

Thuban is a former Pole Star

Posted by

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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 B.C.. Image via Nina Aldin Thune/ [Wikimedia Commons](#).

Thuban is not a particularly bright star, but it holds a special place in the hearts of stargazers. That's because Thuban – a relatively inconspicuous star in the constellation Draco the Dragon – was the pole star some 5,000 years ago, when the Egyptians were building the pyramids.

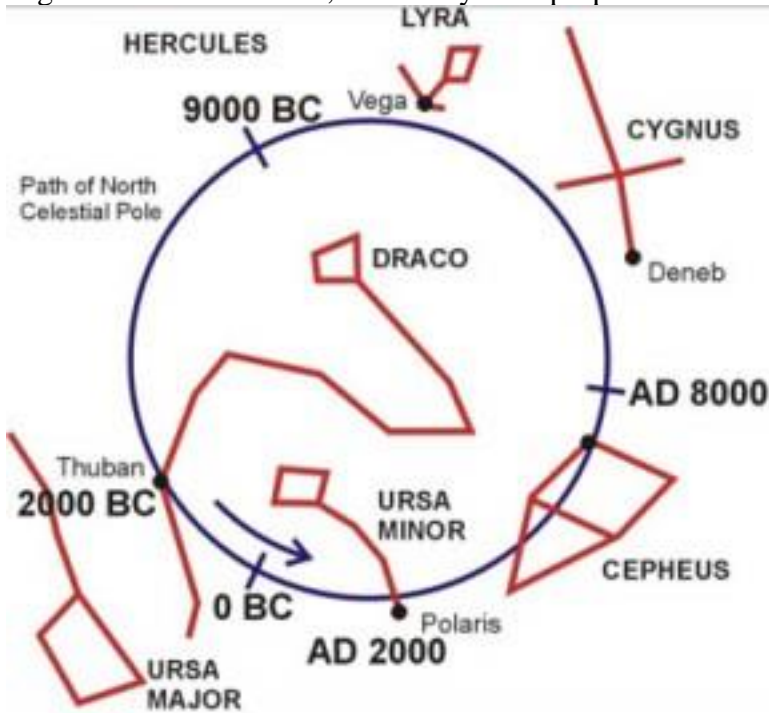
Among the many mysteries surrounding Egypt's pyramids are the so-called "air shafts" in the Great Pyramid of Giza. These narrow passageways were once thought to serve for ventilation as the pyramids were being built. In the 1960s, though, the air shafts were recognized as being aligned with stars or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

One of the "air shafts" follows a crooked course through the Great Pyramid, so you couldn't have *sighted* stars through it. To this day, the purpose of these passageways inside the Great Pyramid isn't clear, although they 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.



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. Image via



The 26,000-year precession cycle

causes the north celestial pole to move counterclockwise relative to the backdrop stars. Whichever star is closest to the north celestial pole is the pole star.

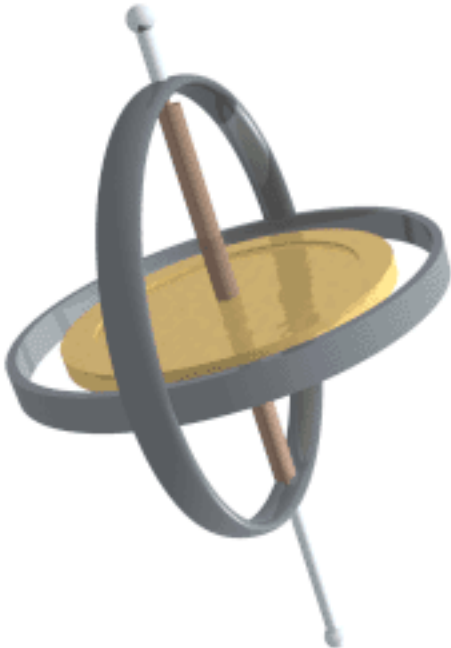
Past and future pole stars

Indeed, Thuban at times made a better pole star than our modern [Polaris](#). Various sources claim that Thuban almost exactly pinpointed the position of the north celestial pole in the year 2787 B.C.

Meanwhile, our modern Polaris – which many centuries ago was an ordinary star known by the name Phoenice – won't match Thuban's precision when it most closely aligns with the north celestial pole on March 24, 2100. Polaris will be 27'09" (0.4525 [degrees](#)) from the north celestial pole at that time (a little less than the angular diameter of the moon when at its farthest from Earth), according to the computational wizard [Jean Meeus](#).

The Northern Hemisphere also has had long stretches without a pole star. After the reign of Thuban but before that of Polaris, [Kochab](#) in the Little Dipper served as a rather poor pole star in 1100 B.C. Kochab was only half again as close to the north celestial pole as it is today.

Looking into the future, [Errai](#) will become the northern pole star around 4000 A.D., and [Alderamin](#) will take its turn around 7500 A.D.

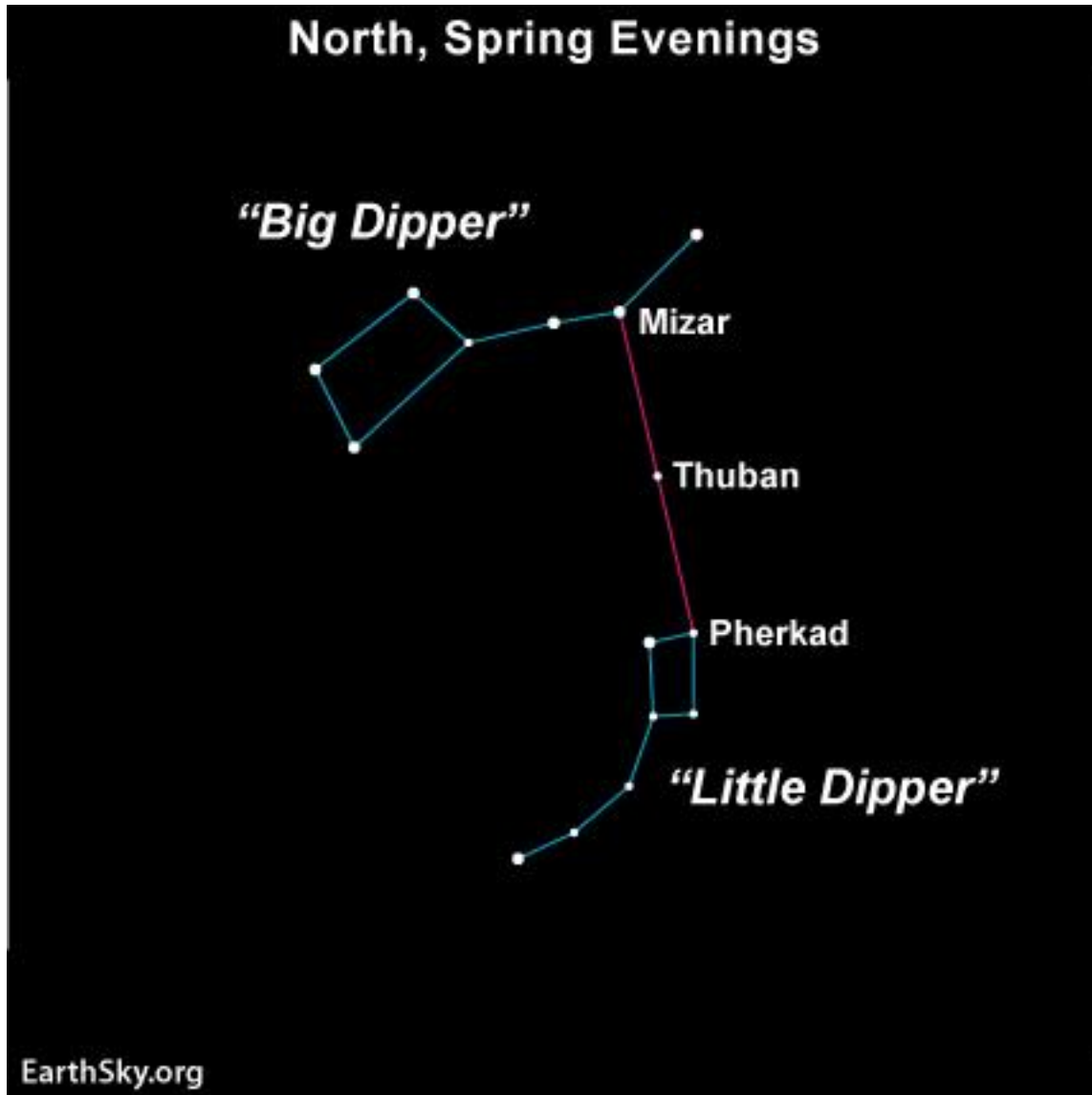


Earth never changes its axial tilt, but its axis does point out at different pole stars. Many compare this movement of Earth to the wobble of a spinning top before it falls. Animation via [Astro Bob](#).

Why does the identity of the pole star keep changing?

Earth's axis maintains a tilt that varies from about [22 degrees to 24 degrees from perpendicular every 41,000 years](#) with respect to the plane of our orbit around the sun. But, over a period of 26,000 years, Earth's axis points out at different pole stars, tracing out a slow circle in the heavens. Whichever star lies on or near that circle will eventually be a pole star.

Many compare this motion of Earth – which is called *precession* or sometimes *precession of the equinoxes* – to that which you sometimes see in a spinning top wobbling before it falls.



You can always find Thuban using the Big and Little Dippers as a guide.

How to see Thuban

Thuban is part of the constellation Draco the Dragon. Although it's not a super bright star, it 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 and Mizar. You'll see Thuban, the former North Star, midway between these two guide stars.

Bottom line: Thuban was the pole star 5,000 years ago, when the Egyptian pyramids were being built. It is part of our constellation Draco the Dragon.