

The model of Jupiter at Angkor Wat in an ancient solar system model

Abstract

A model of the inner solar system planets that is designed from geometric geodesic lines that connect many ancient monuments has been explained in detail in the previous papers in this series. The outer solar system planet model locations have not yet been established and in this paper I identify the models of Jupiter that are part of the same architectural system. I show that the long term average aphelion and perihelion distances of Jupiter and the range of the planet at the winter solstice of 2729 BCE have been used to locate three models of the planet relative to the Sun model that was identified in the earlier papers. At the location of the perihelion model I show that the first 21 of the moons of Jupiter have been modeled using the temples of the Angkor Wat complex and that the modeling has been done with the knowledge of each moon's orbital characteristics whereby the apoapsis and periapsis values are used with the design system. I go on to show that there are three more models of the cross section of the planet Jupiter that can be logically uncovered within the design, the smallest being a 1:5000 scale model of the planet and the largest being a 1:600 scale model which is located over central Asia and uses mount Everest to pinpoint its southern pole. I conclude that the Jupiter models and the moon models must have been constructed using precise and complete knowledge of the Jupiter planetary system.

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The Great Pyramid papers

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The model of Jupiter at Angkor Wat in an ancient solar system model

In the four previous papers in this series the four planet of the inner solar system have been identified on a 1:87500 scale model of the solar system along with a model of the Sun to which they are attached. The surveying system of the inner solar system contained a mechanism for closing the surveying and the system was resolved to millimeter accuracy on a GPS reference frame at the time of the winter solstice in 2729 BCE. In this paper the model of the first of the outer solar system planets is identified which connects to the second Sun model that was identified in the earlier paper¹ as part of the Moon, Earth and Sun system.

Because the location of the Sun model for the outer solar system is implicit in the design rather than explicit, the architects have included an additional pair of reference points to which the position of the Sun model can be cross checked.

The Earth apoapsis and periapsis points

The range of the Earth model in Cairo relative to the Sun model has already been determined to a very high level of precision and by scaling up this distance by the 1:87500 scale of the model the actual range of the Earth at the moment of the 2729 BCE winter solstice can be determined. Knowing this value allows the DE441 ephemeris to be used to look up the Julian Date of the winter solstice event from which the instantaneous values of apoapsis and periapsis of the Earth's orbit can be extracted. Using the standard modeling technique seen throughout the previous planet models where lines are rotated by 1 radian for every 365 perfect kilometers (pkm) traversed, the locations of the two points representing these distances can be determined relative to the Sun model, and the location of the Sun model center cross checked. Diagram S0 shows the location of the Sun model and the apoapsis and periapsis points.



Diagram S0 - The apoapsis and periapsis points of the Earth.

The periapsis and apoapsis lines on diagram S0 are modeled using the system shown in diagram S1.

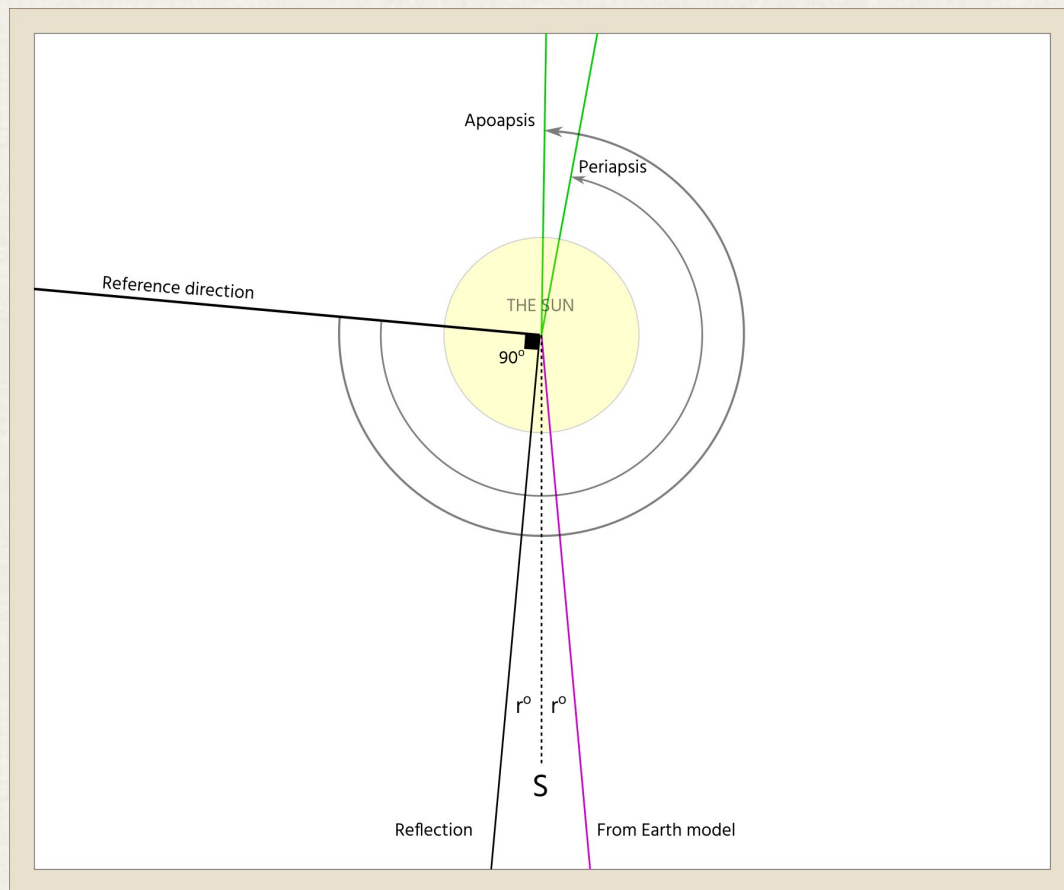


Diagram S1 - The apoapsis and periapsis line modeling system.

The purple line on diagram S1 is the line that comes from the Earth center point and which has a reverse azimuth at the Sun center point of 356.555959 degrees which makes the angle r on the diagram 3.444041 degrees. This line is then reflected in the north-south axis and the reference direction from which the principal lines are rotated is set at 90 degrees to the reflected line. The periapsis of the Earth at the winter solstice of 2729 BCE is exactly 14665000 pkm, a value which is the defining value for the winter solstice, which scales down to 1676 pkm on the models 1:87500 scale. This value can then be divided by the 365 pkm per radian rotation definition to give the periapsis angle from the reference direction as 263.0896615 degrees. Exactly the same method is used to calculate the apoapsis line length and azimuth giving the length as 1737.389903 pkm and the angle of rotation anticlockwise from the reference direction as 272.7263255 degrees.

The values just obtained were determined using the now standard approach of searching for the relevant locations using approximations and then attempting to find how the architectural design has been performed by trying out various permutations of the rotations from differing start points whilst comparing the resulting line end points to the satellite images of the Google Earth system. Once the ground locations are identified they are then used as the target points for the geodesic lines and the DE441 data which is being used to approximate the locations is discarded. In this way the geometric construction of the solar system locations on the Earth always end up independent of any modern data.

Diagram S2 shows the end location of the periapsis line in northern Russia where the point GEO2000 is at a distance of 1676 pkm from the Sun center and the inbound line to this point is at an azimuth of 10.35438 degrees. The line from this point to the point GEO2001 has a length of $666\frac{2}{3}$ perfect meters (pm) and is set at an azimuth of $333\frac{1}{3}$ degrees. The Earth model is a standard polar cross section of the Earth with an equatorial radius of 256 pm and the point GEO2001 is a focal point of this Earth ellipse. The point GEO2002 is the center point of the ellipse and therefore the length of the line between the points GEO2001 and GEO2002 is the focal length of the ellipse.



Diagram S2 - The end location of the periapsis line of Earth.



Diagram S3 - The end location of the apoapsis line of Earth.

Diagram S3 shows the end of the apoapsis line. There are two ground features at this location, the first being the diagonal valley feature that is set perpendicular to the Earth polar cross section ellipse. The second is that at the location of the point GEO2005 there is a 750 tonne stone known as the 'Steed Stone' which considered to be a religious location by locals and which gives its name to the island upon which it is found, the island of Konevets.

The construction method of the Earth model is identical to that of the periapsis point. The Earth ellipse has an equatorial radius of 256 pm, the distance from the point GEO2003 to GEO2004 is the focal length of that ellipse and the point GEO2003 is a focal point of the ellipse with the ellipse center being placed at the point GEO2004. The Steed Stone at the point GEO2005 is located at the south or north pole of the Earth model and the inbound line from the Sun model is that shown in the lower portion of the diagram terminating at the point GEO2003.

The apoapsis and periapsis locations of the Earth are both explicitly marked out on the ground by significant features and therefore the position of the Sun center location is confirmed as being correct, in addition to which the elliptical shape of the Earth's orbit at the moment of the winter solstice in 2729 BCE is now known.

The models of Jupiter

Jupiter is the first of the outer solar system planets and is therefore a significant distance from the Sun making it more than likely that the location of the models of the planet would be positioned relative to those of the Earth and so this line of investigation was pursued first during the investigation. After extensive analysis it was discovered that there are three models of Jupiter mapped out on the outer solar system 1:87500 scale model. The long term average aphelion is modeled relative to the instantaneous apoapsis of the Earth at the 2729 BCE winter solstice. The long term average perihelion of the planet is modeled relative to the instantaneous periapsis of the Earth at the winter solstice in 2729 BCE and the range of the planet is modeled relative to the range of the Earth at the winter solstice.

This modeling system explains why the periapsis and apoapsis locations of the Earth were modeled in northern Russia because the distances involved in that modeling are now required to solve the location of the Jupiter models.

Because Jupiter is such a long distance from the Sun the elliptical orbit of the planet becomes highly significant when creating the aphelion and perihelion locations because the difference between the two distances, even when scaled down by 87500:1, remains large. This means that when the rotation of 1 radian for every 365 pkm is applied to the lines there is a significant difference of 123 degrees between the aphelion and perihelion model locations. Diagram S4 shows a high altitude view of the Earth with the lines to the points marked on it.

The line that runs from the Sun model location through Finland and Greenland terminates in Canada and is the long term average perihelion line. The line that runs to the East from the Sun model point through the Himalayas and terminates in Cambodia close to the Angkor Wat temple is the long term average aphelion.

The third line on the diagram marks out the range of Jupiter at the 2729 BCE winter solstice and terminates in Vietnam on a small island just off the coast of the country. As can be deduced from these three lines, at the winter solstice of 2729 BCE Jupiter was very close to its aphelion point in its orbit around the Sun.

The location of the perihelion line in Canada is shown in diagram S5.

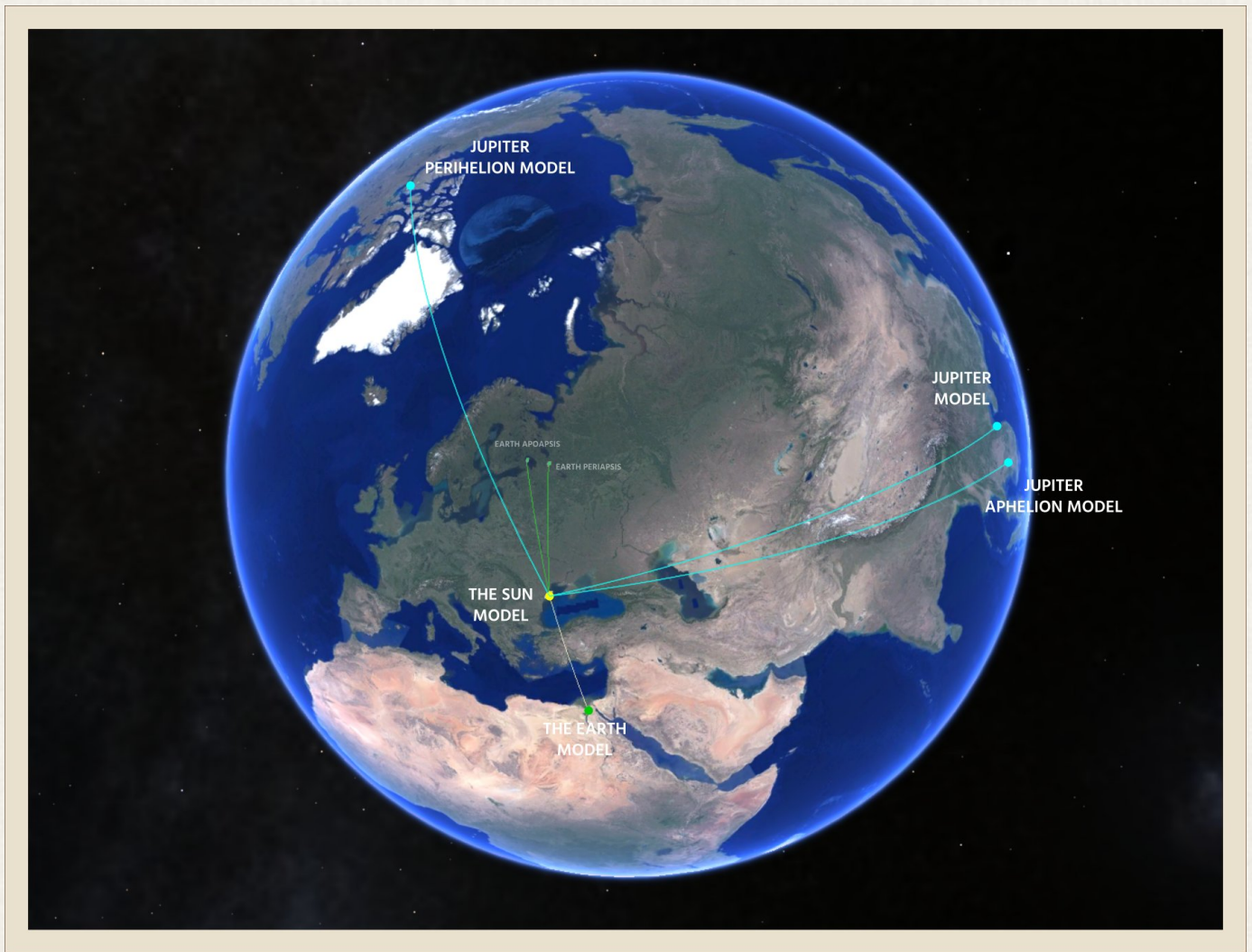


Diagram S4 - The three models of Jupiter.

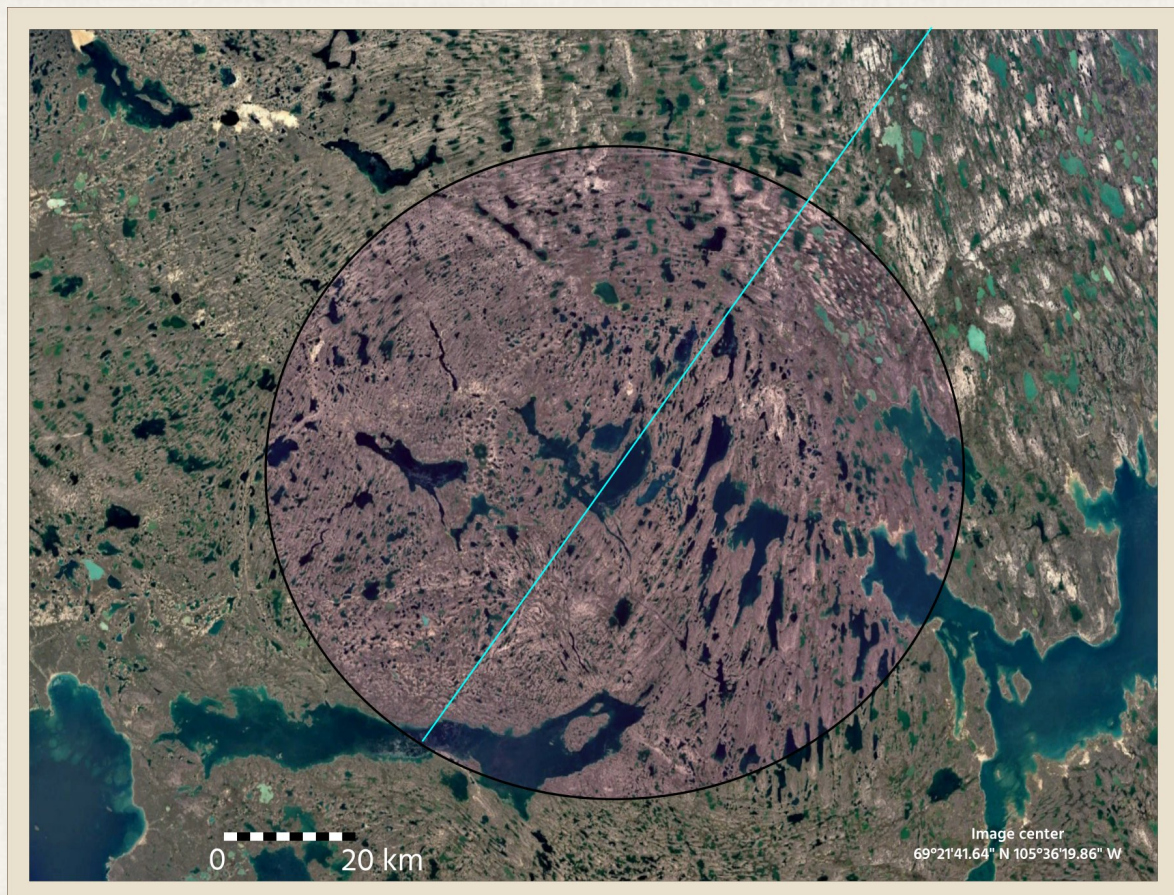


Diagram S5 - The perihelion location in Canada.

As can be seen from the diagram the location is in the middle of an area full of lakes and although a fit to a 1:2700 model of Jupiter can be seen in the rock formations of the area towards the north of the image there is no other definitive structure at this location that is worthy of note.

The location of the end of the Jupiter range line however has a quite conclusive alignment point which is shown in diagram S6 located on a small island off the Vietnamese coast.

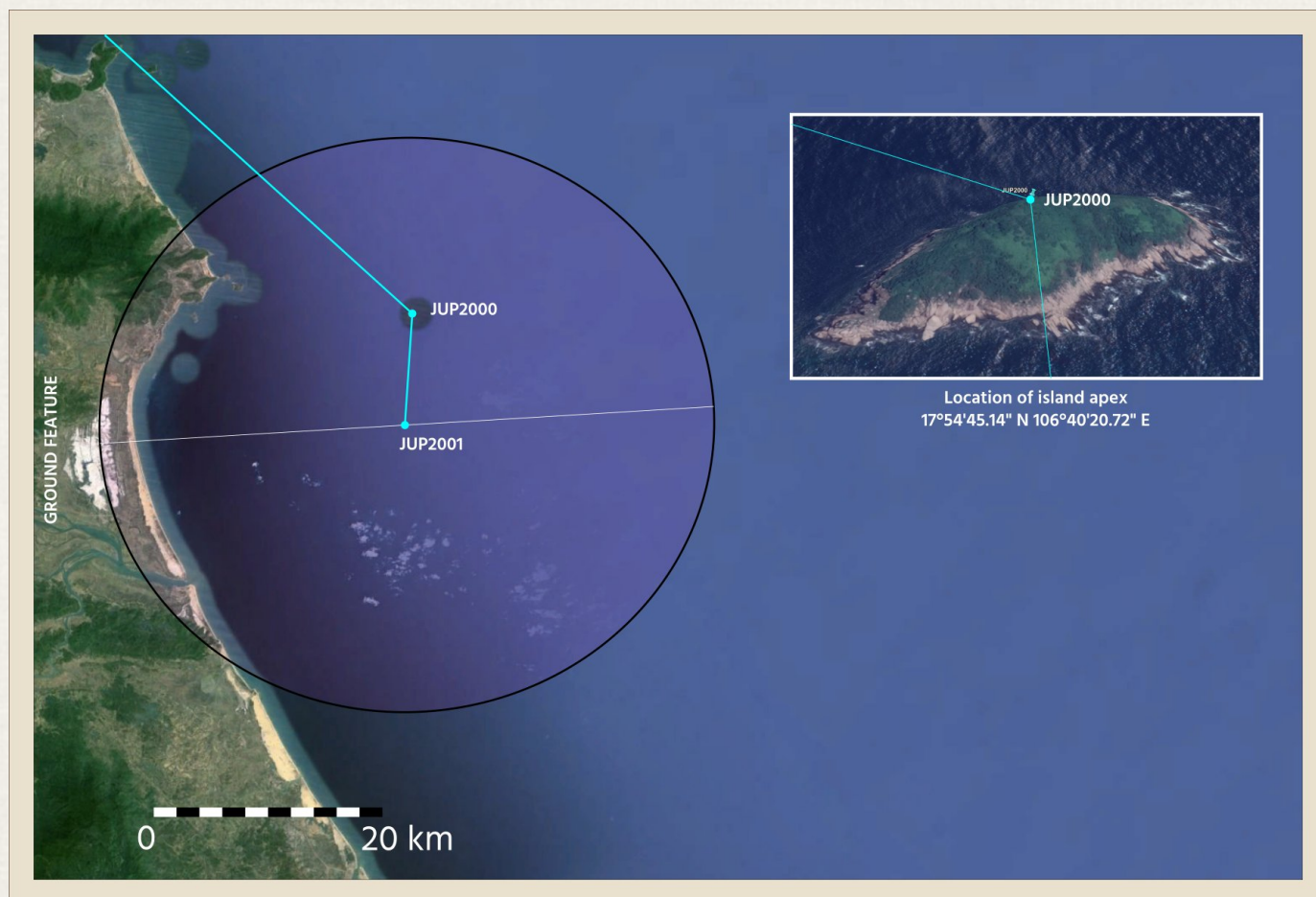


Diagram S6 - The marker point for Jupiter at its 2729 BCE winter solstice range.

The point JUP2000 on diagram S6 is located at the apex of the hill on the island that is shown in the inset illustration and is determined by first using the range of Jupiter relative to the range of Earth at the 2729 BCE winter solstice from the DE431 ephemeris which positions the point to within 150 m of the hill top. The range can then be adjusted, which also adjusts the line's angle from the Sun center, until the point perfectly coincides with the highest point on the island when tectonic plate movement is applied to the geodesic lines. The resulting distance between the Sun model center point and the hill top is 7553.465 pkm which when scaled up by 87500:1 and added to the periastron distance of Earth gives the range of Jupiter at the 2729 BCE winter solstice as 809,510,359.370 pkm which has a variance from the DE431 value of 1 part in 70,000.

The point JUP2001 is the focal length of a 1:2700 scale model of Jupiter, the scale being taken from the potential Jupiter model in Canada, and this point is set at an angle of 180 degrees plus the axial tilt of Jupiter of 3.24 degrees and then the model of Jupiter is drawn with the equator line also angled at 3.24 from the cardinal points. On the west side of the planet model there is a ground feature shown on the diagram which has a very similar format to the ground features² around the Sun model in the Ukraine whereby the elliptical shape of the planet has been carved out of the landscape on a massive scale with the white pock feature being 10 km in length.

There are no other ground features or ancient monuments in the surrounding area and the range line of Jupiter to this island is not the principal of the three Jupiter lines that contains the definitive model of the 7

planet at the end of it. This has been emphasised in the architecture because at the start of the line, on the Sun model, the location of the start point is not the center of the Sun but is a derived point that is shown in diagram S6a.

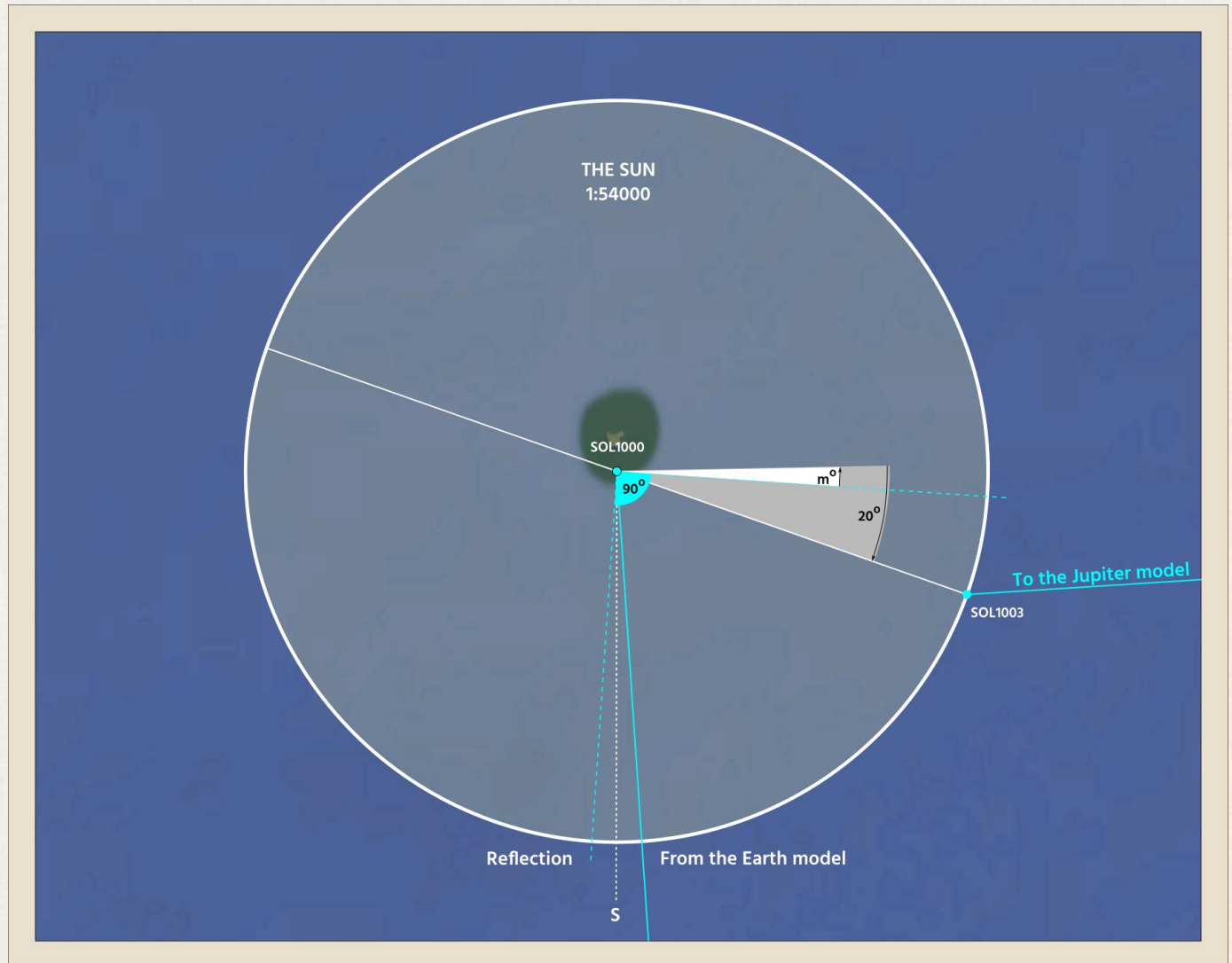


Diagram S6a - The sun start location for the Jupiter range line.

The diagram shows the Sun center point SOL1000 around which a 1:54000 scale model of the Sun is drawn. The cyan line coming in from the south is the line from the Earth model in Cairo which is reflected in a north-south line, this reflection being shown by the dashed line to the left. The dashed line running in an easterly direction from the center of the Sun is perpendicular to the reflection line. Using this as a reference direction the position of the Jupiter line start point, SOL1003, is constructed by adding the axial tilt of the Moon shown as angle m° in an anticlockwise direction and then a 20° rotation of the resulting line in a clockwise direction. All of the data required to construct this point is known to a high degree of precision meaning that the start point of the Jupiter line is a millimeter accurate location.

This design system ensures that the outer solar system model of the range of Jupiter at the winter solstice of 2729 BCE cannot be determined unless the Moon axial tilt from the inner solar system model has been resolved.

The third line on diagram S4 marks out the long term average aphelion distance of Jupiter relative to the instantaneous apoapsis distance of the Earth at the 2729 BCE winter solstice and is by far the most important of the three line because it is roughly aligned with the Angkor Wat temple in Cambodia and terminates about 80 km short of the structure. It forms the starting line in another of the architect's puzzles in which it is required to determine how the line attaches to the temple, and by solving the puzzle the whole of the Angkor Wat series of temples can rationally resolved against the astronomy.

The reason that the principal Jupiter model is located on this average aphelion distance line is that the line length is not a variable unknown length, unlike the range line for Jupiter at the winter solstice of 2729 BCE, and therefore when starting to solve the puzzle it is known with certainty that the line length is a fixed constant value because the long term average distance is also a fixed constant. Because the start point of the line at the *center* of the Sun model is known precisely and the line length cannot vary then the only unknown quantities in the puzzle must lie at the Cambodia end of the line, allowing the design system to be resolved using logical analysis. Diagram S7 shows the first geometry of the fully resolved Jupiter model at Angkor Wat.



Diagram S7 - The principal geometry of the Jupiter model at Angkor Wat.

The point JUP1000 is the long term average aphelion distance of Jupiter relative to the apoapsis of Earth and is 7588.459 pkms in length. The line from JUP1000 to the point JUP1001 is a continuation of the previous line and has a length equal to the full size long term average aphelion of Jupiter divided by ten million giving the line a length of 81.60117934 pkms. The model of Jupiter is a 1:25000 scale model of the elliptical cross section of the planet with an axial tilt applied relative to the reverse azimuth of the inbound line at the point JUP1001 of the long term average axial tilt of Jupiter of about 1.3 degrees plus 30 degrees applied anticlockwise to the planet model.

The point JUP1002 is the equator point of the planet model and the point JUP1003, which falls on the central tower of the Angkor Wat temple, is a model of the first of Jupiter's four large moons Io. The moon is also modeled at a scale of 1:25000 giving the distance from the center of the Jupiter model to the moon Io as 16.7597 pkms when the moon is at periapsis and 16.8977 pkms when the moon is at apoapsis. From this data it can be deduced that Angkor Wat must be a model of the moon Io at periapsis because the 138 m difference between the apoapsis and periapsis values is sufficiently large to be able to distinguish on the temple which value fits and which does not.

Diagram S8 shows a more detailed view of the Angkor Wat area.

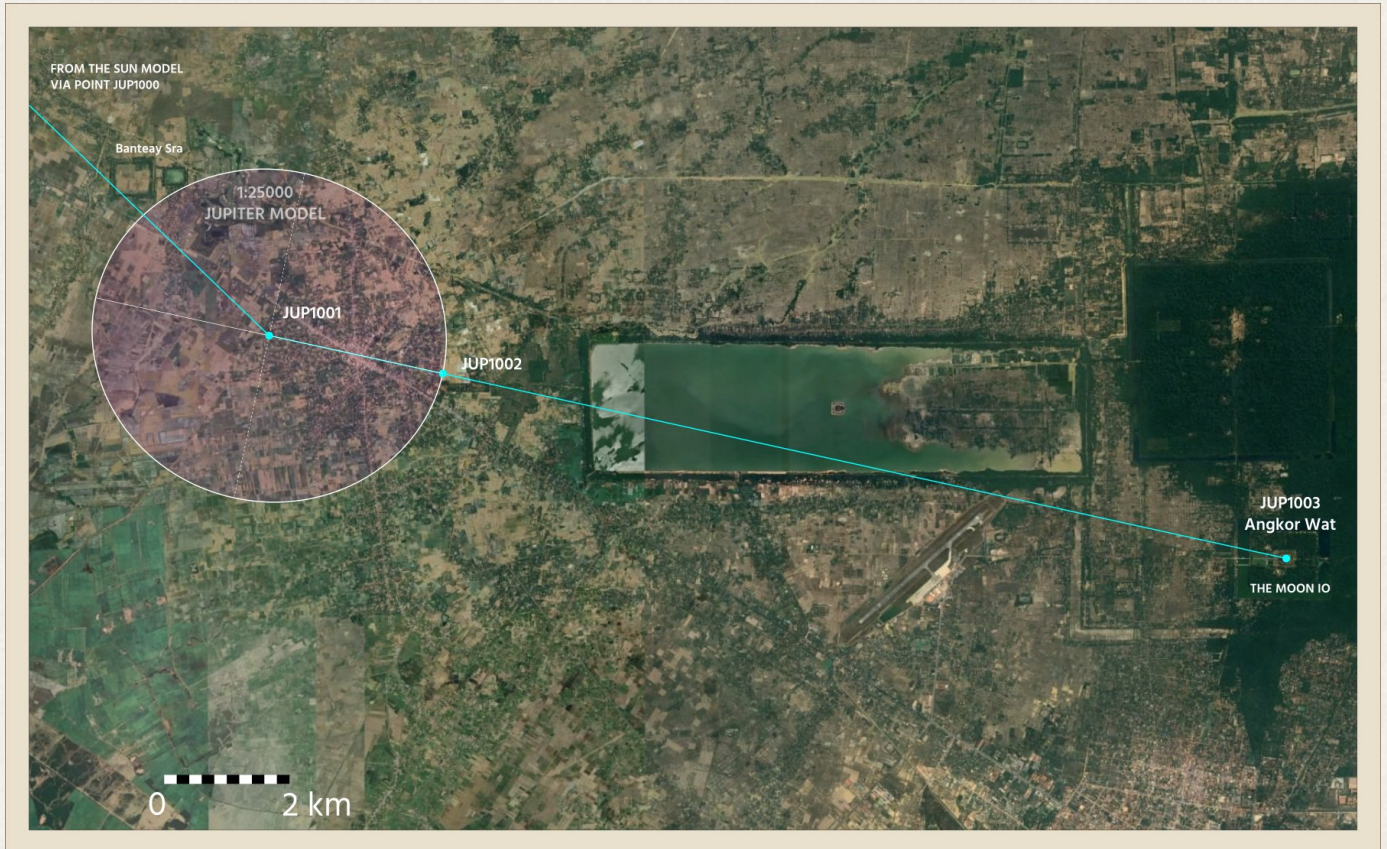


Diagram S8 - The principal geometry of the Jupiter model at Angkor Wat, detailed view.

The position, alignment and size of the Jupiter model can be confirmed by reference to the ancient construction known as Banteay Sra which is located in the top left of diagram S8. It is an alignment mechanism which is identical to that used in the Venus model shown in the earlier paper³ where the north pole of the planet model is aligned with the central axis of the construction as shown in diagram S9.

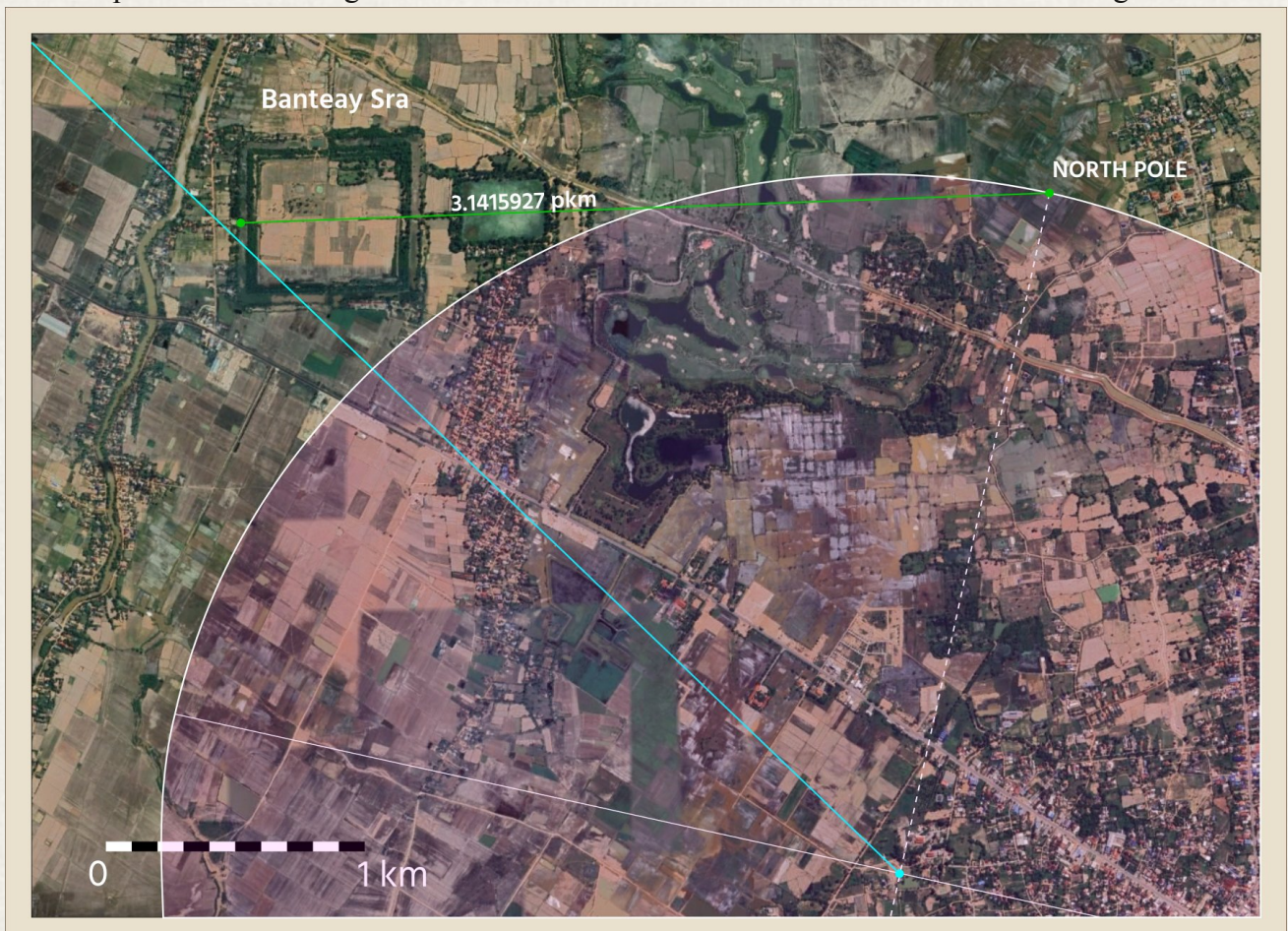


Diagram S9 - The alignment of the Jupiter model to Banteay Sra.

The north pole point of the 1:25000 scale model of Jupiter is exactly in line with the central axis of Bantaey Sra and the western side of the ancient construction is located at exactly π perfect kilometers from the pole point. The angle of the line that connects the two location is $\pi-1$ degrees, or 2.1415927 degrees south of due west. By using this alignment mechanism the axial tilt of Jupiter at the moment of the 2729 BCE winter solstice can be determined. The model of the moon Io has been constructed at Angkor Wat temple and is perfectly in line with the equatorial radius of the planet model.

There is a further alignment on diagram S8 which is not obvious but can be shown to deliberate on the part of the architects. The line from Jupiter to Io runs exactly through the end of the modern runway at the airport that serves this region and the detail of the alignment is shown in diagram S10. Whilst this alignment may appear to be coincidental it will be shown in future papers that other parts of the outer solar system model also align precisely to modern airport runways which further confirms that the architects must have had access to information from the future when these monuments were designed, however improbable that scenario may currently appear.



Diagram S10 - The runway alignment at Angkor Wat.

The moons of Jupiter

The moon model of Io at Angkor Wat is the first of many temple constructions that can be found in the immediate vicinity of the main temple and each of the subsidiary temple is positioned to represent one of the many moons of Jupiter.

There are currently 95 known moons around Jupiter which fall into distinct groups that have similar inclinations to the equator of the planet. On the next page in table S11 there is a list of the first 22 of these moons listed in semi major axis length order. As will be shown in this paper each of these 21 moons is explicitly represented around Angkor Wat by one of the temples of causeways that can be found hidden among the lush greenery of the surrounding forests or by subsidiary parts of principal temple constructions when the moons are too close to each other on the 1:25000 scale model to make individual constructions a viable proposition.

Moon	(km) Diameter	(deg) Inclination	(pkm) Semi major axis	(pkm) Periapsis	(pkm) Apoapsis	(%) Error
Group 1- scale 1:2,500,000						
Metis	43	0.060	0.0511899	0.0511797	0.0512002	0.00
Adrastea	16.4	0.030	0.0515899	0.0515125	0.0516672	0.00
Amalthea	167	0.374	0.0725457	0.0723136	0.0727779	0.00
Thebe	98.6	1.076	0.0891426	0.0875826	0.0907026	0.00
Group 2 - scale 1:25,000						
Io	3643.2	0.050	16.828684	16.759686	16.897682	-0.24
Europa	3121.6	0.470	26.879969	26.638049	27.121889	0.15
Ganymede	5268.2	0.200	42.839627	42.783935	42.895318	0.07
Calisto	4820.6	0.192	75.953199	75.391146	76.515253	0.88
Group 3 - scale 1:25,000						
Themisto	9	43.80	297.28824	196.21024	398.36624	0.48
Group 4 - scale 1:2,500,000						
Leda	21.5	28.6	4.4576837	3.7355390	5.1798285	0.41
Ersa	3	29.1	4.5595037	4.0783246	5.0736541	-0.32
S2018J2	3	28.3	4.5443822	3.8536361	5.2341284	-0.52
Himalia	139.6	28.1	4.5822566	3.8490956	5.3154177	0.15
Pandia	3	29.0	4.6127374	3.7870574	5.4384174	0.46
Lysithea	42.2	27.2	4.7584002	4.2016673	5.2401330	0.34
Elara	79.9	27.9	4.6855192	3.3968747	5.6741638	0.12
S2011J3	3	27.6	4.6894989	3.7891151	5.5898827	0.16
Dia	4	29.0	4.9176402	3.7767476	6.0585327	0.37
Group 5 - scale 1:2,500,000						
S2018J4	2	50.2	6.5341163	5.3775778	7.6906549	0.06
Carpo	3	53.2	6.8270322	3.9869868	9.6670776	0.17
Valetudo	1	34.5	7.4076104	5.8001589	9.0900618	0.09
Group 6 - scale 1:2,500,000						
Euporie	2	145.7	7.6240774	6.4957140	8.8274409	-0.07
Ananke	29.1	147.6	8.4169064	6.3926404	10.4411724	0.06

Table S11 - The 22 moons of Jupiter.

The moons in the table are grouped according to the design system of the temples around Angkor Wat which also follows closely the moon groupings around the planet. The moons that have names containing numbers have only recently been discovered and the name shows the year of discovery with formal names not yet having been assigned. The semi major axis, periapsis and apoapsis distances shown in the table have been scaled down from the real values by the scales shown so that the construction of the temples and features that represent these moons can be compared easily to the table values. Most importantly these distances have been calibrated to the monuments of Angkor Wat and are not the values that can be found in modern tables of Jupiter's moons. The cumulative error in the semi major axis of the 22 moons shown in the table after adjustment to the monuments, relative to modern values, was 0.22% with the maximum error occurring on the moon Callisto at 0.88% of the modern day listed value.

The first moon to be encountered in the ancient monuments is the moon Io located at the main Angkor Wat temple and shown in diagram S12. The inbound line from the center of the Jupiter model terminates on the central tower of the temple which is the center of the moon Io. The dimensions of Io taken from modern data show that its polar cross section ellipse has radii 3660 km and 3631 km which gives the focal length of the elliptical cross section a length of 18.4 meters. This is the internal dimension of the inner courtyard of the temple which places the focal point of the elliptical moon to the left of the courtyard as shown on the diagram. An in depth analysis of the surveying of the temple would be required to completely resolve the dimensions, the values that are shown in this paper are those from the initial analysis which are sufficiently accurate to be able to explain the construction of the complete moon system.

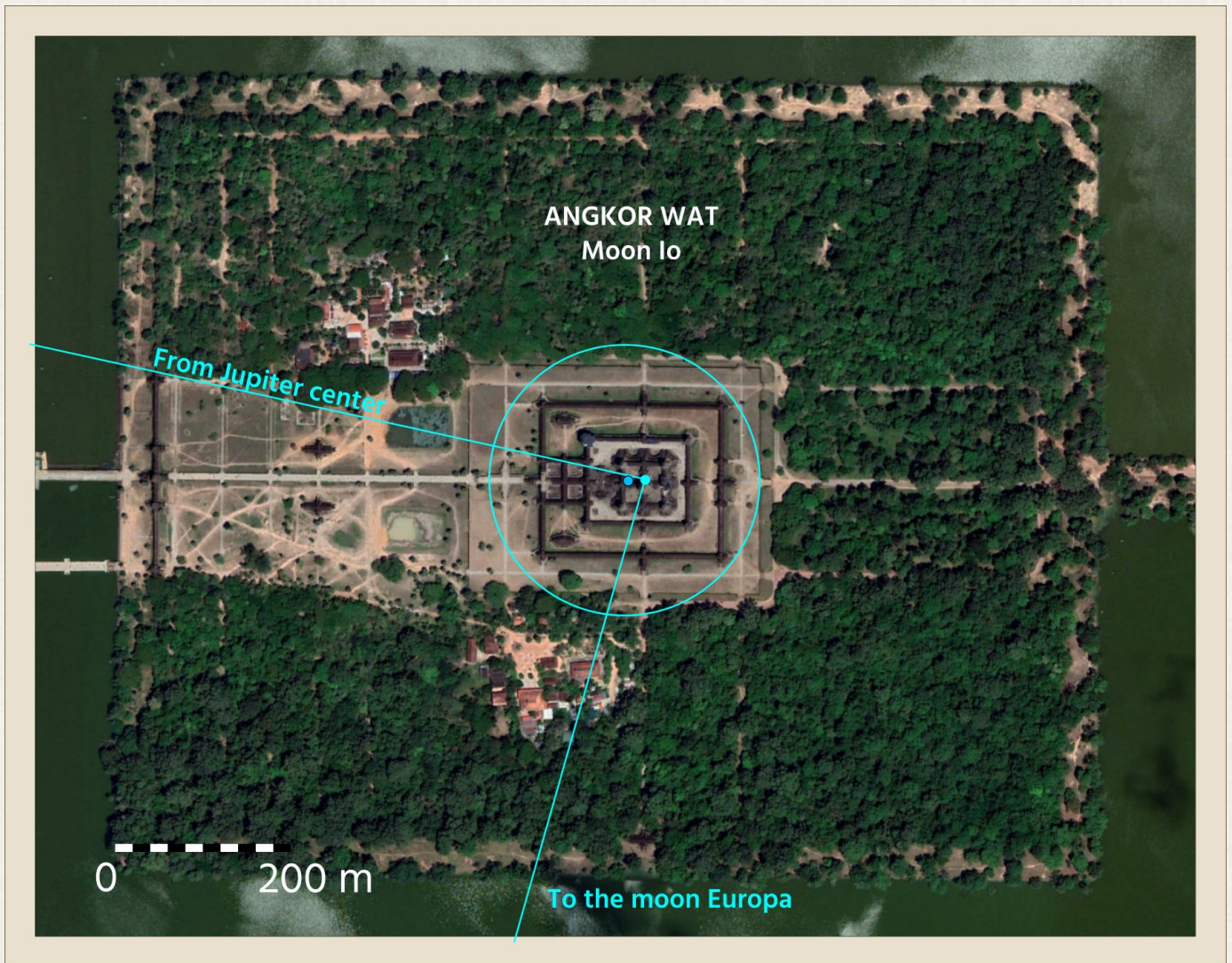


Diagram S12 - The Jupiter moon Io at Angkor Wat

On diagram S12 the inbound line from the Jupiter model is shown on the left and the line running out of the south of the image is the line which connects Io to the next moon in the sequence, Europa.

The moon Europa has a scaled apoapsis distance of 27.1219 pkms and this distance is plotted on the moons model relative to the apoapsis distance of Io 16.8977 pkms giving the difference between the two as 10.22421 pkms. The temple that represents Europa was determined by plotting a circle of this radius around Angkor Wat and the resulting azimuth deciphered from the identified location rather than using a set angular rotation per unit of distance. The location of the Europa moon is shown in diagram S13.



Diagram S13 - The Jupiter moon Europa south of Angkor Wat temple.

The next moon in the series of Jupiter's moons is Ganymede and this time the difference between the periapsis distance of Europa and the periapsis distance is used as the determining factor in the distance between the two locations, rather than the apoapsis distances used between Io and Europa. The location of the temple was identified in the same manner as before, by plotting a circle of the correct scaled length from Wat Athvear and determining from this the location of the temple. The azimuth of the line between the temples representing the moon Europa and the moon Ganymede is exactly 32 degrees but the line has to be plotted using spherical mapping for the point to fit correctly. The Ganymede moon temple is shown in diagram S14.



Diagram S14 - The Jupiter moon Ganymede plotted from Wat Athvear.

The distance to the next moon, Callisto, is determined by taking the difference between the apoapsis distances of the two moons and the pattern used in the architecture now becomes apparent whereby each moon location alternates between apoapsis and periapsis relative distances from the previous moon. In addition to this the fact that the previous line azimuth was exactly 32 degrees and the line required spherical plotting rather than ellipsoidal shows that the azimuths between the moons do not have a set distance to angle ratio and cannot be predicted. The scaled down distance between the apoapsis of Callisto and that of Ganymede is 33.62 pkm and the line connecting the two monuments is plotted in an easterly direction. The location of Callisto (and all future moons) was determined by plotting a circle with the radius of the calculated distance around the previous moon location and then searching for the monument on that circle. Diagram S15 shows the location of the moon Callisto.



Diagram S15 - The Jupiter moon Callisto plotted from the Eastern Mebon.

The reason that there only appears to be one line on the right image of diagram S15 is that the azimuth of the line to the next moon, Thermisto, is almost identical to the reverse azimuth of the inbound line from the moon Ganymede.

Because the full scale distance to the next moon is significantly large then the architects have changed the scale of the modeling in order to keep the model of the moons compact. The distance between the moons Callisto and Thermisto is, as expected, determined from the periapsis distance between them scaled down by 25000:1. However, the resulting distance is then scaled down by a further factor of 3 meaning that the scale being used for the distance between the moons is 1:75000. The location of the temple marking out the moon Thermisto is situated to the north of Angkor Wat at the Bayon Temple as shown in diagram S16.



Diagram S16 - The Jupiter moon Thermisto at the Bayon Temple.

If you look at table S11 you will see that the next moon in the series Leda is the first in group 4 and that the scale of the models in this group is 1:2,500,000. Because the previous moon Thermisto is modeled at 1:75,000 then there is no easy way to create a geodesic line between the two by taking the distance between the apoapsis distances of the two at different scales and consequently the architects have placed the moon Leda at the same location as the moon Thermisto as shown in diagram S16. It needs to be remembered that as well as being scientifically accurate, the moon models are part of a puzzle and therefore placing two moons at the same location makes the puzzle harder to solve.

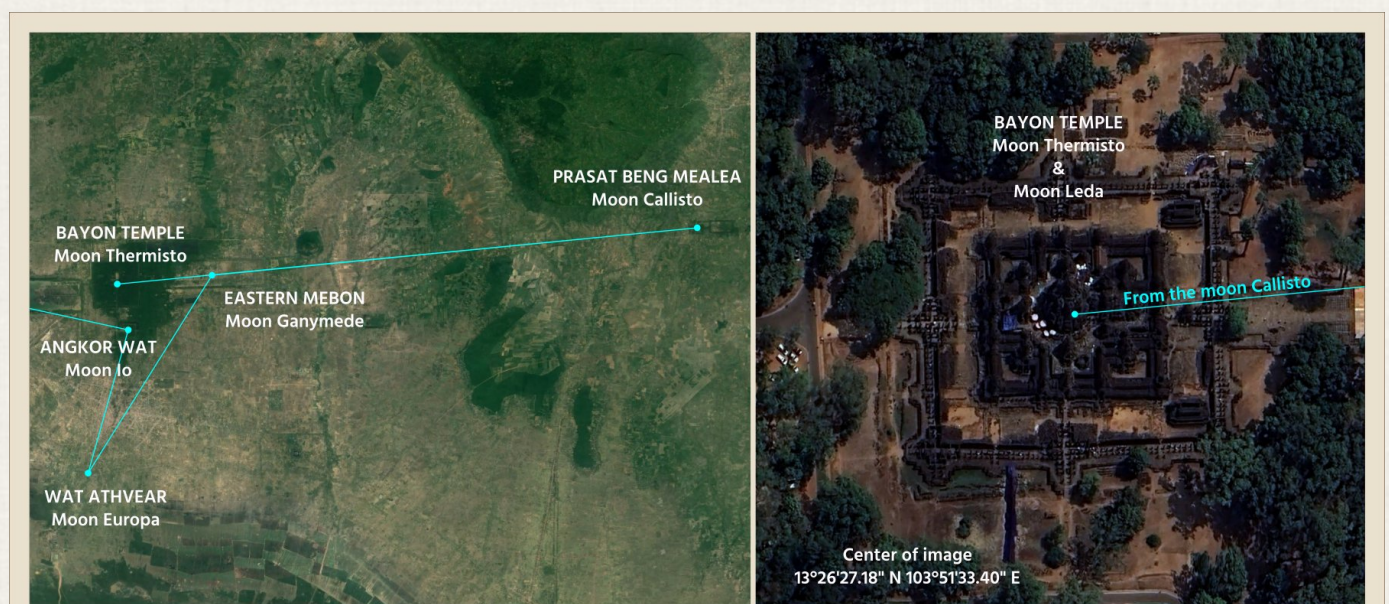


Diagram S17 - The Jupiter moon Leda at the Bayon Temple.

Diagram S17 shows the location of the next moon in the series, Ersa, situated 282.33 meters to the north of the Bayon Temple.



Diagram S18 - The Jupiter moon Ersa at the eastern end of the causeway to Baphuon temple.

The distance between these two moons is determined from the difference between the scaled periapsis values of the two moons because the difference between the apoapsis values is negative. That is to say that although the orbit of the moon Ersa has a larger semi major axis it has a smaller apoapsis but larger periapsis because of the eccentricity of the orbit and therefore there is no choice as to which of the apsis is used in the modeling. The same is true for many of the other moons in this group, and in the situations where both the periapsis and apoapsis are positive values then the correct value is selected by comparison to the architectural features on the ground.

The next three moons in the series all lie on the causeway that runs from the location of the moon Ersa to the western side of the Baphuon temple, the first of these being the moon S2018J2 situated 159.85 meters in a westerly direction from the moon Ersa as shown in diagram S19.



Diagram S19 - The Jupiter moon S2018J2 on the causeway to Baphuon temple.

The next moon in the sequence is Himalia which has to be plotted using the relative apoapsis distance because the relative periapsis distance is negative. Diagram S20 shows this moon at the western side of the Baphuon temple, the point being located 80.29 meters along the causeway in a westerly direction relative the the previous moon point.

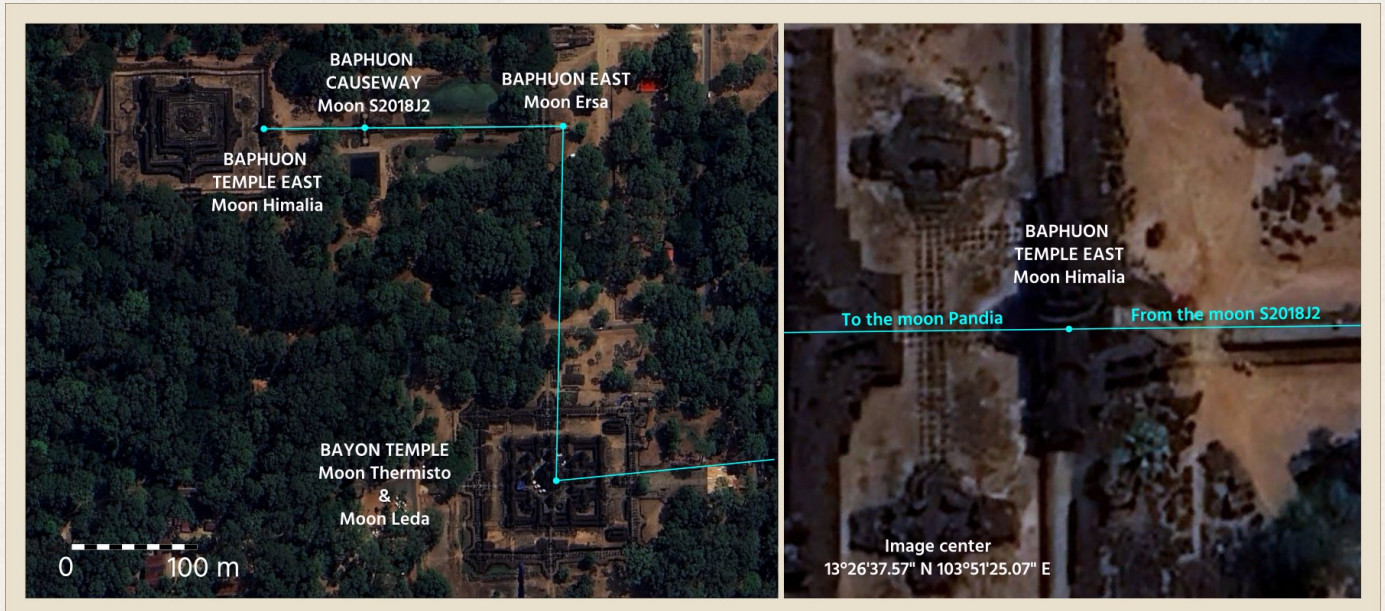


Diagram S20 - The Jupiter moon Himalia at the eastern entrance to Baphuon temple.

The moon Pandia is the next in the sequence and is logically located at the west entrance to the Baphuon temple 123 meters to the west of the previous moon point and uses the relative apoapsis distance of the two moons, the relative periapsis distance being a negative value. This moon location is shown in diagram S21.



Diagram S21 - The Jupiter moon Pandia at the western entrance to Baphuon temple.

At this point there is a change in the system for the next moon in the sequence, Lysithia. Instead of using the relative distance from the previous moon to determine the distance to the next moon the absolute value of the periapsis is used scaled down by the same value as all the previous moons of 1:2,500,000. This gives the scaled periapsis distance as 4.14604 pkm which is then further divided by 10 to give the distance to the next moon as 414.604 pm as shown in diagram S22.

The most likely reason that the architecture is constructed in this manner is that coincidentally the relative periapsis distance between Lysithia and Pandia (the relative apoapsis distance being negative) is 359 meters and the modeled distance between the moon Ersa and Pandia along the Baphuon causeway is 364 meters and there would be an ambiguity in the architecture where the moon Lysithia could have been located at the East end of the causeway. The logic of the azimuth of the line to Lysithia can be deduced as it is the absolute values of the apoapsis and periapsis differences added together to give 0.5585 pkm and then transposed into degrees to give 55.85 degrees.



Diagram S22 - The Jupiter moon Lysithia on the 'Terrace of the Elephants'.

The distance to the moon Elara is taken from the relative scaled distance of the apoapsis of the moon Lysithia and that of Elara and is 434 pm and is shown on diagram S23. The line terminates at the Kandork Yeak temple which is only just visible on satellite photography as the tree canopy nearly covers the whole of the inner structure of the temple.



Diagram S23 - The Jupiter moon Elara at the Kandork Yeak temple.

The next moon in the sequence is named S2011J3 and is positioned 92.2 pm from the moon Elara with this distance being the scaled difference between the periapsis values of the two moons. As with the previous moon the temple that represents it is located within the tree canopy area although this temple is much clearer to see on the satellite images. Diagram S24 shows the location of this moon at the Angkor Thom temple.



Diagram S23 - The Jupiter moon Elara at the Kandork Yeak temple.

The final moon in this group is the moon Dia and the azimuths of the previous two moons have been selected in the architecture so that the moon Dia is located at the same location as the moon Lysithia on the Terrace of the Elephants. The distance between the moons is taken from the scaled apoapsis distance difference which is 468.65 pm and is shown on diagram S24.



Diagram S24 - The Jupiter moon Dia on the 'Terrace of the Elephants'.

Because the next moon in sequence is the first moon of the next group and there is a significant 1.5 km difference in the elliptical orbit's semi major axis relative to the previous moon both the apoapsis difference and the periapsis difference are both positive numbers. The architects have taken this opportunity to use both of these values and have plotted the next moon at both its apoapsis and periapsis positions. The two locations on the ground are the east and west gates of the large enclosure known as Angkor Thom, with both of the lines being plotted from the location of the last moon, Dia, on the Terrace of the Elephants. The two locations of the moon S2018J4 are shown in diagram S25 along with all of the other moons in that area that have been plotted up to now. The lines from the moon Dia to the moon S2018J4 are plotted in green so as to distinguish this group of moons from the previous as the diagram becomes more complex.

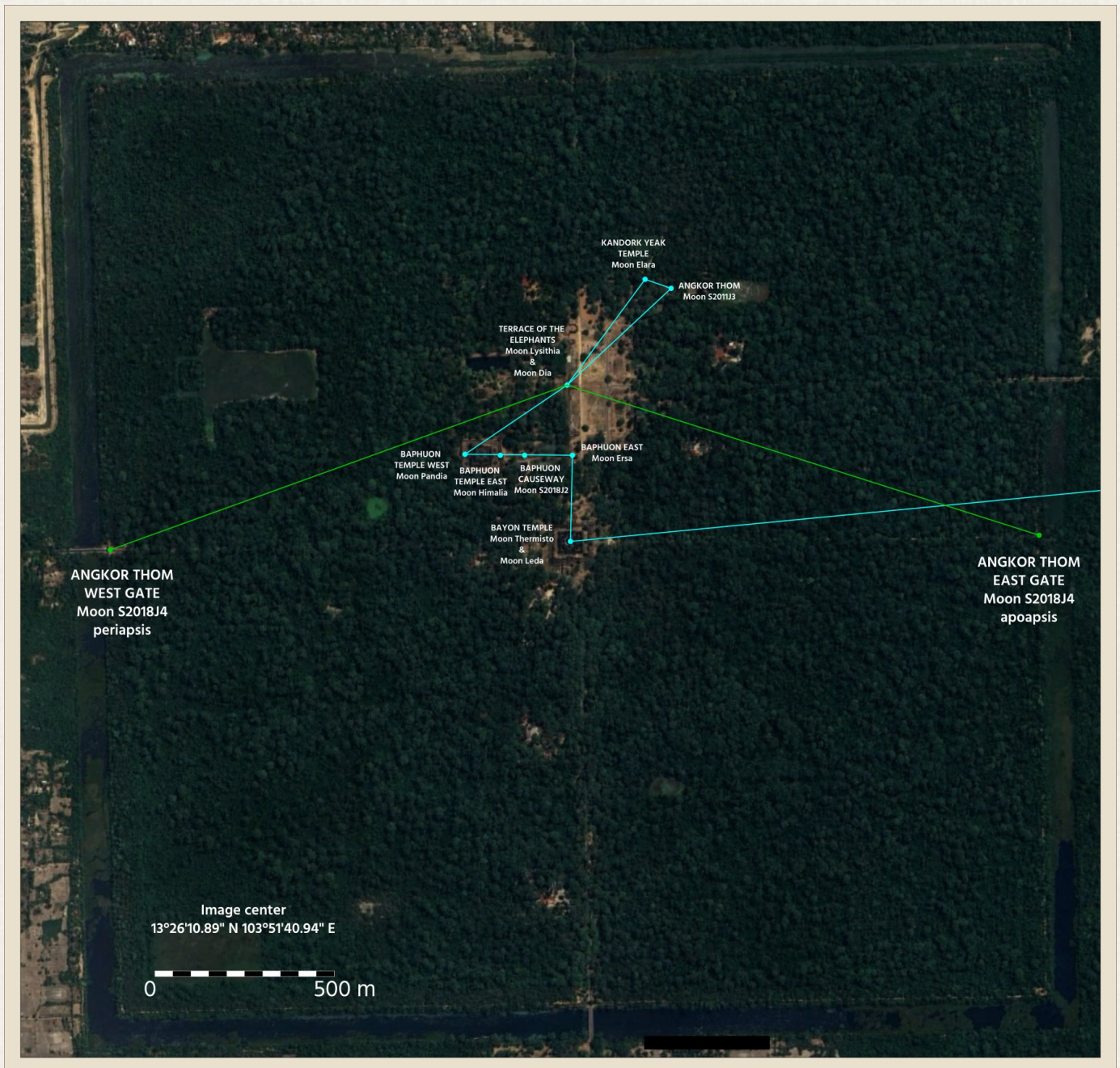


Diagram S25 - The Jupiter moon S2018J4 at the east and west gates on Angkor Thom.

The next moon in sequence is Carpo which reverts back to having the difference in the periapsis relative to S2018J4 being negative and the apoapsis difference being positive. In order to keep the alternating sequence the architects have therefore selected the west gate of Angkor Thom as the selected moon point from which to plot because it was the periapsis point of the previous moon, and the distance to the next moon is therefore the apoapsis distance between the two moons and can be calculated as being from table S11 as being 1.9764 pkm.

Because of the way the moon points have been designed with the azimuths not following any particular length to angle ratio, the moon Carpo is located at the same position as the moon Elara. What is being done in the architecture is that they are creating closed triangles of points so that with sufficiently accurate ground surveying it would be possible to perfectly recreate the distances between the moons and thereby extract the astronomical data from the architectural design.

Diagram S26 shows the moon Carpo at the Kandork Yeak temple with the line plotted in green and running from the west gate of Angkor Thom.

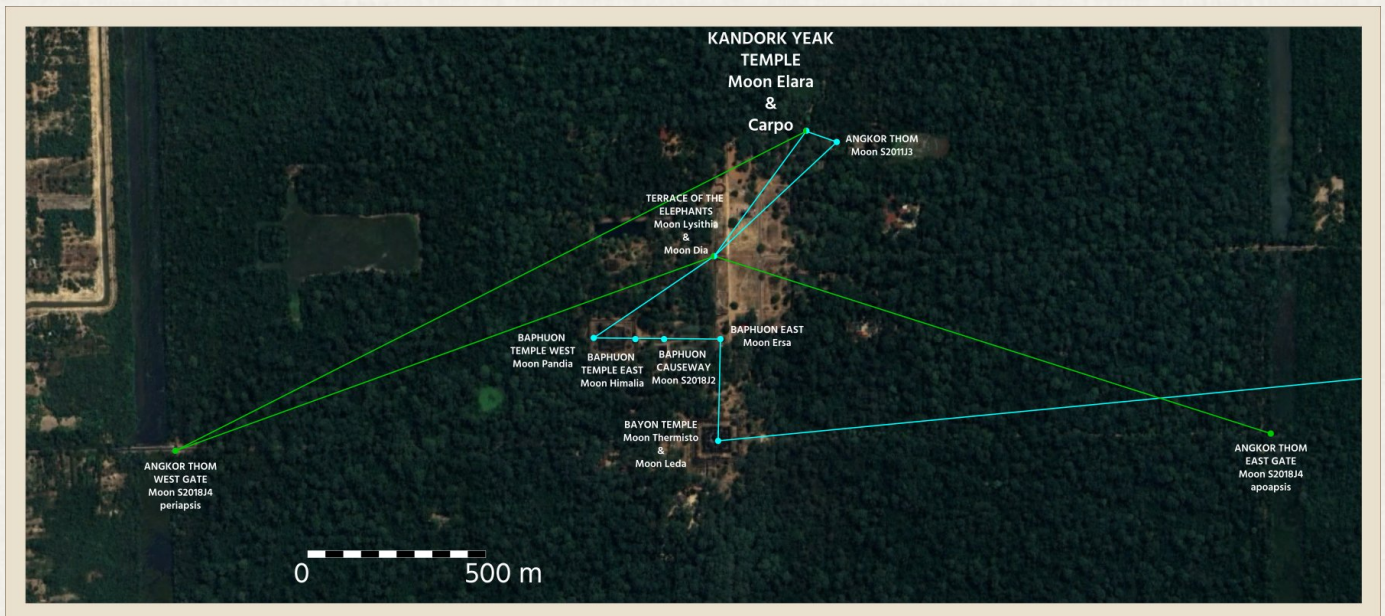


Diagram S26 - The Jupiter moon Carpo at Kandork Yeak.

If you calculate the differences between the apoapsis and periapsis values of the next moon Valetudo and the moon Carpo, the periapsis is positive and the apoapsis is negative and so Valetudo is plotted using the difference in the periapsis values of 1.872 pkms as shown on diagram S27. The end point of the line is at the north east inner corner of Prasat Preah Khan temple at an azimuth of 38.46 degrees.

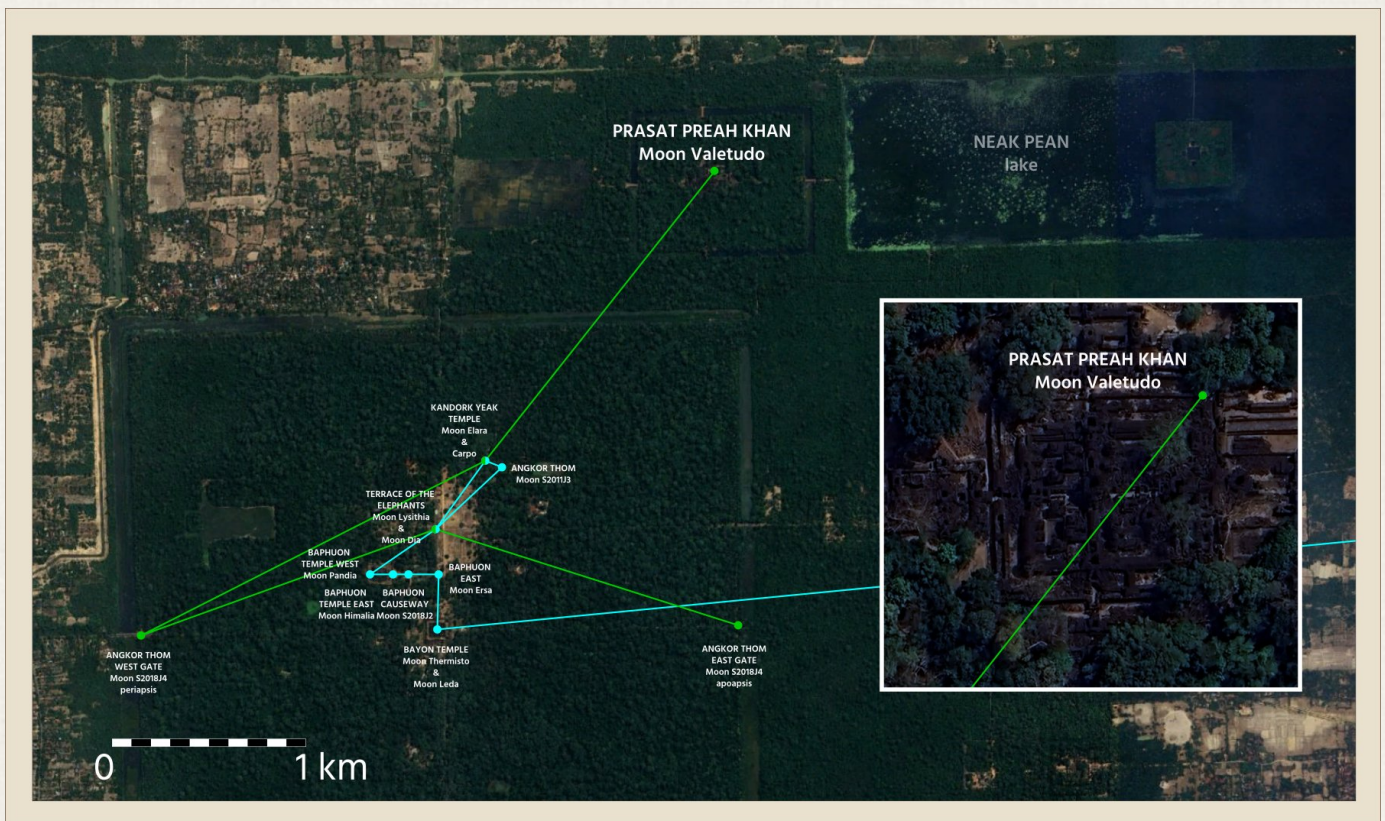


Diagram S27 - The Jupiter moon Valetudo at Prasat Preah Khan temple.

The penultimate moon in the sequence and the first of the two moons in group 6 is Euporie which has a positive periapsis difference distance and negative apoapsis difference distance. The periapsis difference on the 1:2,500,000 scale model is 701 pm and is plotted in a due east direction to the eastern perimeter of Prasat Preah Khan on the western end of the large rectangular lake called Neak Pean shown on the previous diagram. The moon Euporie is first of a group of 36 moons which all orbit in close proximity to each other, with the group being known to astronomers as the Ananke group and named after the largest of these 26 moons. The connection between the moons Valetudo and Euporie is shown in diagram S28 and the pathways around the lake are shown in the inset image by the dotted white lines.

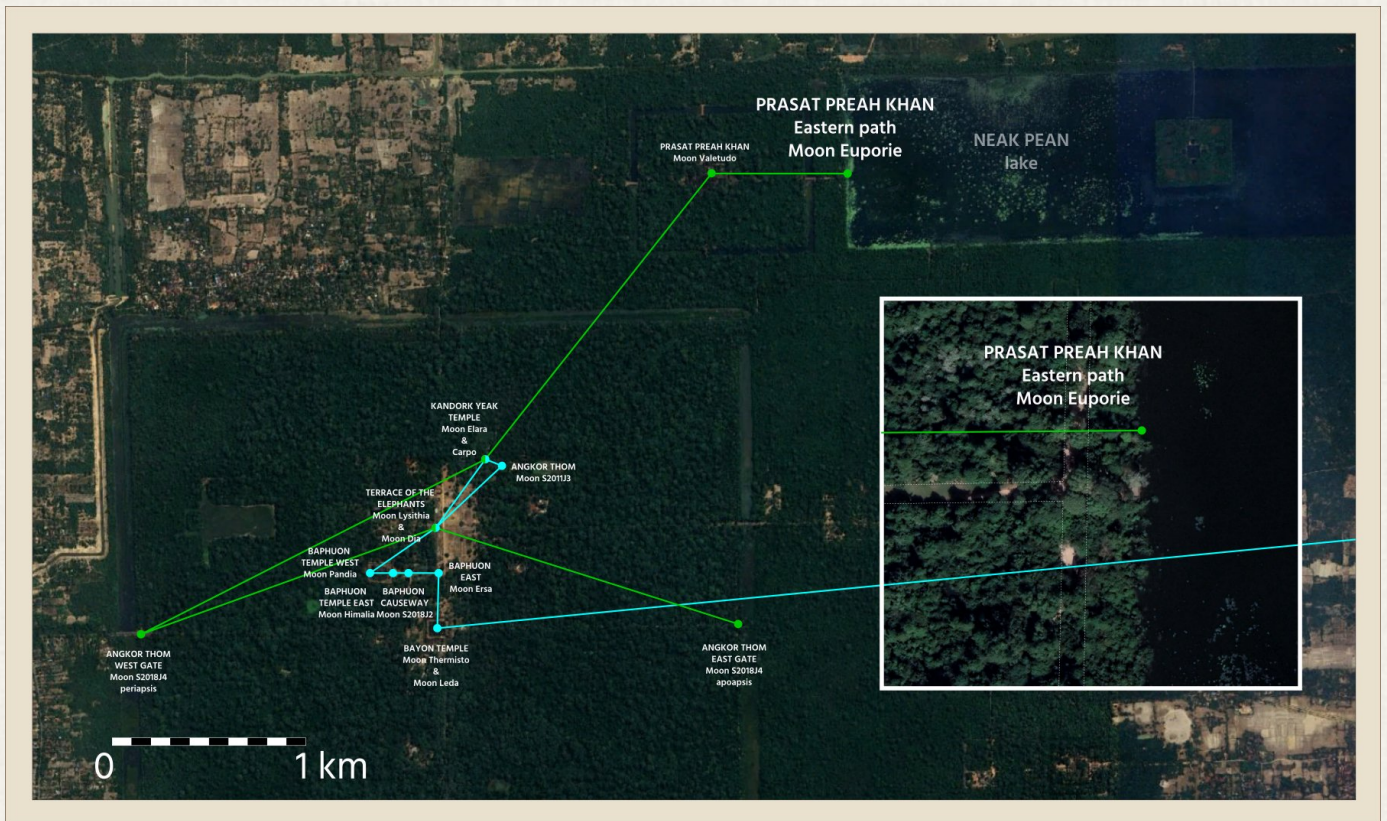


Diagram S28 - The Jupiter moon Euporia at the western edge of Neak Pean lake.

The final moon in the sequence is not the next moon in the astronomical group but is the moon Ananke, the largest of this group of 26 moons. The difference in the apoapsis of Anake relative to that of Euporie is positive and has a value of 1.6137 pkms, the periapsis difference being negative. This is clearly the final moon in the sequence because there are so many moons missing between Euporia and Ananke and the architects are bringing the system to a close and showing that they have not plotted the 26 individual moons of the Ananke grouping. The model of the moon Ananke is shown on diagram S29.

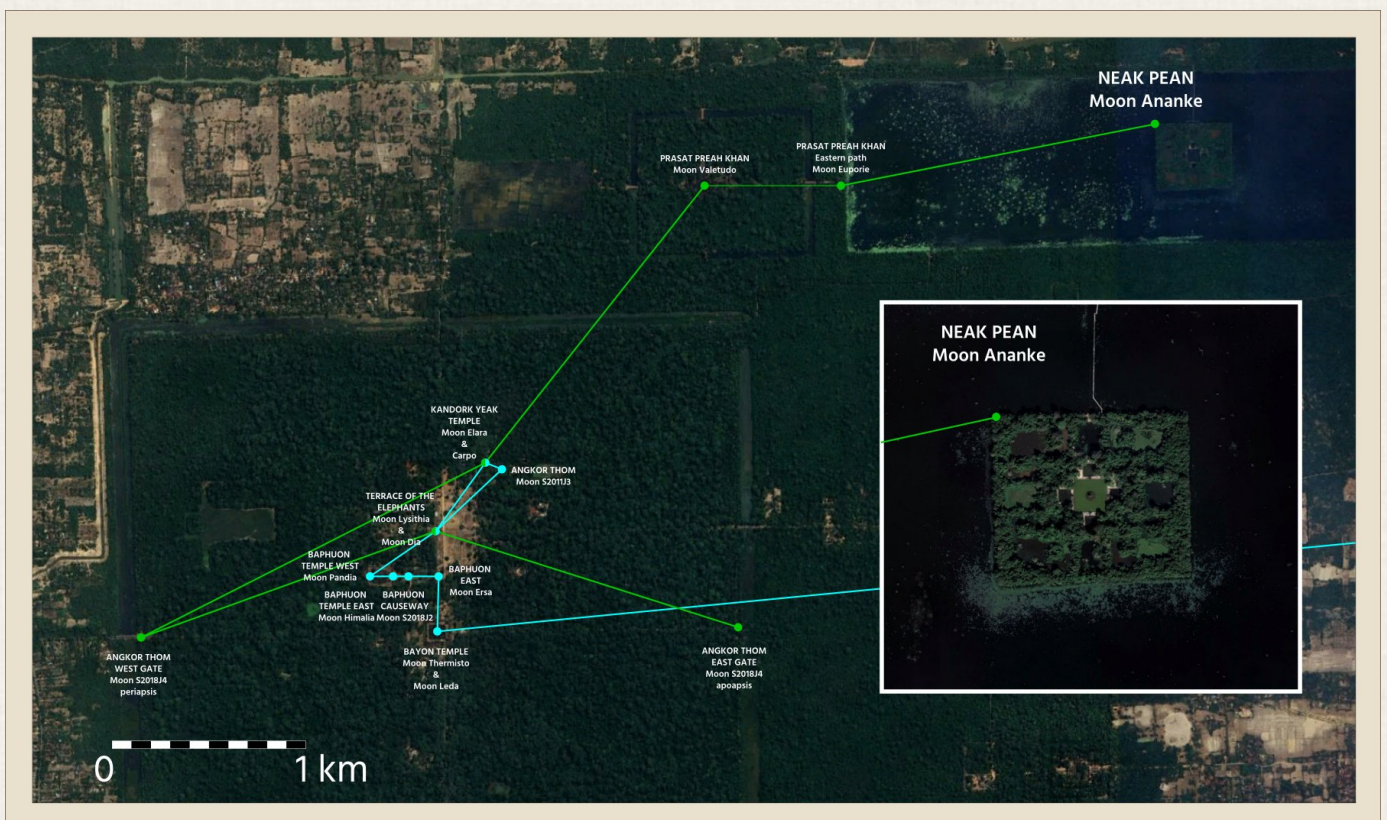


Diagram S29 - The Jupiter moon Ananke on the central island of the Neak Pean lake.

All of the moon models from Io at Angkor Wat through to Ananke at Neak Pean have now been identified leaving just the first four moons in table S11 to have their locations determined. The way that they have been incorporated into the architecture is absolutely specific and is done in such a way that these moons are unable to be identified until the sequence of moons to Ananke has been resolved and the existence of the 1:2,500,000 model scale has been revealed. The first four inner moons of Jupiter are incorporated into the design of the Angkor Wat temple as shown in diagram S30.

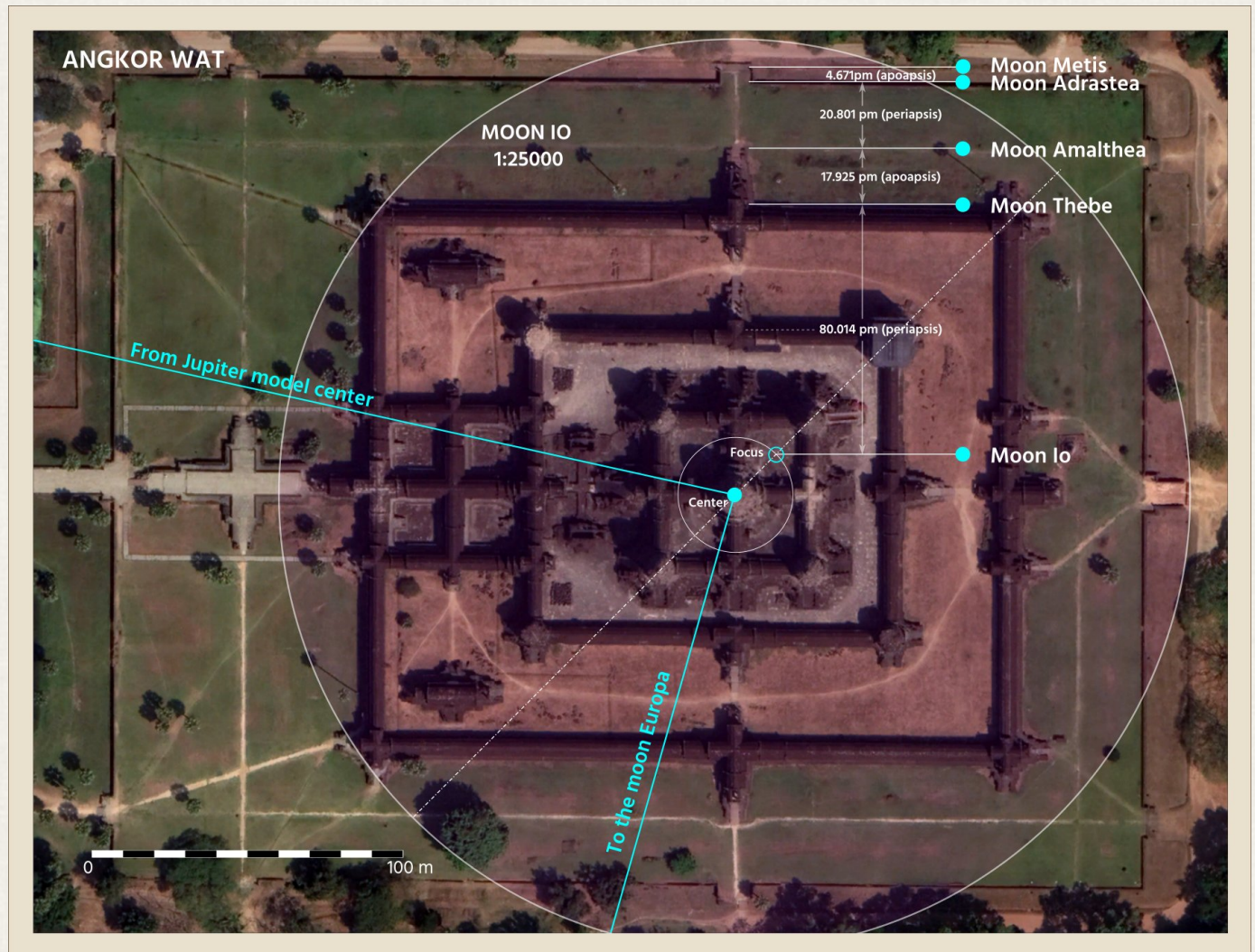


Diagram S30 - The inner most four moons of Jupiter at Angkor Wat.

The diagram shows a 1:25000 scale model of the moon Io centered at the Angkor Wat temple with an inner circle drawn representing the locus of focal points of the elliptical moon. The single focus point marked on the diagram is set at an azimuth of 45 degrees and is used to represent the location of the moon Io in the system of inner moons of Jupiter shown on the right. On a scale of 1:2,500,000 the difference between the periapsis of the moons Thebe and Io is 80.14 pm and this distance marks the outer face of the external wall of the temple. On the same scale the apoapsis distance between Amalthea and Thebe is 17.925 pm and is used in the architecture to delimit the exit point constructions northern limit which is easy to recognise because the tourist path along the grass also aligns with it. The scaled periapsis distance between Adrastea and Amalthea is the next to be modeled with a distance of 20.801 pm which defines the distance from the external wall of the temple and the perimeter wall of Angkor Wat complex. The final moon, Metis, is very close to the moon Adrastea and the scale for this final dimension has to be altered by a factor of 10 so that the construction can be recognised on satellite images. The apoapsis distance between the moons Metis and Adrastea at a scale of 1:2,500,000 is 0.467 pm and this has been multiplied by 10 to get the distance 4.671 pm which defines the depth of the stair protrusion on the perimeter wall.

With all of the moon models now identified a recap of the system shows that there is a problem within the logic if it is to be useful as a comprehensive map of the first 22 moons of Jupiter. The last moon of group 3, Thermisto, and the first moon of group 4, Leda, are modeled at the same temple location with no geodesic path between them. This means that from the center of the model of Jupiter to the moon Thermisto the cumulative distance to each of the monuments allows the range of the moon from Jupiter to be determined. However from the moon Leda onward the moons only form a relative series of interconnected monuments and the absolute distances from the center of Jupiter cannot be calculated because of this break in the system. This is a deliberate break built into the architecture which requires solving.

There are two possible ways that the moons could be in the same location and still have an astronomically correct geodesic line between them. The first would be to have a circular path that runs through the temple and returns to the temple, and the second would be to have the inbound line to the temple from the moon Callisto continue to a point and then reflect back to the temple. Both of these solutions are present in the architecture and diagram S31 shows the circular path solution which is calculated from the periapsis difference between the Thermisto and Leda models scaled at 1:2,500,000. Thermisto's scaled periapsis distance is 1.9621 pkm and that of Leda is 3.7355 pkm giving a difference of 1.7734 pkm which, when used as a circular path, has a circle radius of 282.25 pm.

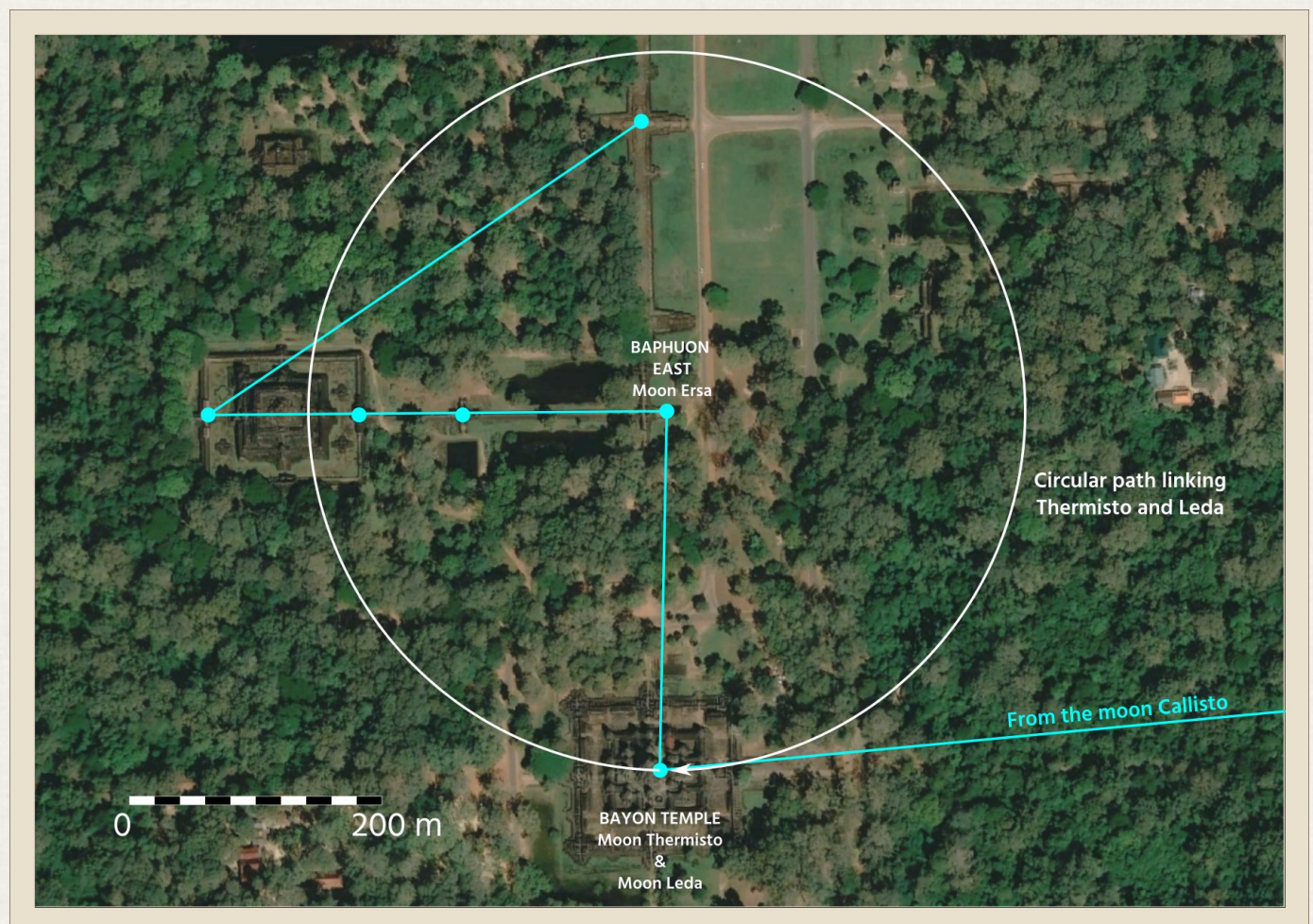


Diagram S31 - The circular path of the Bayon Temple

As can be seen in the diagram, the next moon in the sequence, Ersa, is located at the correct distance from the model of the moon Leda so that a circular path drawn around the Ersa model has the correct radius for the periapsis path from Thermisto to Leda to be correct. The distance from the model of Leda to that of Ersa was shown in diagram S18 to be 282.33 pm and the radius required to form a circular periapsis path between the moon models of Thermisto and Leda is 282.25 pm using modern day values of the semi major axis and eccentricity of the moons' orbits.

the circular solution works perfectly but requires that the periapsis distances are used in the calculations, and because the previous connection from Callisto to Thermisto also used the periapsis distance in its calculations and it is known the the moon models alternate between apoapsis and periapsis as each moon in the sequence is modeled, then it can be correctly deduced that the straight line solution shown in diagram S32 is the architect's preferred solution as it uses the apoapsis distances in its formation.



Diagram S32 - The straight line solution for mapping the moon models of Thermisto and Leda.

The line marked on the diagram as the geodetic line continuation of the line from Callisto to Thermisto has a length of 1.196 pkm which is the 1:2,500,000 scale distance between the apoapsis of Thermisto and Leda moons. As can be seen on the diagram it terminates due south of the large construction cut out of the forest area which is an ancient artifact and part of the Bayon temple group of architecture. The geodesic line extension represents the distance from the moon Thermisto to the moon Leda and does not require a return path back to the temple to be plotted.

Investigation into the structure in the cleared area of trees shows that it is the equator marker of a second model of Jupiter which has a scale of 1:5000 and as well as solving the problem with the two moons at the Bayon temple also allows the exact orbital inclination of Jupiter to be measured from the geodetic construction of the planet's geometry.

Diagram S33 shows the 1:5000 model of Jupiter with the alignment to the tree clearing shown in the inset image. The rotation of the model of Jupiter shown in the image, and therefore the orbital inclination, is 1.304 degrees which is taken from the NASA data sheet regarding Jupiter and the alignment to the tree clearing construction is such that the center line of the construction and the equator line are all but identical. Clearance of the monument in this location would allow the precise determination of the orbital inclination used in the architecture to be established.



Diagram S33 - The 1:5000 model of Jupiter and the equator marker.

Diagram S34 shows the equator point marker and the end of the geodesic line from the Bayon Temple which is how the difference between the apoapsis of Thermisto and Leda can be established.

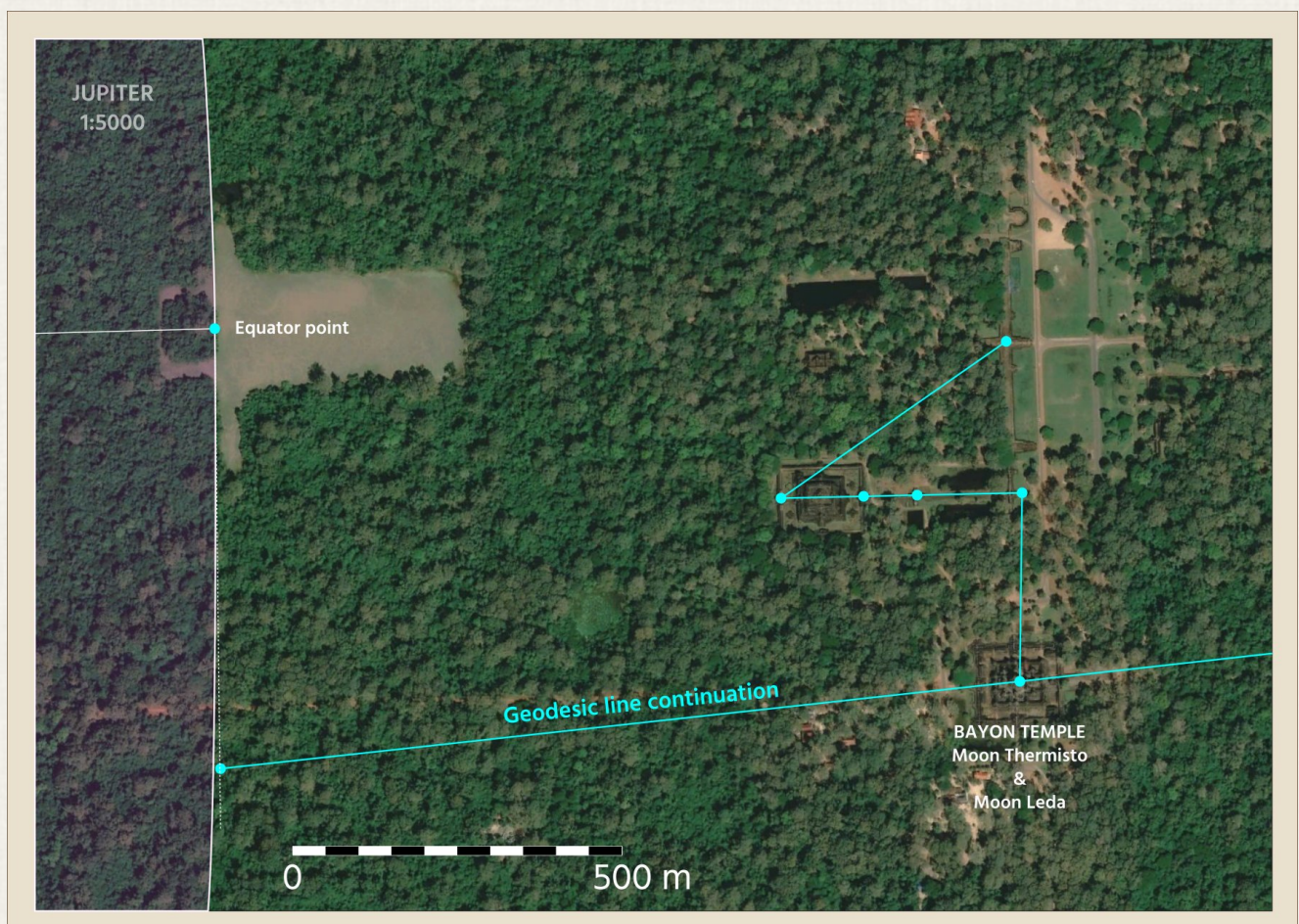


Diagram S34 - The alignment of the geodesic line and the equator point.

From the geodesic calculation software the distance between the apoapsis of Thermisto and Leda is 1.21745 pkm on the scaled model and therefore 3043634.9 pkm at full size.

The reason for the break in the moon system at the Bayon temple is so that the solution to it has to be found and the 1:5000 scale model of Jupiter can be found. The reason for this second model of Jupiter existing is so that it poses the question as to whether there are more models of Jupiter in the architect's design, to which the answer is yes.

One hundred kilometers to the East of the Angkor Wat temple system there is another massive ancient structure know as Kampong Svay which is shown in the four sections of diagram S35.

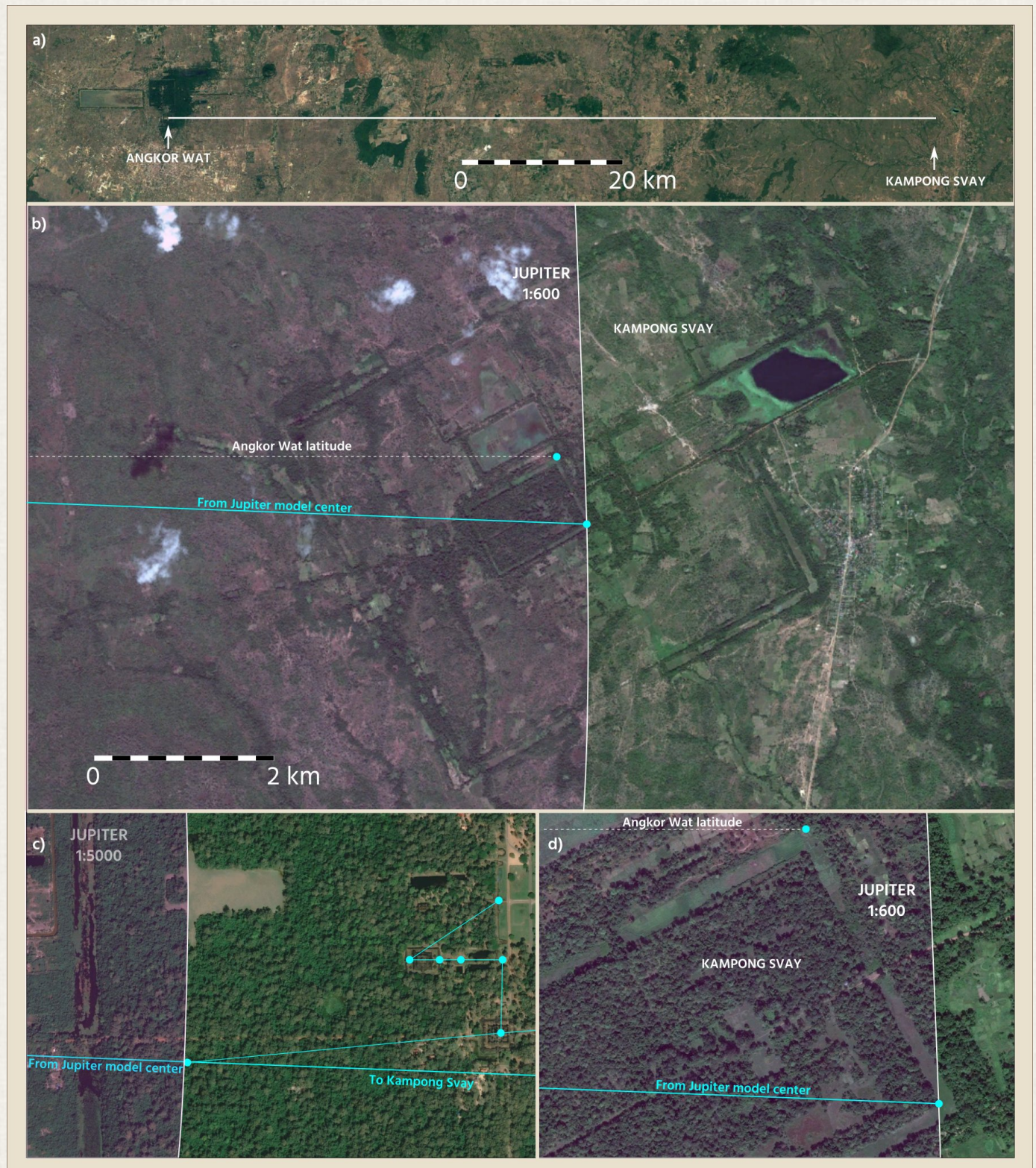


Diagram S35 - The 1:600 scale model of Jupiter and the Kampong Svay temple area.

The upper panel a) in diagram S35 shows the relationship between Angkor Wat and Kampong Svay which is 95 kilometers to the east. Panel b) shows the Kampong Svay construction the main square of which is 4.5 km in side length. Superimposed upon this area is the latitude line from Angkor Wat main temple center tower which terminates on the northern corner of the outer part of the moat area surrounding the inner temple area and a line that comes from the center of the Jupiter model. The shaded purple area on the left of panel b) is a section of a 1:600 scale model of Jupiter and the line from the center of this model terminates on the southern inner corner of the temple area of Kampong Svay. The panel c) shows that the line from the center of the Jupiter model also passes through the last point to be constructed in the system, that being the line extension end point from the Bayon Temple model of Thermisto that is positioned due south of the equator point of the 1:5000 scale model of Jupiter. Panel d) shows how the line from Jupiter center terminates at Kampong Svay and how the latitude line from Angkor Wat and this line have opposite alignments with one being to the outside and one being to the inside of the moat.

The reason for this 1:600 model of Jupiter existing is that in order to get the lines to correctly engage with the Kampong Svay architecture the Jupiter model needs to be rotated around its central point and diagram S36 shows a higher altitude view of the planet model on which the rotation and equator line are drawn.

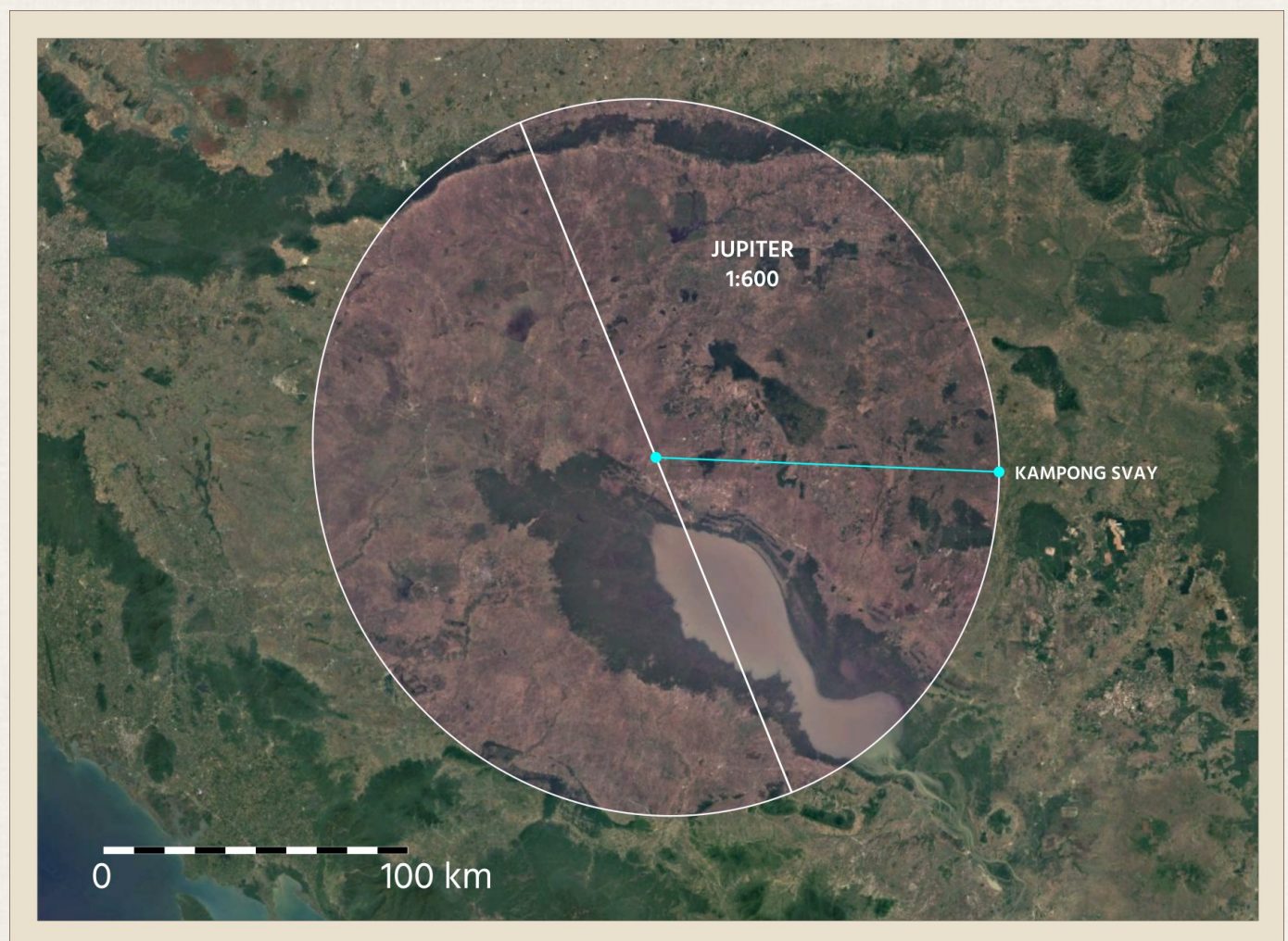


Diagram S36 - The 1:600 scale model of Jupiter.

The length of the equator line on the model is 238.1 km and the model serves one purpose, which is to identify the final most remarkable Jupiter model the center of which is in line with the equator line of the 1:600 model and which is difficult to find simply because it is so large and the alignments so remarkable.

Diagram S37 shows the final 1:50 scale model of Jupiter located over central Asia with the connections to the 1:600 model also shown on the diagram.

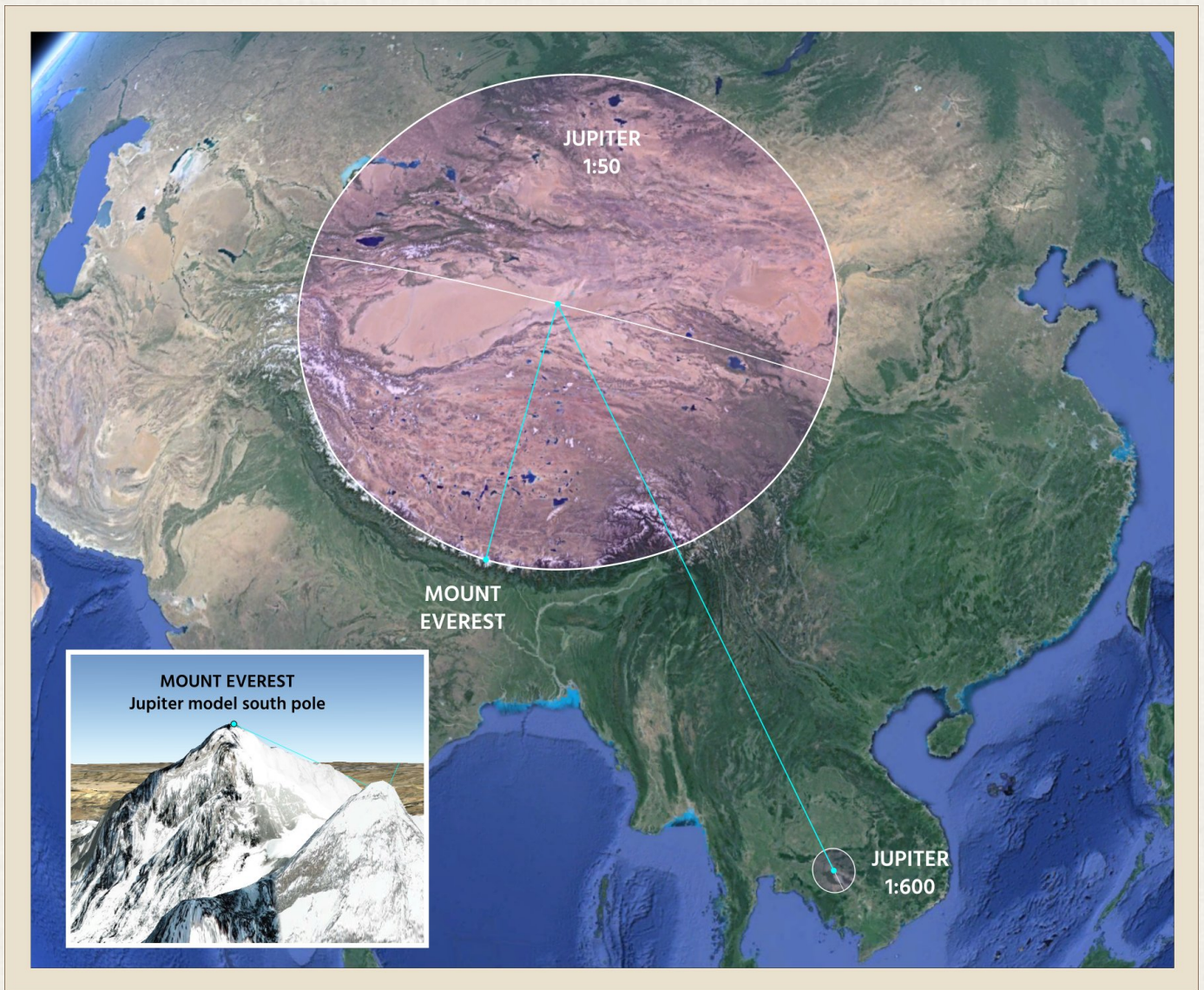


Diagram S37 - The 1:50 scale model of Jupiter.

The azimuth of the line that connects the 1:600 model to the 1:50 model in diagram S37 is dictated by the equator line of the 1:600 model which is defined from the geometry shown in diagram S35. The line length from the primary model of Jupiter near Angkor Wat to the center of the 1:50 model of Jupiter, which has the Himalayas defining its southern section and mount Everest marking out its southern pole, is 3333.333 pkm. From this it can be seen that the whole of the Jupiter system must have been designed with the 1:50 model shown in diagram S37 as its starting parameter and then the previous points shown in this paper engineered so that the whole system fitted together with the starting point of the plots at the model of the Sun.

The rotation angle of the 1:50 Jupiter model is the forward azimuth of the line from the 1:600 model of 337.785152163217 (deg) plus 33.3 degrees plus [the equatorial radius of Jupiter in perfect kilometers divided by 40,000] giving a total of $360 + 12.9048167290575$ degrees clockwise rotation. This places the southern pole of the model exactly at the top of mount Everest as shown in the inset illustration of diagram S37. The 1:50 scale model of Jupiter has an equatorial radius of 1429.065 pkm and a polar radius of 1335.967 pkm and can be shown to be a deliberate part of the overall design of the outer solar system model because the north pole of the 1:50 Jupiter model is used in the formation of the model of Uranus in a future paper in this series.

Appendix

pm	Perfect meter. One 10 millionth of the distance from the North pole to the equator on the WGS84 reference ellipsoid of Earth. The conversion factor between meters and perfect meters is $1 \text{ pm} = 1.00019657308809 \text{ m}$
pkm	Perfect kilometer. 1000 perfect meters.

Tectonic plate movement

The geodetic calculations performed during the work for this paper were done on the Earth's WGS84 reference ellipsoid at the base date of Jan 14 2729 BCE with no tectonic plate movement applied to the points. On all diagrams in this paper all points on the geometric plots have had tectonic plate movement between the base date and the date February 26th 2018 applied to them using the mm/yr plate movements listed by the EarthScope Consortium on their interactive plate movement calculator (<https://www.unavco.org>) using the *terminating* point on each individual geodesic line as the reference coordinates for the plate movement that is applied to *both* end points of that line. The tectonic plate movement of Snake Island is taken from the inherent geometry of the model at that location.

Supplementary material

The data points and associated geodetic mappings for the inner solar system model are contained within a Google Earth application kml file. Each point in the file contains the high precision coordinates of the point as it was calculated by the software and a description of how the point and line from the previous location has been formed, listing both the numerical logic and the astronomical reference to which the point is associated. The file is available to download at the following URL:

<https://www.thegreatpyramidpapers.com/documents/kml/OuterSolarSystem.kml>

That kml file was produced on a piece of bespoke software which was designed and developed to create complex geodetic paths across the WGS84 reference ellipsoid specifically to solve the puzzle outlined in this and previous papers in the series. It was deliberately written in javascript to integrate into a webpage interface so that the underlying code could be examined. The fully functioning interface is available at the following URL:

<https://www.giza-plateau.com/PathCreator.html>

The file type that this programme uses is also bespoke and called '.gpf' or a Giza Pyramid File. Saved files can be loaded into the software using the available selection box on the webpage and the inner solar system model is available in this list under the name 'Inner solar system'. The interface also includes the ability to load any of the previously saved individual locations listed on the inner solar system model into the starting point of a new path, allowing the user to create new path systems and investigate further into the subject.

The calculations for the solar system model's astronomy were performed in a spreadsheet which is provided as supplementary material for reference and cross checking purposes

https://www.thegreatpyramidpapers.com/documents/ods/Solar_system.ods

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