

Astronomical Conjunctions and The Star of Bethlehem

The very close alignment, i.e., conjunction, of Jupiter and Saturn on December 21, 2020, is at times being referred to in the media as either a reminder of or as another “Star of Bethlehem” or “Christmas Star.” Why this analogy? In this short review, based on previous presentations, I will provide a summary of some of the relevant topics, both astronomical and historical. Much of the historical context and interpretations are from a 1997 article by Susan Carroll called *The Star of Bethlehem: An Astronomical & Historical Perspective*. [She is an amateur astronomer and her writing is excellent; however, although she provides a long list of references at the end, she does not cite them in the text.] Her article is at

<https://www.scribd.com/document/291067192/THE-STAR-OF-BETHLEHEM-AN-ASTRONOMICAL-AND-HISTORICAL-PERSPECTIVEStar-Susan-Carroll>

This review is to provide background for the general public regarding the possibility of observations and interpretations of celestial conjunctions as a basis for The Star of Bethlehem. It is not intended as a scientific publication. Also, there is no intent to demean other interpretations.

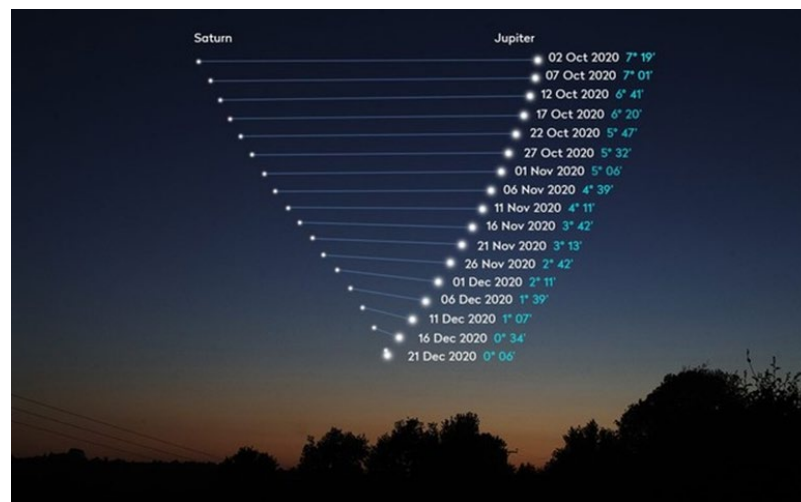


Figure 1: The Jupiter Saturn Conjunction in 2020
BBC Sky at Night Magazine

<https://www.skyatnightmagazine.com/advice/skills/great-conjunction-jupiter-saturn/>

I. The Star in Biblical Texts

The “star” reference is in the Book of Matthew, Chapter 2:

¹After Jesus was born in Bethlehem in Judea, during the time of King Herod, Magi from the East came to Jerusalem ²and asked, “Where is the one who has been born king of the Jews? We saw his star in the East and have come to worship him.” ... ⁷Then Herod called the Magi secretly and found out from them the exact time the star had appeared.

⁹After they had heard the king, they went on their way, and the star they had seen in the East went ahead of them until it stopped over the place where the child was. ¹⁰When they saw the star, they were overjoyed. ¹¹On coming to the house, they saw the child with his mother Mary, and they bowed down and worshiped him. Then they opened their treasures and presented him with gifts of gold and of incense and of myrrh. ¹²And having been warned in a dream not to go back to Herod, they returned to their country by another route.

II. The Star's Possibilities

What was the star? Why did only the Magi, who were probably Persian astronomers and nobility, see it and interpret as a sign of a king's birth? Possible answers to the first question are:

1. The star was a miracle that only the Magi saw.
2. The star never existed and was only added by the author of Matthew.
3. There was a real astronomical object or event. But if it were an object, such as a supernova or a comet, why did no other group – particularly the Romans – note it or assign such significance?

A few more details:

1. To the ancients, everything in the night sky was a star: Shooting star (meteor), hairy star (comet), wandering star (planet), and guest star (nova).
2. Astronomers of that era apparently did the bulk of their observing in the morning. For example, the Egyptian astronomers were watching for the first appearance of the star Sirius (The Dog Star) in the pre-dawn morning. This date in the calendar did not change, and it happened to be correlated with specific activity of the Nile river. By the way, the first rising of Sirius is seen in August, hence “The Dog Days of Summer”.

Many today believe the Bethlehem's Star was an astronomical event. With today's celestial software, numerous simulations have been performed for alignments – conjunctions of planets with planets or planets with bright stars. [Even I have done some simulations – see Figures 2 and 3 further down.] This brings up another problem, though, and that is the in-exactness of the modern calendar. How did it get established that this is year 2020?

III. The Star – When Did the Event Occur?

[Google Dionysius Exiguus for additional information.]

In AD 525, Pope John I assigned Dionysius Exiguus, a monk from Russia, to calculate the dates for Easter from the years AD 527 to 626. Dionysius decided to start with what he considered to be the year of Jesus' birth. The problem was there was no long running total of years. Rather, the dates were always “in the tenth year of Augustus” or “the second year of Nero”. In order to compute the year of Jesus' birth, he began with the year in which Rome had been founded. He determined, from the evidence available to him, that Jesus was born 753 years after the founding. [Remember this date as it plays a significant role in Section V.]

Today it is believed that Dionysius was off by a few years. There are some astronomical clues in the Bible to try to improve the start of the calendar. To be safe, most researchers look for celestial events in the 7 BC to 1 BC time frame. A second issue is that the Magi were not present at the birth of Jesus. They could have arrived many years later. [There is still the issue of why only the Magi placed importance on the astronomical event, which is discussed in Section VI.]

IV. The Star and Caesar Augustus [This entire section is from Susan Carroll’s article.]

During this date range, the Roman Empire was enjoying a time of unparalleled peace and prosperity. Caesar Augustus had given the Empire stability and growth. In 2 BC, Rome celebrated its 750th year since it was founded. This huge year was probably based on the *Aeneid*, which was written in about 20 BC. This was also the 25th Jubilee Year of the reign of Augustus as Emperor of the Romans.

In August of 2 BC there were going to be great festivals in Rome and through-out the regions. People came from all over the Empire and beyond. The most significant event was that Augustus would be given his greatest prestigious title – the highest honor that could be given to any Roman – that of *Pater Patriae* (“Father of the Country”). But Caesar Augustus wanted to be “worthy” of the title, so he decreed that the entire Roman people must register their approval of him receiving it, before the title would be bestowed. This affirmation oath took place in the early fall of 3 BC and was required of all Roman citizens and others of distinguished rank among the kingdoms associated with Rome.

This universal census of allegiance to Caesar Augustus was demanded of those who claimed any kind of authority within the Empire. It was also required of any Jewish person who could trace their ancestry back to the great Jewish royal families. Jesus’ parents, Mary and Joseph, both being descendants of King David, fell into this category. They, among others, were required to swear an oath that neither they, nor any of their offspring would usurp the throne. It was Jewish custom, during such a census, each traveled to the city of their ancestry. In the case of Mary and Joseph, this city was the city of David – Bethlehem.

V. The Star – The Astronomical Events

So, finally, what were the astronomical events? During the range of a couple of years, there were several conjunctions with all five of the visible planets involved. These were followed by a “Triple” Conjunction involving Jupiter and the bright star Regulus.

1. Jupiter and Venus had an extremely close conjunction in August, 3 BC, early in the morning (i.e., in the East).

See Figure 2 on the next page.

2. Then in September, the first of the three Jupiter and Regulus conjunctions occurred. Due to retrograde (“backward”) motion – that planets exhibit due to the Earth’s orbital motion – the second conjunction occurred in February, 2 BC. With the return of the prograde movement, the third conjunction was in May, 2 BC.

See Figure 3 on the next page.

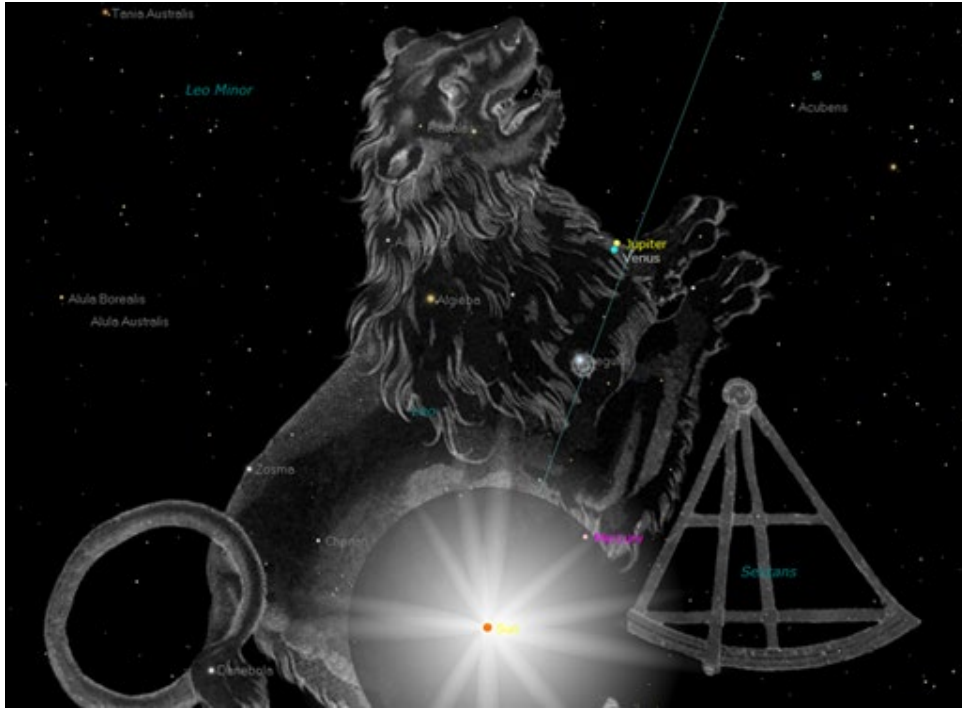


Figure 2: This is image from TheSkyX software program: the bright object is the Sun and the line is its path across the sky. The orientation is such that the movement of the sky is from top to bottom, so the close pair of Jupiter and Saturn rise shortly before the Sun.

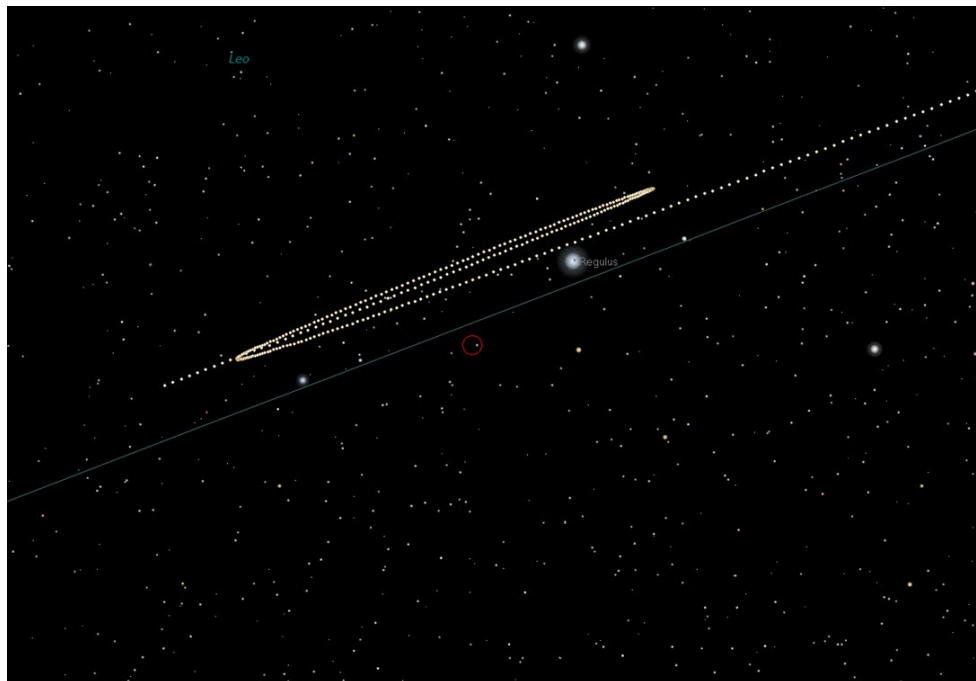


Figure 3: Each dot represents the location of Jupiter at midnight on a particular date. The bright star Regulus is seen. The straight line is the path of the Sun on the sky.

[Except for the last paragraph, the following is from Carroll.]

Each of these objects carried special significance.

Jupiter was regarded by the Roman people to be the guardian and ruler of the Roman Empire and it was thought to have the power to determine the course of all human affairs.

Venus, now next to Jupiter on the sky, was believed to be the mother of the family of Augustus. So here were the two planets dedicated to the origins of Rome and the sovereignty of Augustus merging together in a “marriage” during one of the most glorious years in the history of Rome, and this occurred in the constellation of Leo.

Regulus was known as the “Royal Star”, for it laid practically in the path of the Sun, and was the starting position of the Roman Calendar. Here was the “King Planet” now coming into contact with the “King Star” AND in the Royal Constellation. To astrologers, it appeared as though the King Planet was circling over and around Regulus, the King Star. This circular movement of Jupiter over Regulus would, in all probability, have signaled that a great king was then destined to appear.

This circling motion provided another significant astrological observation. For most of the world, who was the greatest ruler then in existence? **Caesar Augustus**. These celestial events coincided with the 25th year of Augustus’ elevation to supreme power over the Romans, the 750th priestly anniversary of the founding of Rome, and the exact year the people and Senate of Rome bestowed upon Augustus his supreme title of *Pater Patriae*. To those in Rome, it seemed as though heaven itself was giving approval for the emperorship of Augustus and that the government of Rome had the divine right to world sovereignty.

More history: After Julius Caesar died, a bright comet appeared, and Augustus proclaimed it was Julius’ spirit ascending into the heavens as a god. This proclamation helped ensure that Augustus become the subsequent Roman Emperor. Plus, it linked him as the (adopted) son of a god and established a relationship with the heavens and the night sky.

VI. The Star and the Magi [This section is partially based on Carroll’s article.]

The origins of the Magi are not clear, but they are believed to have started with Zoroaster, sometime around 1000 BC. He was a religious leader and teacher in the region of Persia where the Magi were thought to have their origins.

1. The Magi were not simple astrologers, but were professional astronomers as well.
2. Over the centuries they became important members of royal courts, often serving as emissaries to the kings by whom they were employed.
3. The Magi, particularly those from the eastern parts of what was considered to be the civilized world, were held in high esteem.

The constellation Leo the Lion had great significance to the Magi. It was referred to as the Lion of Judah. To the Magi, specific astronomical events – occurring in this constellation – fit the prophecy of the birth of a great **Jewish King** far more closely than they did the sovereignty of the Roman Empire and Caesar Augustus. They headed toward Jerusalem – not Rome.

VII. The Star – Summary

The cause of The Star of Bethlehem has a variety of possibilities. For those who want an interpretation based on natural occurrences, a case can be made that it was due to the observation and interpretation of several planet–planet and planet–star conjunctions. Specifically, simulations indicate that during a few years shortly before the birth of Jesus, there were conjunctions of Jupiter (the King planet) with both Venus (the King’s mother planet) and three times with the star Regulus (the Royal Star) in the constellation of Leo the Lion. To the Magi astronomers/astrologers, these events may have been interpreted as the birth of a King in the country of Judea.