Lost Star… Found?

Our Sun's Potential Binary Relationship with Barnard's Star

Findings

As postulated in my book, *Lost Star of Myth and Time*, and mentioned in numerous articles on our Binary Research Institute website, the best way to explain the movement of our sun across the sky, at the currently observed rate of about 50 arc seconds per year, is to understand that our sun might be part of a binary star system. After 20 years of detective work, we have reason to believe its companion may be none other than Barnard's Star, a nearby red dwarf, deemed the "runaway star" for its exceptional speed. In fact, its proper motion is faster than any other star in our stellar neighborhood. Its present location on the celestial equator, which is the same path the sun travels, and its speed are important considerations in the calculations below.

Barnard's has a mass of about 48,000 earths or approximately 15% of the sun's mass. It is currently the sun's second closest stellar object, after the three-star Alpha Centauri system, which is not on plane and probably couldn't drive the sun on the path we see. But Barnard's won't be second for long! It is moving so fast it is expected to be our closest star in about 10,000 years. This is quite important, as no astronomer believes we could be in a binary star system unless that star is, or soon will be, very close.

It is interesting to note that the Indian astronomer, Swami Sri Yukteswar, wrote in his book, *The Holy Science*, published in 1894 (well before Barnard's was officially discovered by E.E. Barnard in 1915), that our sun was part of a "dual star" system with a 24,000-year orbit period. He calculated the last aphelion (when our sun's companion was farthest from the sun) at about 500 AD, and determined the next perihelion (closest approach) would be around 12,500 AD. This number is remarkably close to the modern calculation for Barnard's, which predicts perihelion in the year 11,800 AD.

If Barnard's star is our companion in a 24,000 year orbit, then its last perihelion was in 11,500 BC. A close approach by any object this size would likely cause solar system perturbations, possibly disturbing the Oort Cloud. While not the purpose of this paper, the date is eerily close to that of the disastrous Younger Dryas period, which some speculate may have been set off by a large comet or meteor impacting the earth.

Background

It has long been thought that the sun's year-to-year motion is only "apparent" and that it hardly moves at all. This belief arose because the axial wobble theory of precession, first espoused by Copernicus, effectively constrained the sun's motion to zero. Copernicus had to do this—fix the sun at the "center of the Universe"—in order for his heliocentric system to work. In his mind, the earth needed an immoveable point to revolve around in a circular orbit. This was before Kepler and the realization that all orbits are elliptical. Having explained the daily and yearly celestial cycles through simple motions of the earth (rotation and revolution), Copernicus needed a third movement to explain the sun's long term retrograde motion seen equinox to equinox, known as the precession of the equinox. He explained that the earth must also librate or wobble, which made it only "appear" that the sun was moving because the wobbling axis would change the position of the equinox, causing a 50 arc second per year shift in the position of the stars when viewed on that date. Thus, in one stroke he cancelled all motion of the sun along the celestial equator, stating it was nothing more than an illusion caused by an unstable axis. It was an elegant solution but time has proved it too simplistic. The sun does move, and hence the amount of precession due to axial wobble appears to be greatly overestimated.

A century after Copernicus, Newton tackled the reason "why" the axis might wobble. He knew the moon and sun caused the tides and assumed these same forces, tugging on an oblate earth, were responsible for ALL of the 50 arc seconds of apparent solar motion that we see. Thus he too unwittingly constrained the sun to zero movement. But over time his equations were found to be seriously flawed, they didn't predict the precessional motion, especially acceleration. The idea of constraining the sun's motion to zero was perpetuated by all those that tried to fix Newton's equations without tackling the underlying assumption. Great scientists from Jean la Rond d'Alembert, Urbain Le Verrier and Simon Newcombe worked on the problem but all started with the idea the solar system cannot move. They added plenty of variables (now numbering in the thousands), while ignoring the question: Could the sun itself actually move?

Today all astronomers recognize the sun has some motion, at least around the galactic center, but that geometric effect is very small, less than .005 arc seconds per year. The solar motion we see (50+"per year) is ten thousand times bigger! But again, it is assumed to be nil because precession theory doesn't allow it. If we are failing to account for any solar system motion, then what other reference frames might we be forgetting? If the sun is in a binary star system, might this system also be in motion around something larger in our local stellar neighborhood? Yukteswar and Indian astronomy suggests this is the case. There may be multiple moving reference frames between us and intergalactic space. But since axial wobble theory constrains the sun's motion to nothing - these questions go unasked - and unanswered.

What seems to have been forgotten is that the theory of lunisolar precession requires the earth to revolve around the sun 50 arc seconds short of a complete orbit in an equinoctial year. That is how the Copernican model works: the axis is presumed to wobble 50" and therefore the equinox occurs, along the earth's orbit path, at a point 50" short of where the equinox occurred in the prior year. That is the explanation for the shift in the background stars seen equinox to equinox. But recent studies of the motions of the moon[1], show the earth does indeed travel 360 degrees along its orbit

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[1] On the Precession of the Equinox, Robert Augusto Riva, University of Chicago, and https://binaryresearchinstitute.org/bri/evidence/the-lunar-cycle/

path each year (relative to the sun), give or take just a few arc seconds. And this happens in the period of time equivalent to an equinoctial year! This is proven by calculating the number of lunar orbits in an equinoctial year versus the number of full moons observed in that same period, and finding that the two measurements show a delta of exactly "one" only in this time period. Hence, most of the 50 arc seconds that the sun moves (relative to the background stars) is due to actual solar system motion, NOT earth motion, leaving only a few seconds of arc for axial wobble. In fact, the sun is on quite the gallop around our local stellar neighborhood - completing a circuit in about 25,770 years at the currently observed rate. This is slower then the Yukteswar predicted 24,000 year orbit period, but exactly what one would expect under Kepler's Laws when two stars are still far apart.

One telltale sign that the precession rate is actually the signature of our sun accelerating in its binary orbit is the fact that the precession rate is speeding up year after year with no good explanation offered by the precession dynamists. But if we are in a binary system this acceleration would simply be a sign that the sun and its companion are moving closer to each other: towards periapsis. That's how Kepler's laws work.

Distance, Speed, Orbit Period Calculations

Barnard's Star is currently about 5.95 light years from the Sun - and independent sources expect it to come as close as 3.75 light years over the next 10,000 years. So let's use 4.07 as its average distance, during its binary orbit period.

To find the common center of mass between the two stars (the point that both stars must orbit) and using Barnard's mass estimated at .144 solar masses (rounded to .15), we can determine the average center of mass between the two stars will be .7311 light years from our sun (the larger mass). While we don't know the exact eccentricity of the sun's orbit, we know it is minor (because the companion mass is much smaller), and therefore we can determine the approximate distance our sun would need to travel, and from this, determine the speed.

The estimated distance is a rather straightforward: 2*Pi*.7311 light years or (2x3.141594x.7311) = 4.5904 light years. Since we already know the orbit period, we can assume the circumference of the orbit to be in the range of 4.5 light years.

Using a distance of 4.5LY and a time of 24,000 years (an average of 54"py), we can then determine a speed by dividing 4.5 LY by 24,000. The result is the sun must travel at an average speed of .0001875 LY, or about 125,805 mph. Again, according to Kepler's Laws, that present speed is now a bit lower as the two stars are much closer to apoapsis than periapsis, and thus the sun is now only traversing about 50.3 seconds of arc per year, as seen from earth.

In 2009 we built a model based on this data (presented at the AGU in San Francisco)[2] and found that had our scientists used this simple method to predict the changing rate of precession over the last 200 years, their calculations would have been 43 times more accurate than the traditional model! Surely the more predictive model should be favored over the less predictive model. But obviously it is hard to believe in a binary model, and use the better system of calculation, before an actual companion star has been proposed or identified. That is the purpose of this paper: to point out that Barnard's seems to meet al the criteria.

To put our estimate of speed in perspective, the earth currently moves at about 66,600 mph in its orbit around the Sun, while Barnard's Star speed is estimated at about 215,000 mph in its current trajectory towards our Sun (stellar speeds are harder to determine). So an average speed of 125,000 mph for our Sun (less at apoapsis and more at periapsis) seems well within the window of reason. We do this calculation just to dispel the notion that most astronomers still believe it near impossible our sun might be in orbit around a nearby star. The physics are hardly a stretch!

Perspective

Once again, we believe that Barnard's Star is the Sun's companion, and likely responsible for many of the solar system effects now attributed to a hypothesized Planet Nine.[3] It might also explain other solar systems anomalies, like the sun's apparent lack of angular momentum relative to the planets, which has puzzled scientists for years.[4] In a binary model, that puzzle is solved because its angular momentum would be mostly in its binary motion. Other solar system anomalies should be reviewed to determine if they might be resolved by our sun's motion around a nearby stellar mass.

All can see that the sun moves across the sky at about 50 arc seconds per year but we have been led to believe it does not move at all because of precession theory constraints. Fortunately, like the child that sees the emperor walk in his underwear, we have an unbiased witness; the moon. It travels with the earth and shows us through its shadows the earth does not wobble more than a few arc seconds per year. Understanding this point is key, as it means the earth has completed 360 degrees of motion around the sun, in the time period that Copernicus and precession theory says it should have only gone 359 degrees, 59 arc minutes and 10 arc seconds, leaving about 50 seconds of arc per year of actual solar system motion that desperately needs an explanation!

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[2] Predicting Changes in Earth Orientation Paper, BRI

[3] Mike Brown, Constantine Batygin, Caltech

[4] https://binaryresearchinstitute.org/bri/evidence/angular-momentum/

Astrophysicists, like Mike Brown and Constantine Batygin at Caltech, have done a wonderful job in helping us understand that solar system anomalies, like the unusual orbit patterns of the dwarf planets, and bunched perihelions, require a large object “out there” somewhere. That is why they are looking for a hefty planet Nine, something around five to ten earth masses is the latest estimate. But they have been hobbled by an archaic theory of precession that does not allow the sun to move. This means they have very little wiggle room in looking for the object responsible for the noted effects.

When I talk to other scientists about the idea that our sun might have a companion star, they usually say, “If it did we would know it by now”. Indeed, we probably would “know it” if we understood that precession theory masks the sun’s motion, because then everyone would be looking for the cause of this motion. It takes something pretty big to move the sun! Other general criteria put forth by the astronomical community includes: 1. If we were in a binary system our companion star would probably be the fastest moving star in the sky. 2. Our companion would probably be the closest star to the sun, now or very soon. 3. The companion would probably appear to be coming nearly straight towards us. And 4. If the orbit period is the precession period, then the center of mass would likely need to be within one light year. Barnard’s fits this criteria to a tee.

In the literature we find two possible reasons why Barnard’s Star moves so fast: 1. Its motion is magnified because it is relatively close, and or 2. It must have come close to another star sometime in the relatively recent past (20,000 years), causing it to accelerate. The first is largely true. Closer objects do appear to move faster, however, the stars of the Alpha Centauri system are now much closer than Barnard’s but show only a third of Barnard’s motion. So mere proximity cannot be the full answer. The second reason, is just basic physics. If Barnard’s came close to another star in the recent past it would accelerate its motion. But Barnard’s mystery accelerant has not yet been identified even though it should still be relatively close and thus easily detectable. Barnard’s is presumed to be moving away from that recent close encounter so it should now be decelerating (even if it is still the fastest star in the sky). But that’s not what studies show.[5] It clearly accelerating. The most logical conclusion is the accelerant star is our very own sun! We are one of the few stars in the neighborhood, and as Barnard’s comes closer to “us” it moves faster! Barnard’s or any other star moving towards its companion would pick up speed as the distance closes and the gravitational effect increases.

All of this is hard to get your head around if you still believe in the Copernican model of precession—that it must ALL be due to a wobbling axis because the sun cannot move. But the reality is that the Sun does move. Its motion of about 50 seconds of arc per year is there for everyone to see and measure, and watch as it accelerates, year by

[5] https://ui.adsabs.harvard.edu/abs/2009AAS...21340613B/abstract

year (at least in the years between 500 AD to 12,500 AD) as the two stars move closer together.

Broader than Astronomical Implications

I began this work not to tackle an astronomical problem but rather to better understand why ancient cultures around the world tied the motion of the heavens (the phenomenon commonly known as precession) to a grand cycle of time with alternating dark and golden ages. I simply wanted to know if there might be any scientific basis for this mythological tale of a vast cycle of time.

It is now accepted that the heliocentric system was known by several Greeks, and apparently taught by Aristarchus of Samos in 300-400 BC. But it was then lost for almost 2000 years before being resurrected by Copernicus[6]. It seemed to me that the only way that inventions like the Babylon battery, the Greek Antikythera geared device, ancient Greek optics, advanced engineering skills shown in structures like the pyramids, and heliocentric systems could have been known before the Dark Ages, then lost for thousands of years, only to be rediscovered post-Renaissance (the French term for "rebirth"), if there was some type of cycle affecting consciousness.

The myth and folklore of dozens of ancient cultures tie the motion of the heavens (precession) to such a cycle of time, which indirectly produces different conditions here on earth. Just as the cycle of day and night, and the cycle of the seasons are caused by the first two celestial motions, so did the larger motion of the heavens cause a "cycle of the ages", according the the Ancients. To the Greeks, this was known as Plato's Great Year, which they broke into the Iron, Bronze, Silver and Golden ages. To the Indians, one precession cycle was one complete "Yuga" with similar phases or ages they called Kali (the darkest age), Dwapara, Treta, and Satya (their Golden Age). They even gave us the same 24,000-year orbit period.

A major work on this topic is *Hamlet's Mill*, by co-authors Giorgio de Santillana, the former professor of the History of Science at MIT, and Hertha von Dechend, former professor of anthropology and the History of Science at Frankfurt University. They were looking for the "origins of science" when they found multiple ancient cultures had a deep knowledge of astronomy, including the precessional "motion of the heavens," long before Hipparchus. The "Mill" in their Hamlet's Mill, is the precession cycle as seen from an ancient perspective, grinding out different ages over time.

If the Ancients were right, that this large binary motion indirectly has effects similar to the earth's first and second motions (which affect consciousness and behavior on a daily and yearly basis across the planet), then it is fair to assume that some of their myth and folklore may have a basis in fact. These are the findings of the researchers

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[6] Copernicus was known to have seen the work of Aristarchus of Samos before penning De Revolti Onibus

that regularly present at the Conference on Precession and Ancient Knowledge, where this topic has been studied for almost 20 years.

A final interesting fact is that the Ancients, who gave us the geodetic systems we still use today for both terrestrial and celestial reference frames, apparently embedded a knowledge of the larger cycle in our daily system of time: our clocks and watches contain a microcosm of the 24,000 year cycle. Of course, the sun's motion is measured in years: 12,000 years moving towards its companion (more light), and 12,000 years moving away (less light), whereas our daily system of time is measured in hours, 12 of AM (increasing light), and 12 of PM (decreasing light), within a 24-hour day. I believe the ancient skywatchers may have understood the connection between the motions of the heavens and life on earth much more than we do today.

Back when astronomy was held as the royal science, the Mithraic culture, the last mystery school of the Roman Greco era, spoke of a "sun beyond or sun". They said it moved our sun through the twelve constellations of the zodiac, the very observable of precession. If true, they may have been watching the sun's motion far more carefully than we ever imagined!

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