Suns Near and Far

Clark M. Thomas

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Abstract

Beyond our Sun are many other suns within telescopic range. This essay deals with our original dual-star solar system and the Oort Cloud. It also shows how to view Stella, a star that drifted out of our dust cloud of origin. It discusses 2D vision vs. 3D vision, and more.

Seemingly forever we humans have looked to the skies and seen only one godlike star, our sun. The bright-but-tiny spots that kept their circulating positions on the celestial dome were long thought to be something other than our magnificent sun. Because we earthlings were given our place at the center of the cosmos by the anthropophilic gods, even the sun itself traveled across our skies. Thus, astrological and religious harmony was mutually established and maintained, in our heads.

In near-modern times, even before telescopes, the too tidy spheres-within-spheres geocentric model of Roman Ptolemy was challenged by Copernicus. Galileo superseded Ptolemy with his observations of the phases of Venus. He almost lost his life for talking about his experiments, but science could not be denied.

It is logical to think that truly modern people would be logical, but we are now a superpredator species filled with hubris and myopia. We are too simple to understand that we are also collectively simple. Future humans need to pay attention to real scientists and emerging ecology. Beneath and above it all, the natural order is objective and universal, not subjective.

Our Sun's Long Departed Companion

Recent studies of the Oort Cloud by sophisticated astronomical instruments have concluded that our sun in its juvenile era shone close to a companion star.[1] That dual sun-like star would have looked like a bright star in the sky from a Sol planet such as ours, but it would have been part of our early binary solar system.

[1] https://www.livescience.com/planet-9-sun-twin.html

The other star is long gone, and we have no easy way to see it directly after billions of years of wandering, even while we can see some traces of its gravitational effects on the Oort Cloud. A third star long ago most likely wandered nearby and disturbed our dual gravitational fields, kicking out the other local sun.

Interestingly, it is likely that the Earth is not an original planet, but instead is a composite of very early planetary perturbations involving Jupiter's changing orbit. It is not hard to imagine that a passing third star started the process that led to a renewed Earth that we briefly enjoy today.[2] From this gravitational encounter we may roughly date the creation of our single-star solar system.

Our Sun's Original Dust Cloud Neighbors

Both Sol and its long lost dual companion began their lives within a shared dust cloud of origin. This is the common way new solar systems emerge, as evidenced by telescopic spectroscopic observations. I wrote about another star (Stella) among several unknown sister stars inside the dusty nursery. I recommend that you read the (Footnote #3) essay explaining how astronomers *chemically* located this dim star 110 light years away. Here is scientific sleuthing at its best.[3]

Stars Beyond Our Cosmic Neighborhood

Increasing the outward radius quantitatively yields a qualitative transformation of what it means to be a celestial citizen. It also dims the hubristic idea that we humans are uniquely gifted with intelligence by the gods. A better hypothesis is that all of our "gifts" are equally spread among all universal conscious beings, according to the laws of physics. Old religious world views that don't embrace the modern model are entitled to their Bronze Age ideas, but not to the emerging and verifiable astronomical facts.[4]

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2 https://www.space.com/28901-wandering-jupiter-oddball-solar-system.html

3 https://astronomy-links.net/Stella.html

4 https://astronomy-links.net/Religion.and.Math.pdf

Back to the original idea of the cosmos: There was flat Earth below with tribal gods, and a nifty 2D dome above of circulating bright objects. That cozy idea is gone, but of course not from ancient texts. Early science, where astrology was astronomy, should not be faulted for its anthropocentric focus. The scientific tools we take for granted today had not yet been invented.

The bold idea that there are stars similar to ours with their own inhabited planets led the Roman Catholic inquisition to burn at the stake in 1600 Dominican friar Giordano Bruno. Galileo came along very soon thereafter in 1610, and was himself in danger, despite being a friend of the pope. He had used the magical tool of astronomy, a telescope, which made no difference to the rigid would-be killers. Scientific history has never since turned back. Nevertheless, it took the Catholic Church exactly four hundred years to formally apologize for torturing and murdering Bruno.[5]

Intellectually, we know the skies are three-dimensional, with a fourth dimension of vector movement. Emotionally, we are like houseflies who live briefly in an everlasting present, feeding and reproducing. We likewise experience our human lifespan as a lot of time. Existentially it is long, but not objectively. Lifespans of entire civilizations are as nothing compared to universality. Our entire solar system is ephemeral when compared to what else is possible in deep time.

When stargazers and backyard astronomers look at the skies, they are looking back in time. Astronomy, like archaeology, is an intellectual time machine into the past. The science of astronomy has learned much from observations, theory, and calculations – to where modern astronomers can now predict with increasing precision much of the cosmic future from past trends and events.

For example, we know about when the sun itself will transform into a nova and then form a planetary nebula. That's five billion years after our species is long gone – when Sol's future drama will be existentially irrelevant; yet scientifically fascinating today.

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5 https://www.sciencemag.org/news/2000/03/vatican-regrets-burning-cosmologist

Here's an interesting field experience: In the summer and fall there is a "triangle" of first-magnitude stars overhead. It's called the summer triangle. These three stars inside three imagined constellations comprise bright points of the triangle: Altair, Deneb, and Vega. The brightest triangle star for us is Vega, and not far behind is Deneb.

This triangle is a perceptual 2D asterism within our time and perspective. More importantly, Vega is just 25 light years away, while Deneb may be more than 2,616 light years distant. Indeed, Deneb is still a fine first-magnitude star in our night sky, whereas nearby Vega is slightly brighter to us with much less luminosity. Our sun from 50 light years away would by comparison be hardly visible at sixth magnitude in a dark sky.

Our two eyes provide 3D vision, but only for objects close by. Look beyond 100 feet away, and natural binocular 3D vision mostly fails. Celestial objects cannot be seen by one telescope in 3D. Two or three instruments can see in something like 3D if they are far apart and united by computers. We even use the diameter of our Earth's orbit to measure the movement of foreground stars that aren't too far away against the relatively unmoving distant background. Apply a little geometry, and we can calculate the distance of fairly nearby stars.[6]

Truly distant objects require different techniques, such as measuring the relative luminosity of cepheid variables, or Type Ia supernovas, or even measuring red shifts of phenomena toward the edge of our visual universe. Probing the adjacent multiverse can also be done, but so far with much less accuracy.[7]

BOTTOM LINE: When you step outside at night to gaze at the complex beauty of our night skies, think deeply about the depth you are actually enjoying. Human ability to *envision* that which we cannot see in 3D with natural vision is one of our best powers. Ultimately, astronomy is a science of philosophy and of the mind.

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6 https://astronomy-links.net/2Dis3D.pdf

7 https://astronomy-links.net/Universal.Anisotropy.Explained.pdf