

# Planetary clustering and *navagraha* at Banteay Srei

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**Abstract:** An inscription at Prasat Banteay Srey, 15 km north of Angkor Wat in Cambodia, dates the inauguration of this Shivaite sanctuary to coincide with a planetary alignment. A *planetary clustering* or *planetary alignment* is when the five planets visible to the naked eye are observable at dawn or dusk above the eastern or western horizon. The five planets form together with the sun, the moon, Rahu and Ketu the Indian concept the *Navagraha*. A close gathering of the five planets is an impressive celestial event and has been described in ancient Indian and Chinese records and calculations.

**Appendix III**, pgs 226-233 in *Ancient Khmer Sites in North-eastern Thailand. Khorat, Buriram and the Angkor - Phimai route*. Printed by White Lotus Co., Ltd., Bangkok.  
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Above: Planetary alignment at dawn the 23<sup>rd</sup> of April, 967 AD, finalizing the consecration ceremony, when the main deity was installed at Prasat Banteay Srei at Angkor, Cambodia. Mars initiated the celestial show, followed by a Venus-Jupiter conjunction, Saturn and finally Mercury just above the horizon. Courtesy to Stellarium<sup>1</sup>.

“Unto the good and evil fortune of men is this system set forth: the planets move on upon their own paths, approaching one another at a distance.”<sup>2</sup>

A full treatment of astro-archeology<sup>3</sup> in relation to ancient Khmer sanctuaries - or for that sake just a single temple as Prasat Banteay Srei - should include a description of the *dikpala* (Guardian of the Cardinal Directions), the *navagraha* (the Nine Celestial Deities), the *saptamātrkās* (the Seven Mothers), *Kala* (the time-eating demon), inscriptional references, indigenous belief systems (ancestor worship, spirits of land, etc.), Indian religions (Hindu and Buddhism), Vedic astronomy, Khmer temple architecture, inscriptions, site planning (Vaastu-Purusha-Mandala, *yantra*, cosmogram), the *Vedic Circle*, historical frame, location, era and orientation of sanctuaries.

Such a comprehensive interdisciplinary study is far beyond the scope of these notes - and the capabilities of the author. The text here only briefly describes the geographic and historical frame and then presents the astronomical setting when the main deity of the shrine was consecrated, as described in the K. 842 inscription.

*General information*

The original name of Prasat Banteay Srei, or more exactly the deity in the central shrine, was *Śrī Tribhuvanamaheśvara*, meaning the Great Lord of the Threefold World, an appellation of Lord Śiva. The constructor and chief architect, Yajñavarāha, was not a king, but the *rajāguru*<sup>4</sup> ('royal teacher') of Yajavarman V. Inscription K.842 is engraved on both sides of a stele discovered in January 1936 in the southern central part of Gopura IV.

The construction was initiated in the 960s during the reign of Rayendravarmān II (reigned 944–968 AD), and the main deity was installed the 22<sup>nd</sup> of April 967 AD according to inscription K.842, which was inscribed the following year, when his very young son, Yajavarman V (968–1001 AD) ascended the throne after the death of his father. Religious context: Shaivism.

*Geographic setting*

The sanctuary is located in *Īśvarapura*, the Settlement of Shiva, 23 km NNE of the more well-known and later constructed Prasat Angkor Wat. Coordinates: N 13.599 E 103.96296.

The sanctuary and its more than 500 m long processional path is orientated straight true east and traces of the ancient fields mentioned in the inscription can be traced on Google Earth as well as on LIDAR images to the west and south. The associated *baray* is located right north of the processional path, measures appr. 400 by 200 meter, and shares the same equinoctial orientation as the *baray*. Another significant structure in *Īśvarapura* is what has been termed *dome fields*. The *dome field* at Banteay Srei is located ca. 2 km to the west of the *baray*, measures appr. 660 by 330 meter, shares the same centerline as the *baray*, and is surrounded by moats - like an inverted *baray*. Some of the domes are still observable on LIDAR images and the Banteay Srei *dome field* is allegedly constructed over multiple periods. These gridded domes/mounds "seem to have an association with significant water management features"<sup>5</sup>, which apparently is the case at *Īśvarapura*, where an ancient dike leaves the southern part of the enigmatic *dome field* and reaches the fields west of the sanctuary following the contours of the landscape and most likely lead water for irrigating the fields of *Īśvarapura*.

Another inscription from Banteay Srei, K. 570, was excavated in the 3<sup>rd</sup> eastern gopura and stipulates the extend of the temple city. It is dated to 891 Saka (969/70 AD) and the Sanskrit word *Krīdāparvata*<sup>6</sup>, meaning 'artificial mountain' could be speculated to be a sufficient term for the domes, even the context in the inscription points NE of Banteay Srei.

*Astronomical setting*

The foundation inscription (K.842) informs us that a Saivite deity was consecrated “when Aquarius was rising, Mars, Jupiter and Venus in the fifth [house], the moon had reached the end of the tenth [house] and the other [Saturn, Mercury and the Sun], in Ari [the sixth house], in the beginning of the Mādhava month, [in the Saka year designated as] Mūrti (8), (8) and nine (9), on the day of Yama”, which Golzio<sup>7</sup> dates to the 22<sup>nd</sup> of April, 967 AD, around 18:20 local time. Billard and Eade<sup>8</sup> reach the same date, but give the time as 17:44.

The deity, Śrī Tribhuvanamaheśvara, most likely in the shape of a *linga*, was consecrated in the central tower of the Saivite sanctuary of Īśvarapura (Banteay Srei)<sup>9</sup> at sunset (18:14 local time), when a 72% illuminated moon was shining on the eastern hemisphere close to zenith and with no planets visible. The consecration ceremonies continued all night, until a rare celestial event, a planetary alignment, became visible starting with the rise of Mars around 03:30 and followed by Venus and Jupiter in conjunction half an hour later. Around 20 minutes later Saturn would have joined the celestial show and half an hour before sunrise the dim Mercury finalized the planetary alignment event.

Planets are easily observable being the last celestial objects to be seen on the celestial sphere at dawn (and the first objects observable after dusk) and easily discernible from stars as they do not blink.

A planetary alignment (also called a planetary cluster) is when the five planets visible by the naked eye appear close to one another as observed from the Earth. Meis and Meeus have in *Quintuple planetary groupings - Rarity, historical events and popular beliefs* calculated when the five planets spanned less than 25° of the celestial sphere within -3101 and +2750 AD. In the five centuries before the construction of Prasat Banteay Srei ten planetary alignments are listed, of which only half were observable either at dawn or dusk. This gives an average of one event per century; except for the 10<sup>th</sup> century, which was gifted by two events: in 947 and 967 AD. The latter is described in the Banteay Srei inscription (K. 842); the former does not correspond with any dated Khmer inscription.

Khmer inscriptions evidence that Indian inspired astronomical concepts were fully developed since the appearance of the first dated inscriptions: The Robang Romas (k.151) mentions the installation of a deity (Śrī Kalpavāsudeva) in 598/599 AD. The dating counts in Saka Era, lunar months (Nakṣatra), solar houses, (in ascendant Virgo), on the 3<sup>rd</sup> ascending lunar day of the Vaiśākha month.

After the encounter between Indian and Greek astronomy in the 2<sup>nd</sup> century AD the previous *Vedanga* astronomy underwent revisions. A new school of manuals on astronomy started c. 5<sup>th</sup> century AD with the Indian Circle method for determining cardinal directions described in details by Aryabhata, Varāhamihira, who wrote the *Pañcasiddhāntikā*, which is dated to c. 505 AD. Other famous astronomers include Brahmagupta (7<sup>th</sup> century), Bhāskara I (7<sup>th</sup> century), and Lalla, who wrote the *Śiṣyadhīvrddhida* in the 8<sup>th</sup> century AD. The more well known *Sūrya Siddhānta* was compiled and revised from the 4<sup>th</sup> to the 12<sup>th</sup> century AD, served as a standard text-book on astronomy, and is referred to in later texts on architecture as for example the *Mayamata*, an Indian treatise on housing architecture and iconography.

The *Sūrya Siddhānta* defines the *Kaliyuga* as a period of 432,000 years, starting with a planetary alignment in 3102 BC. A similar planetary event was visible for weeks on the eastern sky before dawn in April 967 AD and would not have passed unnoticed by neither layman nor priests. We can only guess which interpretations they would have come up with. Maybe they would have associated it with the start of a new era<sup>10</sup>, eventually the era of the new king, Yajavarman V, who as a young boy started reigning in 968 AD, when the inscription was executed. Maybe they would have linked it to the *Navagraha*, the Nine Celestial Deities, who besides the five planets visible to the naked eye, also counted the Sun, the Moon, Rahu and Ketu, and were venerated at many sanctuaries, for example the contemporary East Mebon<sup>11</sup>. If the order of the planets was significant, then interpretations could have been numerous, as a planetary alignment takes place during several weeks, with changing rising order of the planets and several conjunctions.

The five planets were the closest to one another on the 14<sup>th</sup> of April, but the 22<sup>nd</sup> was chosen as the auspicious date for the consecration of the presiding deity - eventually due to the Venus-Jupiter conjunction the 22<sup>nd</sup>. The visibility of Venus and Jupiter is described as auspicious, especially when in conjunction<sup>12</sup>, in the Indian *Kāśyapaśilpa*<sup>13</sup>. The same two planets were dominant on the sky when the contemporary Eastern Mebon was consecrated on the 28<sup>th</sup> of January 953 AD; not the 20<sup>th</sup>, when a close conjunction between Jupiter and Venus took place. The author has compared dated Khmer inscriptions with actual astronomical events and Venus-Jupiter conjunctions are not significant. The motivations of the ancient Khmer sages for choosing a date and moment as auspicious must be searched for elsewhere, especially the locations of the planets in lunar

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houses. Khmer inscriptions give limited information on astrological concepts determining auspiciousness.

As an astro-photographer I would have covered the planetary clustering during the *Shiva Ratri*, the Night of Shiva, 11<sup>th</sup> - 12<sup>th</sup> of April 967 AD, which was marked by the last visibility of the thin moon seal before new moon, resembling the moon-seal in the matted hair of Shiva. And for observation spot, I would have chosen Phnom Dei, the ‘Mountain of the Earth’, located 2 km east of Banteay Srei. The peak of this small mountain raises 190 m above Banteay Srei and is adorned with a small square brick sanctuary constructed by Yaśovarman I, who initiated various Shaivite sanctuaries on isolated hills in the vicinity of his capital (e.g. Phnom Bakheng, Phnom Krom, Phnom Bok) and most likely as far away as Phnom Rung and Plaibat I in nowadays NE-Thailand. In 893 AD, according to an inscription found in situ, Yaśovarman I consecrated Phnom Dei, or *Purandraparvata*, as the mountain is called in the inscription, to Harihara. The pillar inscription is written in Sanskrit and Khmer and prescribes the boundaries of the domain of the sanctuary<sup>14</sup>.



*Above, left:* View from the SE corner of the surrounding moat.

*Above, right:* ‘Library’- fireshelter in the SE corner of the 1<sup>st</sup> enclosure, which was likely used for venerating the *holy-fire* as well as holy scriptures, which Yajñavarāha according to the inscription (K. 842) copied with piety. The building in the NE corner is identical. Note the ventilation panel highly located in the southern wall.

*Right:* View from the SW corner of the 1<sup>st</sup> enclosure. Śrī Tribhuvanamaheśvara resided in the central tower.



*Historical setting*

The founder and master-builder (*sthapati*<sup>15</sup>) of the temple and author of the K.842 inscription, Yajñavarāha, was not a photographer, but seemingly the *vrah guru* ('holy teacher') of Jayavarman V (reigned 968-1001 AD), the son of the *Brahmin* Damadara, and grandson of Harsavarman I<sup>16</sup>. In stanza 42 the king guaranteed that the temple "must not be given to or taken by kings or their favorites; let it be kept as it was defined by the founder". Yajñavarāha was a prominent figure among the Khmer religious and intellectual elite. Stanza 20 praises Yajñavarāha for his supreme knowledge in Indian yoga, languages and various sciences; among them specifically mentioned being astronomy. One astronomical treasure of his era was the *Sūrya Siddhānta*, which forms the basis of calendar calculations in dated Khmer inscriptions, incl. K.842 from Banteay Srei.



Above: Fragment of inscription from the northern doorway of the 3<sup>rd</sup> eastern *gopura*.

The K.842 stele was inscribed the year after the consecration, thus written retrospectively.

The construction period of Prasat Banteay Srei, its associated baray, and human habitat area would have spanned over a decade or more. And one could assume that the consecration date was calculated and decided in advance, as at the Sun Temple of Konārka. Yajñavarāha could have been inspired by the planetary alignment in 947 AD for choosing the consecration to coincide with the next planetary alignment.

Prasat Banteay Srei was build with assistance off his brother, Viṣṇukumāra. Two other nearby sanctuaries were built solely by Yajñavarāha: Ta Tuy and Prasat Trapang Khyang, located ten km apart and both having nearly identical inscriptions. "All these sanctuaries were dedicated to the linga Tribhuvanamaheśvara, which is the name of the god of Lingapura (Chok Gargyar) [Koh Ker], and all were made *mīśrabhoga* (co-participant) of certain revenues with the god Bhadresvara"<sup>17</sup>.

Indian knowledge was the 'state of art' throughout the 'Sanskrit sphere' including most of SE-Asia from the first part of the first millennium. Vedic knowledge was revered among the Khmer elite and the royal family had contemporary Brahmin ties to India in the 10<sup>th</sup> century. The younger sister

of Jayavarman V, Indralakshmi, was married to Divākarabhata, a Brahmin from North India. Together they made many foundations, one of which included an image of her mother. And “During Jayavarman V’s reign we see two ‘foreign’ Brahmans (Paradeśa), undoubtedly Indians, buying land and founding Shivaite sanctuaries on it”<sup>18</sup>.

The Khmer master-builders did not copy Indian temples; but were influenced by Indian sciences and religions, which were adapted to local conditions. Vickery<sup>19</sup>, an expert in Khmer inscriptions, argues that the Khmer remained true to their local indigenous deities, e.g. the, Neak Ta, ‘guardian spirits’ or ‘ancestral spirits’. Consecrating sanctuaries for venerating ancestors of the temple founder is another example of localization of Indian concepts and were executed in Hindu as well as Buddhist sanctuaries. Another famous epigraphist, Pou, informs us that during sacrifices (*Yajña*) of the Vedic type, “*Yajña* could be performed to worship the ‘sacred fire’ (*vrah vlen*), male ancestors (*pitryajña*), divine mothers (*mātryajña*) (K.18)”, Siva, Buddha and Brahma<sup>20</sup>. Another example of ‘religious’ syncretism, mentioned by Pou, is ritual use of pigs and buffaloes, which was and still is practiced throughout wide parts of SE-Asia including the Tai-Kradai speaking people in southern China.

Astronomy/astrology is a third example, where astronomy as an exact science, was borrowed from Indian sources, whereas astronomy could have been adapted to local beliefs.

### *Some future planetary events illustrating this text*

Celestial events have appealed to the human mind since prehistoric times, and astronomy/astrology has always represented a border zone between science and belief. A recent example was the planetary alignment in 2002, which, besides being a beautiful sight, also caused doomsday theories and expectations of being picked up by extraterrestrial beings.

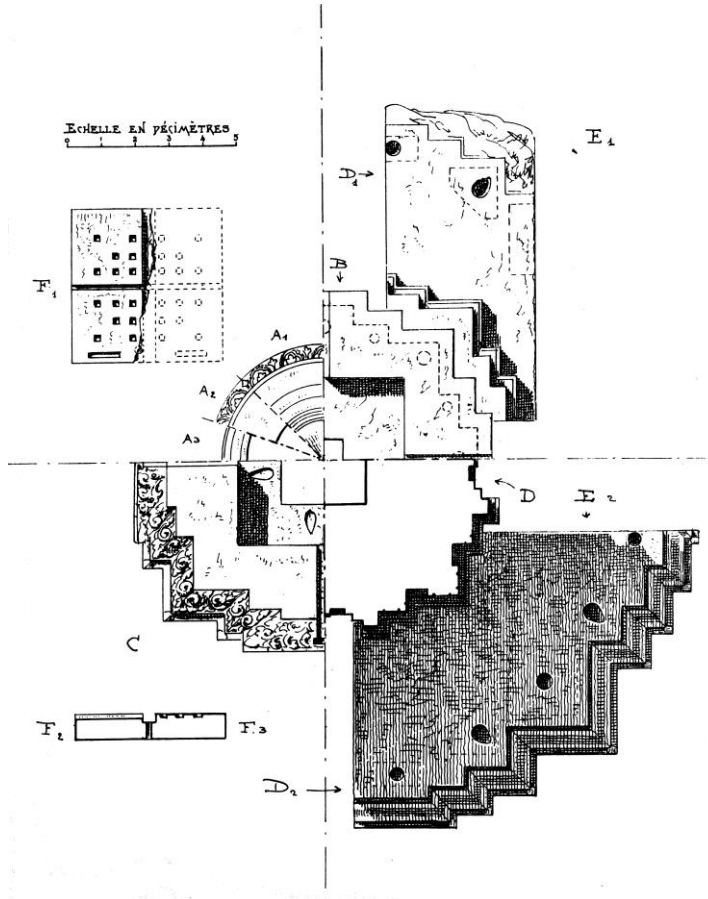
Venus-Jupiter conjunctions are not rare; just beautiful. Two examples will occur in 2019 after the publishing of this book. The first can be observed before dawn the 24<sup>th</sup> of January. A second and even closer encounter will happen the 24<sup>th</sup> of November at dusk. A very close encounter between Venus and Jupiter will happen 2<sup>nd</sup> May 2022 when the two planets will rise at 03:23 (local time, Banteay Srei).

In the end of May, 2022, four of the five-planets of the *navagraha* will be visible on the night sky every night, culminating, when Mercury and the moon joins the celestial show before dawn the 29<sup>th</sup> of May.

The prime celestial show of this century will take place after dawn the 8<sup>th</sup> of September 2040, when all five planets will set grouped together with the



very thin seal of the ascending moon resembling the moon in the matted hair Shiva. The planets will approach one another in the weeks before - with a Venus-Jupiter conjunction the 1<sup>st</sup> of September - and as in the era of Banteay Srey again attract the mind of man on locations where light-pollution will not obscure the event.



Summit of the southern tower of Prasat Banteay Srei<sup>21</sup>. Also see page 223.  
Courtesy: White Lotus Press.

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**Endnotes:**

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<sup>1</sup> Stellarium is an excellent and free open source planetarium for PC. The mobile version costs a few US\$: <http://stellarium.org/en/>

<sup>2</sup> The Surya Siddhanta, Stanza 24.

<sup>3</sup> Also written as archeoastronomy; cultural astronomy.

<sup>4</sup> In K. 842 he is referred to as both *vrah-guru* ('holy teacher') and *raja-guru* ('royal teacher').

<sup>5</sup> Evans, 2016, p. 3. LIDAR images are shown on page 5.

<sup>6</sup> Coedes, 1937, IC, vol. I, p. 147.

<sup>7</sup> Golzio, 2006, pp. 87-88, from where I translated his German translation of the Sanskrit text.

<sup>8</sup> Billard and Eade, 2006, p. 409.

<sup>9</sup> Coèdes, 1968, p. 117: "the temple of Tribhuvanamaheśvara at Īśvarapura (Banteay Srei)".

<sup>10</sup> See De Meis et. al, 1961, pp. 294-295, where we are informed that Plato mentioned that the 'Great Year' in -3101 began at the meeting of all five planets and that the Babylonian Berosus in 300 BC handed down the idea that the world began at the conjunction of the five planets and will end at a new conjunction. Arabian astronomers shared the concept and put a time frame on. When this 'alternative story' reached South Asia, Indian astronomers framed it in a *Kaliyuga* measuring 432,000 years, again starting from year -3101. Meeus also informs that according to Greek and Persian sources the Flood took place in year -3101.

<sup>11</sup> Bhattacharya, 1956, p. 192.

<sup>12</sup> Ślaczka, 2006, p. 44.

<sup>13</sup> Ślaczka, 2006, pp. 9-10: "The *Kāśyapaśilpa* is thus, in a certain sense, a hybrid text, showing characteristics of" the *śilpaśāstra*, a category of Sanskrit texts, or manuals, dealing with such arts and crafts, and the *āgamas*, which are texts dealing mainly with ritual.

<sup>14</sup> Briggs, 1951, p. 110: "The pillar inscription of Phnom Dei, in Sanskrit and Khmer, dated 893, indicates that the sanctuary erected there was consecrated to the almost-forgotten cult of Harihara. The object of the inscription was to precise the boundaries of the domain of this divinity." *Harihara* (Sankara-Narayana) is Vishnu and Shiva combined in one body. *Harihara* was an important deity in Pre-Angkorian era. This dating is not listed by neither Billard nor Golzio.

<sup>15</sup> The architect is known as the *stapati* (*stha*, meaning 'fixed' and *pati*, 'master'), one who presides over construction of an edifice. He is assisted by a *sutragrahin* (the 'carrier of the thread', who is knowledgeable of proportionate measurement by the cord to lay out the constructions, and various craftsmen, *silpin*).

<sup>16</sup> Briggs, 1951, p. 134; Coèdes, 1968, p. 117.

<sup>17</sup> Briggs, 1975, p. 138.

<sup>18</sup> Coèdes, 1968, p. 118.

<sup>19</sup> See Vickery, 1998.

<sup>20</sup> Pou, 2008, p. 248.

<sup>21</sup> Finot et. al., 2000, Plate 67.

## Ancient Khmer Sites in North-eastern Thailand

**Khorat, Buriram and  
the Angkor - Phimai route**

Asger Mollerup



White Lotus



Asger Mollerup was born on the 12th of August 1949 (BE 2492) in Hebro, Denmark. As an architect, he visited Thailand for the first time in 1988 as a part of a group researching slum problems and the impact of tourism on local environments. He returned in 1990, and since then has been working in various fields: Cultural tourism (bringing tourists to experience village life), tourism adviser in Vientiane, farm-manager for a Danish diary project in Isan, and is presently permanent advisor on astronomy in relation to the solar-lunar events at Prasat Phanom Rung for the governor's office in Buriram Province. Since the mid-90es he has been living permanently in the Phu Phan Mountains in Mukdahan Province, NE-Thailand, working on local languages, experimental archeo-astronomy and doing field research on Khmer temples in Thailand and Laos. His *Thai-Isan-Lao Phrasebook* was printed in 2000 and a book on Phatnai language, *Phutai for Medicals*, (in Thai) was printed in 2013.

Author's website: [www.thai-isan-lao.com](http://www.thai-isan-lao.com)

**Front-cover photo:** Prasat Phimai, Khorat, Thailand.

**Back-cover photo:** A fire-priest (*hōr*) conducting a fire ritual (*agnicayana*). Depicted on the eastern wall of the 2<sup>nd</sup> enclosure at Prasat Banteay Chhmar, Cambodia.

# Ancient Khmer Sites in NE-Thailand

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*Ancient Khmer Sites in North-eastern Thailand* is the 2<sup>nd</sup> of three volumes of Ancient Khmer sites outside the present-day Cambodia. It is the first comprehensive inventory of ancient Khmer sites in north-eastern Thailand since the now more than one century-old works of Étienne Aymonier, Étienne Lunet de Lajonquière, and Major Erik Seidenfaden, describing some 170 Khmer sites in the provinces of Khorat and Buriram in the first two parts of the book.

The 3<sup>rd</sup> part describes the ancient road from Angkor to Phimai, which according to an inscription was intended flanked with 17 *fire-shelters*. Important *fire-shrines* along the route are described as well.

Museums and temples in the area exhibiting Khmer artifacts, quarries, ancient moated sites, and ancient routes are described as well. Location, era, and orientation are presented together with a short description about the site, inscriptions, associated water structures such as moats, small ponds (*sra*), larger basins (*baray*), nearby rivers, and geographical context. Consecration deposits, solstitial alignments, and planetary clustering at Prasat Banteay Srei are presented in appendices.

The attached CD contains some 7,000 color photographs and satellite images.



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