A Location in Time

The Book of Revelation as a Sky Frame of c. 2775 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 independent calculations date the frame of Revelation to about 2775 BC. The four living creatures stand best on the four corners of the year in 2761 BC. The celestial pole stood on Thuban, in the tail of the Dragon, in 2786 BC.

Three historical markers fall in the same window. Egypt introduced its civil calendar of 365 days in 2781 or 2773 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.

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:

- 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.

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.

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[1] See reference 8.

[2] See reference 1.

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.

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.

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[3] See reference 2.

[4] See reference 7.

[5] See reference 6.

[6] See reference 1.

- 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
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: modern positions for the year 2000. Their own motion is ignored. Over 5,000 years the error stays below half a degree.

[7] See reference 39.

[8] See reference 2.

[9] See reference 3.

- 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.[10] Dates were converted from the Julian calendar, which the historical literature uses.

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.[11] 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.

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)	−0.7°	+43.3°	+70.2°
Regulus (Lion)	−10.6°	+33.3°	+60.2°
Antares (Scorpion / eagle)	−0.7°	+43.3°	+70.1°
Sadalmelik (Water-bearer / man)	−6.8°	+37.1°	+64.0°

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.

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 2761 BC, with a mean offset of 4.2 degrees. Within 5 degrees the window runs from 2941 to 2571 BC. Within 10 degrees it runs from 3411 to 2101 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 5.4 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.[12] We computed when the celestial pole stood closest to it. The answer is 2786 BC. The distance was then less than three minutes of arc. The pole stayed within one degree of Thuban from 2961 to 2611 BC. An independent source gives 2787 BC.

[10] See reference 4.

[11] See reference 9.

[12] See reference 5.

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.

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 25 years. Figure 1 shows both curves.

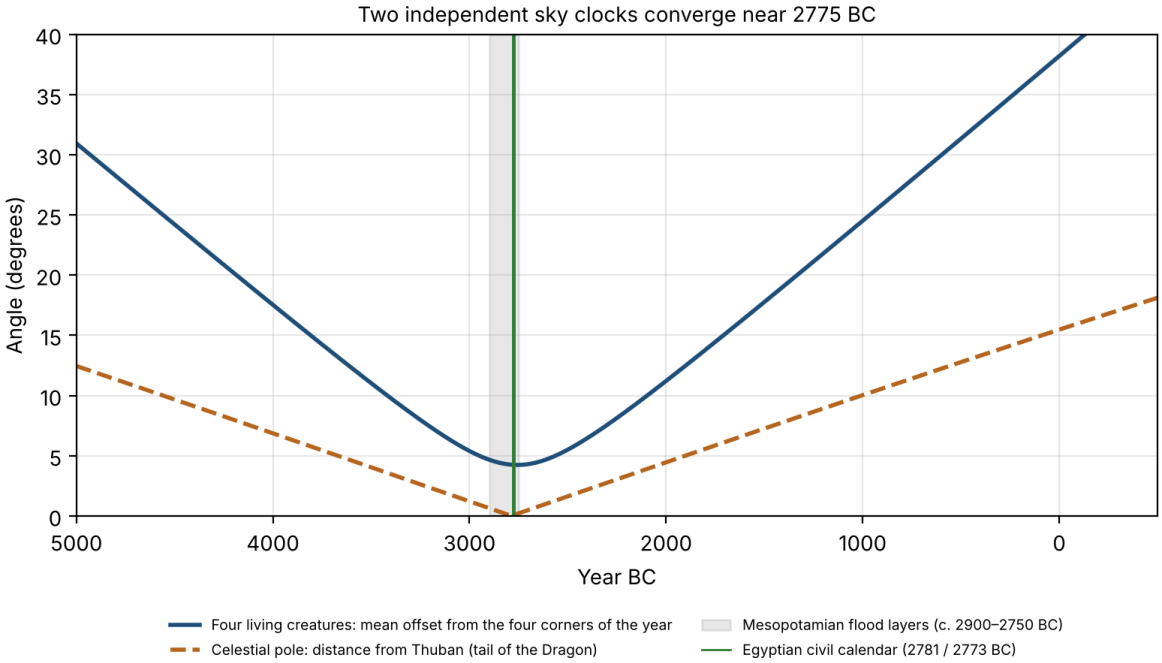


Figure 1. Blue: mean offset of the four creatures from the corners of the year. Dashed: distance of the celestial pole from Thuban. Grey band: Mesopotamian flood layers. Green line: Egyptian civil calendar.

Both clocks point to about 2775 BC, with a margin of roughly 150 years. The next question is obvious. What happened then?

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.[13] 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.[14] A second method uses the older lunar and stellar calendar. It places the start of the civil calendar in 2773 BC.[15] Both dates fall inside our window.

[13]See reference 14.

[14]See reference 15.

[15]See reference 16.

10.2 The five days and the gods of Revelation 12

Egyptian myth explains the five extra days. Plutarch tells it.[16] 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".[17]

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.[18] 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.[19]

> *"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.[20] Shuruppak was the city of the Sumerian flood hero. Its flood layer is dated between about 2850 and 2750 BC.[21]

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.[22] 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.[23] After him came Djoser and the first pyramid.
- 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.[24]
- Mesopotamia: the first Early Dynastic period ends around 2750–2700 BC.

Marker	Date	Basis
Four creatures on the corners of the year	2761 BC	This essay (section 7)
Celestial pole on Thuban	2786 BC	This essay (section 8); Darling: 2787 BC
Egyptian civil calendar (Sirius cycle)	2781 BC	Censorinus; Meyer

[16] See reference 17.

[17] See reference 18.

[18] See reference 27.

[19] See reference 19.

[20] See reference 20.

[21] See reference 21.

[22] See reference 22.

[23] See reference 41.

[24] See reference 40.

Marker	Date	Basis
Egyptian civil calendar (lunar–stellar)	2773 BC	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.[25] 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.[26] 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.[27]

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.
- 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.

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[25]See reference 23.

[26]See reference 24.

[27]See reference 33.

- 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.[28] 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.

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.[29]
- The people: in Joseph’s dream sun, moon and twelve stars stand for Israel (Genesis 37:9–10).

[28] See reference 28.

[29] See reference 27.

- 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.[30]

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.[31]

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.[32]

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.[33] 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.[34] 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.[35] Our best fit of 2761 BC lies inside that window. Hartner suggests that the winter solstice was first an ibex.[36] Kaulins reads the antelopes on Egyptian palettes as Capricorn.

13.2 Babylon

The Babylonian star compendium MUL.APIN uses an ideal year of 12 months of 30 days.[37] That is the year of Revelation. Its star observations date from about 1370 BC.[38] 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

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[30]See reference 32.

[31]See reference 34.

[32]See reference 31.

[33]See reference 36.

[34]See reference 35.

[35]See reference 9.

[36]See reference 10.

[37]See reference 11.

[38]See reference 12.

Fomalhaut in the south.[39] 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.[40] Its numbers come from Babylonian schematic astronomy.[41] 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).[42] One of them, Kokabiel, who taught the constellations, is also spelled Kochab. Later lore gives him 365,000 spirits.[43]

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”.

13.5 Thoth and Enoch

Later tradition identifies Enoch with Thoth and Hermes. In Islam he is Idris.[44] 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).
- 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).

14. 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 independent markers that agree within 25 years. A third source confirms the pole date.

The window is not a point. A tolerance of 5 degrees gives about 370 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.

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[39] See reference 13.

[40] See reference 26.

[41] See reference 25.

[42] See reference 23.

[43] See reference 38.

[44] See reference 37.

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.

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

Further work could test other frames in the book. Examples are the 24 elders, which Malina links to the sky,[45] and the seven stars. It could also follow the eagle to Kish, the first city after the flood. There King Etana flies to heaven on the back of an eagle.

15. Conclusion

Revelation describes a location in time. Its frame of four creatures and its dragon at the pole both point to about 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.[46]

Acknowledgement

Research, calculations and drafting were carried out with the assistance of Claude (Anthropic). The calculation scripts are available from the author on request.

[45] See reference 30.

[46] See reference 29.

Annotated References

[1] 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.

[2] 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.

[3] 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.

[4] 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.

[5] 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.

[6] 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.

[7] 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.

[8] 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.

[9] 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.

[10] 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.

[11] 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.

[12] 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.

[13] "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.

[14] 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.

[15] 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.

[16] Darvill, T. (2022). Keeping time at Stonehenge. Antiquity 96, 319–335; quoted in Sparavigna, A. C. (2024), Timekeeping at Akhet Khufu, as shown by the Diary of Merer, arXiv:2411.08061.
Darvill states that back-calculation with the older lunar–stellar calendar places the start of the Egyptian civil calendar in 2773 BC. The quotation is taken from Sparavigna. Check Darvill's original for the full reasoning.

[17] 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.

[18] "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.

[19] 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.

[20] 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.

[21] 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.

[22] “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.

[23] 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).

[24] 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.

[25] Drawnel, H. (2024). Early Babylonian Astronomy and the Duration of the Nychthemeron in 1 En. 72:8–32. Revue de Qumran 36.
Places the numbers in 1 Enoch 72 in early Babylonian schematic astronomy. Supports the Babylonian route of the 360-day frame.

[26] 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.

[27] Yarbro Collins, A. (1976). The Combat Myth in the Book of Revelation. Missoula, MT: Scholars Press.
Reads Revelation 12 as the ancient myth of mother, child and dragon. Names the Egyptian form (Isis, Horus, Seth) and the Greek form (Leto, Apollo, Python).

[28] 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.

[29] Boll, F. (1914). Aus der Offenbarung Johannis: Hellenistische Studien zum Weltbild der Apokalypse. Leipzig: Teubner.
The classic astral reading of Revelation. Boll reads the book as the end of an age, not the end of the world.

[30] 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.

[31] 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.

[32] 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.

[33] 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.

[34] 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.

[35] 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.

[36] "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.

[37] Colavito, J. "How did Enoch come to be identified with Hermes Trismegistus?" (jasoncolavito.com); "Idris (prophet)", Wikipedia.
Traces the identification of Enoch with Hermes and Thoth among Christians in Egypt (first to fourth century AD), and of Idris with Enoch in Islamic tradition. Important: the identification is late.

[38] 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.

[39] 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.

[40] "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.

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