A Location in Time

The Book of Revelation as a Sky Frame of the Early Third Millennium BC

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Abstract

This essay reads the Book of Revelation as a definition of time and space. It does not read it as a prophecy. The book contains a frame of the sky. A sky frame can be dated, because the sky slowly turns.

Two calculations place the frame of Revelation in the early third millennium BC, in a window of about 3000 to 2550 BC, centred near 2775 BC. The four living creatures stand best on the four corners of the year in 2756 BC. The celestial pole passed closest to Thuban, in the tail of the Dragon, in 2796 BC.

Three historical markers fall in the same window. Egypt's civil calendar of 365 days is dated by back-calculation to about 2781 BC. Flood layers in Mesopotamia date from about 2900 to 2750 BC. The Sumerian King List says that after the flood, kingship "descended from heaven". Revelation ends with a city that comes down from heaven.

The essay traces how this old frame could reach John around AD 95. The route runs through Babylonian schematic astronomy and the Astronomical Book of Enoch. A second layer, the sign of the woman in Revelation 12, fits the sky of 11 September 3 BC. The result is a book that stores three moments: the founding of the calendar, a birth, and its own time of writing.

The essay starts from a stated premise. Following Kaulins, it takes ancient sacred language as sky language. The premise is judged by what it explains, not assumed to be proven.

Version 1.4 adds the Watchers of Enoch and the antediluvian king Enmeduranki to the route of the frame. It reports that Malina and Pilch read Revelation 12–16 as the cosmos before the flood: the same moment our sky clocks reach. It also reports that Boll and Malina place the dragon in the south, which weakens the second clock.

Version 1.2 adds four chapters. They show that earlier scholars already read the frame in the sky. They show that both cities of the book are women, as cities were in the ancient world. They apply the same frame to our own time. And they ask what a shared sky means for the traditions that inherited it.

1. Introduction

Revelation is usually read in one of four ways.[1] Some read it as fulfilled in the first century. Some read it as a script for the end of time. Some read it as a map of church history. Some read it as a timeless symbol of good against evil.

This essay takes another route. It treats the book as an astrological definition of time and space. Such a definition has three parts:

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[1] See reference 10.

- A frame: a fixed centre and four corners.
- A clock: a year divided into months and days.
- A correction: a rule for what happens when the clock and the sky drift apart.

The idea came from a paper by Andis Kaulins on the cult of Horus.[2] Kaulins argues that early Egyptian kingship was a sky calendar. Horus names marked regions of the sky. Kings were also units of time. When the calendar drifted, kings were inserted to correct it. Revelation shows the same three parts. This essay asks what follows if we take that seriously.

1.1 The premise

This essay works from two premises. They are stated openly, so that the reader can judge them.

- Kaulins' reading of early kingship as a sky calendar is taken as the foundation.
- Ancient sacred language is read as sky language. Each image is assumed to have a place in the sky.

A premise is not a proof. It is a starting point, as an axiom is in mathematics. It is judged by what follows from it. If the premise is fruitful, the images of the book should find places in one sky, at one time. If it is not, they will scatter. The chapters below test this.

For the same reason the essay relies on primary texts, on astronomy and on specialists in ancient astronomy and calendars. It does not rely on theological interpretation.

One notion from the author's wider work on the Vacuum.Net theory helps here. It is closure. In this essay closure is used only in its plain calendar sense. A calendar closes when its year returns to the same point in the sky. A calendar that does not close drifts. The whole argument below is about a frame that drifts and a frame that closes.

The essay is written for a broad reader. Each step is explained in the text. The annotated references at the end allow the reader to go deeper.

2. Why a Sky Frame Carries a Date

The earth's axis wobbles slowly, like a spinning top. One full turn takes about 25,800 years. This motion is called precession.[3] Two things follow from it.

First, the four corners of the year move against the stars. The corners are the spring equinox, the summer solstice, the autumn equinox and the winter solstice. Each moves about one degree in 72 years. In 2,000 years they move almost 28 degrees. That is nearly one sign of the zodiac.

Second, the celestial pole moves. Today it lies near Polaris. Five thousand years ago it lay near Thuban, a star in Draco, the Dragon.

So a text that names which stars mark the corners, or which star marks the pole, names an era. A sky frame is a clock that cannot lie. It can only be read.

3. A First Test That Failed

The author's draft essay first read Revelation as a log-periodic system.[4] In such a system numbers follow a rhythm. The pattern returns each time a value is multiplied by a fixed factor, as octaves return on a piano.

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[2]See reference 3.

[3]See reference 4.

[4]See reference 9.

We built four data sets from the book. They held its numbers, its durations, its sky items and the positions of its sevenfold series. We tested them with the cycle detector from the author's Trit Tile reference.[5] The detector was first calibrated on the tile itself. It reproduced the tile's mean share of 30.87 per cent and its overtone spectrum.

Applied to Revelation, the detector found no cycle. One trace appeared: a ladder of twelve (12 and 144; 12,000 and 144,000). It did not repeat across periods. The book is also too short for this kind of test.

The failure was useful. It showed that Revelation is not a series of measurements. It is a coordinate system. One does not test a map for rhythm. One checks whether its units fit the sky.

4. Kaulins: Kingship as a Sky Calendar

Kaulins deals with late predynastic and early dynastic Egypt, around 3100 BC.[6] His main points are these:

- The Horus falcon guards the celestial pole. Kaulins links it to the two "guardian" stars of the Little Bear, Kochab and Pherkad.
- The Dragon, Draco, lies around the fixed pole of the ecliptic.
- The serekh, the frame around a king's Horus name, is an enclosure at the centre of the sky.
- Horus names are regions of the sky, related to the zodiac. Together they form a royal calendar.
- The year has 12 months of 30 days, plus 5 extra days. This year is a quarter day too short. After 479 years it is 120 days off.
- Khasekhemwy, the last king of the Second Dynasty, corrects the drift. He inserts four "calendar kings" of 30 days. They never ruled. They are units of time.

Kaulins starts his royal calendar on 25 December 3117 BC. He links that date to an eclipse at sunrise on the winter solstice. He also cites the image of a celestial Jerusalem "in the far north": an enclosure around the pole.

5. The Same Structure in Revelation

Revelation contains each element of Kaulins' frame. Table 1 sets them side by side. The verses are from the King James Version.[7]

Kaulins (Egypt)	Revelation	Verse
Dragon around the pole	A great red dragon; his tail draws a third of the stars of heaven	12:3–4
Falcon at the pole	An eagle flying in mid-heaven; the woman receives two wings of a great eagle	8:13; 12:14
Four standard bearers: the four quarters	Four living creatures: lion, calf, man, flying eagle	4:7
Enclosure at the centre of the sky	The New Jerusalem: square, walled, twelve gates	21:12–16

[5] See reference 8.

[6] See reference 3.

[7] See reference 41.

Kaulins (Egypt)	Revelation	Verse
Shen ring: no beginning, no end	Alpha and Omega, the beginning and the end; a rainbow round the throne	21:6; 4:3
Year of 12 × 30 days	1260 days = 42 months = a time, times and half a time	11:2–3; 12:6, 14
Kings as units of time	Seven kings, five fallen; ten kings for one hour	17:10–12
Eclipse	The sun black as sackcloth, the moon as blood	6:12
Horus against Seth at the pole	The Lamb against the beast; the dragon gives the beast his throne	13:2

Table 1. Elements of the Egyptian sky calendar (after Kaulins) and their counterparts in Revelation.

Revelation 8:13 reads “angel” in the King James Version. Many other translations read “eagle”. Both readings exist in the manuscript tradition.

6. Method

The frame can be dated. We did this with standard astronomy.

- Precession: the long-term model of Vondrák, Capitaine and Wallace (2011).[8] It is implemented in the open library ERFA.[9]
- Stars: positions, parallaxes and proper motions from SIMBAD, with Hipparcos astrometry.[10] Each star is moved along its own path through space to the date in question with the ERFA routine pmsafe. Results without this motion are also given, for comparison.
- Corners: each star’s longitude along the ecliptic of its own date. 0° is the spring equinox, 90° the summer solstice, 180° the autumn equinox and 270° the winter solstice.
- Pole: the angle between the celestial pole of the date and the star.
- Planets, sun and moon: Astronomy Engine.[11] Dates were converted from the Julian calendar, which the historical literature uses.
- Fit measure: the root-mean-square (RMS) of the four offsets, in steps of five years. The mean of the absolute offsets is not used for the optimum. It stays almost flat over three centuries, because two offsets grow while two shrink.

For each test we chose the stars in advance. We did not search the sky for a match.

7. Result One: The Four Living Creatures

Revelation names four creatures: a lion, a calf, a man and a flying eagle. The oldest Mesopotamian marker constellations are the Bull, the Lion, the Scorpion and the Water-bearer.[12] Three map directly. The lion is the Lion. The calf is the Bull. The man is the Water-bearer. The eagle takes the corner of the Scorpion.

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[8] See reference 4.

[9] See reference 5.

[10] See reference 1.

[11] See reference 6.

[12] See reference 11.

We took the brightest star of each: Aldebaran (Bull), Regulus (Lion), Antares (Scorpion) and Sadalmelik (Water-bearer). We measured how far each stood from its corner of the year. Table 2 gives the result for three dates.

Star (figure)	3100 BC	AD 95	AD 2027
Aldebaran (Bull / calf)	−0.8°	+43.3°	+70.2°
Regulus (Lion)	−10.3°	+33.5°	+60.2°
Antares (Scorpion / eagle)	−0.7°	+43.3°	+70.1°
Sadalmelik (Water-bearer / man)	−7.0°	+36.9°	+63.7°

Table 2. Distance of each star from the corner of the year it marked around 2800 BC. Spring equinox for Aldebaran, summer solstice for Regulus, autumn equinox for Antares, winter solstice for Sadalmelik. Proper motion included.

Around 3100 BC two stars sat within one degree of their corner. The other two sat within eleven degrees. By John's time the frame had moved 44 degrees: one and a half signs. When John wrote, the frame of the four creatures was already about 3,000 years old.

We then searched for the year of best fit. It is 2756 BC, with an RMS offset of 4.2 degrees. Without proper motion it is 2751 BC (4.3 degrees). An RMS offset below 5 degrees holds from 2956 to 2556 BC.

One detail is worth noting. In John's own sky the constellation Aquila, the Eagle, stood near the winter solstice. Its brightest star, Altair, was about five degrees from it in AD 95. The eagle therefore fits both the old frame and John's own sky.

8. Result Two: The Dragon at the Pole

Thuban (alpha Draconis) lies in the tail of the Dragon.[13] We computed when the celestial pole stood closest to it. With the star's own motion included, the answer is 2796 BC, at a distance of about six minutes of arc. Without that motion it is 2786 BC, at under three minutes. The pole stayed within one degree of Thuban from about 2970 to 2625 BC. An independent source gives 2787 BC.

In that era the whole sky turned around the Dragon's tail. Revelation 12:4 says that the dragon's tail "drew the third part of the stars of heaven". Read as astronomy, the tail is the pivot. The stars sweep around it.

This reading must be qualified. Boll and Malina both place the dragon in the south. Malina writes that it is obviously not Draco at the pole. Boll chose the long southern serpent Hydra, with the Raven (seven stars) and the Cup (ten stars) as its seven heads and ten horns.[14]

We therefore treat the pole dragon as a reading, not as a finding. The pole did stand at Thuban in the window; that is astronomy. That John's dragon is the pole dragon is our interpretation. We also checked Hydra. Its stars lay roughly along the celestial equator from before 5000 BC until about 3000 BC. That fits an old frame, but it does not give a sharp date.

9. Two Clocks Agree

The two results are independent. One uses the corners of the year. The other uses the pole. They differ by only 40 years. Figure 1 shows both curves.

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[13] See reference 7.

[14] See reference 44.

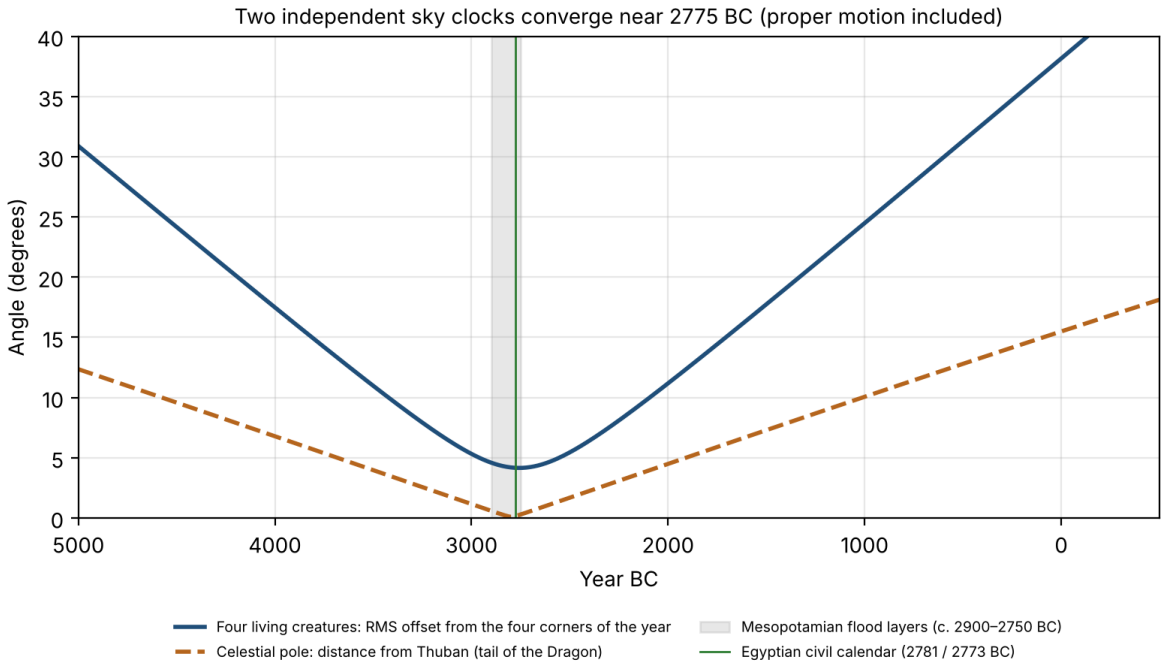


Figure 1. Blue: RMS offset of the four creatures from the corners of the year. Dashed: distance of the celestial pole from Thuban. Grey band: Mesopotamian flood layers. Green line: Egyptian civil calendar.

Both clocks point to about 2775 BC. The window is wide: the four-creature fit stays within 5 degrees from about 2950 to 2550 BC.

The clocks are less independent than they look. Aldebaran and Antares always stand almost opposite each other. The four-creature clock therefore mainly tracks one axis: the Bull and the Scorpion on the equinoxes. The dragon clock depends on a reading. Revelation does not say that its dragon is the constellation at the pole; the essay assumes it. The convergence is real, but it is a convergence of two clocks and one reading.

The next question is obvious. What happened in that window?

10. What Happened Around 2775 BC

10.1 The calendar was fixed

Egypt introduced its civil year of 365 days. It had 12 months of 30 days plus five extra days.[15] This year is a quarter day short of the solar year. Its New Year meets the rising of Sirius again only after about 1,460 years.

The Roman writer Censorinus fixed one such meeting in AD 139. Counting back gives 1321, 2781 and 4241 BC.[16] This date rests on an assumption: that the calendar began in a year when New Year and Sirius met.

A second figure, 2773 BC, appears in Darvill's study of Stonehenge. Darvill gives no source for it.[17] It most likely comes from an ivory tablet of King Djer. The tablet names Sirius as

[15]See reference 16.

[16]See reference 17.

[17]See reference 18.

"opener of the year". If it marked the start of a cycle, the date would be about 17 July 2773 BC. That is too late for Djer himself.[18]

The origin of the Egyptian calendar remains uncertain. The astronomer Otto Neugebauer warned that every theory of an astronomical origin is doomed.[19] Depuydt concludes that nothing about the origin is certain.[20] This essay therefore treats 2781 BC as a supporting marker, not as proof.

10.2 The five days and the gods of Revelation 12

Egyptian myth explains the five extra days. Plutarch tells it.[21] Thoth plays a board game with the moon. He wins a seventieth part of her light. From it he makes five days and adds them to the 360.

On these five days the gods are born: Osiris, the elder Horus, Seth, Isis and Nephthys. The Pyramid Texts call them the "Birth of the gods".[22]

This matters for Revelation. The cast of chapter 12 is a mother, a child and a dragon. In the Egyptian form of that myth they are Isis, Horus and Seth.[23] They are born in the days that close the year.

10.3 The flood and the city from heaven

Mesopotamia remembered a great flood. The Sumerian King List puts it in one line.[24]

> *"After the flood had swept over, and the kingship descended from heaven, the kingship was in Kish."*

Archaeology found flood layers at Kish, Shuruppak and Uruk. They date from about 2900 to 2750 BC.[25] Shuruppak was the city of the Sumerian flood hero. Its flood layer is dated between about 2850 and 2750 BC.[26]

The Genesis flood uses the same schematic year. The waters rise on the 17th day of the second month. The ark rests on the 17th day of the seventh month. That is 150 days, or five months of 30 days.[27] Revelation counts the same way: 1260 days are 42 months of 30 days.

10.4 Elsewhere in the same window

- Egypt: Khasekhemwy reigned roughly 2690–2670 BC.[28] After him came Djoser and the first pyramid.

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[18] See reference 46.

[19] See reference 47.

[20] See reference 48.

[21] See reference 19.

[22] See reference 20.

[23] See reference 29.

[24] See reference 21.

[25] See reference 22.

[26] See reference 23.

[27] See reference 24.

[28] See reference 43.

- China: tradition dates the Yellow Emperor to 2697 or 2698 BC. His name Xuanyuan is also the Chinese name of Regulus, the star of the Lion.[29]
- Mesopotamia: the first Early Dynastic period ends around 2750–2700 BC.

Marker	Date	Basis
Four creatures on the corners of the year	2756 BC	This essay (section 7)
Celestial pole closest to Thuban	2796 BC	This essay (section 8); 2786 BC without proper motion; Darling: 2787 BC
Egyptian civil calendar (Sirius cycle)	2781 BC	Censorinus; Meyer
Egyptian civil calendar (Djer tablet, uncertain)	2773 BC	Grimal; Darvill
Flood layer at Shuruppak	c. 2850–2750 BC	Raikes; Livius
Flood layers in Mesopotamia	c. 2900–2750 BC	Mallowan; Raikes

Table 3. Independent markers that fall within the window of the sky frame.

11. The New Jerusalem

Revelation ends with a city. It is the frame of the sky, built as a city.

11.1 The gates come from Enoch

Revelation 21:13 lists the gates: “on the east three gates; on the north three gates; on the south three gates; and on the west three gates.”

The Astronomical Book of Enoch has the same twelve gates in the four quarters.[30] Chapter 76 gives them in the same order: three to the east, three to the north, three to the south and three to the west. The prophet Ezekiel also describes a city with twelve gates, but he begins with the north. John follows Enoch, not Ezekiel.

Scholars compare the twelve gates of Enoch to the signs of the zodiac.[31] Each gate is divided like the 30 degrees of a Babylonian sign.

11.2 The foundations are the zodiac

The city stands on twelve foundation stones (21:19–20). They resemble the twelve stones of the high priest. Josephus and Philo link those stones to the zodiac. John lists the stones in reverse order.[32]

11.3 Reading the city

Taken together, the city reads as follows:

- Four sides: the four quarters of the sky. These are the corners marked by the four creatures.
- Three gates on each side: three signs for each season.
- Twelve foundations: the twelve signs.

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[29]See reference 42.

[30]See reference 25.

[31]See reference 26.

[32]See reference 35.

- Length, breadth and height are equal (21:16): the closed year as a space.
- No need of sun or moon (21:23) and no night (22:5): the frame no longer depends on the lights that drift.

The reversed order of the stones suggests one more step. The spring equinox moves backwards through the zodiac. A foundation laid in the direction of that motion absorbs the motion. The city is then a frame that no longer drifts: a frame that closes. This is a reading. It still needs testing.

11.4 The city after the flood

Three details link the city to the flood.

- The city comes "down from God out of heaven" (21:2). After the flood, kingship "descended from heaven" (King List).
- "There was no more sea" (21:1). The waters of the flood are gone.
- A rainbow stands round the throne (4:3). In Genesis the rainbow is the sign set after the flood (9:13).

The New Jerusalem is thus the first city after the flood. It marks the moment when order, the frame, came down from heaven again. That moment falls in the window of the sky frame and of the fixed calendar.

12. The Woman: A Second Layer

12.1 The sign of September 3 BC

Revelation 12:1 describes "a woman clothed with the sun, and the moon under her feet, and upon her head a crown of twelve stars". Ernest Martin dated this sign to the evening of 11 September 3 BC.[33] We recalculated the sky for that evening, seen from Jerusalem at 18:30.

Body	Longitude	Position
Sun	166.2°	Mid-Virgo, between gamma Virginis (162.3°) and Spica (176.0°)
Moon	189.8°	On lambda Virginis (189.1°), the feet. Thin crescent, 23.6° from the sun, briefly visible after sunset
Jupiter	121.6°	On Regulus (122.0°), the king star of the Lion, above the head of the Virgin
Venus	153.3°	Near the head of the Virgin
Mercury	158.4°	Near the head of the Virgin

Table 4. The sky of 11 September 3 BC (Julian; 9 September Gregorian), Jerusalem, 18:30.

The fit is exact. The sun clothes the Virgin. The moon lies at her feet. Martin counts the crown as the nine stars of the Lion plus Jupiter, Venus and Mercury.

A sun in mid-Virgo with the moon at her feet occurs on one evening each year. What makes 3 BC special is Jupiter on Regulus. It marks the start of a series of meetings between Jupiter and Regulus in 3–2 BC.

[33] See reference 30.

12.2 The woman carries the book

The child is born and taken away in a single verse: “her child was caught up unto God, and to his throne” (12:5). The woman remains. She flees. She receives the wings of an eagle. The 1260 days, the time unit of the book, are her time. At the end the city itself is a woman: “prepared as a bride adorned for her husband” (21:2).

The woman has four layers:

- The sky: the Virgin.
- The myth: Isis with Horus, fleeing from Seth. Isis is often shown with wings.[34]
- The people: in Joseph’s dream sun, moon and twelve stars stand for Israel (Genesis 37:9–10).
- The person and the community: Mary, and the Church. Early Christian authors mostly read the Church. The reading as Mary was at first almost marginal.[35]

The flight links the layers. In Revelation the woman flees into the wilderness after the birth. In Matthew 2:13–14 Joseph takes the child and his mother and flees into Egypt, because Herod seeks to destroy the child. Egypt is the land of Isis. A nineteenth-century reference work already links these passages.[36]

The images of Isis nursing Horus and Mary nursing Christ are close. Yet they are centuries apart. Similar images do not prove a direct link.[37]

12.3 Whose birth?

Is this the birth of Jesus? That depends on the death of Herod. Most scholars date it to 4 BC. They place the birth in 6–4 BC. A minority dates Herod’s death to 1 BC. Many early Christian authors place the birth in late 3 or early 2 BC.[38] The sky of September 3 BC fits the second view.

13. How an Old Frame Reached John

John wrote on Patmos, probably around AD 95, under Domitian.[39] How could a frame of 2775 BC reach him? The sources suggest a route in steps.

13.1 Sumer and Elam

Rogers places the quartet of Bull, Lion, Scorpion and Water-bearer as markers of the year in Sumer or Elam between 4400 and 2200 BC.[40] Our best fit of 2756 BC lies inside that window. Hartner suggests that the winter solstice was first an ibex.[41] Kaulins reads the antelopes on Egyptian palettes as Capricorn.

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[34]See reference 29.

[35]See reference 34.

[36]See reference 36.

[37]See reference 33.

[38]See reference 38.

[39]See reference 37.

[40]See reference 11.

[41]See reference 12.

13.2 Babylon

The Babylonian star compendium MUL.APIN uses an ideal year of 12 months of 30 days.[42] That is the year of Revelation. Its star observations date from about 1370 BC.[43] The compendium is younger than our frame. It passed the frame on.

13.3 Persia

In Persian tradition the four bright stars that once stood on the corners are the four "Watchers" of the sky: Aldebaran in the east, Regulus in the north, Antares in the west and Fomalhaut in the south.[44] A caution applies. Part of this Persian naming is late or modern. The astronomy does not depend on it.

13.4 Enoch

The Astronomical Book of Enoch dates from the third or fourth century BC.[45] Its numbers come from Babylonian schematic astronomy.[46] It has the twelve gates in four quarters. In its Book of the Watchers the fallen Watchers teach astrology, the constellations, the signs of the sun and the course of the moon (1 Enoch 8:3).[47] One of them, Kokabiel, who taught the constellations, is also spelled Kochab. Later lore gives him 365,000 spirits.[48]

Revelation itself calls the four creatures sleepless: "they rest not day and night" (4:8). The Aramaic word for the Watchers means "the wakeful ones".

Enoch has an older model. The seventh king before the flood in the Sumerian King List is Enmeduranki of Sippar, the city of the sun god. In a Babylonian text he is taken up to heaven and taught the secrets of heaven and earth. Scholars generally agree that the seventh patriarch Enoch, who lived 365 years, is modelled on him.[49] The sky knowledge of Enoch thus reaches back to the time before the flood.

13.5 Thoth and Enoch

Later tradition identifies Enoch with Thoth and Hermes. In Islam he is Idris.[50] All three are the inventors of writing and keepers of the sacred record. Enoch "walked with God: and he was not; for God took him" at the age of 365 (Genesis 5:23–24): the number of the civil year.

The identification is late. It arose among Christians in Egypt in the first to fourth centuries AD. Yet it joins the two lines of this essay. The Egyptian line gives the year of 365 days and its maker, Thoth. The Babylonian line gives the schematic year of 360 days, which Revelation uses. Enoch stands where the two meet.

13.6 The route

- Sumer and Elam: the quartet of cardinal figures (c. 2800 BC).

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[42] See reference 13.

[43] See reference 14.

[44] See reference 15.

[45] See reference 28.

[46] See reference 27.

[47] See reference 25.

[48] See reference 40.

[49] See reference 59.

[50] See reference 39.

- Babylon: the ideal year of 360 days and the star catalogue (second to first millennium BC).
- Persia: the four Watchers of the quarters (first millennium BC).
- Enoch: the Watchers, the twelve gates, the calendar (third century BC).
- Revelation: the four sleepless creatures, the 1260 days, the city with twelve gates (c. AD 95).

13.7 The creatures are Watchers

The Watchers of Enoch are called ʿîrîn in Aramaic: "the wakeful". Their class is defined by the absence of sleep.[51] Revelation says of the four creatures: "they rest not day and night" (4:8).[52] The creatures are sleepless. They are Watchers.

In Persian tradition the four corner stars are also called the Watchers of the four quarters.[53] Creatures, Watchers and corner stars are one figure. Their knowledge, according to Enoch, included the constellations and the signs of the sun. Annus reads the Watchers as the reverse image of the Mesopotamian sages from before the flood.[54]

14. Earlier Readers of the Sky in Revelation

The sky reading of Revelation is not new. It has a history of more than a century. What is new here is the date.

In 1914 the Heidelberg philologist Franz Boll published a study of the world view of Revelation.[55] Boll was an expert on Ptolemy and on ancient astrology. He read the visions against the sky lore of John's time.

In 1995 the New Testament scholar Bruce Malina called John an "astral prophet".[56] In Revelation 4:1 John sees a door open in heaven and is called up. Malina takes this literally: John looks at the sky and reports what he sees. With John Pilch he later wrote a full commentary on that basis.[57]

The four creatures are the clearest case. The historian of astrology Roger Beck notes that the Bull, the Lion, the Scorpion and the Water-bearer are the middle signs of the four seasons.[58] Each stands in the centre of its quarter of the year.

There is a further detail. In Revelation 6 the creatures call out the four horsemen in a fixed order: lion, calf, man, eagle. In seasons that is summer, spring, winter, autumn. The order runs backwards through the year.[59] Section 11.2 noted that John also lists the foundation stones in reverse. Both point the same way. The sky clock in the book turns backwards, as precession does.

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[51] See reference 60.

[52] See reference 41.

[53] See reference 15.

[54] See reference 59.

[55] See reference 31.

[56] See reference 32.

[57] See reference 44.

[58] See reference 45.

[59] See reference 45.

14.1 Boll and his critics

Boll read the visions of the bowls, the trumpets, the locusts, the riders, and the woman and the dragon as built from Hellenistic sky lore. In 1929 Joseph Freundorfer wrote a full rebuttal. He argued that a derivation from astronomy was impossible.[60] Exegesis largely followed Freundorfer. A few scholars of ancient astrology kept Boll's view. Malina stands in Boll's tradition.

Secondary sources report that Boll read the book as the change from the age of the Fishes to the age of the Water-bearer.[61] This could not be checked in Boll's own text. It is reported here, not relied on.

14.2 Malina: a different assignment

Malina and Pilch assign the creatures differently. Their lion is Leo and their calf is Taurus. Their man is Scorpio and their flying eagle is Pegasus.[62] This essay follows Rogers and Beck: the man is the Water-bearer and the eagle takes the corner of the Scorpion. With Malina's assignment the fit of section 7 would change. The choice is defensible, but it is a choice.

Malina also places the Lamb. The Lamb stands "by the polar opening of the throne of God", in the centre of the four creatures and of the 24 elders.[63] He reads the Lamb as the constellation Aries, the first of all constellations.[64] A figure on the throne at the pole is exactly Kaulins' Horus falcon at the pole.[65]

14.3 The twenty-four elders

Twenty-four elders sit on thrones around the throne (4:4). Diodorus describes the sky of the Chaldeans. Outside the zodiac they name 24 stars, twelve in the north and twelve in the south. They call them "Judges of the Universe".[66] Judges seated around a throne are elders. Malina reads the elders as the decans, the star gods that divide the year.[67]

14.4 The seven stars

John sees a figure with seven stars in his right hand (1:16). The stars are the angels of the seven churches (1:20). The best candidate is the Pleiades.

In Babylon the Pleiades were called MUL.MUL, which simply means "the stars". MUL.APIN calls them "the Seven Gods, the great deities". Its list of stars in the path of the moon begins with them.[68] That order dates from a time when the spring sun stood near the Pleiades. MUL.APIN also uses the Pleiades and the moon to decide when a month must be inserted: a calendar correction.

We calculated when the spring point passed the Pleiades and Aldebaran. It passed Aldebaran around 3050 BC and the Pleiades around 2340 BC. In our window the spring sun stood

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[60] See reference 52.

[61] See reference 53.

[62] See reference 44.

[63] See reference 44.

[64] See reference 54.

[65] See reference 3.

[66] See reference 55.

[67] See reference 44.

[68] See reference 57.

between them, in the Bull. The Bull now appears four times: as the calf, as Aldebaran on its corner, as the seven stars, and as the head of the moon's path.

A popular claim says that the seven cities form the shape of the Pleiades on the map. We tested it. We fitted the cities to the seven brightest Pleiades by rotation, scaling and reflection, over all 5,040 pairings. The best fit was no better than for one random set of seven points in five. The order of the cities follows the Roman road.[69] The link between the seven stars and the churches lies in the name "the Seven", not in the map.

14.5 Malina: the cosmos before the flood

Malina and Pilch give Revelation 12–16 a section of its own. Its title is "Sky Trip and Vision: The Cosmos Before the Flood". In their reading the pregnant sky woman, the sky child and the red sky dragon belong to events that began before creation was complete and continue up to the biblical flood. Chapter 13 sets up the evil of Genesis 6, the descent of the Watchers.[70]

This matters. Malina and Pilch reach the time of the flood by reading the text. They do not calculate. We reach the same time by precession, by the pole and by the flood layers. The two routes were not tuned to each other. Malina means a mythic primeval time, not a year; the year remains ours.

14.6 The limit

These authors support the frame. None of them dates it. The date comes only from the calculations in sections 7 and 8.

There is also a simpler explanation for the creatures. In John's time the Bull, the Lion, the Scorpion and the Water-bearer were simply the fixed signs of Hellenistic astrology.[71] John may have used them as a common convention. In that case the book does not record 2775 BC on purpose. It carries a frame that was born then, as a fossil carries its age. The test that separates the two readings is set out in section 18.

15. The Woman and the City

A careful reader notices that the cities in Revelation are women. This is not an interpretation. The text says so.

- Babylon: "the woman which thou sawest is that great city, which reigneth over the kings of the earth" (17:18).[72]
- Jerusalem: the angel says "I will shew thee the bride, the Lamb's wife", and then shows "that great city, the holy Jerusalem" (21:9–10). It comes down "prepared as a bride adorned for her husband" (21:2).

There are four women in the book. Jezebel "calleth herself a prophetess" (2:20). The woman of chapter 12 wears a crown of twelve stars. The harlot is Babylon. The bride is Jerusalem, and "his wife hath made herself ready" (19:7).

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[69] See reference 58.

[70] See reference 44.

[71] See reference 45.

[72] See reference 41.

15.1 The city as a woman in the ancient world

In the Greek and Roman world every city had its own goddess of fortune, Tyche.[73] She was the city in person. She wore a mural crown, shaped like the city wall with its towers. She was sometimes shown seated on a throne.

The woman of Revelation 12 also wears a crown. It is made of twelve stars. The city she becomes has twelve gates. Her crown is the sky.

15.2 Egypt: the throne is a woman

Kaulins places the king of early Egypt at the centre of the sky.[74] The seat of that king is a woman. The name Isis comes from an Egyptian word for "throne".[75] She wears the throne sign on her head. Through Horus she is the mother of every king.

The Egyptian sign for "city" fits the same pattern. It shows a round wall divided by crossroads into four parts.[76] A wall and four quarters: that is the plan of the New Jerusalem.

15.3 Kish and the eagle

After the flood, kingship first came down at Kish. The King List names Etana of Kish "the shepherd, who ascended to heaven".[77] In his myth the gods build Kish with high walls and then look for a king. An eagle fights a serpent. The eagle carries Etana up to heaven to find the plant of birth, so that he may have an heir. Seals of the Akkad period already show the scene.

Revelation has the same parts. A walled city comes down from heaven. A woman gives birth to an heir. She is given "two wings of a great eagle" to escape the serpent (12:14). The fourth creature is "a flying eagle" (4:7). Kish lies in the window of the frame: the first city after the flood.

The flood itself is in chapter 12. The serpent casts water out of its mouth "as a flood after the woman", and the earth swallows it (12:15–16). The woman escapes the flood on eagle wings. The city comes down after it.

15.4 Reading

The woman is the seat. The child, the king or the Lamb is placed on it. Isis carries Horus. The bride receives the Lamb. The city carries the order of the world; it does not rule it.

The two women of the book are two kinds of seat. Babylon "reigneth over the kings": an order of power and trade. Jerusalem is a bride: an order of union. This reading is the author's. The texts and images above are sourced; the link between them is interpretation.

16. John's Message Projected onto Our Time

Kaulins describes what happens when a sky frame drifts.[78] The calendar no longer matches the sky. A struggle for the centre follows: Horus against Seth. Kings are inserted as units of time to patch the gap. In the end a new frame replaces the old one.

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[73] See reference 49.

[74] See reference 3.

[75] See reference 50.

[76] See reference 51.

[77] See reference 56.

[78] See reference 3.

We applied this rule to three moments, using the same calculations as before (Table 5).

Moment	Spring point	Pole	Opener of the year
c. 2775 BC (frame)	Aldebaran, 3.7° away	Thuban, 0.2° away	The Bull
AD 95 (John)	Hamal, 11.1° away	No pole star (Kochab 8.6°)	The Ram, the Lamb
AD 2027 (now)	Towards the Water-bearer	Polaris, 0.6° away	The Water-bearer, the "man"

Table 5. Spring point and celestial pole at three moments, with proper motion. Polaris is closest to the pole in AD 2102, at 27.6 minutes of arc.

16.1 John's own time

John wrote when the frame had drifted 44 degrees. The old pole star had gone. In chapter 12 the dragon falls from heaven, and the child is "caught up unto God, and to his throne". The opener of the year was now the Ram. Malina reads the Lamb of 5:6 as Aries, the first sign and the beginning of the cosmos.[79] The Lamb stands on the throne.

16.2 Our time

Today the drift is 70 degrees. For the first time since the age of Thuban the pole stands on a clear star, Polaris. It will be closest in 2102. The spring point is moving towards the Water-bearer. Of the four creatures, that is the one with the face of a man.

Revelation measures the new city "according to the measure of a man, that is, of the angel" (21:17). Babylon, the city of trade, falls "in one hour", and the merchants and seafarers mourn (18:10, 17, 19).

16.3 The message

Read with Kaulins, the message is general. Every frame drifts. When the drift becomes visible, the old light fails. An unanchored power seizes the centre. The city of trade falls suddenly. Patching does not help; inserting more kings only delays. Recovery comes from a new frame that hangs on the sky itself and is built to human measure.

This is a reading, not a forecast. The positions in Table 5 are calculated. What they mean for human affairs is the author's interpretation of John's pattern.

17. One Sky, Several Traditions

If this reading holds, it matters beyond one book. The frame of c. 2775 BC runs through several traditions:

- Egyptian: Isis as the throne, Horus as the king, the year of 365 days and its five birth days of the gods.
- Mesopotamian: kingship that descends from heaven after the flood, and the ideal year of MUL.APIN.
- Jewish: the Watchers and the twelve gates of Enoch, and the city of Ezekiel.
- Christian: Revelation itself, and the woman who flees into Egypt.
- Islamic: Idris, whom later tradition identifies with Enoch.[80]

[79] See reference 32.

[80] See reference 39.

These traditions would then not be rivals with separate origins. They would be readings of the same sky, each made at its own moment of drift.

The boundary must stay clear. The astronomy is reproducible. The historical markers are sourced, with stated uncertainty. The transmission route has gaps. The meaning for each tradition is interpretation. A claim of this size needs more support, not less.

18. What This Is, and What It Is Not

The calculations are robust. The precession model is modern and well tested. The dates come from two sky markers that agree within 40 years, though they are not fully independent (section 9). A third source confirms the pole date.

The window is not a point. A tolerance of 5 degrees gives about 400 years. The convergence near 2775 BC rests on the agreement of independent markers, not on the precision of one.

Parallels are not proof of borrowing. Table 1 shows that Revelation and Kaulins' frame share a structure. It does not show a direct line of copying.

Several links rest on late tradition. The Persian names of the royal stars are partly modern. The identification of Enoch with Thoth is late antique. The reading of the reversed stones as precession is a hypothesis.

The stars' own motion matters most for Thuban. It moves the closest approach by ten years and doubles its distance, from under three to about six minutes of arc. For the four creatures it shifts the best year by only five years.

This essay does not read Revelation as a prediction. It reads it as a record. The record names a place in time.

The premise of this essay is Kaulins' reading of ancient language as sky language. A reader who rejects that premise will reject much of the reading. The astronomy stands either way.

One test would decide between a deliberate record and an inherited convention. Does the book contain sky elements that belong only to the old layer, and not to the Hellenistic standard frame? Candidates are the gate order of Enoch, the reversed stones and the backward order of the creatures. A second test follows from the premise itself. If all images are sky images, every image in the book should find a place in one sky at one time. That full inventory is the next stage of this work.

19. Conclusion

Revelation describes a location in time. Its frame of four creatures and its dragon at the pole both point to the early third millennium BC, near 2775 BC. In that window Egypt fixed its calendar of 365 days. Mesopotamia remembered a flood, after which kingship came down from heaven.

The book ends with a city that comes down from heaven. The city is the sky frame built in stone: four sides, twelve gates, twelve foundations. It needs no sun and no moon. It is a frame that closes.

A second layer places a birth in that frame: the sky of 11 September 3 BC. A third layer is John's own time, when the old frame had drifted by 44 degrees.

Read this way, Revelation is not about the end of the world. It is about the beginning of time as people measured it: the moment the year was closed.[81]

The frame stands at the flood. Before it lay the sky knowledge of Enmeduranki and the Watchers; after it, kingship came down from heaven at Kish. Malina and Pilch reach the

[81] See reference 31.

same boundary by reading the text. The four sleepless creatures, the woman who escapes a flood and the city that comes down from heaven all mark that boundary: a transition between two orders.

The same frame gives a message for later ages. Both cities of the book are women: seats that carry an order. When the frame drifts, the seat of power falls and a new seat must be built on human measure. In our time the pole stands again on a star, and the year turns towards the sign of the man.

Changes in Version 1.4

- Section 8: Boll and Malina place the dragon in the south (Hydra). The pole dragon is now marked as a reading. Hydra was checked by calculation.
- Section 13.4 adds Enmeduranki, the seventh king before the flood and model of Enoch. New section 13.7: the four sleepless creatures as Watchers.
- New section 14.5: Malina and Pilch read Revelation 12–16 as the cosmos before the flood.
- Section 15.3 adds the flood of Revelation 12:15–16.

Changes in Version 1.3

- The premise (Kaulins; ancient language as sky language) is now stated in section 1.1.
- The date is given as a window of about 3000 to 2550 BC. Section 9 explains why the two clocks are less independent than claimed before.
- Chapter 14 now discusses the rejection of Boll, Malina's different assignment of the creatures, the Lamb at the pole, the 24 elders and the seven stars (Pleiades), including a negative map test.
- Section 15.3 adds Etana of Kish and the eagle.
- Section 18 names the alternative explanation (a Hellenistic convention) and the test that would decide.

Changes in Version 1.2

- The figure 2773 BC was checked in Darvill's original. It has no source there. Its likely origin, the Djer tablet, is now given, together with the doubts of Neugebauer and Depuydt. 2781 BC is the main marker.
- Earlier astral readings (Boll, Malina and Pilch, Beck) are now discussed in chapter 14. They support the frame, not the date.
- New chapters on the woman and the city (15), on our time (16) and on the traditions (17).
- The verses 1:8, 2:20, 19:7, 21:12 and 22:13 were checked in the KJV.

Corrections in Version 1.1

An independent check of version 1.0 found three points.[82] All three are corrected here.

- Input error. In version 1.0 the declination of Sadalmelik was entered as +0°19′ instead of −0°19′. This changed its offsets by about 0.2 degrees. Without proper motion the best-fit year moves from 2761 to 2751 BC.

[82] See reference 2.

- Fit measure. Version 1.0 called the 4.2 degrees a “mean offset”. It was the root-mean-square offset. The text now says so.
- Proper motion. Version 1.0 ignored the stars’ own motion. Version 1.1 includes it. The four-creature fit moves to 2756 BC. The Thuban result moves to 2796 BC, at about six minutes of arc.

The conclusion does not change. Both clocks still point to about 2775 BC.

Acknowledgement

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Annotated References

[1] SIMBAD Astronomical Database, CDS Strasbourg (simbad.u-strasbg.fr); astrometry from van Leeuwen, F. (2007), Validation of the new Hipparcos reduction, Astronomy & Astrophysics 474, 653–664.
Source of the star positions, parallaxes, proper motions and radial velocities. For Thuban: proper motion −56.34 and +17.21 mas per year, parallax 10.76 mas, radial velocity −13.0 km/s.

[2] A Location in Time — Research Pack, version 1.0 (23 November 2026). Independent reconstruction with scripts, data and a Dutch QA note.
Recomputed all sky values of version 1.0. Found the Sadalmelik input error, the unnamed fit measure and the effect of proper motion on Thuban. It also contains an exploratory astrological rotation, which this essay does not use.

[3] Kaulins, A. (2005). The Origin of the Cult of Horus in Predynastic Egypt. Paper, uploaded to ResearchGate (publication 265492234).
The starting point of this essay. Kaulins reads early Egyptian kingship as a sky calendar: the Horus falcon at the pole, the serekh as an enclosure at the centre of the sky, Horus names as sky regions, a year of 12 × 30 + 5 days, and Khasekhemwy's four inserted "calendar kings". Read it for the full argument on the Narmer palette and the drift of 120 days in 479 years.

[4] Vondrák, J., Capitaine, N. & Wallace, P. (2011). New precession expressions, valid for long time intervals. Astronomy & Astrophysics 534, A22.
The precession model used for all sky calculations in this essay. It is valid over ±200,000 years. Read it to see why a modern model, not a constant rate, is needed for dates near 3000 BC.

[5] ERFA / pyerfa (version 2.0.1.5). Essential Routines for Fundamental Astronomy, Python wrapper. github.com/liberfa/pyerfa.
The open software library that implements the Vondrák long-term precession (functions ltpequ and ltpecl). Anyone can repeat the calculations with it.

[6] Cross, D. Astronomy Engine (Python package astronomy-engine). github.com/cosinekitty/astronomy.
Used for the positions of sun, moon and planets in September 3 BC. Note: it counts dates in the Gregorian calendar. Ancient dates in the literature are usually Julian. In 3 BC the difference is two days.

[7] Darling, D. "Thuban". The Encyclopedia of Science (daviddarling.info).
Independent check of our pole result. It states that Thuban lies in the Dragon's tail and was closest to the pole in 2787 BC. Our calculation gives 2786 BC.

[8] Konstapel, J. (2026). The Trit Tile Reference, v1.1. Constable Research, Leiden.
Contains the cycle detector (section 21) used in the first test of this essay. Read it for the calibration values (mean 30.87 %, overtone spectrum) that the detector reproduced.

[9] Konstapel, J. (2026). The Book of Revelation as a Log-Periodic Cosmological System. Unpublished draft.
The draft that proposed four data sets from Revelation and a log-periodic test. The present essay reports why that test failed and what replaced it.

[10] Sproul, R. C. Four Ways to Read the Book of Revelation. Ligonier Ministries (ligonier.org).
A short overview of the preterist, futurist, historicist and idealist readings. Useful to see how the reading in this essay differs from all four.

[11] Rogers, J. H. (1998). Origins of the ancient constellations: I. The Mesopotamian traditions. Journal of the British Astronomical Association 108, 9–28.
The key source for the age of the four cardinal constellations. Rogers dates the first zodiacal figures to about 3200 BC. He places the quartet Bull, Lion, Scorpion and Water-bearer as markers of the year in Sumer or Elam between 4400 and 2200 BC.

[12] Hartner, W. (1965). The earliest history of the constellations in the Near East and the motif of the lion–bull combat. Journal of Near Eastern Studies 24, 1–16.
Argues that the lion–bull combat in early art marks seasons. Suggests that the winter solstice may first have been an ibex, and that the imagery may be Elamite. Compare Kaulins on antelopes and Capricorn.

[13] Hunger, H. & Pingree, D. (1989). MUL.APIN: An Astronomical Compendium in Cuneiform. Archiv für Orientforschung, Beiheft 24.
The standard edition of the Babylonian star compendium. It uses an ideal year of 12 months of 30 days. Hunger and Pingree date its compilation to about 1000 BC.

[14] Schaefer, B. E. (2007). The latitude and epoch for the origin of the astronomical lore in MUL.APIN. Presented to the American Astronomical Society, June 2007. Reported in The Register, 4 June 2007.
Dates the star observations in MUL.APIN to 1370 ± 100 BC, near latitude 35° N (Assur). Shows that the catalogue is younger than the frame discussed here and passed it on.

[15] "Royal stars". Wikipedia (consulted November 2026); with Davis, G. A. (1945), Popular Astronomy 53.
Lists Aldebaran, Regulus, Antares and Fomalhaut as the Persian "Watchers" of the four quarters. Caution: part of the Persian naming is late or modern. Davis rejected Persian use around 3000 BC. The astronomical fact stands apart from the names.

[16] Censorinus, De Die Natali 18 and 21 (AD 238); summarised in Encyclopædia Britannica, "Chronology: Egyptian".
Censorinus fixes the coincidence of the Egyptian New Year and the heliacal rising of Sirius in AD 139. Counting back by cycles of 1,460 years gives 1321, 2781 and 4241 BC. Britannica explains the civil year of 12 × 30 + 5 days.

[17] Burrows, R. M. (1907). The Discoveries in Crete. London: John Murray (digitised by Heidelberg University Library).
A clear early statement of Eduard Meyer's Sothic dates, including 2781 BC. Read it for the history of the argument.

[18] Darvill, T. (2022). Keeping time at Stonehenge. Antiquity 96, 319–335. DOI 10.15184/aqy.2022.5 (open access).
Read in the original for version 1.2. Darvill writes that back-calculation with the older lunar–stellar calendar suggests a start of the civil calendar in 2773 BC. That sentence carries no citation. Sparavigna (2024, arXiv:2411.08061) points out the same gap.

[19] Plutarch, De Iside et Osiride 12. Trans. F. C. Babbitt, Loeb Classical Library (1936); Perseus Digital Library.
Thoth (Hermes) plays a board game with the moon. He wins a seventieth part of her light and makes five days. They are added to the 360. On these days Osiris, the elder Horus, Typhon (Seth), Isis and Nephthys are born.

[20] "Epagomenal Days (Egypt)". Ancient Near Eastern Festivals, St Petersburg State University (anefest.spbu.ru).
Notes that the Pyramid Texts call the five days the "Birth of the gods". Confirms the same five gods as Plutarch.

[21] The Sumerian King List (Weld-Blundell Prism, Ashmolean Museum). Trans. after Jacobsen (1939); summary in Wikipedia and World History Encyclopedia.
The source of the line: "After the flood had swept over, and the kingship descended from heaven, the kingship was in Kish." The list places eight kings in five cities before the flood.

[22] Raikes, R. L. (1966). The Physical Evidence for Noah's Flood. Iraq 28, 52–63; with Mallowan, M. E. L. (1964), Noah's Flood Reconsidered, Iraq 26.
Reviews the flood deposits at Kish, Shuruppak and Ur. For Shuruppak the specific evidence points to about 2850 BC.

[23] Lendering, J. "The Great Flood: Archaeology?" Livius.org.
A clear summary of the flood layers. Places the Shuruppak flood at the end of Early Dynastic I, c. 2750 BC, and allows a local flood in southern Babylonia in the 28th century BC.

[24] "Genesis flood narrative". Wikipedia (consulted November 2026); Genesis 7:11–8:4 (KJV).
Shows that the 150 days of the flood equal five months of 30 days. The flood story therefore counts with the schematic year of 360 days.

[25] Charles, R. H. (1917). The Book of Enoch. London: SPCK (sacred-texts.com).
The standard English translation. Used for 1 Enoch 8:3 (the Watchers teach astrology, the constellations, the signs of the sun and the course of the moon) and 1 Enoch 76 (twelve gates in the four quarters).

[26] Ratzon, E. (2015). The Gates Cosmology of the Astronomical Book of Enoch. Dead Sea Discoveries 22(1), 93–111. DOI 10.1163/15685179-12341336.
Shows that the twelve gates of the Astronomical Book are divided like the 30 degrees of a Babylonian zodiac sign. Scholars have compared the gates to the zodiacal signs.

[27] Drawnel, H. (2024). Early Babylonian Astronomy and the Duration of the Nychthemeron in 1 En. 72:8–32. Revue de Qumran 36.
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[28] Neugebauer, O. (1981). The "Astronomical" Chapters of the Ethiopic Book of Enoch (72 to 82). Copenhagen.
The classic study. Dates the first layers of the Astronomical Book to the third or fourth century BC.

[29] Yarbro Collins, A. (1976). The Combat Myth in the Book of Revelation. Missoula, MT: Scholars Press.
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[30] Martin, E. L. (1996). The Star that Astonished the World. Portland: ASK Publications.
Dates the sign of Revelation 12 to the evening of 11 September 3 BC. This essay recalculates the sky and confirms the configuration.

[31] Boll, F. (1914). Aus der Offenbarung Johannis: Hellenistische Studien zum Weltbild der Apokalypse. Leipzig: Teubner (reprint Amsterdam: Hakkert, 1967).
The classic astral reading of Revelation by a Heidelberg philologist and historian of astrology. Secondary accounts report that Boll read the book as the change of an astrological age, from the Fishes towards the Water-bearer, rather than the end of the world. That claim is reported here from secondary sources; check it in Boll's text.

[32] Malina, B. J. (1995). On the Genre and Message of Revelation: Star Visions and Sky Journeys. Peabody: Hendrickson.
A full astral reading by a New Testament scholar. Suggests further frames in the book, such as the 24 elders.

[33] Higgins, S. (2012). Divine Mothers: The Influence of Isis on the Virgin Mary in Egyptian Lactans-Iconography. Journal of the Canadian Society for Coptic Studies 3–4, 71–90.
Isis nursing Horus is attested from 700 BC to the fourth century AD; Mary nursing Christ from the seventh century. Higgins warns that similar images do not prove a direct cultic link.

[34] Ecclesio-Mariological Interpretation of Rev 12:1–6 in Early Christian Writings (2023). Verbum Vitae (KUL Lublin), dlibra.kul.pl.
Shows that early Christian authors mostly read the woman as the Church. The reading as Mary was almost marginal at first.

[35] Josephus, Antiquities of the Jews 3.7.7; Philo, Life of Moses; with Bejon, J., "Scriptural Symbolism: Two Worked Examples" (Substack), and ISBE, "Stones, Precious".
Josephus and Philo link the twelve stones of the high priest to the zodiac. Bejon and the ISBE note that John lists the foundation stones of the city in reverse order.

[36] Treasury of Scripture Knowledge, cross-references to Matthew 2:13 (biblestudytools.com).
A nineteenth-century reference work. It already links the flight into Egypt to Revelation 12:4, 6 and 14.

[37] Bird, M. F. "Dating the Book of Revelation" (Substack); Rojas-Flores, G. (2004), The Book of Revelation and the First Years of Nero's Reign, Biblica 85, 375–392.
Bird summarises the standard date under Domitian, after Irenaeus. Rojas-Flores argues for an early date under Nero.

[38] "Date of the birth of Jesus". Wikipedia (consulted November 2026); Finegan, J., Handbook of Biblical Chronology (rev. 1998); Biblical Archaeology Society on Cramer.
Most scholars date the birth to 6–4 BC because Herod died in 4 BC. A minority places Herod's death in 1 BC. Many early Christian authors give late 3 to early 2 BC.

[39] Colavito, J. "How did Enoch come to be identified with Hermes Trismegistus?" (jasoncolavito.com); "Idris (prophet)", Wikipedia.
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[40] Davidson, G. (1967). A Dictionary of Angels. New York: Free Press; "Kokabiel", Wikipedia.
Kokabiel, the Watcher who taught the constellations, is also spelled Kochab. Later lore gives him 365,000 spirits.

[41] The Holy Bible, King James Version (bible.com; biblehub.com).
All Bible quotations are from the KJV unless stated. Revelation 8:13 reads "angel" in the KJV and "eagle" in many other translations.

[42] "Yellow Emperor". Wikipedia (consulted November 2026).
Traditional reign dates 2697–2597 or 2698–2598 BC. His name Xuanyuan is also the Chinese name of Regulus, the star of the Lion.

[43] "Khasekhemwy". Wikipedia (consulted November 2026).
Last king of the Second Dynasty, roughly 2690–2670 BC. Predecessor of Djoser.

[44] Malina, B. J. & Pilch, J. J. (2000). Social-Science Commentary on the Book of Revelation. Minneapolis: Fortress Press.
Reads John as an astral seer who travels into the sky. Argues that this sky perspective is neglected in traditional commentaries. Read it for verse-by-verse sky readings, including the throne, the elders and the creatures.

[45] Beck, R. (2007). A Brief History of Ancient Astrology. Oxford: Blackwell; applied to Revelation by Leithart, P. J. (2014), "Apocalypse in the Stars", First Things / Theopolis Institute.

Beck shows that Taurus, Leo, Scorpius and Aquarius are the middle ("fixed") signs of the four seasons. Leithart applies this to Revelation 4 and 6. He notes that the creatures call out in an order that runs backwards through the seasons.

[46] Grimal, N. (1988). Histoire de l'Égypte ancienne. Paris: Fayard (English 1992, A History of Ancient Egypt, Oxford: Blackwell), p. 51–52; as summarised in "Sothic cycle", Wikipedia (consulted November 2026).

Discusses the ivory tablet of King Djer that names Sirius as "opener of the year". If it marked the start of a Sothic cycle, the date would be about 17 July 2773 BC, which is too late for Djer. This is the most likely origin of the figure 2773 BC.

[47] Belmonte, J. A. (2009). The Egyptian civil calendar: a masterpiece to organize the cosmos. In Cosmology across Cultures, ASP Conference Series 409, 116–122.

An astronomer's review of the theories of origin. Lists the Sothic date of about 2781 BC as one option among several. Quotes Neugebauer (1942): every theory that gives the calendar an astronomical origin is doomed to fail.

[48] Depuydt, L. (2001). What is certain about the origin of the Egyptian civil calendar? In Mélanges offerts à Edith Varga, Bulletin du Musée Hongrois des Beaux-Arts, Supplément 1, Budapest.

A careful sceptical review. Concludes that nothing about the origin is certain. Notes that the rising of Sirius was called wp rnpt, "opener of the year".

[49] Matheson, S. B. (ed.) (1994). An Obsession with Fortune: Tyche in Greek and Roman Art. New Haven: Yale University Art Gallery; with Metropolitan Museum of Art, "Statuette of the Personification of a City" (acc. 47.100.40).

Tyche was the protector and personification of a city. Every city had its own. She wears a mural crown: a crown shaped like the city wall with towers. The Tyche of Constantinople was shown seated on a throne.

[50] Tyldesley, J. "Isis". Encyclopædia Britannica (consulted November 2026); with Wilkinson, R. H. (2003), The Complete Gods and Goddesses of Ancient Egypt, London: Thames & Hudson.

The name Isis is the Greek form of an Egyptian word for "throne" (Aset, Eset). She wears the throne sign on her head. Through Horus she was seen as the mother of every king. The etymology is not fully certain.

[51] Gardiner, A. H. (1957). Egyptian Grammar, 3rd ed., Sign List O49; with Wiktionary, "⊗" (consulted November 2026).

The hieroglyph for "city" (niwt) shows a round, walled settlement divided by crossroads into four parts. Such settlements are attested in Upper Egypt from the earliest urban periods. The sign itself is very old.

[52] Freundorfer, J. (1929). Die Apokalypse des Apostels Johannes und die hellenistische Kosmologie und Astrologie. Freiburg: Herder; discussed in Groll, T., "Der Augsburger Bischof Dr. Joseph Freundorfer (1949–1963)", ulrichswoche.de (2021).

A full-length rebuttal of Boll. Freundorfer argued that deriving the visions from astronomical ideas is impossible. Hans Windisch found the rejection insufficiently argued. Groll notes that exegesis largely rejected Boll, while Gundel and Kroll kept his view, and that Malina stands in Boll's tradition.

[53] Tymieniecka, A.-T. (ed.) (2011). Astronomy and Civilization in the New Enlightenment: Passions of the Skies. Dordrecht: Springer, p. 95.

The secondary source for the claim that Boll read Revelation as the change from the age of the Fishes to the age of the Water-bearer. The claim could not be checked in Boll's own text for this version.

[54] Malina, B. J. (2000). The New Jerusalem in the Revelation of John: The City as Symbol of Life with God. Collegeville: Liturgical Press; quoted in Leithart, P. J., “A New Sky”, First Things; and Vridar, “The Cosmic Lamb” (2011).
Malina reads the Lamb as the constellation Aries, “the first of all constellations”, marking the beginning of the cosmos. He notes the old Semitic names for Aries: Phoenician Teleh and Jewish Taleh, a young ram or lamb.

[55] Diodorus Siculus, Library of History 2.30–31. Trans. C. H. Oldfather, Loeb Classical Library (1933), LacusCurtius; with Jones, A. & Steele, J. (2018), Diodorus on the Chaldeans, in The Scaffolding of Our Thoughts, Leiden: Brill, 333–352.
Diodorus reports that the Chaldeans name 24 stars outside the zodiac, half in the north and half in the south, called “Judges of the Universe”. He also names 30 “counselling gods” and twelve chief gods, each linked to a month and a sign. Jones and Steele assess the passage.

[56] “Etana”. Wikipedia (consulted November 2026); Mark, J. J., “The Myth of Etana”, World History Encyclopedia; CSMC Hamburg, “Etana and the Creation of Kingship” (2025).
The Sumerian King List calls Etana of Kish “the shepherd, who ascended to heaven”. In the myth the gods build Kish with high walls and look for a king. An eagle fights a serpent and carries Etana to heaven to find the plant of birth for an heir. Seals of the Akkad period (c. 2335–2200 BC) show the scene.

[57] Hunger, H. & Steele, J. (2018). The Babylonian Astronomical Compendium MUL.APIN. London: Routledge; with “MUL.MUL” in the Jena lexicon of Mesopotamian star names (xing.fmi.uni-jena.de) and “Babylonian star catalogues”, Wikipedia (consulted November 2026).
The list of stars “in the path of the Moon” begins with MUL.MUL, the Pleiades. The name means “the stars”. MUL.APIN also calls them “the Seven Gods, the great deities”. The list order reflects a time when the spring sun stood near the Pleiades. MUL.APIN also gives leap rules based on the Pleiades and the moon.

[58] Ramsay, W. M. (1904). The Letters to the Seven Churches of Asia. London: Hodder and Stoughton (ccel.org).
Shows that the order of the seven cities follows the Roman road: north along the coast to Pergamum, then along the imperial post road to Thyatira, Sardis, Philadelphia and Laodicea.

[59] Annus, A. (2010). On the Origin of Watchers: A Comparative Study of the Antediluvian Wisdom in Mesopotamian and Jewish Traditions. Journal for the Study of the Pseudepigrapha 19(4), 277–320; with Lambert, W. G. (1967), Enmeduranki and related material, Journal of Cuneiform Studies 21, 126–138.
Annus reads the Watchers of Enoch as an inversion of the Mesopotamian apkallu, the sages from before the flood. He quotes the consensus that Enoch is modelled on Enmeduranki of Sippar, the seventh king before the flood, who was taken to heaven and taught the secrets of heaven and earth. Lambert edits the Enmeduranki text.

[60] Konstapel, J. (2026). The Wakeful Ones: Enoch and Monroe. constable.blog, 1 September 2026.
The author’s earlier study of the Watchers. The Aramaic ʿîrîn means “the wakeful”; the class is defined by the absence of sleep (1 Enoch 40:2). It links the knowledge of the Watchers to the sages from before the flood, and notes that descents of heavenly beings are often followed by a flood.