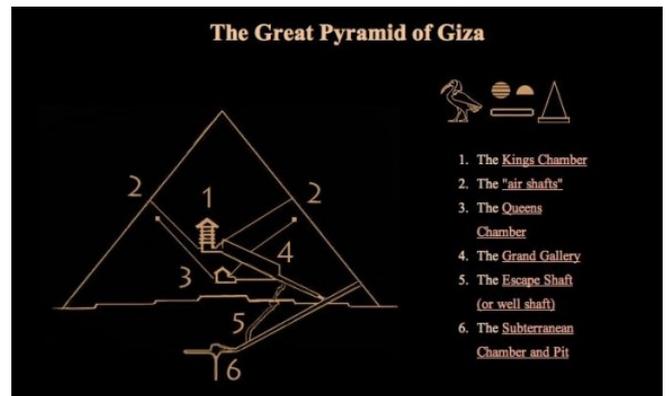
Looking into the future, Errai (in the constellation of Cepheus) will become the northern pole star around 4000 AD and Alderamin (also in Cepheus) will take its turn around 7500 AD. Whichever star lies on or near that "wobble circle" will eventually be a pole star, even Vega in the constellation Lyra.

Thuban, although it's not a super bright star, is bright enough to see with relative ease on a dark night. Most people star-hop to Thuban from the Big and Little Dippers. Draw an imaginary line that connects the stars Pherkad (Ursa Minor) and Mizar (Ursa Major). You'll see Thuban midway between these two guide stars.

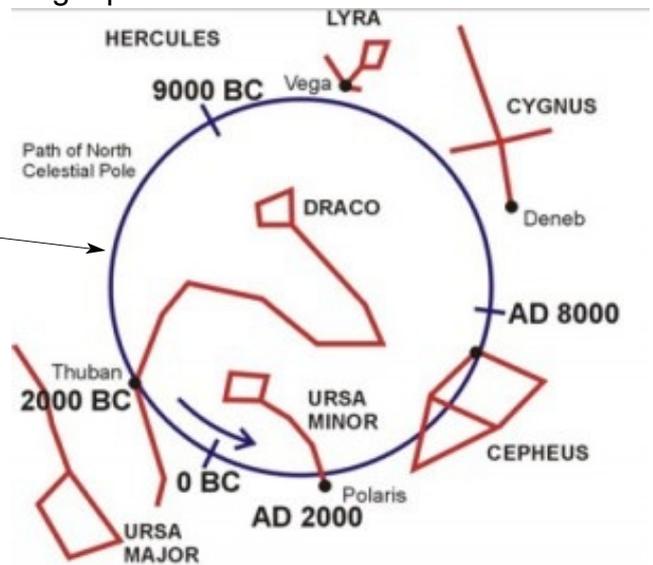
When you see it, think of the Egyptians who built the monumental pyramids some 5000 years ago. By the way, the name Polaris (from Latin *stella polaris*, meaning "pole star") was introduced sometime in the 18<sup>th</sup> century. Polaris is also known as lodestar, or guiding star or just as the North Star, from its property of remaining in an almost fixed position (0.7°) throughout the course of the night and its use in navigation.



The Great Pyramid of Giza, an enduring monument of ancient Egypt. Egyptologists believe that it was built as a tomb for fourth dynasty Egyptian Pharaoh Khufu around 2560 BC



This diagram shows the so-called air shafts in the Great Pyramid. Although it's known they were aligned with certain stars, to this day their purpose is not entirely clear.



Past and future North Pole stars.