

## THE STAR OF BETHLEHEM

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*"Now after Jesus was born in Bethlehem of Judea in the days of Herod the king, behold, wise men from the East came to Jerusalem, saying, Where is He who has been born King of the Jews? For we have seen His star in the East and have come to worship Him. When Herod the king heard this, he was troubled, and all Jerusalem with him. And when he had gathered all the chief priests and scribes of the people together, he inquired of them where the Christ was to be born." (Mt 2, 1-4)*

*"Then Herod, when he had secretly called the wise men, determined from them what time the star appeared. And he sent them to Bethlehem and said, Go and search carefully for the young Child, and when you have found Him, bring back word to me, that I may come and worship Him also. When they heard the king, they departed; and behold, the star which they had seen in the East went before them, till it came and stood over where the young Child was. When they saw the star, they rejoiced with exceedingly great joy. And when they had come into the house, they saw the young Child with Mary His mother, and fell down and worshiped Him. And when they had opened their treasures, they presented gifts to Him: gold, frankincense, and myrrh." (Mt 2, 7-11)*

These two passages of the Gospel of St Matthew, the only one that mention a star in the Nativity scene, have brought a lot of imagination and a precise iconography depicting the birth of Jesus. The star, called the Bethlehem Star, drove the unprecised number of Magi to the Jesus' birthplace.

None of the Gospels let us know the names of the Magi. Moreover, the names of the Three Wise Men came only in the IV century from the *Excerpta Latina Barbari* ("The names of the Magi were Bithisarea, Melichior and Gathaspa."), a V century's Greek chronicle composed in Alexandria

and Caesarius of Arles (468 ca-542) was the ecclesiastic who fixed the names in the Catholic Church's tradition.

Finally, as we can read, the writer of the St Matthew's Gospel didn't mention specifically a comet, but a generic star. But this star must have something different from the others to attract the attention of the Magi.

In fact, the very first image in which a star was depicted recalling the Bethelhem Star is in the Santa Priscilla's catacomb in Rome (II-III century a.C.). It is also considered the first portrait of St Mary. The fresco illustrates the Virgin Mary with Jesus standing in front a prophet whose right index finger points toward a multipointed star. The fresco revoke the Balaam prophecy in Numbers (Nm, 25, 15-17):

*"A Star shall come out of Jacob;  
A Scepter shall rise out of Israel"*

The painting mosaic of Sant'Apollinare in Ravenna, dated VI century is the first image that recalls clearly the St Matthew's Gospel. The star that we can see in this wonderful mosaic is indeed brightest than others. The idea of its brightness lie in its 8 golden points which branch off from the white nucleus.

So, where the idea of the comet came from?

Origen of Alexandria (185-254) in his *Contra Celsum* introduced the idea of the Bethlehem Star as a comet and as a celestial phenomenon linking the already previously cited prophecy of the Book of Numbers (Nm 24,15-17):

*"I see him, but not now;  
I behold him, but not near;  
A Star shall come out of Jacob;  
A Scepter shall rise out of Israel,  
And batter the brow of Moab,  
And destroy all the sons of tumult."*

The Christian theologian and now Church Father, wrote that *"If, then, at the commencement of new dynasties, or on the occasion of other important events, there arises a comet so called, or any similar celestial body, why should it be matter of wonder that at the birth*

*of Him who was to introduce a new doctrine to the human race, and to make known His teaching not only to Jews, but also to Greeks, and to many of the barbarous nations besides, a star should have arisen? Now I would say, that with respect to comets there is no prophecy in circulation to the effect that such and such a comet was to arise in connection with a particular kingdom or a particular time; but with respect to the appearance of a star at the birth of Jesus there is a prophecy of Balaam recorded by Moses to this effect: There shall arise a star out of Jacob, and a man shall rise up out of Israel"*

The first painter to introduce a comet in his works was Giotto da Bondone (1267 ca - 1337) likely under the influence by the physician and philosopher Pietro d'Abano's works (1248-50 - 1315-18).

The *Adoration of the Magi*, in the Scrovegni Chapel in Padua, was painted between 1304-1305 and clearly shows a comet passing over the hut where a baby Jesus embraced by St Mary has his feet kissed by the oldest of the three Magi, Melchior.

What is more important is that Giotto was depicting the comet not in a stereotype way (pointed star with definite and spotless curve tail), but in most realistic way. To do this he was lucky enough to watch the passage of the Halley comet in 1301, three years before he was starting the *Adoration of Magi*, to see another more brilliant comet's appearance in 1304 and to live in Padua, a city whose university was dedicated to the mathematic and astronomy teachings. It is now believed that it was the second comet, and not the Halley's, the star who impressed more Giotto during its painting. In fact the second comet was staying much longer in the sky of Italy and, more important, it appeared exactly during the artist was painting the *Adoration of the Magi*, having so a wonderful realistic object to depict for its painting.

Furthermore, Halley was not so bright as the one that is represented in Giotto's work. Instead its comet resemble some words of Pietro d'Abano, who described them as

*"Dry and hot fumes, which are flammable" and "After a great fire, the matter loses its red color and is tinged with black".*

Painting a Bethlehem Star as a comet was quite dangerous in XIV century, since this description was not accepted in the Church orthodox doctrine; but the Cappella degli Scrovegni, where the first comet appeared in the religious iconography, were a private chapel commissioned by the powerful Enrico Scrovegni, a *familiaris noster* of pope Benedict XI and Giotto was relatively safe. In fact, the comet wouldn't reappeared in any other artistic work for next 70 years and Giotto himself never represented the Bethlehem Star as he did in Padua.

Even though not mentioned in any book of the Bible, the comet became an unavoidable element of the Nativity.

But is there any evidence about the presence of a Bethlehem Star (star or comet) in the Jesus' era astronomical calendar?

To research such prove we must firstly arrange the timeline according to the historical facts. And here the facts go quite tricky.

At that time the calendar in use was computing the year from the founding of the city of Rome (*ab urbe condita*), which Varron established on April 21 in what is now 753 B.D.

The *Anno Domini* calendar was devised by Dionysius Exiguus in 525 A.D. (which is 1278 *ab urbe condita*) in order to replace the Diocletian's era of the Julian calendar and introduced it in 532.

The idea to establish a new calendar based on Christian beliefs (the natural and more important event to begin the new era was the Jesus' birthday) was not new: since II century many scholars have tried to find out the exact years of the birth of Jesus and the bishops of Alexandria and Antioch already started to introduce the liturgical calendar starting from the hypothetical Jesus' birthday.

At Dionysus time, some dates were suggested for the birth of Jesus: in Alexandria it was assumed the birth year was at 23<sup>rd</sup> year of Octavian Augustus' reign (747 *ab urbe condita*, 6 B.D), while others took the 25<sup>th</sup> year of his reign (749 *ab urbe condita*, 4 A.D.). Eusebius speculated that Jesus was born in the 28<sup>th</sup> year of the reign of Octavian (752 *ab urbe condita*, 1 A.D.) and Clement of Alexandria backed the birthday to 30<sup>th</sup> year earlier of the 15<sup>th</sup> year of Tiberius Caesar's reign (753 *ab urbe condita*)- the 15<sup>th</sup> year of Tiberius

Caesar's reign was the time of Jesus' death according to St Luke's Gospel (*"Now in the fifteenth year of the reign of Tiberius Caesar, Pontius Pilate being governor of Judaea, and Herod being tetrarch of Galilee, and his brother Philip tetrarch of the region of Ituraea and Trachonitis, and Lysanias tetrarch of Abilene, in the highpriesthood of Annas and Caiaphas, the word of God came unto John the son of Zacharias in the wilderness."* Lk 3, 1-2).

Actually, the main target of Dionysius's calculation was not to determine the birth of Jesus, but to determine the Incarnation of the Son of God (that is the time of conception) in order to fix the Eastern date, which was the main goal of the monk.

To do that he based his computing on the Bible, describing the results in the *Patrologia Latina*.

In *Argument XV: on equinox and solstice (PL, LXVII, 506)* we can read that *"The birth of Jesus Christ in Bethlehem is celebrated after the first solstice, when the day begin to lengthen... The first equinox fell on 25 March, when day and night were equal. This is the date of the Annunciation, when the angel Gabriel greeted St Mary with the words: 'The Holy Spirit will come upon you, and the power of the Most High will cover you with its shadow. And so the child you shall bring forth will be holy and will be called Son of God' [Luke 1, 35].. From 25 March to 25 December there are 271 days. In other words, according with the number of days, Jesus Christ was conceived on Sunday 25 March, and he was born on Tuesday 25 December. He was crucified 33 years and 3 months afterwards. This period amounts to 12.143 days. According with the number of days, his passion took place on Friday 25 March."*

And to establish the date of Incarnation the *Argument I: on the years of Christ (PL, LXVII, 497)* Dionysius stated that *"If you want to know how many years have passed since Incarnation of Our Lord Jesus Christ, you must reckon fifteen times 34, which is 510. To this always add twelve regular years, which makes 522. Then you must also add the indiction of the year you require, i.e. the third under the Consulate of Probus Junior, and you will get 525. This is the number of years reckoned from Our Lord's Incarnation"*.

The age of Jesus when he was crucified (33 years and 3 months old) were taken by Dionysius from the St Luke's account, which stated that Jesus was about thirty years old when he started to teach, and from the tradition of the Fathers of the Church, which say that the teaching of Jesus lasted three years. The crucifixion would have taken place on 15<sup>th</sup> year of Tiberius' reign (the three months were added to match the December 25<sup>th</sup> birthday to the day of death, March 21<sup>st</sup>).

But backing the year of birth from the Jesus death, Dionysius didn't account some historical fact: he didn't take account of the four years of Augustus' reign under the name of Octavian and the two years when Tiberius was *Collega Imperii* in Syria.

All these disappeared years (7) put historically the birth of Jesus between 7 and 5 B.D.

Most of the historians and scholars now agree that the year of Jesus' birth was the 23<sup>rd</sup> year of the Augustus' reign (747 *ab urbe condita*, 7 B.D.), a date that match with the first census mentioned in St Luke's Gospel (746-747 *ab urbe condita*, 6-7 B.D.).

And here comes the astronomers studies, in which the Bethlehem Star occupies a pivot place.

Matthew's Gospel let us know that a star drove the Magi to West.

Was this star a comet, plausibly the same Halley Comet that Giotto observed in 1301? Only from 1705, with the Halley's work *Synopsis of the Astronomy of Comets*, we got to know that that comet returns visible from the Earth every 76 years. Suddenly it became easy to calculate its passages in the past till the period of Jesus's birth. Unfortunately the closest passage of the celestial object was in 12 B.D. and the astronomers do not have any evidence of other significant passages of any star in the next few years.

It seems plausible that, instead of a comet, which could be visible to everybody, it was a planetary conjunction to convince the Wise Men to begin their journey to Jerusalem and then to Bethlehem. The planetary conjunction is not an event that can impress the normal people. Herod was not aware of that event, otherwise he wouldn't interview the Magi asking "from them what time the star appeared"

and *"when you have found Him, bring back word to me, that I may come and worship Him also"*. If the St. Matthew's star would have been clearly visible, Herod wouldn't have any trouble to find Jesus. Now, we know that a Jupiter-Saturn conjunction in Pisces took place trice from May 28<sup>th</sup> to December 1<sup>st</sup> in 7 B.C. (on May 27<sup>th</sup> or 28<sup>th</sup>, September 29<sup>th</sup> or October 6<sup>th</sup> and December 1<sup>st</sup> or 4<sup>th</sup>). It was a rare event, as Kepler discovered in 1604, and it takes place only every 805 years and the strong symbolic meaning convinced the Magi to leave in search of the King of Israel. Indeed Jupiter was the planet that symbolized the regality, Saturn the principle of justice and the Pisces was the zodiac sign for the Jewish people and Israel.

So there are three periods in which the Magi could arrive in Jerusalem and Bethlehem, but only one match the accounts of St Matthew 2,9 and St. Luke 2, 8-9. St Matthew writes that *"behold, the star which they had seen in the East went before them, till it came and stood over where the young Child was"*, while from St Luke we know that *"there were shepherds living out in the fields nearby, keeping watch over their flocks at night. An angel of the Lord appeared to them, and the glory of the Lord shone around them, and they were terrified."* The star in Matthew *"stood over the young Child was"*; it means that the planetary conjunction is at its highlight on the sky and it would be on September. Moreover, the Gospel of St Luke informs us that the shepherds were still living outside, so we can assume that the weather is still warm enough to let them stay in the fields. Everybody who have been to Bethlehem knows that in winter (December, when the third conjunction took place) the climate is quite chilly and the flocks are keeping inside the paddoks. The two biblical passages stop the time in a precise period, which seems to be September, most probably the month in which Jesus was born.