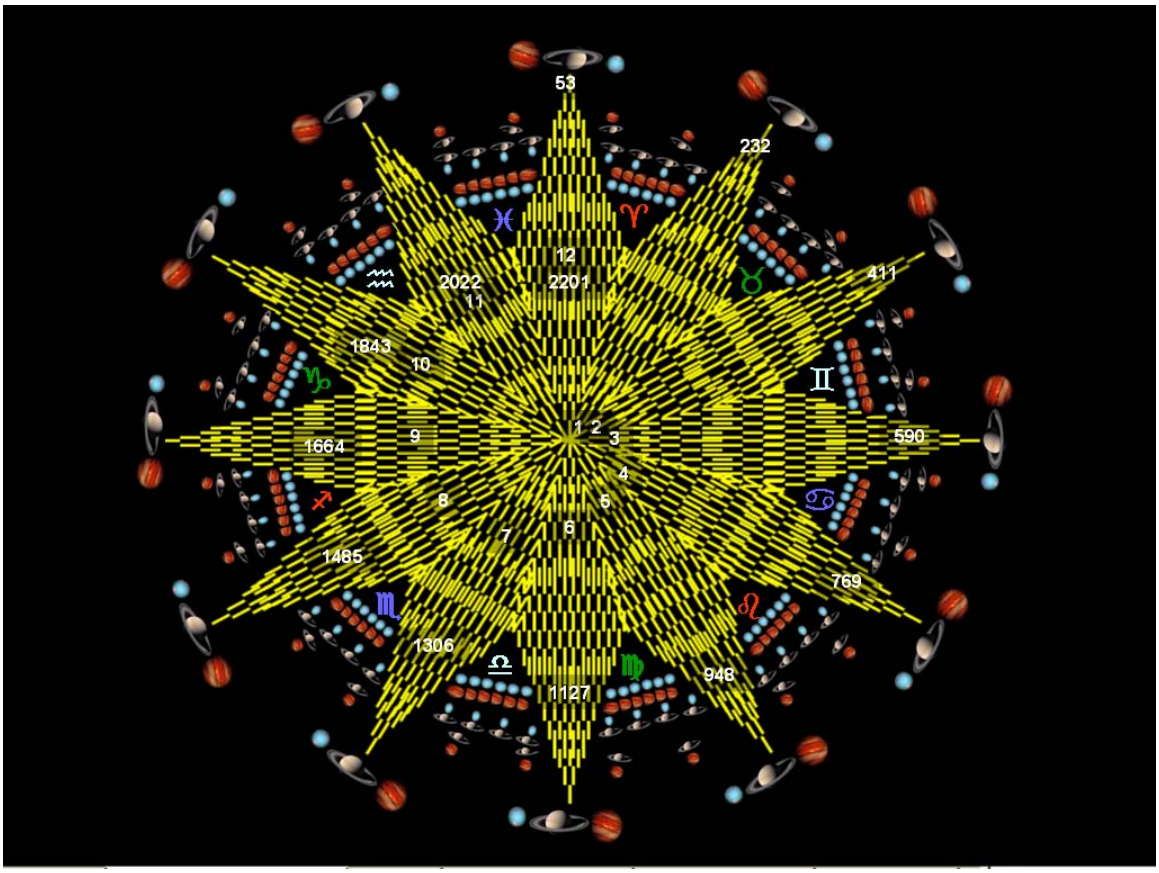
Solar System Planet Clock



The solar system planet clock, shown above, is an empirical diagram of the solar system enabling ready calculation of the positions of Jupiter, Saturn and Neptune over the 2148 years of the period known as the Age of Pisces. The diagram also shows how the 25765 year Great Year axial cycle of terrestrial lunisolar torque maps to a pattern of the solar system gas giants.

The twelve joined diamond wedges in the diagram, one for each hour of the clock, each consist of two isosceles triangles joined at the base, with head angle thirty degrees. Each of the twelve diamonds of the clock has one mark at the centre, then two, three and so on to twelve at its mirror axis half way to the star point. The mirror axes of the twelve diamonds form a circle with 144 points. The number of marks on each star point descends arithmetically from twelve at the joining circle to the single mark at each star point.

The diagram depicts a number of temporal cycles. The twelve points of the star are marked with the numbers one to twelve in the central spiral, indicating both a regular clock and longer term patterns of the earth and the gas giants. These longer patterns are the Great Year of 25765 years, the Zodiacal Age of Pisces, and the gas giant conjunction cycle. The twelve points of the clock mark the triple conjunction dates of the three heaviest gas giant planets, Jupiter, Saturn and Neptune, over the period of the earth's

Zodiacal Age. By coincidence these cycles of the gas giants and the earth align almost perfectly.

The Age of Pisces, one twelfth of the Great Year, is roughly equal to the period in which the position of the Sun at the March equinox has precessed through the constellation of Pisces over the last two thousand years. The average length of an Age, 2148 years, is the same as the period required for Jupiter, Saturn and Neptune to complete twelve conjunctions in a grouped cycle. Over a longer period the gas giants move into and out of alignment, forming families of conjunctions. One conjunction family has its centre in the year 769 and the next is centred in the year 1524. These overlapping cycles are separated by 755 years. The next such cycle appears to be centred in about 2636, but I have not yet obtained data this far in the future.

The stability of the component orbital periods of the gas giants and the earth means that the components of this clock diagram can describe any time in the earth's future and past, for millions of years at least. Such stability appears to have been in evidence for billions of years, and is likely to persist into the far future.

The planet clock depicts the Age of Pisces against the regular cycle of the gas giants in each of the twelve 'hours' at the points of the clock. The years 53 to 2201 around the outer spiral are the dates when the gas giant planets Jupiter, Saturn and Neptune form a triple conjunction, once every 179 years. 179 years forms the 'hour' of the clock when the Zodiacal Age is considered as the twelve hour circle. Within each 179 year 'hour', more frequent planetary meetings are shown dividing the hour. Each hour is divided in three by Jupiter-Saturn, in five by Saturn-Neptune, and in seven by Jupiter-Neptune conjunctions. These divisions enable ready calculation of the approximate date and position of all gas giant conjunctions for the last two thousand years with the exception of Ouranos (Uranus) which is irregular.

The signs of the zodiac are shown in each hour to indicate a surprising empirical fact: that Jupiter, Saturn and Neptune begin and end each 'hour' of the Age in or close to that tropical sign. This match is exact for the fourth and fifth 'hours' of the clock, but drifts slightly out of alignment the further in time one gets from 17-20 July 769, when the triple conjunction was most exact. This three day period is the cusp of the 'hours' of Cancer and Leo and the planetary conjunction occurred at the cusp of these tropical signs.

I would welcome assistance in comparing this tropical depiction against a sidereal version of this diagram, as a way to help visualize the process and rate of precession of the equinox around the zodiac and to define the historic positions of the gas giants against the background stars.

The three Jupiter-Saturn conjunctions shown in each 'hour' at the third marker of each star point occur every 59.6 years. These conjunctions occur physically at the points shown. For example, between the Jupiter-Saturn-Neptune triple conjunctions at 0° Leo in 769 and 30° Leo in 948, actual positions of Jupiter-Saturn conjunctions are shown at 10° Leo in 829 and 20° Leo in 888. Jupiter and Saturn meet every 19.85 years. The

other two Jupiter-Saturn conjunctions between each one shown occur at points equally spaced around the ecliptic, ie at 3° Sagittarius and 7° Aries etc. To calculate the position of these Jupiter-Saturn conjunctions, the time between two events spaced by 19.85 years is given as 37/108ths of the circle, or four hours of the clock plus one point at the ring of nine marks per hour.

The five Saturn-Neptune conjunctions in each 'hour' are of particular interest as a model of our sixty-base clock. Saturn-Neptune conjunctions occur every 35.8 years, dividing the Zodiacal Age by sixty (2148/60 = 35.8), and forming the minutes and seconds when the diagram is used as a normal clock. The actual locations of the planetary conjunctions for the four points shown between each 'hour' are each 13 'minutes' (13/60) further around the clock, at the thirteenth Saturn-Neptune point, ie 2.6 signs further on along the ecliptic. Each fifth conjunction is exactly one 'hour' later, once Neptune has completed 13/12 orbits and Saturn has completed 73/12 orbits.

Jupiter-Neptune conjunction points are shown in each 'hour' by each row of six conjunctions between the Jupiter-Saturn-Neptune points at the seventh line. These points indicate the fourteen Jupiter-Neptune conjunctions from each triple conjunction to the next, with each second event shown. The actual distance between each conjunction is 13/168 of the ecliptic, or 6.5 points along the circle of seven shown with Jupiter and Neptune, making fourteen meetings per 'hour', one per 179/14 = 12.8 years. The Jupiter-Neptune cycle embodies the number of hours in a week, 168, as the denominator of its fractional distance around the ecliptic.

The planet clock shows how our familiar twelve and sixty based time systems are embedded in the structure of the solar system through the ratio between earth's spin wobble period and the orbital pattern of the three heaviest planets. This orbital pattern finds a unity in the effects of the planets on the position of the sun in relation to the centre of mass, the arc that the solar system follows around the galaxy. Planetary influence on the centre of mass is shown by the barycentric formula $r = a/(1+m1/m2)$, where r is the radius of the sun, a is the distance from the sun to a planet, m1 is the mass of the sun and m2 is the mass of the planet. The relative effects of the planets on the barycenter given by this formula are Jupiter 49%, Saturn 27%, Neptune 15% and Ouranos 8%. The four inner planets in total have 0.1% of Jupiter's effect on the barycenter. These relative planetary effects are readily seen by examining a graph of the barycenter-sun distance over time, in which the three biggest planets produce a wave function with period 179 years, or $1/144^{th}$ of the Great Year of the earth.

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