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## ► To cite this version:

Andrea Acri. Alternative approaches to eighth-century Central Javanese Buddhist architecture. *Bijdragen tot de taal-, land- en volkenkunde / Journal of the Humanities and Social Sciences of Southeast Asia*, 2011, 167 (2-3), pp.313-321. 10.1163/22134379-90003595 . halshs-03919617

**HAL Id: halshs-03919617**

**<https://shs.hal.science/halshs-03919617>**

Submitted on 3 Jan 2023

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## Alternative approaches to eighth-century Central Javanese Buddhist architecture

Caesar Voûte and Mark Long, *Borobudur: Pyramid of the cosmic Buddha*. New Delhi: D.K. Printworld, 2008, xxiv + 327 pp. + 2 folded *maṇḍalas*. ISBN 8124604037. Price: INR 5200.00 (hardback).

Mark Long, *Caṇḍi Mendut: Womb of the Tathāgata*. New Delhi: Aditya Prakashan, 2009, xlv + 404 pp. [Śāta-Piṭaka Series 632.] ISBN 9788177420968. Price: INR 2100.00 (hardback).

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The books under review are devoted to two of the finest examples of Buddhist monumental architecture in eight-century Java and the whole Buddhist world, namely the famous Borobudur and its 'satellite' – and by far less famous – temple of Caṇḍi Mendut. It is true that literally hundreds of publications on Borobudur have appeared since the nineteenth century in a variety of languages and formats, and several new ones continue to be published nearly every year. Yet, *Borobudur: Pyramid of the cosmic Buddha* may still be regarded as a novelty and, because of its groundbreaking interpretation of the meaning and function of the monument, also one that is bound to raise some controversies in the field.

For one thing, the backgrounds of the authors are not in archaeology or art history, and although they share a long-standing and deep-rooted interest in those subjects, neither has prior publications on ancient (Buddhist) Javanese art and culture. The late Caesar Voûte, a Dutch geologist born in Java, served as the resident UNESCO/UNDP coordinator for the Borobudur Reconstruction Project from 1971 until 1975, and Mark Long, a recognized expert in electronic communications, has had a 40-year interest in Mahāyāna Buddhism. Their painstaking effort has resulted in an impressive, finely printed and esthetically compelling 'coffee-table' book containing some 163 colour photographs by Fitra Jaya Burnama, along with several drawings and figures. Addressed to a lay audience as well as to academics, Voûte and Long provide readers with a wealth of information on the Borobudur itself and its historical, geographical and cultural background, starting from the

prehistory of Java and Southeast Asia up to the Central Javanese 'Classic Age' and its abrupt end in the tenth century AD. Chapter 6 even offers a valuable insider's account (Voûte's) of the various restoration activities and archaeological works carried out at the site.

But the book's most significant novelty is its emphasis on archaeoastronomy, the study of ancient cultures' astronomical knowledge. Voûte and Long demonstrate that the monument embeds an encoded (mainly, but not exclusively, numerical) symbolism based on the movement of celestial bodies such as Sun, Moon and asterisms of the zodiac. The builders of Borobudur 'embraced a "sacred science" that did not perceive any separation between the spiritual practice of Buddhism and Hinduism and the scientific disciplines of astronomy, chronology, cosmology, geometry and the higher mathematics' (p. 2). The authors' thesis is grounded on the observation that previous studies have neglected the structure of the building, focusing instead on the interpretation of its reliefs and the comparison with the texts they are supposedly based upon. Any work focusing on that still imperfectly understood aspect of the monument constitutes a welcome contribution. As John Miksic (1990:45) has acknowledged, the Borobudur expresses 'a complex message in a code that has yet to be cracked'. Voûte and Long have produced a fascinating attempt to crack the code of Borobudur – a monument that, according to them, can be understood only if we assume that its builders had an advanced scientific and geographical knowledge.

The authors convincingly argue that astronomy – not yet differentiated from astrology – was an ever-present preoccupation governing the life cycles of ancient civilizations in general, and of the ancient Javanese one in particular. According to this view, which is still insufficiently espoused by archaeologists and art historians of the Indonesian Archipelago, important cultural and religious values were attributed to the regular celestial phenomena observed in the sky, among which is the cycle of the Sun through the day, months (in the form of equinoxes and solstices) and years (in the form of its almost imperceptible westwards shift through the zodiacal houses known as precession of the equinoxes). In this respect, the authors' approach appears to owe much to the erudite yet controversial study on ancient mythology by Giorgio de Santillana and Hertha von Dechend, *Hamlet's mill* (1969),<sup>1</sup> as well as to Eleanor Mannikka's *Angkor Wat: Space, time and kingship* (1996). Applying the principles of archaeoastronomy to central Javanese architecture, the authors argue that Borobudur functioned as a calendrical monument, fixing in stone certain regular astronomical phenomena and thereby becoming a 'mirror' of the heavens. It was also a device for calculating time, namely a gigantic gnomon that calculated the hours in a day (vitally important for the daily life of Buddhist monks), the

<sup>1</sup> Which is quoted only once on p. 199, but whose deep influence on Voûte and Long is evident in many parts of the book.

months, equinoxes and solstices in a solar year (useful for ceremonial and ritual purposes), and the much longer cosmic cyclical eras known in Sanskrit culture as *yugas*. The authors argue that, in order to properly understand the meaning and function of the monument, it must be studied against the background of its geographical position and setting, dominated by the imposing silhouettes of two volcanoes and ranges of hills. The surroundings of Borobudur, they conclude, are as important and significant as the monument itself for they provide the scope for certain astronomical alignments.

Voûte and Long draw attention to recurring, and thus 'meaningful' (that is, non-coincidental) numbers embedded in many architectural elements of the monument itself.<sup>2</sup> Consider, for instance, the 72 stūpas on the summit, the 504 *jina* images (432 [4 × 108] on top of the four gallery balustrades + 72 on the summit), the 1460 (365 × 4) narrative panels, and so on. Previous scholars have tried to connect these significant numbers with elements of Buddhist doctrine traceable to Sanskrit texts, whereas our authors understand them as an attempt by the ancient builders to harmoniously link the microcosmos to the macrocosmos by means of numerical correspondences between architectonical elements and solar and lunar months, years and longer cosmic eras. I have found most of their reasoning in this regard to be plausible and well argued.

But much less convincing is the authors' discernment of a number of 'significant' relative measures and proportions embedded in the monument. It appears to me that the authors have achieved such measurements through speculative and intrinsically weak (often circular) methodological procedures. Consider, for example, the claim that 'the length of one second of latitude at Borobudur's location equals nearly 30.72m, which is almost exactly one-quarter of the total length of the monument's north-south axis on the ground' (p. 222); or that the length of Borobudur's east-west axis comes close to equal 4'' of equatorial longitude with respect to Borobudur's location at 7.6083° south latitude. These figures have been arrived at by relying on the assumption that 'the most important construction module that Borobudur's builders employed was based on the dimension of the main stūpa platform [...] when the diameter of this platform is divided into various dimensions both within and without the temple, highly significant results are produced' (p. 222). As a supporting example, the authors mention the ratio of 7.608:1, which would correspond to the decimal form (7.608 degrees) of the monument's location at the southern latitude (7, 36, 29''). Other meaningful ratios would be those produced by dividing the distance between the apex of Borobudur and Caṇḍi Pawon by the diameter of the platform that supports the main stūpa (108:1), and the distance between Borobudur and Mendut by

<sup>2</sup> The authors point out that several such numbers appear to be embedded also in the architecture and iconography of temples belonging to the Prambanan complex in Central Java (see pp. 219-21) and Angkor Wat (on which, see Mannikka 1996).

the diameter of the main stūpa (183, that is the number of days it takes for the sun to travel between its southern and northern limits on the eastern horizon). On p. 226, other complex calculations involving the sum and division of the measures of architectural elements of Borobudur are adduced as proof that its builders incorporated the number *pi* (3.14...) and *phi* (1.618...) in the monument's dimensions.

Now, it seems to me that all the above-mentioned calculations and similar ones found in the book should be regarded with skepticism, applying the same criticism advanced by Miksic (1998:128) in his review of Mannikka's work (1996) on Angkor Wat, namely that 'often "suitable" numbers can only be obtained by ingenious methods'. In the case of Borobudur, the methods used by the authors are so 'ingenious' that they may even appear to be tendentious. Furthermore, a substantial part of the above figures are obtained by disregarding the elementary fact that, as the authors themselves acknowledge, the precise original dimensions of the monument or parts thereof cannot be arrived at with any degree of certainty. This is mostly on account of the changes that followed the modern restoration of the monument (which in some cases amounted to almost complete reconstruction), and especially because the building of the monument was characterized by various phases, during which the original project was abandoned several times and readapted to contingent conditions that imposed evident constraints upon the plan of the original architect(s). The authors' hypothetical conclusions also disregard the fact that the calculation of longitude with an acceptable degree of precision was never achieved in the ancient world, being a scientific conquest of the eighteenth century. Thus, also with respect to the claim that Borobudur's location at the almost exact geographical centre of Java, the authors attribute to the builders of the monument geodetic knowledge that was by far too advanced for their time.

I am not convinced by the authors' correlation between the *Lalitavistara* reliefs and astronomical events on pp. 204-9, nor by their claim to have found certain stellar alignments, which are extremely difficult to verify even through the use of modern computer software, and are not supported in the book through the use of hard scientific evidence. The phantasmagoria of correspondences between doctrinal, political (that is, pertaining to the Śailendra Kingship) and cosmological elements outlined in the final Chapter 11 'Unfolding the divinity' defies the principle of Occam's razor. My impression is that the authors' attempts to find a symbolic value hidden in every artistic and architectural motif of the monument constitutes an unneeded complication of the matter that is detrimental to the overall credibility of the book. Credibility is further undermined by a number of factual errors and imperfections,<sup>3</sup> not to speak of sheer fantasies. An example of the last

<sup>3</sup> To list only a few: the claim that the Pallava script is from South West India (instead of South East India) (p. 12); the reign of Rake Kayuwangi incorrectly dated to 820-832 Śaka (instead of 777-

category is the etymology of the name Merapi (that is, the volcano Merapi in Central Java) suggested in note 19, p. 109, which analyses the word as *meru* (mount Meru, Skt) plus *api* (fire, Malay) and derives the Sanskrit word Meru from the ancient Egyptian *mer* 'pyramid', 'love' and 'canal', adducing as evidence the existence of elements such as *linga* and *yoni* (that is, the *pranāla*) in Indian pyramidal temples dedicated to Śiva (?).<sup>4</sup> Throughout the book, the authors display a significant degree of naiveté when dealing with linguistic and philological matters, uncritically relying upon the views of others, even when they are of questionable validity. For example, they adhere to Lokesh Chandra's view that the Old Javanese *wiku* is the Tamil orthography of the Sanskrit *bhikṣu*. Contrast this with Gonda (1973:274) who, like others before him, derived it from the Middle Indo-Arian *bhikku* (p. 13); and they approvingly quote Jeffrey Sundberg's personal communication (p. 22, note 30) that the 'deviant spelling of certain Sanskrit words in the *Vāstuvidyāśāstra* [a Sanskrit text from Sri Lanka] exactly parallel the strange Javanese spellings of Sanskrit words, such as '*dharma*' (double '*m*'s) to be found on the Garung shrines at Caṇḍi Plaosan Lor' as if it were convincing proof of the links existing between Sri Lanka and Central Java in the late eighth-century.<sup>5</sup> The 'strange' and 'deviant' spelling with geminated *m* after *r* are in reality the norm in almost all the manuscripts and inscriptions from both South and Southeast Asia. Even with respect to an important aspect of the book, namely the authors' own (re)interpretation of Sanskrit and Old Javanese inscriptions issued by Śailendra monarchs from Central Java, they often rely upon translations of others (yet without specifying each and every instance) and simply state that they 'have exercised a certain amount of poetic license in recreating the contents of the inscriptions that appear in this book. In addition, elements have been selected from the various translations and commentaries [...] (p. 110, note 24). This amounts to a rather questionable methodological approach, to put it mildly.

The book contains a few typos and misspelled Sanskrit words, as well as a small number of other editorial imperfections. Strangely enough, pp. 29-32 were missing in my copy of the book. The bibliography is arranged 'by chapters', which is not only unpractical but often leads to redundancies.

In *Caṇḍi Mendut: Womb of the Tathāgata*, Mark Long takes up the study of the Buddhist temple that somehow lives in the shade of its more famous and magnificent neighbour, but which fully deserves a place among the finest examples of Buddhist architecture anywhere. The author applies to Mendut

807 Śaka, that is 855-885 AD) (p. 59, note 6); the constant translation of *śūnyatā* as 'empty' or 'void' (instead of 'emptiness' or 'voidness'), as if it were *śūnya*.

<sup>4</sup> A more convincing explanation of the name Merapi, and of the linguistic problem posed by the presence of such a Malay form on Java, may be found in Mahdi 2008.

<sup>5</sup> The same point is reiterated on p. 91 of the book on Caṇḍi Mendut.

the methodological approach already advanced in the book on Borobudur, by regarding the monument as being imbued with astronomical and calendrical symbolism. In doing so, Long successfully highlights the architectural and artistic ingenuity of the builders of Mendut, which was apparently part of a single 'masterplan' with the nearby Borobudur, being in ancient times connected to it through a ceremonial pathway.

As much as *Borobudur*, Long's monograph constitutes a comprehensive contribution on Mendut, describing in great detail many aspects of its history, iconography, (re)discovery and restoration. Even though the author's eclectic approach is praiseworthy, his prose tends to be bloated and flabby. For instance, in a drawn-out section dealing with the Tantri reliefs along the cella footer of the temple, Long narrates in full all the relevant fables instead of summarizing them. Thus Long's analysis significantly overlaps with the work of Marijke Klokke (1993), whose contribution to the matter has been referred to only once on p. 7, and adds little, since he does not take into account the Old Javanese versions of the stories but only those known from South Asian Sanskrit texts.

Long's idea that the planimetry of Mendut would be based on the Vāstupuruṣa *maṇḍala*, a re-elaboration of an idea previously applied to Borobudur as well, is interesting. However, the author describes the Vāstupuruṣa as an exclusively Vedic creation, without taking into account the possibility that the Javanese used a Tantric variant of the same *maṇḍala*. Indeed one would expect that a Javanese eighth-century temple would somehow mirror the *status quo* in near-contemporary South Asia, and indeed we find that a variety of Tantric or 'Tantrified' *maṇḍalas* consisting of 81 squares are commonly described in post-Vedic (in between the fifth and tenth century) Sanskrit texts, including Vāstuśāstras and Tantras of both Śaiva and Buddhist inspiration. Long fails to address the question as to why the builders of these Buddhist monuments would have followed to the detail architectural (and religious as well as philosophical) models that were ultimately Vedic. The same criticism may be directed to the author's explanation of the major deities in the Caṇḍi Mendut cella reliefs as being exactly correlated with the squares (and related Vedic deities) of the Vāstupuruṣa *maṇḍala*. On the other hand, Long describes as a Tantric feature the presence of 49 stūpas on the top of the monument, which might represent the 49 *akṣaras* of the Sanskrit syllabary. Although the 49 stūpas might also be correlated to the 49 squares of a well-known variant of the Vāstupuruṣa, this idea is compelling. However, the author's efforts seem strained and contrived when he correlates 37 footer and vestibule reliefs with Sanskrit syllables, on account of the fact that the Sanskrit words denoting certain elements in the reliefs begin with the syllables they are supposed to represent. In order to make the data fit his scheme, Long connects certain reliefs and the syllables supposedly connected with them to



rare and virtually unattested Sanskrit words. I find similarly unconvincing the proposed correlation between asterism-Gods and reliefs, as well as between the eight goddesses that formerly adorned the temple vestibule and the 'eight short vowels' of the Sanskrit syllabary – which actually counts only five.

The author claims on p. 82 that the architectural designs of Central Javanese temples were based on the Sanskrit treatise *Mayamatam* (constantly misspelled *Mayāmātam*). Whereas he appears to be aware of the fact that this treatise was probably drafted between 850 and 1190 AD – thus later than the majority of the temples under discussion – and that it reflects a mature stage of Coḷa architecture (see p. 87, where he refers to the opinion of the translator, the French scholar Bruno Dagens), he does not consider this anachronism to be problematic. Similar considerations may be applied to the *Mañjuśrīvāstuvīdyāśāstra* (see p. 92), a Buddhist treatise on architecture from Sri Lanka that is frequently used by Long for comparative purposes, but which probably dates back to the eleventh and twelfth centuries only (even though, admittedly, the text may reflect an earlier situation). It is mainly on the basis of the *Mañjuśrīvāstuvīdyāśāstra* that Long advances a new interpretation of the term *caṇḍi*.<sup>6</sup> The author's main argument lies on the attestation of the term *caṇḍita* in the *Mañjuśrīvāstuvīdyāśāstra* as a technical term referring to temples (or grid-plans thereof) of varying sizes and plans. Unfortunately, the author does not explain what the (literal) meaning might have been, nor which root *caṇḍi* and *caṇḍita* (a past passive participle) are traceable to. Long refers to a dubious derivation suggested by Lokesh Chandra that *caṇḍi* would derive from *sandhī* (via the Tamil *canti*), in turn influenced by the architectural term *caṇḍita*, and concludes that 'perhaps the Javanese shortening of *caṇḍita* to *caṇḍi* had been influenced by the Sanskrit word *sandhī*, rather than the other way around'. Even though these explanations remain highly speculative, the author's hypothesis on the connection between *caṇḍita* and *caṇḍi* is highly interesting and merits further investigation through research into Sanskrit Śilpaśāstras.

Linking the 'Śaiva Siddhāntist salvation pantheon' with the Buddhist one implemented at Caṇḍi Mendut, Chapter 7 is problematic. Largely based on the hypothesis elaborated by Moens in 1921, the discussion makes use of data that were state-of-the-art in the first two decades of the twentieth century, and which now are patently outdated. As I have pointed out elsewhere (Acri 2007:137), it appears that the false notion identifying the Śaiva Siddhānta with the relatively late Tamil school bearing that name is still popular among scholars of ancient Java, who seem to be largely unaware of the existence of the pan-Indian Śaiva Siddhānta based on a much earlier corpus of Sanskrit scriptures. Some of those were known in Java by the eighth and ninth centuries. Hence, Long's (and Moens') 'comparative' analysis is based on Sanskrit

<sup>6</sup> This interpretation was already – if fleetingly – advanced in *Borobudur* (p. 20). In that book the word is, curiously enough, constantly spelled *caṇḍi*.



texts that in all probability were composed after Caṇḍi Mendut was built. Having presented Moens' hypothesis on pp. 191-206 in detail through long quotations of excerpts translated from the original Dutch, Long informs the readers that Moens' theory was fundamentally revised by the same scholar at a later date (1951) and that many sets of his earlier proposed identifications between Śaiva and Buddhist deities were abandoned to embrace new ones. I wonder why Long devotes so much space to the description of an artificial theory that was openly disavowed even by its own theorist. The author's counter-hypotheses are put forward in a manner that I have found unclear.

Chapter 9, 'Dimensional Symbolism and the Javanese Temple', is in my opinion the most clearly written and interesting. Even though it is not free from speculations about meaningful ratios and cyphers extrapolated from Javanese monuments that would correspond to measurements of latitude and longitude, the chapter offers new insights on the controversial matter of the basic unit of measures used in Central Javanese temples, namely the cubit or *tāla*. Long discusses a series of methodological issues, criticizes previous hypotheses and suggests a solution that yields interesting results when applied to the summit of Borobudur. On the other hand, when suggesting alignments with celestial bodies, or between Central Javanese temples – for example those between Borobudur and Plaosan Lor, located some 35 km away! – the author seems to be stretching the matter too far. The same holds true with respect to Long's assumption that a possible astronomical correlation would be hidden within nearly every stone of the temple.

The book is supplied with more than two hundred black and white pictures, drawings and other diagrams; regrettably, it is also riddled with typos, printing errors and editorial inaccuracies, including frequent mistakes involving diacritics. A valuable contribution by Jeffrey Sundberg focusing on the history of early Central Java is included in the book as Appendix A, 'The State of Matarām: A review of recent efforts to clarify its history' (pp. 329-62).

All in all, the two books reviewed here have the merit of bringing to the attention of non-specialist readers and scholars of Java alike the importance of astronomy for a correct understanding of Central Javanese sacred architecture, thereby elaborating a fascinating alternative theory about its meaning and function. It is hoped that these contributions will foster a productive scholarly debate among specialists in the field of Indonesian archeology and art history. As things now stand, the 'code' hidden in Central Javanese monument, if indeed there is any, appears still to be far from being fully 'cracked'.

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