The Physics of Astrological Ages

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Abstract

Astrological Ages are periods of 2,147.6 years in which the equinox points move backward through successive zodiac constellations. Their physical effect on the Earth can be understood through analysis of three orbital movements. Firstly, the precession of the equinoxes marks the slow shift of the seasons against the stars, observed since ancient times. Secondly, precession combines with orbital cycles of the perihelion, axial tilt and orbital eccentricity to drive long-term climate change. Thirdly, the movement of the Solar System Barycentre (SSB) has a cycle with period of 179 years, one twelfth of an Astrological Age. Precession and its climate effects are well known in astronomy. The connection to the SSB is a new observation advanced in this paper to define the physics of Astrological Ages through a 179-year cycle of the Sun against the SSB caused by the triple conjunction cycles of the gas giant planets Jupiter, Saturn and Neptune. Successive triple conjunctions of these three planets every 179 years advance by 31° of arc, slightly more than one zodiac sign, providing a physical basis for what astrologers have called the Houses of the Astrological Age. These triple conjunctions occur in five family groups, forming an orderly pattern of the solar system that is stable over billions of years. This data informs study of the mechanics and meaning of the New Age of Aquarius.

Overview of Precession

Precession of the equinoxes is caused by the gravity of the Sun and Moon tugging on the bulge around the Earth's equator. This process, called lunisolar torque, makes the axis of the Earth slowly wobble against the background stars like a spinning top and causes the equinox points, where the Sun crosses the equator, to move backward against the stars. One cycle of precession around the zodiac stars is known as a Great Year. It takes 25,771.5 years for the equinoxes to return to their

previous sidereal position (Capitaine et al. 2003: p.581). Each successive Great Year is 0.002% slower than the previous one, due to the increase in distance from the Earth to the Moon. This illustrates how stable the precession is over millions of years.

One Great Year comprises twelve equal Astrological Ages, traditionally estimated at 2,160 years (Rudhyar, 1969). Astrological Ages are actually 2,147.6 years long based on division of the Great Year precession period by twelve. The shift of the March equinox sidereal position from Pisces to Aquarius marks the current Astrological Age transition. Astronomy sees the Astrological Age concept as an arbitrary division, with no physical effect. The hypothesis of this paper is that the close correlation between the cycles of the barycentre and precession, considered together with the cycle of the perihelion, provides reasons to expect physical effects of the Astrological Age.

Precession and Climate

Earth's orbital patterns drove natural climate change until the end of the Pleistocene Epoch about ten thousand years ago. The mechanisms were largely calculated a century ago by astronomer Milutin Milankovitch, who analysed the orbital cycles of seasonal light that caused ice ages (Milankovitch, 1941) as shown in Table 1.

Table 1

The Milankovitch Orbital Cycles of Seasonal Light that Caused Ice Ages

Cycle	Duration	Effect
Apsidal Precession	112,000 years	Time it takes for Earth's perihelion to return to the same sidereal position by rotation of the major orbital axis (the apsides) against the stars
Eccentricity	100,000 years	When Earth's orbit is rounder, seasons are milder. More extreme seasons occur in a time of greater orbital eccentricity, producing interglacial periods.
Obliquity	41,000 years	Cycle between axial tilt of 22.1 degrees, producing mild seasons, and 24.5 degrees, producing more extreme seasons.
Axial precession	25,771.5 years	Period for polar axis and equinox points to return to the same sidereal position.
Precession Climate Cycle	~21,000 years	Period for perihelion to cycle around the equinoxes and solstices, combining axial precession and apsidal precession

The Milankovitch Cycles show how the 26-thousand-year (kiloyear or kyr) precession cycle combined with other orbital cycles to drive the ice ages by changing seasonal light. The 26 kyr precession of the equinox combined with the 112 kyr apsidal advance of Earth's orbital axis against the stars to produce the precession climate cycle, which has periods of both 23kyr and 19kyr in the geological record and is described as "bi-partitioned" between these periods (Berger 1989, Muller and Macdonald 2002). The 41 kyr axial tilt cycle of obliquity and the 100 kyr cycle of orbital eccentricity also combined with precession to determine solar forcing and stages of glaciation. The Milankovitch Cycles match sea level, ice core and sediment records. The cycles were amplified (and reversed) by natural terrestrial feedbacks such as planetary whiteness, dust and photosynthesis (Ellis 2016). Biological evidence for the precession effect on climate, alongside effects of changing axial tilt, is documented in studies of benthic geology (Karner 2002). Confirmation of the link between orbital and geological observations is found in ice and sediment data (Berger, 1989) and shown in Figure 1 depicting the correlation with sea level.

Figure 1

Precession as main driver of sea level change over the last 300,000 years.

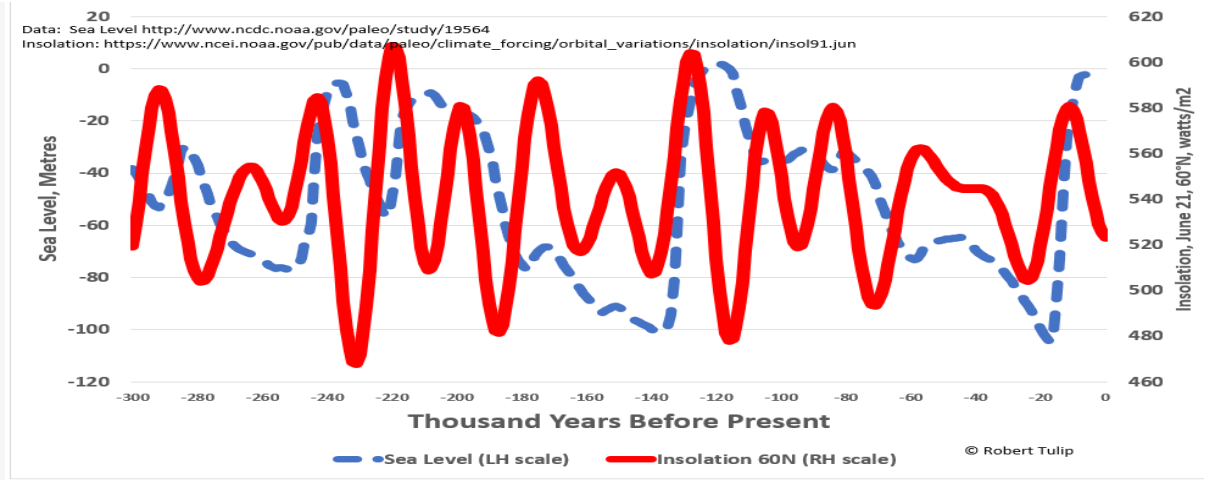
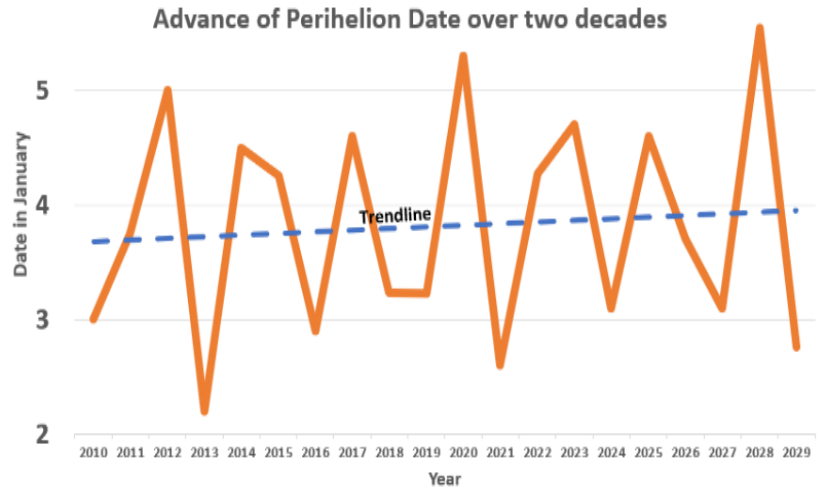


Figure 1 shows how the ~21 kyr cycle of precession was a main factor driving rise and fall of sea level in the Pleistocene. Insolation at the summer solstice at 60° north latitude was the key driver of the orbital climate effect, shown on the right-hand scale (NOAA, 2015). Sea level, shown on the left-hand scale (NOAA, 1992), lagged several thousand years behind insolation, changing in response to the perihelion precession cycle, with the sea level line mostly to the immediate right of the precession line.

This natural climate cycle is highly sensitive to factors including greenhouse gases, albedo and plate tectonics. Precession only became a climate factor after the opening of the Southern Ocean between Australia and Antarctica and then the meeting of North and South America. These tectonic changes had sufficiently cooled the planet about three million years ago to cause the ice ages (Wadhams, 2016). The Pleistocene precession effect on climate was overwhelmed in the early Holocene Period by emissions of greenhouse gases from agriculture (Ruddiman, 2008). Ruddiman explains that the world would now be in a new Ice Age if not for anthropogenic warming, starting from methane coming from rice and cattle cultivation in the Neolithic. In the previous ten similar glacial cycles the planet rapidly returned to an Ice Age every 100 kyr after each brief interglacial warm period. This cycle no longer occurs because anthropogenic climate forcing now outweighs the orbital effects.

Figure 2

Advance of Perihelion Date over Two Decades



The ~21 kyr climate precession period is defined by the seasonal date of the perihelion, the orbital point where Earth is closest to the Sun each year. The perihelion advances by one day every 58 years. In the 2020s it occurs around 3 January each year, varying by a day or two back and forth each year due to the monthly position against the Moon. Perihelion will

advance to 4 January by 2030, as shown in Figure 2.

The current 3 January date of perihelion in northern winter is a time in the annual northern cycle when light has increased since the solstice. The coldest time in this 21 kyr climate cycle is when perihelion is in the northern winter months, while the warmest time is when perihelion is in the northern summer. In Figures 1 and 3, maximum summer insolation at 60° north latitude occurs when perihelion is in June, for example at the dawn of the Holocene, and minimum northern summer insolation occurs when perihelion is in December, as at the Last Glacial Maximum. This 21kyr cycle can be called the perihelion seasons or Cosmic Seasons. When perihelion was in winter through the Pleistocene Epoch, snow that fell each winter was less likely to melt in summer, because summer was at aphelion, the coldest point of the orbit. Ice accumulated, causing glaciers to advance and sea level to fall. Conversely, when perihelion was in summer, winter snow was more likely to melt in summer, causing glaciers to retreat and sea level to rise, and the climate to reach a warm point, resulting in an interglacial or interstadial. Through the Pleistocene Epoch, sea level rose and fell and glaciers advanced and retreated due to this perihelion cycle dominated by precession. The northern hemisphere dominated the whole planetary cycle due to the larger land mass in the north. Table 2 shows the advance of perihelion through the seasons.

Table 2

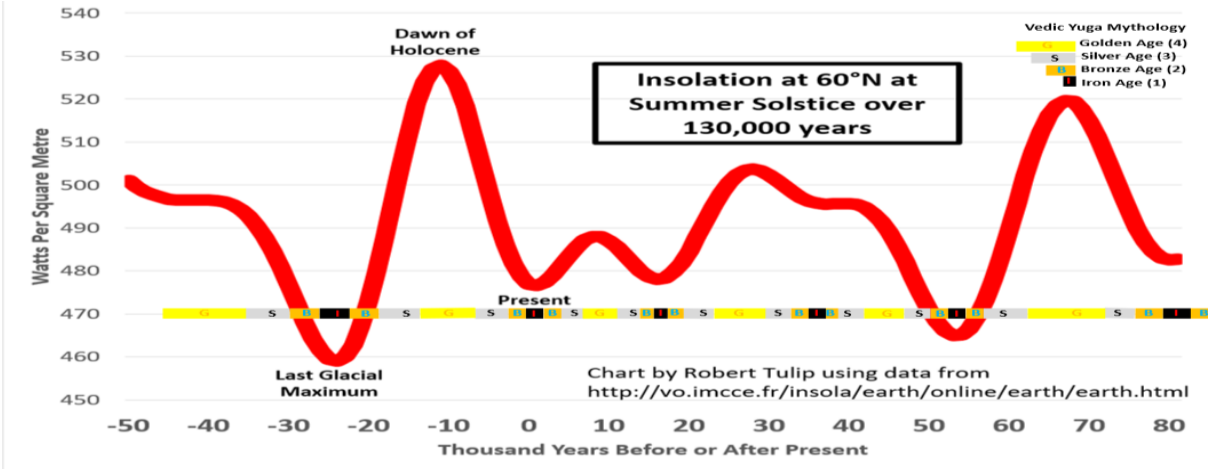
Perihelion Position over 24,000 years with match to Astrological Ages

Cosmic Season	Perihelion Constellation	Perihelion Date	Year (AD/BC)	Astrological Age and Estimated Start Year	
Summer	Cancer	20 June	-9122	Cancer	-8592
	Leo	21 July	-7394		
	Virgo	20 August	-5666	Gemini	-6444
Fall	Libra	20 September	-3938	Taurus	-4296
	Scorpio	20 October	-2210	Aries	-2148
	Sagittarius	20 November	-482	Pisces	0
Winter	Capricorn	21 December	1246		
	Aquarius	20 January	2974	Aquarius	2148
	Pisces	20 February	4702	Capricorn	4296
Spring	Aries	21 March	6430	Sagittarius	6444
	Taurus	20 April	8158	Scorpio	8592
	Gemini	21 May	9886	Libra	10740
Summer	Cancer	20 June	11614	Virgo	12888
	Leo	21 July	13342	Leo	15036
	Virgo	20 August	15070	Cancer	17184

Over the next ten kyr, the perihelion date will slowly advance through northern winter and spring, reaching the summer solstice around 11,614 AD, producing the ascending line after the present point in Figure 3. This graph of northern summer light levels for 130,000 years shows the insolation cycle that drove the past advance and retreat of glaciers and rise and fall of sea level, and the orbital drivers of future cycles, again disregarding artificial warming.

Figure 3

Summer Insolation at 60° North over 130,000 years, correlation with Yuga cycle



In discussing the relationship of orbital mechanics to Astrological Ages, it is important to consider how these physical patterns have affected cultural interpretations of time. One of the most intriguing such connections is a correlation between this structure of terrestrial time and Vedic mythology, marked in Figure 3 by the coloured ribbon showing the Yuga myth of the cycle of gold and iron ages. This Yuga mythology reflects the actual climate cycle of ice ages, discussed further in the section below on Astrological Ages and Mythology. We will return to this cultural analysis after examining other factors in the physical science.

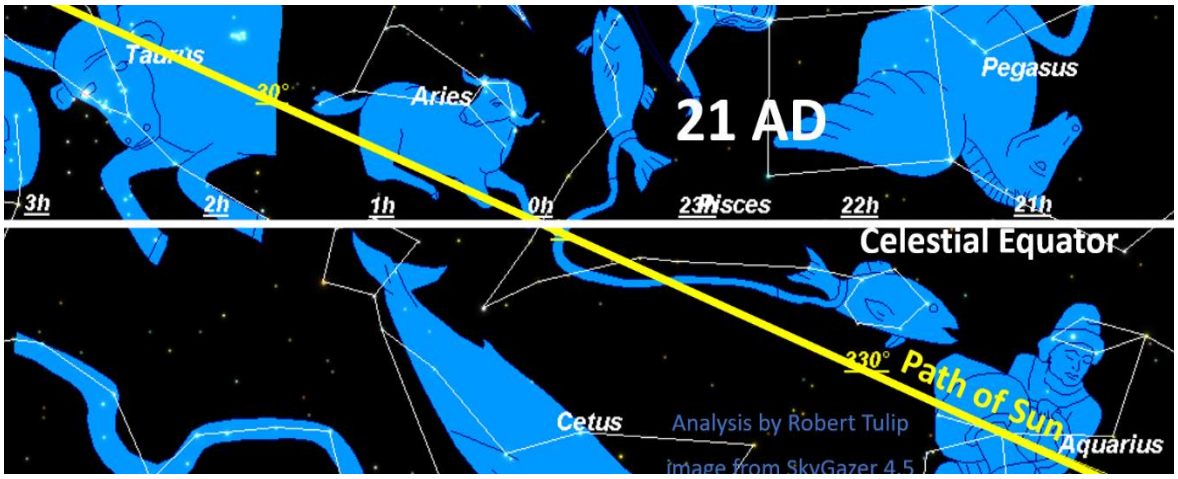
Astrological Ages and Tropical Astrology

A dynamic physical explanation of Astrological Ages needs to set aside the magical idea of a relationship between Earth and distant star groups. The physics of Astrological Ages aligns to Western tropical astrology, which defines zodiac signs from the equinoxes and solstices, not from the stars. Tropical astrologers see astrological effects solely as coinciding with processes within the solar system. The stars are only background and are not considered to have any effect on the Earth, serving only as reference points for processes that must be physically explained by the dynamic relationships between the Earth and the Sun and planets. This tropical model creates a problem for the mythology of Astrological Ages, discussed further below.

The March equinox is the reference point used by astronomers for measuring right ascension and celestial longitude. Astrologers also use this point for defining the sign cusps of the Tropical Zodiac. Each sidereal zodiac constellation is now mostly (~90%) in the following tropical sign. The gap between the signs and the stars due to precession is now about 25° according to the widely accepted Fagan-Bradley calculation (Fagan-Bradley 1950) based on the position of Spica in Virgo. My own view is that the gap is now 28°, based on the date of perfect alignment of the stars and the seasons of 15 September, 21 AD when the equinox crossed the line of stars known as the first fish of Pisces illustrated in Figure 4. On this basis the precession gap between signs and stars will reach one sign (30°) in 2169 AD, given that one Astrological Age takes 2,148 years.

Figure 4*:*

Position of Equinox on 15 September, 21 AD, Sidereal Dawn of the Age of Pisces



Precession, Gas Giant Planets and the Solar System Barycentre (SSB)

The structure of time for the solar system can be defined as the physical unit that integrates all the mass of the system into a single stable repeating period, just as the orbit of the Earth around the Sun defines our year. Such a pattern exists in the movement of the balancing point of the solar system, the SSB. This point, also called the centre of mass, connects the orderly cosmic structure encompassing the Earth. The importance of the SSB was expressed by Sir Isaac Newton, who wrote in his *Principia* that "the common centre of gravity of the Earth, the Sun and all the Planets is to be esteemed the centre of the world". In an accurate model of the solar system, an orrery, the SSB is the single point on which the model can rest, like a fulcrum balance. As Newton explained, when Jupiter and Saturn are opposite each other, the SSB is near the heart of the Sun, while when Jupiter and Saturn are conjunct, they pull the SSB out of the Sun by about one solar radius. The solar system including the Sun orbits around the SSB point, which is the focus of the solar system ellipse, moving to form the smooth arc of our path around the galaxy.

The NASA Jet Propulsion Laboratory (JPL) has calculated the SSB position over 6000 years. The JPL Horizons Database integrates all the mass and motion of the solar system into the single function of the distance from the SSB to the Sun for every month from 3000 BC to 3000 AD.

By my calculation from this JPL data, the SSB has a stable repeating period of 178.86 years.

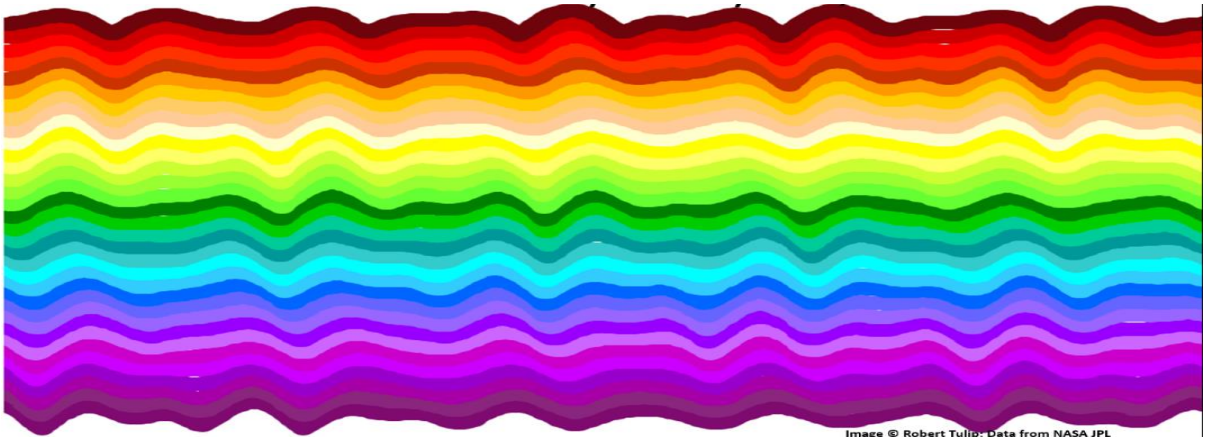
The connection to Astrological Ages is firstly that Earth's precession period of 25,771.5 years is almost exactly 144 times the SSB period. This stable 1:144 ratio between primary motions of the solar system and the Earth embeds the number twelve into the structure of the solar system in its relation to our planet. There are twelve SSB periods in one Astrological Age. The second point of connection is discussed below against the concept of Houses of the Age.

The repeating 179 year SSB period in the JPL data is shown firstly in Figure 5, graphing the distance from the Sun to the SSB. Each line shows successive 179 years of data. The bottom line starts from 3000 BC at the left, and the top line ends in 3000 AD at the right. The whole of Earth's existence since 3000 BC is contained in this astronomical graph. The nine oscillations across each line are caused by the 19.85-year synodic cycle of Jupiter and Saturn. The similarity of the wave shape in each successive line is due to the fact that after nine Jupiter-Saturn cycles, every 179 years, these two biggest planets always return to near the same position with respect to Neptune. The absence of gaps between lines shows how similar each iteration is to those immediately before and after it.

The whole wave gradually drifts over the centuries, creating natural patterns like ripples in sand. Jupiter (JU), Saturn (SA) and Neptune (NE) together dominate the wave pattern of the SSB, with Uranus (UR) the fourth biggest factor.

Figure 5:

Distance from the Sun to the Solar System Barycentre over 6,000 years



The Astronomical Journal published a paper (Jose, 1965) that explained the SSB-Sun distance has a stable repeating period. It stated "the variation in the motion of the Sun around the centre of mass of the solar system has a periodicity of 178.7 years." My analysis of the JPL data shows a small increase of this calculation, to 178.86 years, 0.16 years longer. This small difference may be because Jose used a 1950 analysis of just 400 years of data, whereas I have used the 6000-year JPL dataset.

As an example of this stable repeating pattern, Figure 6 shows the movement of the Sun around the SSB over 179 years from 769 AD, showing detail for one line from Figure 5. I designate this period as the "House of Leo" based on the tight triple JU/SA/NE conjunction at the Cancer-Leo cusp that occurred in 769 AD. This figure illustrates that when Jupiter, Saturn and Neptune (JU/SA/NE) are together they pull the heart of the Sun more than two solar radii away from the centre of mass. Equivalent diagrams for all JU/SA/NE cycles in the Age of Pisces are at rtulip.net/astronomy, showing how very slight the change in this SSB flower pattern is from one cycle to the next.

Figure 6:

Barycentric Path of Sun over 179 Years

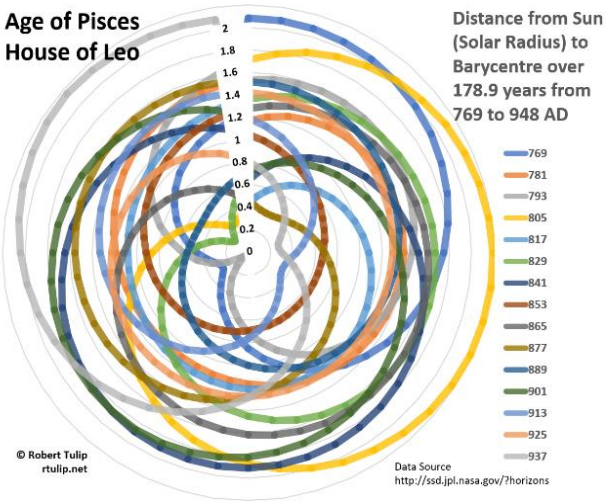


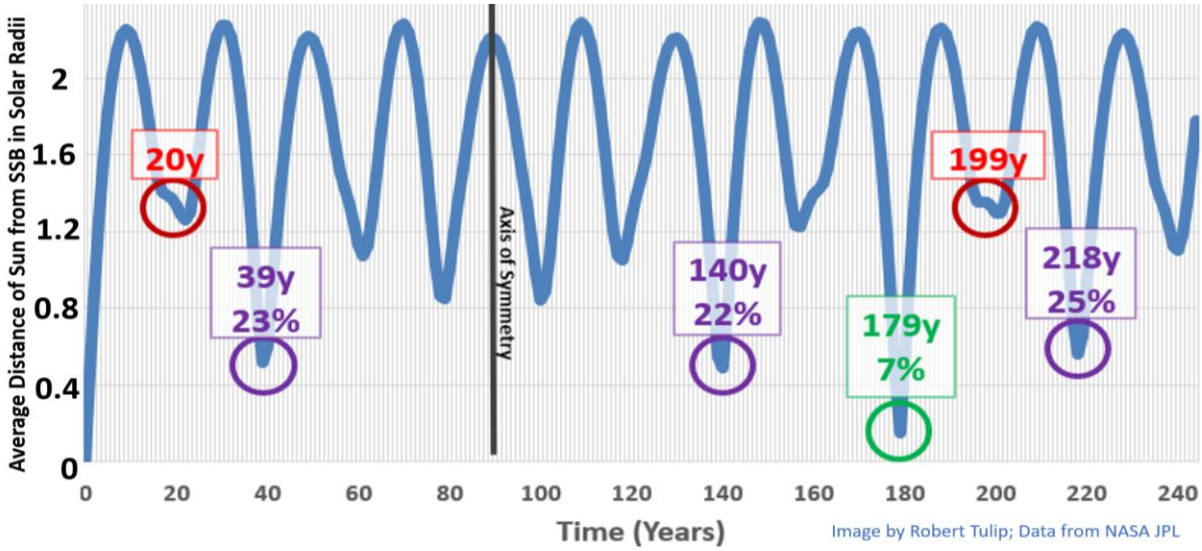
Figure 7 displays the stability of the 179-year cycle of the SSB over the 6000 years of JPL data. It shows the stable variance in solar distance to the SSB over periods from zero to 244 years. This variance chart adapts a method in signal processing called autocorrelation that tests the similarity between observations by averaging the time lag between them. Averaging SSB vectors at each annual time lag uncovers a repeating pattern, a periodic signal, identifying the fundamental 179 year frequency in the signal.

The twenty-year oscillation is due to the Jupiter-Saturn conjunction cycle of 19.85 years. The ninth alignment, at 179 years, has by far the least variance because it always involves the same triple JU/SA alignment with Neptune, the planet with the third most power in the SSB wave

function. All SSB-Sun vectors, not just the triple conjunctions, have length within 0.1 solar radii of those occurring 179 years before and after.

Figure 7:

Solar System Barycentre Variance in Solar Distance

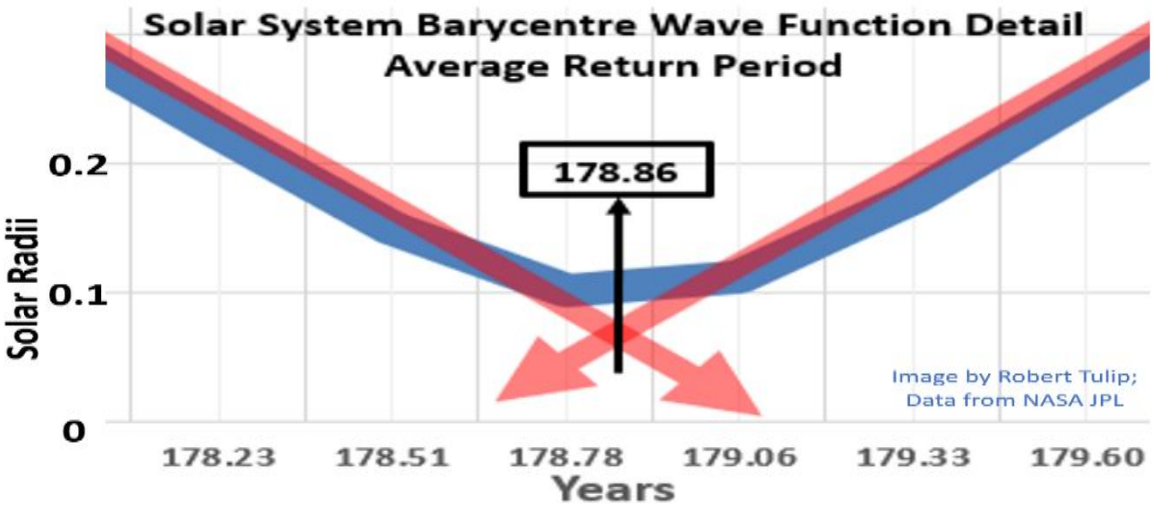


The 7% average change in solar vectors over 179 years produces the slow millennial drift in the SSB wave form. Over successive cycles Jupiter, Saturn and Neptune repeat the same pattern, while drifting slowly in and out of exact alignment (as also shown in Figure 12). The axis of symmetry of Figure 7 at 89.5 years occurs because the two halves of the 179-year period are near mirror images of each other, as planet positions approaching a triple conjunction always form a mirror reflection of their positions as they move away from the triple conjunction.

To calculate the average SSB return period more exactly, Figure 8 shows detail from Figure 7 at the 179-year point. The turning point of the curve, measured by its axis of symmetry, occurs at 178.86 years, defining the average period of the SSB wave function. This cyclic period of the centre of mass can be considered the primary unit of time for the solar system.

Figure 8

SSB Exact Average Return Period of 178.86 Years



Connecting the SSB and Astrological Ages

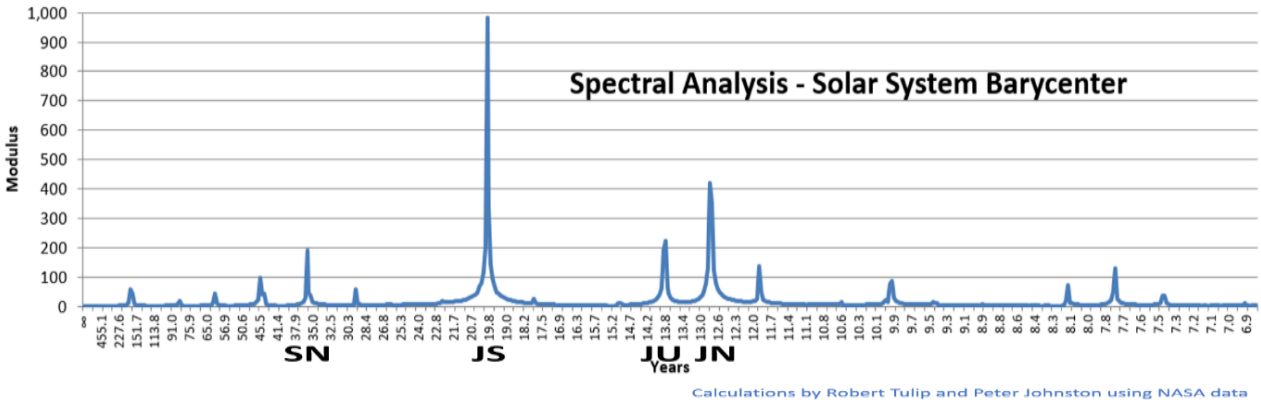
Each Great Year by definition contains twelve equal Astrological Ages of duration 2,147.6 years, which is twelve times the 179-year SSB period. This one-to-twelve SSB ratio was exact one million years ago and is now slowly increasing, due to the increasing distance from the Earth to the Moon. The precise ratio is now 1:144.08. By my calculation it will increase over the next ten million years to 1:145. For historical time, and extending to the last million years, the slow rate of change means the 1:144 ratio can be regarded as a constant. The SSB and Great Year are inverse multiples of the Astrological Age, one to twelve and twelve to one. The Astrological Age therefore embeds the number twelve in the structural relationship between the Earth and the solar system. If we consider the SSB wave period of 179 years as the unit of time, the Astrological Age is the square root of the Great Year, in ratio 1:12:144.

One way to model the relation between the precession and the SSB is to imagine the solar system as like a trampoline mat with a regular oscillation of period one second, and the Earth as like a spinning top bouncing on the trampoline, wobbling with a regular gyroscopic period of 144 seconds. The periods of the trampoline and the top are connected to each other through mutual inverse relation to the period of twelve seconds. That relation, shifted to the solar system and recurring over millions of years, illustrates the potential for a harmonic resonant relationship between the SSB and the precession through Astrological Ages. This stable ratio between the earth and the solar system seen in the Astrological Age can be compared to what the astronomer Johannes Kepler called the music of the spheres, the rational arrangement of the solar system (Kepler, 1619), extending Kepler's analysis of harmonic relations between planetary orbits to an integrated analysis of the whole system. On this harmonic model, the Astrological Age is like an overtone of the frequency relationship between Earth's spin wobble and the wave function of the solar system.

Fourier Transform Decomposition of Solar System Barycentre Wave Function

Analysis of the JPL SSB data by Fourier Transform separates the data in the wave signal into its components. I thank statistician Peter Johnston for his assistance with this analysis. Mathematically decomposing the SSB wave spectrum produces Figure 9, graphing the SSB Spectral Analysis to show the main planetary pairs that contribute to the SSB wave form. The top four peaks in order of power (modulus) are JU-SA, JU-NE, JU-UR and SA-NE. NASA "produced the input data that enabled production of this graph by iterative integration of planetary positions, not by inputting these relationships" (NASA JPL, 2012).

Figure 9:
SSB distance to Sun: Spectral Analysis



The planetary components graphed in Figure 9 are tabulated in Table 3, showing how these planetary effects combine to produce the overall SSB wave. Table 3 shows that three synodic planetary cycles, JU/SA, JU/NE and SA/NE, together produce 66% of the SSB signal (Column E).

These cycles are factors of 178.9 (Columns G-I) with small variance (Column J), showing their combined effect is the main cause of the SSB wave at 179 years shown in Figures 5-8. JU/UR equals SA/NE as equal third factor, but Uranus does not participate in the 179-year JU/SA/NE cycle. The planet pairs shown in columns B and C of Table 3 are derived from the peaks of the spectral analysis in Figure 9, including two small peaks (rows 6 & 9) whose planetary source is not apparent.

Table 3:

Fourier Spectrum Decomposition of SSB Wave Function

Fourier Spectrum Decomposition of Wave Function of Solar System Barycentre											
Cycle	SSB Spectral Peak (Years) A	First Planet B	Second Planet C	Spectral Power D	% of total spectrum E	Orbital Period F	Cycle period close to 179 years G	Cycles in 178.86 years H	Rounded # of cycles I	Absolute Variance from 178.86 J	Precession Ratio K
1	19.85	Jupiter	Saturn	983	40.9%	19.85	178.67	9.010	9	0.11%	144.24
2	12.8	Jupiter	Neptune	419	17.4%	12.78	178.92	13.996	14	0.03%	144.04
3	13.8	Jupiter	Uranus	190	7.9%	13.81	179.52	12.952	13	0.37%	143.55
4	35.9	Saturn	Neptune	189	7.9%	35.87	179.36	4.986	5	0.28%	143.68
5	11.9	Jupiter	Cycle	137	5.7%	11.86	177.90	15.081	15	0.54%	144.86
6	7.8	unknown		128	5.3%	7.80	179.40	22.931	23	0.30%	143.65
7	45.5	Saturn	Uranus	96	4.0%	45.37	181.48	3.942	4	1.44%	142.01
8	9.9	Jupiter	Saturn	75	3.1%	9.93	178.67	18.019	18	0.11%	144.24
9	8.2	unknown		72	3.0%	8.20	180.40	21.812	22	0.85%	142.86
10	29.5	Saturn	cycle	59	2.5%	29.46	176.76	6.071	6	1.19%	145.80
11	171	Uranus	Neptune	57	2.4%	171.37	171.37	1.044	1	4.37%	150.39
Source	Fourier Transform				E= D/SUM(D)	F = 1/(1/B - 1/C)	G= F x I	H= 178.86/F	I= round(H)	J= ABS(H/I-1)	K= 25771/G
planet	Jupiter	Saturn	Uranus	Neptune							
period	11.86	29.46	84.01	164.8							

Houses of the Age

Over an Astrological Age, JU/SA/NE conjunctions form overlapping family groups. Successive JU/SA/NE conjunctions every 179 years occur in or close to the twelve zodiac signs in order. These family groups slowly drift into and out of alignment. Over the Astrological Age of Pisces, a family of twelve JU/SA/NE conjunctions started around Aries in 53 AD, repeated in Taurus in 232 AD, and so on through the signs in order until its current group around Pisces in 2020-2026 AD. Each triple conjunction is on average 31° of arc further along the ecliptic from the position of the previous one, slightly more than one zodiac sign. This stable advance for each JU/SA/NE conjunction means these three planets and the SSB wave period of 179 years provide a physical basis for what astrology has traditionally termed the Houses of the Astrological Age.

The 'House of the Age' is a period of time that was estimated at 180 years by Dane Rudhyar in his book *Astrological Timing* by dividing the 2160-year estimate of the Astrological Age into twelve (Rudhyar, 1969). The JU/SA/NE pattern driving the SSB provides a precise empirical duration for a House, 178.86 years, with the JU/SA/NE conjunctions near the start of each House in successive signs defining each House of the Astrological Age.

The twelve graphical ephemeris diagrams in Figure 10 show the JU/SA/NE family of conjunctions every 179 years from 53 to 2022 AD in the Astrological Age of Pisces. These planetary charts were created using the graphical ephemeris in astrology software program Solar Fire, condensed from 360 to 120 degrees of arc. They illustrate how the triple conjunction orb starts wide, becomes tight and then widens again over the course of an Astrological Age, somewhat like families of eclipses in the Saros Cycle. Looking through the twelve diagrams in order shows how the JU/SA conjunction (the two steeper lines) happened after JU/NE and SA/NE in 53 AD, and then gradually moved earlier in each House, occurring exactly together with SA/NE and JU/NE in 769 AD, until JU/SA occurred well before JU/NE and SA/NE in 2022 AD.

Figure 10

Twelve Houses of the Age of Pisces: Jupiter-Saturn-Neptune Triple Conjunction Ingresses (see detail at Annex)

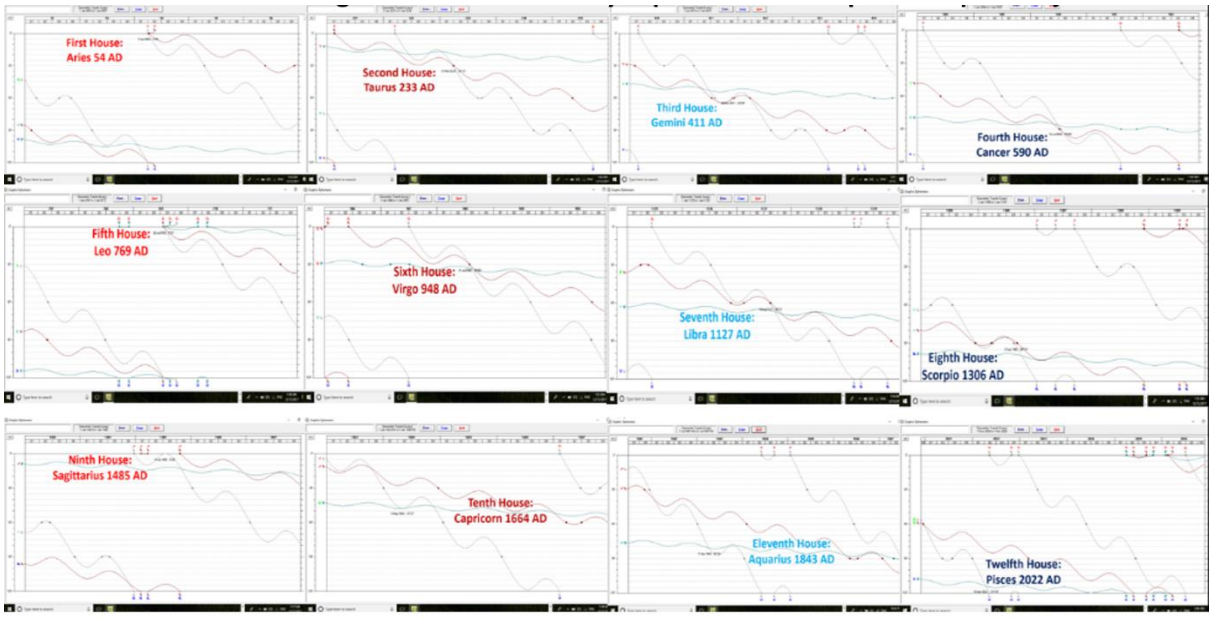


Image by Robert Tulip from Solar Fire data

In the first JU/SA/NE event of the Pisces Age, in 53-54 AD, the ingress to Aries occurred with the JU/SA conjunction at the Pisces-Aries cusp. The orb from the first to the third conjunction was one year. This orb steadily decreased in the following Houses then increased again. Moving forward through the Age of Pisces, the JU/SA/NE orb narrows with each successive House until in the entry to the fifth house the orb is just five days, as the three planets move together from Cancer into Leo. These conjunctions opened the House of Leo (ref Fig 6 flower diagram) in July 769 AD, with JU/NE on 18 July, JU/SA on 20 July and SA/NE on 23 July.

The orbs then gradually widened in the following Houses until the final broad triple JU/SA/NE conjunction of the family, shown in Figure 11 over five years from December 2020 to February 2026, opening the twelfth House of the Age, the House of Pisces. The JU-SA conjunction was on 21 December 2020. JU-NE on 13 April 2022 at 24 Pisces is the central event of the current movement into the twelfth House of the Age. The transition into the twelfth House of the Age of Pisces is completed with the SA-NE conjunction on 20 February 2026 at 0 Aries.

Figure 11

Ingress into Twelfth House of Age of Pisces: 2020-26

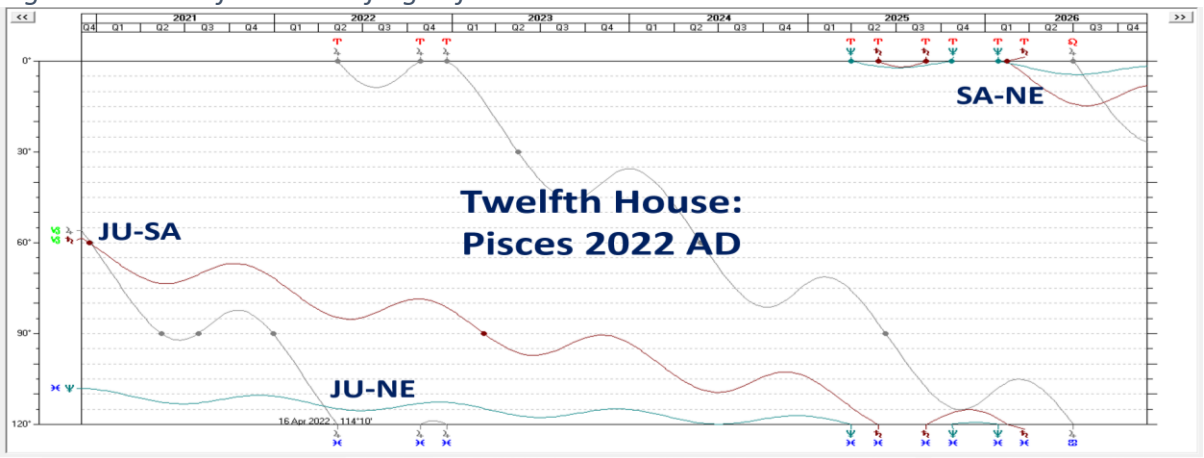
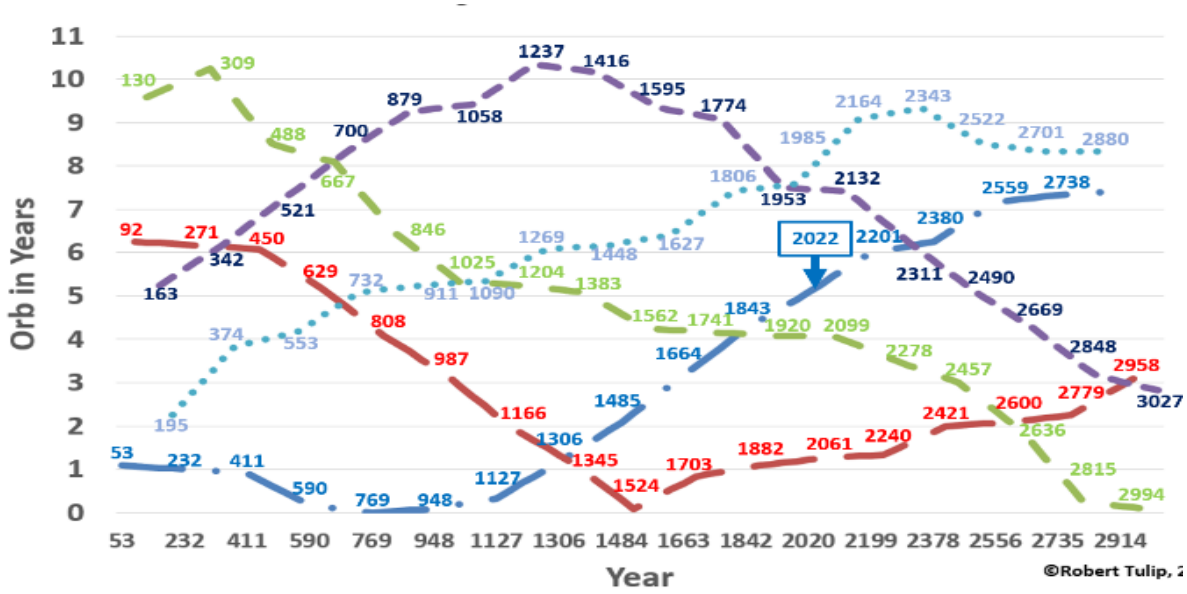


Image by Robert Tulip from Solar Fire data

The Five Jupiter/Saturn/Neptune Conjunction Families

Figure 12

Five Families of Jupiter-Saturn-Neptune Conjunctions Over 3,000 Years



Conjunction cycles of Jupiter, Saturn and Neptune are grouped into five long-lasting families, shown over 3,000 years in Figure 12. The stability of the solar system means these JU/SA/NE families have existed for billions of years. According to the accepted Nice Model of solar system formation, the outer planetary orbits stabilised after the Late Heavy Bombardment of 3.9 billion years ago when Neptune migrated past Uranus (Levison et al, 2007). The five conjunction families are grouped around the SA-NE conjunctions which occur every 35.85 years, five times every 179 years. Figure 12 manually enters the dates using geocentric data, whereas heliocentric data would produce smoother curves. Within each family, Jupiter perpetually cycles over about 5,400 years from conjunct SA/NE, with orb 0 years, to opposed SA/NE, when the JU/SA conjunctions occur 10 years before and after SA/NE, and back again. In the 21st century, three of these five families have events within 5.2 years orb, around 2022 in Pisces, 2061 in Gemini and 2099 in Virgo. These events belong to successive JU/SA/NE families whose tightest orbs are in 769, 1524 and 2994 AD respectively.

The tightest current family is centred on the triple JU/SA/NE conjunction in January 1524 AD in Pisces. This family has continued with conjunctions in Aries in 1703 and Taurus in 1882 overlapping the end of the Age of Pisces family, and then into the Age of Aquarius with the conjunction in Gemini in 2061. These house transitions suggest a period of gestation of the Age of Aquarius within the Age of Pisces, with the world now in the House of Taurus of the Age of Aquarius and shifting from the House of Aquarius of the Age of Pisces into the House of Pisces.

SA/NE conjunctions last occurred in 1881, 1917, 1953 and 1989. Each of these events is part of one of the five JU/SA/NE families shown in Figure 12. Coincidentally, these years were all major turning points in the history of Russia, with the assassination of Tsar Alexander, the Bolshevik Revolution, the death of Stalin and the fall of the Berlin Wall. The tightest JU/SA/NE conjunction in the twentieth century was the 1917-1921 event beginning in Leo. This was an early event in the family of conjunctions that will have its tightest event in Aquarius in 2994 AD, and therefore is part of the Age of Aquarius. This family connection invites the speculation that the Russian Revolution manifested the egalitarian energy of the Age of Aquarius in an early and inchoate form.

Astrological Ages and Mythology

The slow orbital processes driving climate and providing the structure of the solar system have been stable for four billion years, since the dawn of life on Earth. All life on our planet has evolved in this repetitive causal context. The conjecture can be presented from this stable periodicity that cultural and genetic impact of precession should mirror the orbital drivers, producing different adaptive evolutionary traits for life during descending and ascending phases of the Great Year of the perihelion, on the model of adaption to seasons and the day. Although hard to measure, the slow temporal cycles of precession could affect evolution in a similar way to the effects of the more rapid cycles of the day, the month and the year. Robert Currey comments that this is a critical point - there is no doubt the short cycles (day, month, year) have had a huge impact on human and all lifeforms (Foster & Kreitzman 2004 & 2009, Gauquelin 1967). So why not larger cycles?

Evidence for this causal relationship between nature and culture appears in the correlation between the precession climate cycle and ancient cosmologies. The cycles of the perihelion define an overarching structure of terrestrial time that appears to correlate with mythology. Ancient astronomers were able to calculate the visible effects of precession, the basis for Astrological Ages. However, the direct correlation between rising and falling climate patterns and myths of rising and falling culture suggests two possible causes. Either the collective unconscious tuned into this natural cycle, given that the orbital mechanics were not known in ancient times when these myths developed. Or prodigious memory handed down over tens of thousands of years and through the oral tradition encoded knowledge in myth (Kelly, 2016).

The perihelion cycle had a 10 kyr descending phase lasting until approximately the present, followed by a 10 kyr ascending phase, as seen in Figure 3 above. This millennial pattern directly matches the timing of major planetary myths - the Biblical cosmology of a fall from grace followed by the redemption of the world, the Vedic myth of the Yuga cycle between Golden Ages and Iron Ages (Yukteswar, 1895; Campbell, 1972), and the cosmic mill of the Finnish epic the Kalevala, (discussed in *Hamlet's Mill* (Santillana and von Dechend 1969). The Vedic theory of history as a descent from a Golden Age also appears in western myths recounted by Plato, Hesiod and Ovid, and is indicated in Daniel's dream in the Bible of the statue with head of gold and feet of iron mixed with clay. (New English Bible: Dan. 2:35-41)

This well-known mythology of descent also correlates to myths of planetary renewal that match directly to the orbital Milankovitch cycles. Astronomically, the perihelion crossed the December solstice in 1246 AD (Meeus, 1997), the year of lowest summer insolation. The orbital cycle is now emerging from its low point in 1246 AD and entering an upward phase. Myths that reflect this cycle include the Yuga myth of the upward Bronze Age (Yukteswar, 1895), the expectation of cultural and scientific transformation and renewal in the Age of Aquarius (Jung, 1951) and Christian visions of world salvation imagined as the Second Coming of Jesus Christ.

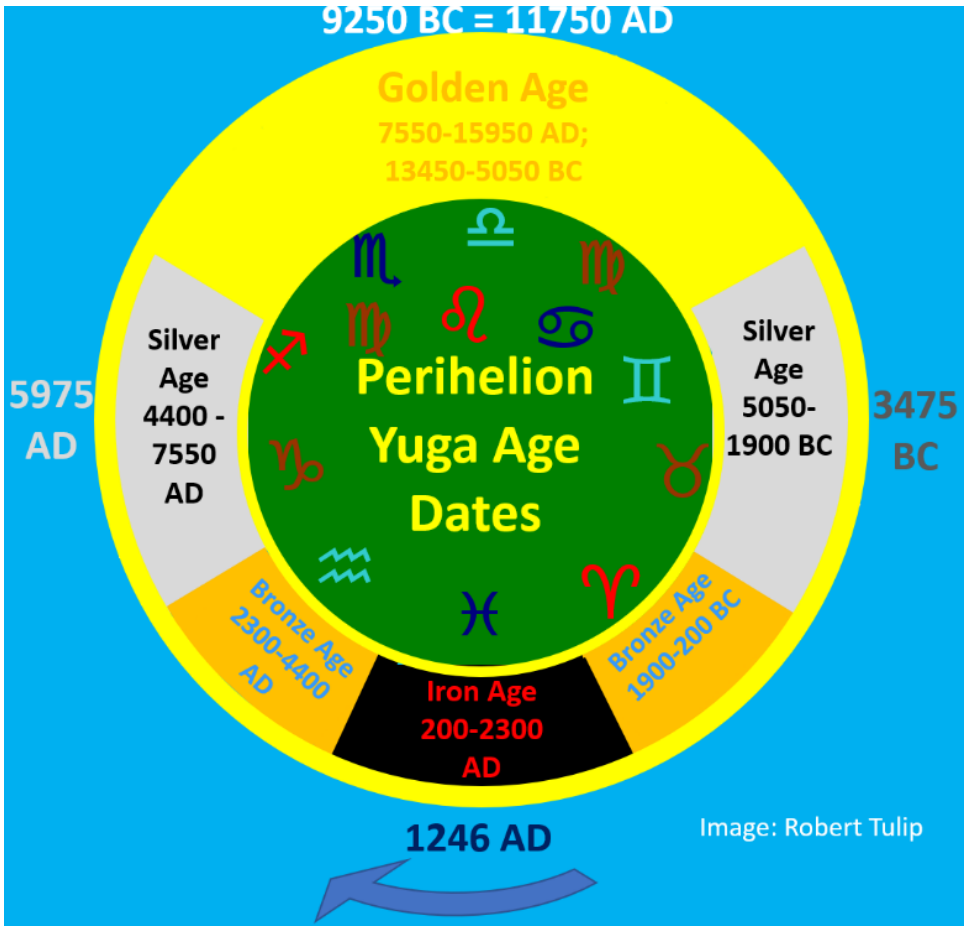
The Millennial Day theory in Judeo-Christian myth proposes a fall from grace that began with the expulsion from the Garden of Eden in about 4000 BC, lasting for 6000 years until about now (Newport, 2000). This 7,000-year cosmology was widely accepted by early Christian Church Fathers and was described in the Young Earth Creation timeline of Bishop Ussher widely used in the Authorised Version of the Bible. The Biblical myth of the fall from grace directly matches the period when the perihelion was in the northern season of fall.

In Vedic cosmology, the 24 kyr Yuga cycle of recurring periods of light and dark presents the myth of an ancient Golden Age, followed by the fall into an Iron Age, followed by slow ascent to an eventual new Golden Age. These imagined Yuga periods were camouflaged in popular religion by multiplying them to billion-year length, but in the original texts they match the actual history of the Bronze Age and the Iron Age (Yukteswar 1895). The mythology imagines successive ascending and descending

ages of gold, silver, bronze and iron with durations of ratio 4:3:2:1. This overall cyclic pattern has a direct and plausibly causal if unconscious correlation to the observed orbital climate cycles. Setting this mythology against the 21 kyr perihelion climate cycle places the depth of the Iron Age, in Vedic myth the Kali Yuga, in the year of least northern summer light in 1246 AD. Vedic myth puts the centre of the Kali Yuga in 500 AD (Yukteswar), a gap of only 3% over the Great Year from the orbital date of least light. By the perihelion measure, the last Vedic 'Golden Age' ran from about 13,500 BC to 5000 BC, and the next Golden Age will begin in about 7500 AD and then continue for 8,500 years.

Figure 13

Yuga and Astrological Age Dates based on Perihelion Cycle



In the Astrological Age framework for this long period of planetary history, the Age of Pisces is a low point matching the Vedic myth of the Iron Age, much as the sign of Pisces is a low period in the year at the end of winter as shown in Figure 13. However, given that the physical model described here excludes sidereal influence, and instead places the entire dynamic causality within the solar system, the symbolism of Pisces and Aquarius seems to be a cultural coincidence or construction rather than a physical structure. In the climate-based model presented here, the Age of Aquarius is a rising period. In this the New Age in astrology matches the cotemporaneous ascending Vedic Bronze Age and the ascending insolation in the orbital pattern.

Astrological tradition sees innovative humanitarian knowledge as the theme for Aquarius and mystical compassionate belief as the theme for Pisces (Sakoian and Acker, 1973). The shift of Ages now occurring can therefore be symbolised by a cultural shift from belief to knowledge as the main basis of human identity and ethics, reflecting trends of global integration and evolution of culture from a basis in faith to a basis in reasoned awareness. In the Astrological Age transition, these

themes of old and new correlate with the historical tensions between emerging scientific knowledge (Aquarius) and traditions of religious belief (Pisces) and with the observed perihelion shift from a time of descent to a time of ascent. If Christianity was originally constructed on the basis of this astrological framework, the imaginative model produced can see Jesus Christ as representing the spirit of the Golden Age in the midst of the Iron Age (Tulip, 2021).

The secular historical shift from belief to knowledge as a guiding social ethic matches Astrological Age symbolism and the orbital climate phase of the start of an upward cycle over the next ten thousand years. Just as the perihelion season is now in the period of lengthening northern days in mid winter, the cultural cycle has a corresponding symbolism of transformation and renewal predicted in a range of mythological traditions. The belief that knowledge is a more advanced form of cognition than belief reflects the claim that the Age of Aquarius will be a more advanced cultural time than the Age of Pisces, which occurred at the low point of the perihelion cycle.

A problem with this model is that the dynamic basis in the Milankovitch Cycles suggests the main physical cause of Astrological Ages should be advance of the perihelion, not precession of the equinox. Despite this problem, the conceptual framework of Astrological Ages as supporting the shift to a more scientific culture is well worth exploring. The annual cycle of life reaches its low point at the spring equinox, and therefore the reversal of this direction in the precession involves an advance, mapping the symbolism of crucifixion and resurrection at Easter to the precessional shift from Aries to Pisces and Aquarius and to the shift from the depth of the Kali Yuga to the ascending Bronze Age in the perihelion climate cosmic seasons.

Conclusion: Astronomy and Astrology of the Age of Aquarius

The precession of the equinoxes defines the New Age of Aquarius, shifting from the Old Age of Pisces. The analysis in this article is intended to inform scientific understanding and describe the temporal framework for new cultural and scientific paradigms by underpinning this cultural story with scientific correlations in climate mechanics and solar system astronomy. Just as the annual cycle sees a slow increase of light in northern winter through January, so too the perihelion cycle now sees a ‘tectonic’ upward movement, correlating to a range of mythological predictions and possibly helping to explain them.

The wave function of the SSB combines with the movement of the perihelion to drive deep patterns in slow time, appearing in the historical structure of the Astrological Age. The perihelion climate framework shows our planet would be entering a slow upward temperature trajectory, analogous to the annual climate in the northern hemisphere on 3 January, except that the current glacial cycle has been suppressed by anthropogenic greenhouse gas emissions.

The SSB analysis shows we can empirically describe Astrological Ages as comprising twelve houses of duration 179 years, integrating the Earth with the solar system. As a regular wave pattern, the SSB period of 179 years is the primary stable repeating unit of time for the solar system. Combining this SSB analysis with Earth’s spin wobble and with the perihelion climate cycle provides the basis for a systematic analysis of the structure of terrestrial time through the Astrological Age period of 2,148 years, seeing how precession underpins myth and culture.

The method of this paper, placing a terrestrial cosmology within a unified analysis of the solar system, points toward paradigm shifts in culture, science and spirituality, grounding the meaning of the New Age in the 21 kyr climate cycle of the perihelion combined with the structure of Houses of the Age produced by the triple JU/SA/NE conjunction families. The world is now at a transition point into the twelfth house of the Astrological Age of Pisces. This ending of the old age of Pisces overlaps the rising energy of the New Age of Aquarius, seen in the two Aquarian JU/SA/NE family transitions in this century, into Gemini in 2061 and into Virgo in 2096.

These temporal structures support the hope that the precession of the March equinox through the constellation of Aquarius over the coming two millennia can be a time of cultural ascent, with the advancing date of the perihelion reflecting how the annual winter is a period of ascending light. This 'as above so below' cosmology suggests we can transform dominant features of culture that evolved in the previous ages of descent, when the perihelion was in fall. This paradigm shift is by no means an easy or guaranteed matter, given the entrenched intransigence of the obsolete thinking that rules the world. Hence the need to transform old paradigms, building upon and respecting their existing resources. Scientific reformation of religion, in the case of Christianity, requires shifting its foundations from belief to knowledge (Tulip 2021). This process can be grounded in Astrological Age cosmology by seeing all Biblical claims as metaphor for underlying physical drivers of cultural evolution. For example, Jesus Christ as alpha and omega (Revelation 1:8) represents the end of the Astrological Age of Aries and the dawn of the Age of Pisces. Christianity presents a cosmology of fall into corruption followed by planetary salvation in ways that cohere with the orbital planetary frameworks described here, imagining Jesus Christ as Avatar of not only the Astrological Age of Pisces, but also, in the imagination of the Second Coming, as Avatar of the Age of Aquarius.

The paradigm shift suggested by the current change of Astrological Ages involves the gradual replacement of religious belief by scientific knowledge as the primary ethical framework for ordering society, while retaining and respecting the cultural heritage of mythology as containing profoundly deep sacred mystery and memory. This secular shift also matches the traditional themes that astrology sees in the signs, moving from mystical compassionate belief as the theme for the Age of Pisces to innovative humanitarian knowledge as the theme for the Age of Aquarius. This cultural evolution of the Zeitgeist grounded in the theory of Astrological Ages suggests a vision of planetary transformation into a stable and peaceful global civilization.

References

Berger, Andre, (1989) Pleistocene climatic variability at astronomical frequencies, Quaternary International 2 , 1-14.

Berger, Andre (2021) Milankovitch, the father of paleoclimate modelling, *Climate of the Past*, a Journal of the European Geophysical Union, Preprint. https://doi.org/10.5194/cp-2021-9

Joseph Campbell, 1972, *Myths to Live By*, Viking

Capitaine, N, Wallace P.T, Chapront, J. (2003), Expressions for IAU 2000 precession quantities *Astronomy & Astrophysics* 412, 567–586 p. 581 expression 39, https://syrte.obspm.fr/iau2006/aa03_412_P03.pdf

Charvatova, I (2000), Can origin of the 2400-year cycle of solar activity be caused by solar inertial motion? Ann. Geophysicae 18, 399-405, Geophysical Institute AS CR, Bocni II, 141 31 Praha 4, Czech Republic

Ellis, Ralph and Palmer, Michael (2016), Modulation of ice ages via precession and dust-albedo feedbacks, Geoscience Frontiers

Fagan, C. & Bradley, D. (1950) *Zodiacs Old And New: A Probe Into Antiquity And What Was Found*

Foster, R.G. & Kreitzman, L. (2004) *Rhythms of Life: The biological clocks that control the daily lives of every living thing*. Profile Books: London

Foster, R.G. & Kreitzman, L. (2009) *Seasons of Life: The biological rhythms that enable living things to thrive and survive*.. Profile Books: London

Gauquelin, M. (1967) *The Cosmic Clocks: From Astrology to a Modern Science*, Henry Regnery Co

Hancock, Graham (1999) *Heaven's Mirror : Quest for the Lost Civilization*, Three Rivers

Jose, Paul D. (1965) The Sun's Motion and Sunspots, *The Astronomical Journal*, Volume 70 Number 3. http://adsabs.harvard.edu/full/1965AJ.....70..193J

Jung, Carl (1951), *Aion - Researches into the Phenomenology of the Self,* Bollingen Press

Karner, DB. Levine, J. Medeiros, B. Muller, R. (2002) *Constructing a stacked benthic D18O record*, Paleoceanography, VOL. 17, NO. 0, 10.1029/2001PA000667,

Kelly, L. (2016) *The Memory Code*, Allen and Unwin

Kepler, Johannes (1619) *Harmony of the Worlds* http://www.sacred-texts.com/astro/how/index.htm

Levison HF, Morbidelli A, Van Laerhoven C, Gomes RS, Tsiganis K (2007). "Origin of the Structure of the Kuiper Belt during a Dynamical Instability in the Orbits of Uranus and Neptune". Icarus. 196 (1): 258-273 doi:10.1016/j.icarus.2007.11.035. S2CID 7035885.

Meeus, Jan (1997), Mathematical Astronomical Morsels, Willmann-Bell

Milankovitch, Milutin (1941, translated 1998) *Canon of Insolation and the Ice-Age Problem*, Agency for Textbooks

Muller, R.A. & MacDonald, G.J. (2002) *Ice Ages and Astronomical Causes: Data, spectral analysis and mechanisms*, Springer Praxis Books

NASA Jet Propulsion Laboratory Horizons Database: https://ssd.jpl.nasa.gov/horizons.cgi

National Center for Environmental Information (US), Insolation data: https://www.ncei.noaa.gov/pub/data/paleo/climate_forcing/orbital_variations/insolation/insol91.jun

Newport, Kenneth (2000). *Apocalypse and Millennium: Studies in Biblical Eisegesis*. Cambridge University Press. p. 104.

Newton, Isaac, 1687, *Principia Mathematica*, On the System of the World. XII

Ruddiman W.F. et al. (2008) / Early rice farming and anomalous methane trends, *Quaternary Science Reviews* 27 1291–1295 Elsevier Ltd. Doi:10.1016/j.quascirev.2008.03.007

Rudhyar, Dane (1969) *Astrological Timing* http://www.khaldea.com/rudhyar/at/at_c6_pp2.shtml

Sakoian and Acker, 1973, *The Astrologer's Handbook*, Harper Collins

Santillana and von Dechend (1969) *Hamlet's Mill: An Essay Investigating the Origins of Human Knowledge and Its Transmission Through Myth,* Gambit, Boston

Tulip, R. (2021) *Christianity for the Age of Aquarius*, Canberra Jung Society

Wadhams, Peter, 2016, *A Farewell to Ice,* Penguin

Ward, William R, 1982, Comments on the long-term stability of the Earth's obliquity, Icarus

Yukteswar, Sri (1895) The Holy Science

New English Bible (1992), Oxford University Press