

Astronomical Phenomena that Influenced the Compilation of Anno Domini

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Abstract. The world year 6000 occurring during Dionysius' lifetime caused a calendrical Last Day providing the reason for his new Anno Domini calendar. Basing upon cosmological ideas as the "Great-Year-Conjunction" of all classical planets Anno Domini focused a future return of Christ. Forecasting a close massing of the planets of the Ptolemaic system in May, 2000 AD and the medieval value of precession, 666 years/10°, conflated with interpretation of Gospel and Revelation were reasons for the fictitious dating of Christ's incarnation.

1. Anno Mundi 6000: The Prompt at Beginning of the 6th Century

The Cosmic Year ("Anno Mundi") of Iulius Sextus Africanus (3rd century) is an early Christian temporal concept, based upon interpretation of the Bible, according to which the Lord created the world in six days, which are equated to 1000 years each:

For a thousand years in thy sight are but as yesterday when it is past, or as a watch in the night¹.

One day is with the Lord as a thousand years, and a thousand years as one day².

Therefore, children, in six days, that is, in six thousand years, everything shall come to an end. And He rested on the seventh day. This He meaneth; when His Son shall come, and shall abolish the time of the Lawless One, and shall judge the ungodly, and shall change the Sun and the Moon and the stars, then shall he truly rest on the seventh day³.

To date the moment of creation, Jesus' coming, and end-time prophecy were drawn in comparison:

Children, it is the last hour; and as you have heard that antichrist is coming, so now many antichrists have come; therefore we know that it is the last hour⁴.

¹ Psalms 90:4.

² Peter 3:8.

³ Barnabas 15:3-5.

⁴ 1 John 2:18.

Writing in the first half of the third century, Origen, in his *Commentary on Matthew*, employed the analogy of the twelve hours of the day to divide the whole of biblical history into ages. Accordingly, he locates Noah at the third hour, Abraham at the sixth, Moses at the ninth, and, finally, Christ at the eleventh hour⁵.

Also the Ark of the Covenant were drawn in comparison, because the Christian Old Testament⁶ tells that the Ark was 2 1/2 cubits long, 1 1/2 cubits wide, and 1 1/2 cubits high. Irion (Hieron) of the court of Constantinople and Hippolytus both interpreted these dimensions, amounting to 5 1/2 cubits, as symbolic of the 5,500 years⁷.

The first *Christian Chronography* of Africanus (3rd century) used these comparisons to date Christ's birth to the world's year 5500, figuring the fictitious creation in this way:

- The world lasts 6000 years.
- Christ came in the 11th of 12 hours.
- $6000 : 12 \times 11 = 5500$ years.

Yet the approach of the fatal year of the Cosmic Year 6000 caused end time fever and the North African bishop Julius Hilarianus, for instance, wrote at end of 4th century a treatise *On the Duration of the World*, in which he calculates 5530 years from creation to the Passion of Christ, and 369 years from that event until the consulate of Caesarius and Atticus (AD 397); there remain, so he concludes, 101 years to go before the Resurrection of the dead⁸.

To avert end time fever and to sustain religious credibility Christian authors applied several strategies. Dionysius Exiguus made the most widespread attempt at this when he created a new temporal hinge point for counting the years: Anno Domini, Year of the Lord, since the fictitious incarnation of Christ at vernal equinox.

Dionysius created a new Easter cycle starting with AD 532 (equal to the Diocletian 248th year) and established in this way a new yearly count, but gives no concrete hint how he made his invention.

2. The Pretext with Which Dionysius Introduced the Anno Domini Count

[...] Because the blessed Cyril began his first cycle in the 153rd year of Diocletian and ended his last cycle in the 247th year of Diocletian, we have to start in the 248th year [i.e., 532 AD] of this man, who was a tyrant rather than emperor. However, we did not want to preserve the memory of an impious persecutor of Christians in our cycles, but chose rather to mark the times with the years from the incarnation

⁵G. DECLERCQ, *Anno Domini. The Origins of the Christian Era*, Turnhout, Brepols, 2000.

⁶2 Exodus 25:10.

⁷A. A. MOSSHAMMER, *The Easter Computus and the Origins of the Christian Era*, Oxford, Oxford University Press, 2009, p. 254.

⁸DECLERCQ, *Anno Domini* (cit. note 5).

of our Lord Jesus Christ [i.e., 532 AD], so that the commencement of our hope will appear more familiar to us and the origin of the redemption of mankind, that is the Passion of our Redeemer, will shine in a more glorious way⁹.

If we take the narrative of the Bethlehem star of the Gospel as a historical fact, we have the dilemma that Herod the Great died in 4 BC, and therefore the AD years do not represent precise historical fact and in addition do not go conform with any contemporary chronologies. Yet, the AD years go conform to the scholar cosmological concept and religious belief of late antiquity.

3. The Cosmological Great Year Doctrine of Antiquity

There exist dozens of ancient cites of a common multiple of the planetary periods as for example Plato tells. This doctrine, called *apokatastasis pantoön*, was telling of a moment after which everything would repeat itself¹⁰ when all planets return to the same position. From Eudemos, Aristotle, Berossos, Seneca, Cicero, Macrobius, Heraclitus Stoicus, Nemesius, Clement of Alexandria, and many others we have similar citations¹¹.

[...] and hence they [humankind] can scarcely be said to know that their [the planets'] wanderings, being infinite in number and admirable for their variety, make up time. And yet there is no difficulty in seeing that the perfect number of time fulfills the perfect year when all the eight revolutions, having their relative degrees of swiftness, are accomplished together and attain their completion at the same time, measured by the rotation of the same and equally moving [the ecliptic]¹².

There is a common multiple of all orbital times, the large year; at its expiration all planets are again in the same place. [...] If one believes the Pythagoreans, then I will return also in the future, as everything after its number returns, and I will tell you here again fairy tales, holding this stick in my hand, while you will sit likewise before me. Likewise everything else will repeat itself¹³.

Heraclitus evidently alludes to the Homeric theogony and to the heavenly turmoil after the creation of humankind by Prometheus, which had as a consequence the Olympic Symposium.

Some people want the conjunction of the seven planets in one zodiacal sign to be referred to by these words of Homer, and also the universal destruction, whenever

⁹The translation of the *Cyclus Decemnovennalis Dionysii* by M. Deckers is available at the website <http://hbar.phys.msu.ru/gorm/chrono/paschata.htm>.

¹⁰B. L. VAN DER WAERDEN, *Das Grosse Jahr und seine Ewige Wiederkehr*, "Hermes", 80, 1952, pp. 129-155.

¹¹G. DE CALLATAY, *Annus Platonius. A Study of World Cycles in Greek, Latin and Arabic Sources*, Louvain, Université Catholique de Louvain, 1996

¹²PLATO, *Timaeus*, 39 c-d, in DE CALLATAY, *Annus Platonius* (cit. note 11).

¹³EUDEMOS, Aristotle's disciple at the Lykaion at Athens, in VAN DER WAERDEN, *Das Grosse Jahr* (cit. note 10).



Figure 1. *Meal of the Seven*, 3rd century, graffiti, Catacombs of St. Callixtus, Rome. (Credit: Wikipedia Commons)

this should happen. He [Homer] alludes to the confusion of the universe when he brings together Apollo, i.e. the Sun and Artemis, whom we identify with the Moon, as well as the stars of Aphrodite, Ares, Hermes and Zeus¹⁴.

An Indian parallel of Dionysius is his contemporary Aryabhata, who calculated backwards to an alignment of all planets and dated there the beginning of the Indian age Kali Yuga. The very same year, 3102 BC¹⁵, we find later in Persian and Arabic chronologies, such as Abu Mashar's *Book of the Conjunctions*, where it is identified as the date of the Deluge, and makes evident a transfer of astronomical knowledge between India and the West.

4. The Imagination of Jesus' Return at a Conjunction of All Planets

Nemesius gives a report that early Christians believed that during a Great Year alignment the Resurrection of Jesus was expected:

According to the Stoics the conflagration and the destruction of all beings is generated, after stated periods of time, by the planets, when they come back, both in longitude and latitude, to the same sign in which each one of them was at the beginning, when the world was first shaped. Then, from the start the world is restored anew.[...] Some people state that Christians imagine the Resurrection by way of this restoration, but those are completely wrong. For Christ's words instruct that the Resurrection will take place once and not periodically¹⁶.

In early Christian iconography, the scene of the *Meal of the Seven*, found in several graffiti at the catacombs of Rome (Figure 1) represents this cosmic moment expected

¹⁴HERACLITUS STOICUS, *Quaestiones homericae*, 53, in DE CALLATAY, *Annus Platonius* (cit. note 11).

¹⁵B. L. VAN DER WAERDEN, *The Conjunction of 3102 BC*, "Centaurus", 24, 1980, pp. 117-131.

¹⁶NEMESIUS, c. 400 AD, in DE CALLATAY, *Annus Platonius* (cit. note 11).

by early Christians at the end of time or in the world beyond. This scene mirrors that sitting together at a common meal, which alludes to the classical Olympic symposium after the heavenly turmoil because of the creation of humankind by Prometheus.

A late medieval tombstone, called *stecak*, from Bosnia and Herzegovina shows the astronomical heritage of Bogumils (see Figure 2 in L. Harris' contribution, this volume). Basing upon Manichaean and Zoroastrian culture the Bogumils were a heretic movement, which emigrated from the Black Sea area (now Bulgaria and Romania) in former times known as Scythia, the homeland of Dionysius Exiguus. The *stecak* shows the Sun and the Moon and five circles (planets), which allude to a massing of the classical planets.

5. The Astrological Connection of Jesus with the Constellation Pisces

Early Christian iconography shows the acrostic ICHTHYS and graffiti in catacombs of Rome present a fish, which alludes to Jesus as the releaser of the new age. Pisces then became new heliacal vernal equinox constellation due to the precession. As a consequence Dionysius dated the starting point of his years to the vernal equinox at 25 March, the former feast of Incarnation (now Annunciation). The letters ICHTHYS, the Latinized version of the Greek word *IXOYS* (fish) were interpreted as *Iesous CHristos THEou HYios Soter* (Jesus Christus, son of God, Savior)¹⁷.

Similarly, early 3rd century Christian writer Tertullianus alludes to Jesus Christ and the new age.

[...] we, little fishes, after the image of our ICHTHYS, are born in the water¹⁸.

6. The Revelation of John of Patmos and Its Allusion to the Seven Planets and Precession

As the great Franz Boll stated, Revelation tells of the future cusp from one aeon to the next. Thus it tells of the shift from the Piscean age to the Aquarian age:

The material [...] to interpret the Revelation of John [...] consists of texts and images. Prophecies like Revelation deal with images of the future. [...] The apocalypses tell of events shortly before the end of this world, or more correctly said, before or at the beginning of a new aeon or saeculum¹⁹.

In the introduction, the Revelation gives a hint on how to interpret it astrologically. If we identify the seven stars with the angels, i.e., the ancient deities of the seven communities of Asia Minor, as the Revelation itself asserts, we easily find an allusion to the seven classical planets.

¹⁷See also note 5 in V. SHRIMPLIN's contribution, this volume.

¹⁸TERTULLIAN, *Über die Taufe (De baptismo)*, trans. K. A. H. KELLNER, Bibliothek der Kirchenväter, 1. Reihe, Band 7, München, 1912, chap. 1.

¹⁹F. BOLL, *Aus der Offenbarung Johannis. Hellenistische Studien zum Weltbild der Apokalypse*, Leipzig und Berlin, Teubner, 1914.



Figure 2. Illustration from Germanicus, *On the Phainomena of Aratos*, c. 800 AD, Codex Basilienensis, ms. AN IV 18. (Credit: M. Haffner)

As for the mystery of the seven stars which you saw in my right hand, and the seven golden lamp stands, the seven stars are the angels of the seven churches and the seven lamp stands are the seven churches²⁰.

Therefore the seven stars correspond to the angels (deities) of the seven churches. The seven letters of the Revelation are addressed to these seven churches:

Ephesus:	Main antique sanctuary of Artemis =	Moon
Pergamon:	The famous alter of Zeus =	Jupiter
Thyatira:	The text mentions the morning star =	Venus
Sardis:	The text deals of merchants and thieves =	Mercury
Philadelphia:	Greek Delphi is sanctuary of Apollo =	Sun
Laodicea:	=	Mars?

Revelation makes an allusion to the value of Precession.

Then I saw another beast, which rose out of the earth; it had two horns like a lamb and it spoke like a dragon²¹.

²⁰Revelation 1:20.

²¹Revelation 13:11.

This calls for wisdom: let him who has understanding reckon the number of the beast, for it is a human number, its number is six hundred and sixty-six²².

Since the end of antiquity the usage of the precessional value 66.6 years each 1° (equal to 666 years/10° or 2000 years/30°) can be found at many astronomers. There exists a strong indication that in India the value of 1800 years/27°, which equals 2000 years/30°²³, was used even before medieval times²⁴. A transfer of knowledge from India to the Occident occurred at the end of antiquity, as ascertained by the 9th century patriarch Photius of Constantinople, as well as by Cedrenus in the 11th century. During the reign of Constantine in the 4th century, Metrodorus, who created a 532-yearly Easter cycle, visited India to study philosophy with the Brahmins²⁵.

An illustration of Germanicus' *On the Phenomena of Aratos* in the Codex Basilienensis (c. 800 AD) impressively confirms the medieval identification of the feared apocalyptic beast with the upcoming Age of Aquarius and shows the horned beast just at the position between Pisces and Capricorn, where one usually expects Aquarius (Figure 2)²⁶.

It is a fact that at 5 May 2000 a close massing of the planets within a span of 30° occurred, which is postulated to be the forecast of an end of the world date and was the reason to adjust the fictitious date of Christ's incarnation 2000 years in hindsight.

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²²Revelation 13:18.

²³S. BENNEDIK, *Die Siebenplanetenwoche in Indien*, Ph.D. Thesis, Rheinischen Friedrich-Wilhelms-Universität, 2007.

²⁴D. E. PINGREE, *The Recovery of Early Greek Astronomy from India*, "Journal for the History of Astronomy", 7, 1976, p. 112.

²⁵MOSSHAMMER, *The Easter Computus* (cit. note 7), p. 199.

²⁶M. HAFNER, *Ein antiker Sternbilderzyklus und seine Tradierung in Handschriften vom Frühen Mittelalter bis zum Humanismus. Untersuchungen zu den Illustrationen der "Aratea" des Germanicus*, Hildesheim, Georg Olms, 1997.