Reassessing an Angkorian Bronze Masterpiece: The Male Deity from Ban Yang Pong Sadao, Buriram

Brice Vincent,[1] **Donna Strahan,**[2] **Federico Carò,**[3] **Adriana Rizzo,**[4] **David Bourgarit**[5] **& Yvan Coquinot**[6]

Abstract—An exceptionally rare and remarkably well-preserved Khmer bronze statue of a male deity, formerly in the collection of the Metropolitan Museum of Art in New York City, was recently returned to Thailand. Moving beyond competing ownership claims and nationalist narratives, this article presents the results of an interdisciplinary scientific investigation into the long-life cycle of a unique cult image and its production. The findings place the statue within the political, religious, and technological milieu of the 11th-century Angkorian kingdom while underscoring the transregional character of Khmer bronze statuary. These results also offer a more nuanced understanding of the object's historical and cultural significance in both Thailand and Cambodia.

Keywords: Angkor; Art History; Deity-Image; Khmer Bronzes; Life Cycle; Provenance and Provenience; Technological Investigations

Introduction

An exceptionally rare and well-preserved 11th-century Khmer bronze statue of a male deity, once part of the Metropolitan Museum of Art (Met) in New York City **[Figure 1]**, was recently returned to the Kingdom of Thailand.[7] The sculpture's repatriation was officially announced by the Met in December 2023 and was made effective in May 2024; it is now on view at the National Museum Bangkok (inv. no. 01/01/2567; former Met acc. no. 1988.355). It was returned along with another bronze sculpture of a kneeling female figure (inv. no. 01/02/2567; former Met acc. no. 1972.147; cat. no. 7 in **Online Appendix 1**).[8] Both sculptures are linked to the notorious Thai–British art smuggler and collector of South and Southeast Asian antiquities, Douglas

[1] École française d'Extrême-Orient (EFEO), Paris. Corresponding author. Email: brice.vincent@efeo.net.

[2] Smithsonian's National Museum of Asian Art, Washington, D.C.

[3] The Metropolitan Museum of Art (Met), New York City.

[4] The Met, New York City.

[5] Centre de recherche et de restauration des musées de France (C2RMF), Paris.

[6] C2RMF, Paris.

[7] Publications that mention the statue are listed here in chronological order: Felten & Lerner 1989: 224–227; Watt et al. 1989: cover, 92; Burn 1993: 168–169; Kossak & Lerner 1994: 80, 82, fig. 85; Woodward 1997: 92, n. 24; Strahan 1998: 101; Thompson 1999: 278, n. 28; Bunker & Latchford 2004: 213–214; Woodward 2005: 127; Felten 2006: 48–49; Baptiste & Zéphir 2008: 205; Bunker 2008: 299; Bunker & Latchford 2008: 45; Gerschheimer & Vincent 2010: 118–119; Woodward 2010: 50, n. 27; Bunker & Latchford 2011: 234, 240, fig. 7.15a–b; Bunker 2011–2012: 21, 23; Campbell 2012: 123; Vincent 2012: ill. 2.15a–b; Vincent 2014a: 106–127; Vincent 2014b: 23–26; CAST:ING 2018; Feneley 2023: 261, 264, 266, 268, figs 182–185; Vincent & Bourgarit 2025; Chiu 2026.

[8] The online appendices are available at: https://doi.org/10.69486/114.2.2026.7b.

https://doi.org/10.69486/114.2.2026.7a © The Siam Society Under Royal Patronage

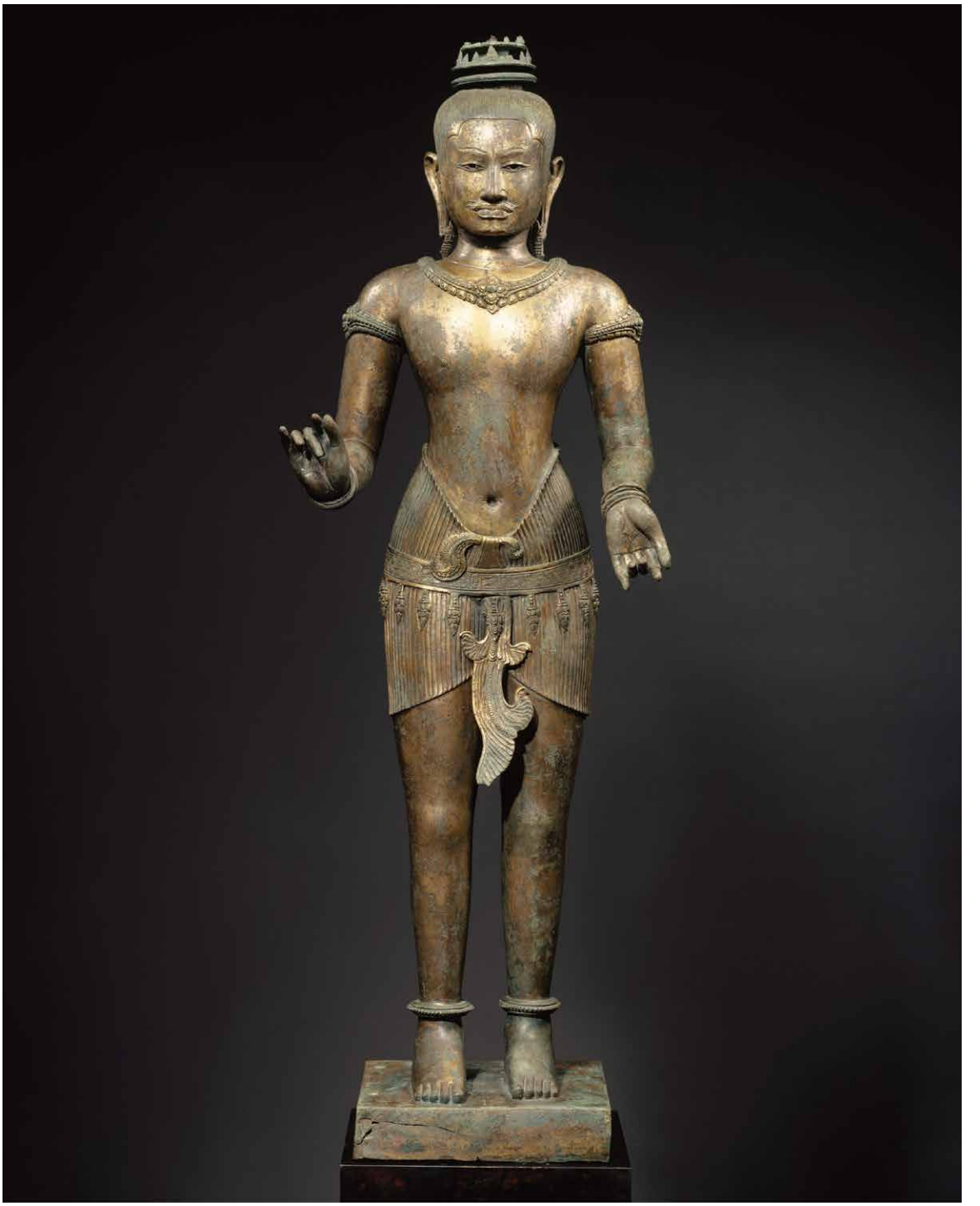


Figure 1: Male deity from Ban Yang Pong Sadao, Ta Chong subdistrict, Lahan Sai district, Buriram province, Thailand; Baphuon style, 1060–1080s; National Museum Bangkok, inv. no. 01/01/2567; formerly at the Met, acc. no. 1988.355; mercury gilded bronze with silver, lead, cinnabar, and red ochre; H.: 131 cm (with tang), W.: 35.5 cm, D.: 34.5 cm, Weight: 66.2 kg © Met

A.J. Latchford, also known as Pakpong Kriangsak (ภัคพงษ์ เกรียงศักดิ์; 1931–2020).[9]

Setting aside the competing ownership claims and nationalist reinterpretations surrounding the statue in both Thailand and Cambodia,[10] this article presents the results of recent interdisciplinary research, combining provenance studies, art history, and technological investigations, to better contextualize this unique religious object and its production within the political, cultural, and technological frameworks of its time. Nevertheless, several questions remain unresolved. After years of discussions and collaborative work, the recent repatriation of the statue, together with this Special Edition of the *Journal of the Siam Society*, provides an excellent opportunity to share our collective research with a wider audience.[11]

From Provenience to Provenance: Discovery and Circulation

The sculpture depicts a two-armed male deity, standing with the right foot slightly forward on a square pedestal. Its height is around 130 cm, including a trapezoidal 25 cm tang under the pedestal that originally helped to stabilize the image on a stone base.

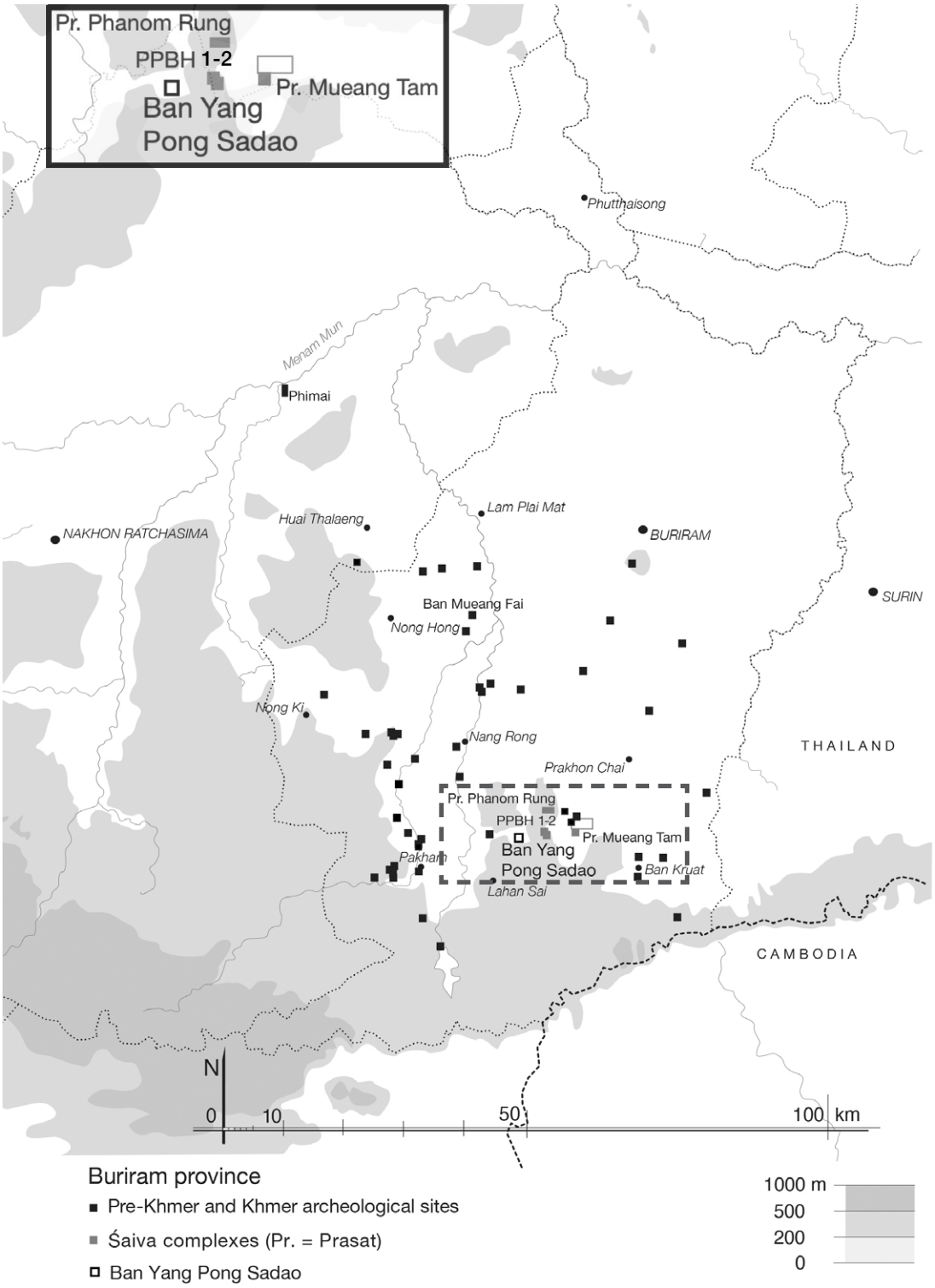
The statue is reported to have been accidently discovered by two brothers in the early 1970s in the northeast Thai village of Ban Yang Pong Sadao (บ้านยางโป่งสะเดา), Ta Chong subdistrict (ต. ตาจง), Lahan Sai district (อ. ละหานทราย), Buriram province (จ. บุรีรัมย์) **[Map 1]**.[12]

[9] The unfortunate nickname "Golden Boy", coined by Latchford himself—presumably to appeal to potential buyers during the "golden age" of the American finance sector in the 1980s—is still widely used to refer to the statue but will be deliberately avoided throughout this article.

[10] See, for example, Crosbie-Jones 2024.

[11] To date, the authors have presented this research only at two scholarly events: first, at the 15th EurASEAA International Conference (Nanterre, France, 6–10 July 2015), where Brice Vincent, Donna Strahan & Federico Carò delivered the unpublished paper "Technical Investigations of a Khmer Bronze Male Deity from the Metropolitan Museum: Angkorian Foundry Practices and 11th-Century Innovations"; and more recently on 9 October 2026, in an online CKS/EFEO webinar, titled *Khmer Objects in Motion: Provenance, Dispersal, and Repatriation?*, where Brice Vincent traced the statue's provenience and subsequent circulation from Buriram to New York City.

[12] This provenience was confirmed during a field survey conducted by Brice Vincent in Buriram province in July 2015, with the invaluable assistance of Surakarn Thoesomboon (Sai) of EFEO Bangkok. The investigation, which included interviews in Thai and Khmer with villagers, was prompted by a brief indication provided by Latchford himself in the already controversial *Khmer Gold: Gifts for the Gods*: "The figure was actually found at the village of Ban Yang, Lahan [Sai] district, where its stone base is still visible, and not in Cambodia" (Bunker & Latchford 2008: 45, n. 25). An earlier source also associated the statue with Buriram province, although less precisely: namely, a comment sheet from the Asia Society's archives (bronze Maitreya, acc. no. 1979.63), dated 13 November 1985, records a verbal communication from Latchford to the curator of Asian art Robert Mowry stating that the statue "was found not too far from Prakhon Chai", a locality likewise situated in Buriram province near Lahan Sai district (on the confusion between Prakhon Chai and Lahan Sai districts, see Revire 2025: 226–227). For additional information on the place of discovery, see Felten & Lerner 1989: 226, Bunker 2008: 299, and Bunker & Latchford 2011: 234; also the Channel News Asia documentary series *Looted* (Season 1, Episode 2, "Hunting Priceless Relics", 16 October 2022: https://www.channelnewsasia.com/watch/looted/hunting-priceless-relics-3009711), which documents the field investigations carried out by Tanongsak & Lalita Hanwong in Ban Yang Pong Sadao in 2022, as well as Chiu 2026.



Map 1: Buriram province sites with Ban Yang Pong Sadao and the three Śaiva complexes of Plai Bat Hill (Prasat Plai Bat Hill 1 and 2 [PPBH 1-2]), Prasat Phanom Rung, and Prasat Mueang Tam © Brice Vincent, adapted from Pierre Pichard



Figure 2: Satellite view of Ban Yang Pong Sadao sanctuary area, Jan. 2014, showing sanctuary (red dot), ancient moat and surviving remains of laterite structures © Google Earth

During a private interview conducted on site in July 2015, the younger of the two brothers—his elder brother having passed away—stated that the statue had been found within the ancient temple of Pa Kruha (ป่าครูหา), a site associated with the local tutelary spirit, Ta Kruha (ตาครูหา). At the time, the area was still forested and contained the ruins of an east-facing laterite sanctuary tower, surrounded by a laterite platform (ca. 35 m²) and enclosed by a rectangular moat measuring approximately 75 × 45 m. By 2015, however, the entire site had been levelled and the temple had been replaced by a building and a concrete playground. Today, the sanctuary tower lies beneath the eastern end of the expanded playground. Only part of the western section of the moat survives, while numerous laterite blocks remain scattered across the site **[Figure 2]**.[13]

According to our interview, the two brothers were digging for tuber crops (Th. *man*; มัน) near the central platform of Pa Kruha when they discovered the statue lying face up at approximately knee depth—about 50 cm below the ground surface, as measured from the level of a person standing inside the excavation pit. During its extraction, the statue was damaged: specifically, the hanging, fishtail-shaped front fold of the *sampot* became detached from the body. An additional upper element of the chignon-cover was also preserved at the time of discovery but has since disappeared. The younger brother did not recall the presence of the butterfly-shaped back bow.

The discovery took place after another high-profile find in northeast Thailand: in 1971 three 7th–9th-century

[13] Contemporary aerial coverage (2023) does not show the structures seen in this earlier coverage. See **Online Appendix 3, Fig. 1**.



Figure 3: Modern wooden shrine dedicated to Ta Kruha with two sandstone pedestals installed in front: Pedestal 1 (viewer's left) and Pedestal 2 (viewer's right), July 2015 © Brice Vincent

bronze statues were unearthed in Ban Mueang Fai (บ้านเมืองฝ้าย), Thai Samakkhi subdistrict (ต. ไทยสามัคคี), Lam Plai Mat district (อ. ลำปลายมาศ; now Nong Hong district, อ. หนองหงส์), located approximately 45 km north of Ban Yang Pong Sadao. Two years later, in 1973, the individuals who discovered those three statues received a payment of 100,000 Thai baht from the Thai Fine Arts Department (Tanongsak et al. 2024). Having witnessed this successful precedent, the elder brother subsequently sought assistance from villagers in Ban Mueang Fai to facilitate the sale of the newly discovered bronze statue from Ban Yang Pong Sadao. Two meetings were arranged with a Thai buyer named Bunloet (บุญเลิศ), a resident of "Khorat" (Nakhon Ratchasima).[14] The first meeting took place in Lam Plai Mat, where photographs of the statue at its findspot were examined—these were later destroyed—while the second was held in Nakhon Ratchasima, where the sale was finalized presumably with Bunloet. The brothers initially asked 3 million Thai baht for the statue, but it eventually sold for 1.8 million Thai baht, equivalent to more than US$ 86,000 at the exchange rate of the time. This was, and remains, a substantial sum, particularly for the village of Ban Yang Pong Sadao, where some inhabitants had opposed the sale. A portion of the proceeds was therefore used to organize a communal celebration featuring traditional performances such as *like* (ลิเก), as well as to purchase agricultural equipment. The villagers later learned that the statue had been resold for 7 million Thai baht (more than US$ 336,500).

After the sale, extensive clandestine excavations were carried out at the discovery site at the request of Bunloet and another foreign individual—most likely Latchford, whose presence in the village is documented at this time (Chiu 2026). The villagers excavated across the entire area, including the sanctuary tower, platform, and moat, removing soil and laterite blocks. During their search, they also employed traditional divination tools (*siang khong*; เสี่ยงของ), made of wood or metal, to identify the presence of spirits, burials, or buried metal objects. Inside the sanctuary tower, at a depth of two to three meters,

[14] Bunloet (also spelled Boonlert), as we now know, acted as a local intermediary, buyer and occasional driver for Latchford during his acquisition of pre-Khmer and Khmer antiquities in northeast Thailand during the mid-1960s onwards. Operating from villages in the region, he acquired ancient bronze objects from local villagers and facilitated their transfer to Latchford, who subsequently exported and marketed them internationally (Tanongsak et al. 2024: 197–198).

they discovered three sandstone pedestals.[15] Two remain *in situ* and were installed in front of a small wooden shrine dedicated to Ta Kruha **[Figure 3]**. The third, larger pedestal was reportedly sent to the Buddhist monastery of Wat Khok Wan (วัดโคกหว่าน) in the neighboring village of Ban Khok Wan (บ้านโคกหว่าน), Khok Wan subdistrict (ต. โคกหว่าน), Lahan Sai district (อ. ละหานทราย); however, it was not found there during our survey in 2015.

The dimensions of the two remaining pedestals correspond to those of the statue's pedestal and tang.[16] However, only one can be considered a possible match. Pedestal 1 must be excluded because of the presence of small deposit cavities around the edges of its upper platform. Pedestal 2, by contrast, remains a likely candidate; the missing Pedestal 3 cannot be assessed.

After its discovery and sale in Thailand, the statue was sent to London, where it entered Latchford's private collection (Felten & Lerner 1989: 226, "private collection, London"). It was most likely restored there under the supervision of Anna Plowden (1938–1997; Anna Plowden Ltd from 1968, and Plowden & Smith Ltd from 1985), as were other looted Khmer bronzes from Latchford's network.[17] The statue was subsequently consigned to the London-based firm Spink & Son Ltd, which frequently handled objects for Latchford. In 1988, Spink & Son sold it to the American media tycoon Walter H. Annenberg (1908–2002), who, together with his wife Leonore (1918–2009), later donated it to the Met as a "partial gift", a fractional donation arrangement under which the museum did not initially receive full ownership. At the time of the donation, Martin Lerner was curator of South and Southeast Asian Art.

Iconography, Style, and Dating

Like other contemporary bronze sculptures, the statue's identity is not readily identifiable due to the absence of specific iconographic features. For this reason, Lerner initially proposed identifying the male deity as a "deified king" and possibly "the only known surviving *Devaraja* image", potentially associated with the Khmer King Jayavarman VI

[15] The butterfly-shaped back bow may have been recovered during these clandestine excavations, although no direct evidence confirms this find.

[16] Pedestal 1 (**Fig. 3**, viewer's left; fragmentary, square, concave profile, with rim): H. 48 cm; upper platform W. 76 cm; central square opening W. 18–19.5 cm. Pedestal 2 (**Fig. 3**, viewer's right; fragmentary, square, concave profile, without rim, and larger): H. 59 cm; upper platform W. 79.5 cm; central square opening W. 26–26.5 cm. Statue pedestal (square base with trapezoidal tang): base W. 23.3–23.8 cm; tang H. 25.2 cm; tang W. 12.3–13.2 cm.

[17] Among the modern repairs identified—besides surface cleaning—was one affecting the right plinth of the pedestal, where a putty-like material was applied and subsequently repainted to match the color of the metal. XRF analysis of this repair detected potassium, calcium, titanium, manganese, iron, copper, strontium, and a notable presence of bromine. This intervention was likely undertaken after a substantial portion of the pedestal had broken off (the front and right plinths, as well as the inner plate), probably during burial and due to the weight of the tang. Ultraviolet examination also revealed that the broken right ear had been glued and that both hands had been repainted. At the Met, in 1989, the larger wings of the butterfly-shaped back bow were reattached using long stainless-steel pins, while earlier losses were filled and breaks repatinated (Steven M. Kossak, "Damage & Loss Report", 7 December 1989). More recently, an epoxy-like material was applied to the rear left corner beneath the pedestal to stabilize the sculpture for display.

(r. 1080/1081–1107/1108 CE).[18] Lerner's interpretation was based primarily on the statue's "size, quality, and medium", as well as its attribution to the end of the so-called Baphuon style (ca. 1010–1080 CE).[19] This hypothesis was later revised and the statue was instead proposed to represent the Hindu deity Śiva in anthropomorphic form, functioning both as a cult image for worship in a royal sanctuary and as an ancestor image of a deceased ruler (Campbell 2012: 123). However, this identification remains insufficiently substantiated.

These various hypotheses now require reassessment in light of current research. Regarding the more recent identification as Śiva, no extant iconographic features securely link the statue to this deity, such as a third eye, rosary, trident, crescent moon, or the syllable OṂ depicted on the chignon. However, the hand gestures performed by the male deity may suggest a relationship with Śiva. The right hand, positioned slightly off-center with the middle and ring fingers bent at different levels, appears to be in a holding gesture, generally depicted in art with the figure grasping a removable attribute. If the statue originally held such an attribute, it is now missing. The left hand, also slightly off-center, displays an open palm with the fingers pointing downward, the middle and ring fingers bent at the same level, performing the gesture of giving or receiving gifts. The combination of these two gestures is not unique and is attested in Khmer art from at least the first half of the 10th century. Notably, several extant images displaying this combination—although not all—represent Śiva[20] or are associated with a Śaiva context.[21] In addition, these images often feature braided hair, either arranged in a high cylindrical chignon or surmounted by a conical chignon-cover. This matted coiffure traditionally reflects the ascetic nature of Śiva and his consort Umā. Similarly, the present image displays individually braided strands of hair. Despite the deity's lavish jewelry, its ascetic character should therefore be taken into consideration, along with its possible Śaiva affiliation.

Thus, Lerner's original identification of the statue as a deified king no longer appears convincing, as much of his argument rested on the figure's adornment. Although the statue's jewelry is elaborate—including earrings, a necklace, armlets, bracelets, a belt, and anklets—such ornamentation does not necessarily indicate royal status (Thompson 1999: 278, n. 78). Contemporary bronze images of deities were similarly adorned and the statue's supposedly unique "crown" is likewise not unprecedented: similar tiered chignon-covers, composed of decreasing rows of lotus petals and originally complemented by a diadem, are found on stone sculptures from the capital region of Yaśodharapura (Angkor).[22] Moreover, no hard evidence

[18] Notice written in Watt et al. 1989: 92; see also Felten & Lerner 1989: 226; Kossak & Lerner 1994: 82.

[19] Period styles such as the Baphuon were defined by a stylistic development model elaborated and refined by early French scholarship (see, for example, Boisselier 1955).

[20] See, for example, the Śiva from Prasat Bavel, in Battambang province, Cambodia (IK 869), from the second half of the 10th century, formerly at the Wat Po Veal museum, Battambang (inv. no. 7; H. 134 cm; Giteau 1965: 70, fig. 32).

[21] Cat. nos 1 and 15 **[Online Appendix 1]**.

[22] See, for example, the head of Viṣṇu from Prasat

has been provided to support the statue's association with King Jayavarman VI, founder of the so-called Mahīdharapura dynasty. Lerner's hypothesis can be better understood by examining the preliminary inventory he proposed of the then-known large 11th-century bronze sculptures (Felten & Lerner 1989: 225–226). In this inventory, he arranged the sculptures chronologically on stylistic grounds and associated them with specific rulers, from Jayavarman VI's predecessors, Udayādityavarman II (r. 1050–1066 CE) and Harṣavarman III (r. 1066–1080/1081 CE), to his successor, Dharaṇīndravarman I (r. 1080/1081–1107/1108 CE), while extending the end of the Baphuon style beyond 1080/1081. This chronological framework is now considered incomplete and requires revision.

Similarly, Lerner's hypothesis identifying the statue as a representation of the *devarāja* should be dismissed in light of recent scholarship that has significantly nuanced our understanding of this royal cult and tutelary deity (e.g., Bourdonneau 2020; Bourdonneau & Mikaelian 2020). Éric Bourdonneau has proposed identifying the foundational representation of the *devarāja* (Old Khmer, *vraḥ kamrateṅ añ jagat ta rājya*) with a monumental stone image of a dancing Śiva installed in the Prasat Thom temple at Koh Ker, the ancient royal capital and holy place of Chok Gargyar, where the *devarāja* cult was established during the reign of Jayavarman IV (r. 921–941 CE). He further argued that this image continued to embody the palladium of Khmer royalty until the end of the Angkorian period, being replicated in one or more bronze statues and reproduced in various iconographic contexts.

Even so, some aspects of Lerner's earlier interpretations remain worth considering. First, the possibility of a connection between the statue and Khmer kingship, including royal patronage and installation in a royal foundation, should not be dismissed, given its dimensions and the materials employed (see below). Second, the statue may have served a dual function as both a deity-image and an ancestor image invested with a funerary or commemorative role, whether installed posthumously or dedicated to a living royal beneficiary (Lavy & Polkinghorne 2023).

Lerner initially dated the statue to the second half of the 11th century (Watt et al. 1989: 92; Burn 1993: 169; Kossak & Lerner 1994: fig. 85), tentatively associating its production with the reign of Jayavarman VI (Felten & Lerner 1989: 226). The Met later revised this dating to encompass the entire 11th century (Campbell 2012: 123). Other scholars have likewise proposed alternative chronologies, often on stylistic grounds.[23]

When the statue is examined alongside other large 11th-century bronze sculptures, of which around 30 are known (e.g., Bunker & Latchford 2004; Bunker & Latchford 2011; CAST:ING 2018), several distinguishing features emerge

Phnom Bok, Angkor, Siem Reap province, Cambodia, 11th century, now in the collection of the NMC (inv. no. Ka.1668; H. 42 cm; Boisselier 1955: pl. 24, fig. 3 [vol. 1]; pl. 60 [vol. 2]).

[23] Published stylistic datings include the late 11th century (Woodward 1997: 92, n. 24), the middle of the 11th century (Felten 2006: 49), the reign of Harṣavarman III (Bunker & Latchford 2011: 234), and the late 11th or early 12th century (Feneley 2023: 268).



Figure 4: Facial features with inlays for eyes, eyebrows, mustache, chin beard, and beauty marks on neck of male deity from Ban Yang Pong Sadao
© Brice Vincent/Met

that may help refine its stylistic attribution and dating.[24]

• *Face*. Inlays are used for the eyes, eyebrows, mustache, chin beard, and beauty marks on neck **[Figure 4]**. During the Angkorian period, bronze images of the Baphuon style are distinctive in their almost systematic use of inlays for the eyes, eyebrows, mustache, and beard, the latter two typically rendered in a bracket-shaped form (Boisselier 1955: 219). However, such facial inlays are generally absent from later Baphuon bronzes.

• *Garment*. The statue preserves a rare, complete example of a costume comprising a low-cut, pleated *sampot* without a border, complemented by a hanging fishtail-shaped front fold secured by a decorated knot and an elaborate butterfly-shaped back bow **[Online Appendix 3: Fig. 2a]**. This combination of costume elements is attested in Khmer bronze statuary from around the middle to the end of the 11th century, and possibly into the early 12th century.[25]

• *Jewelry*. Among its most distinctive ornaments is a belt composed of a central square plaque and a double row of flattened ovals and quatrefoils, bordered with beading and complemented by pendants and peduncles. The necklace likewise features large central diamond-shaped medallions—echoed on the armlets—as well as similar pendants and peduncles at the back **[Online Appendix 3: Figs 2b–c]**. These decorative elements, particularly the belt ornamentation and the pendants and peduncles shared by the belt and necklace, are attested in Khmer bronze statuary from the 1040s and again during the second half of the 11th century.[26]

• *Coiffure*. In addition to the elaborate tiered chignon-cover mentioned above

[24] A large hole was drilled into the back of the left shoulder, presumably to obtain a sample for metal analysis and/or thermoluminescence (TL) dating prior to the statue's sale. No known documentation records this intervention.

[25] See cat. nos 8 and 15 **[Online Appendix 1]**.

[26] See cat. nos 6, 10, and 11 **[Online Appendix 1]**.

[Fig. 4], the coiffure consists of braided hair rather than alternating vertical bands of quatrefoils and beads and features a continuous hairline complemented at the back of the head by a row of petals **[Online Appendix 3: Fig. 2d]**. This coiffure arrangement is also attested from the 1040s onward.[27]

• *Body*. The treatment of the legs and, particularly, the feet—with the right foot still slightly advanced—is less naturalistic and recalls the stylistic developments of later Baphuon bronzes **[Online Appendix 3: Fig. 2e]**. Moreover, among the two types of navel representations identified in 11th-century bronze production—either round or incised with two horizontal lines on each side—the statue belongs to the latter type **[Online Appendix 3: Fig. 2a]**. This characteristic, however, cannot be linked to a specific period or workshop.

Based on the above-listed features, dating the statue to the second half of the 11th century seems appropriate. More precisely, its crafting likely occurred between the production of bronze sculptures mentioned above: on the one hand, the *dvārapāla*—or Śiva—from Prasat Sa Kamphaeng Yai (cat. no. 10 in **Online Appendix 1**; 1040s) and the West Mebon Viṣṇu (cat. no. 11 in **Online Appendix 1**; 1050–1060s); on the other, the Prasat Yeay Moa and Wat Phu male deities (cat. nos 13 and 14 in **Online Appendix 1**; 1080s?). An additional argument for this late dating is evidenced by the facial representation. The statue's face, rather than oval or round (Boisselier 1955: 219), is more elongated, with less opened eyes, thicker eyelids, a sharp nose with incised nostrils, and larger ears. The stylistic model for this representation is therefore distinct, which in this case would preclude gradual stylistic evolution but would also suggest the embodiment of individualistic traits in a kind of idealized portrait image.

Fabrication

While in the collection of the Met, the statue was examined visually and instrumentally at the Sherman Fairchild Center for Objects Conservation and the Department of Scientific Research, in collaboration with the Centre de recherche et de restauration des musées de France (C2RMF), to investigate its manufacturing techniques. An integrated methodological approach specifically adapted to the examination of lost-wax cast bronze sculptures was employed (Bourgarit et al. 2025; for detailed operating conditions, see **Online Appendix 2**).

From Wax to Bronze

The copper-based sculpture was hollow-cast in almost a single piece, including the pedestal and tang. In addition, ten sections were cast separately: first, elements belonging to the body, the right hand and the left forearm with hand; second, a series of decorative elements, including the chignon-cover (three elements, one of which is now missing), earrings (two elements for each ear), the front fold (one element) and back bow (one element) of the *sampot*, and the diadem (one element, now also missing). Determining how the wax model of the main part of a

[27] See cat. no. 6 **[Online Appendix 1]**.

sculpture was prepared prior to casting is rarely straightforward (Bourgarit et al. 2025). In this case, several features point toward a direct lost-wax process, including the non-conformal inner volume (for example, the overthickness of the *sampot*) and the relative complexity of the armature system (see below).

Wax Model

Following the hypothesis of a direct lost-wax process, an iron armature was first constructed as a "skeleton" **[Figure 5]**. It consisted of two vertical iron rods (Diam. 8–10 mm) representing the legs, extending down to the feet. These were bent and joined in the hip region, then continued upward as a thick double rod (Diam. 9–13 mm) reaching the top of the head, where it extended through an open hole and appeared square in cross-section **[Online Appendix 3: Fig. 3]**. A horizontal rod was added at the shoulder level, crossing the vertical rod and bent to provide support for the shoulders and arms. It extended to the right wrist and left elbow (Diam. 4 mm). The junction between the horizontal and vertical rods remains unclear, although they may have been secured together with wire.[28] Once this iron "skeleton" was completed, clay was

[28] A metal wire joining the vertical and horizontal armatures was possibly identified in cat. no. 5 (**Online Appendix 1**; Vincent 2014a: 64, fig. 3.2.6b). In cat. no. 7 **[Online Appendix 1]**, the horizontal iron rod running through the chest, branching into the arms, and extending to the hands has an oval opening at the center to allow the central vertical armature to pass through (Vincent 2014a: 93, fig. 3.4.6).

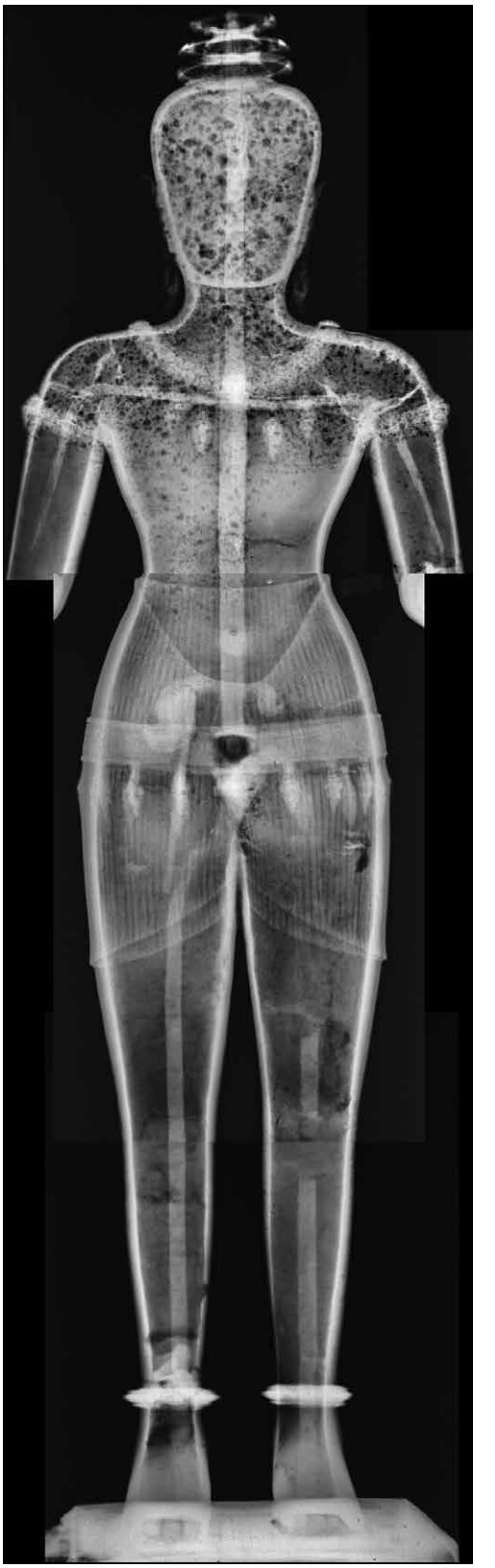
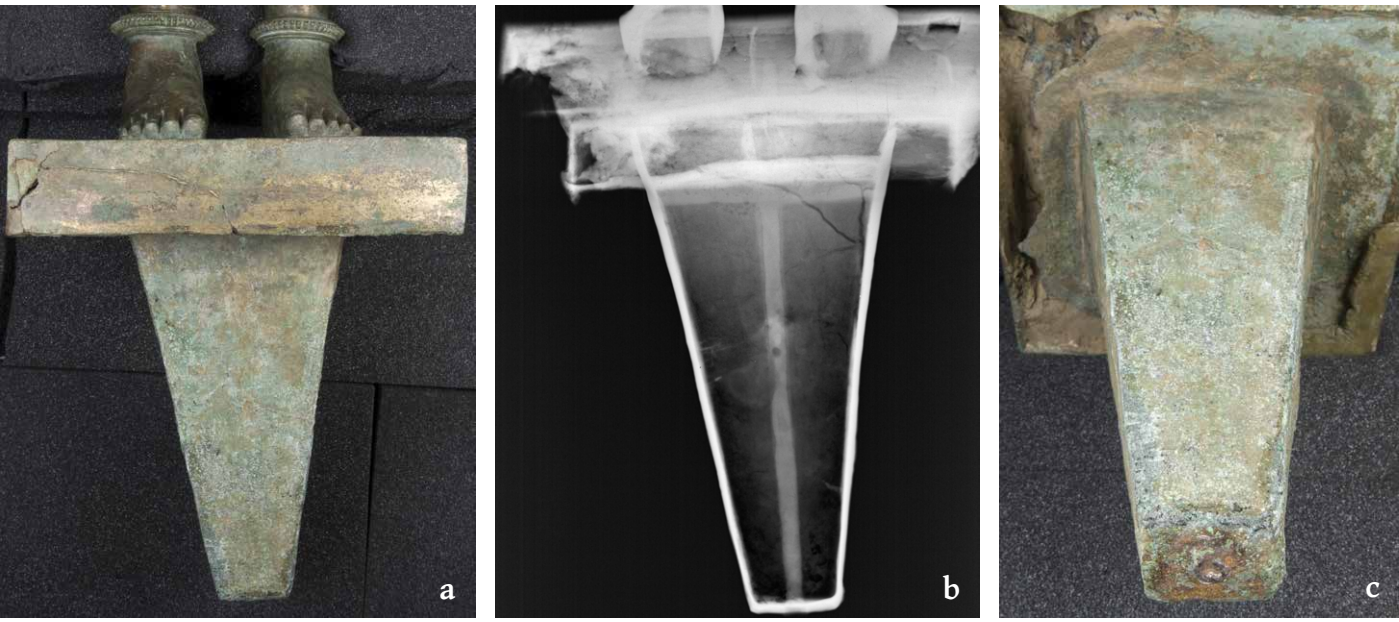


Figure 5: X-radiography of male deity from Ban Yang Pong Sadao, front view © Brice Vincent/Met



Figures 6a–c: Square base and trapezoidal tang of male deity from Ban Yang Pong Sadao; a. Front, b. X-radiography: front view, c. Iron armature on the bottom (round in cross-section) © Brice Vincent/Met

applied to form the three-dimensional standing figure.

The refractory clay-based core was entirely preserved. Vertical fine gaps, known as "core flashes" (Bourgarit et al. 2025), attest to the construction process of the core, which was built upward through the progressive addition of clay layers. The core was reinforced with additional thin iron rods, visible in the X-radiographs as separate floating rods. These include one rod in the left hip and another in the neck area, parallel to the central vertical rod (Diam. 2–3 mm; Length 10 cm). The shape of the final core was nearly identical to that of the finished metal sculpture.

Once completed, the core was covered with wax to create the wax model. The intended thickness of the wax layer can be estimated at around 4–6 mm, as observed on the head, ribs, hips, and right thigh **[Fig. 5]**. The regularity and relatively substantial thickness of the wax layer, reflected in the consistent thickness of the metal walls, suggest the use of wax sheets. The rare variations in thickness (from 7 to less than 2 mm, for example on the right shoulder, arms, and left leg) indicate a displacement of the core during casting. Further evidence for the use of wax sheets is visible on the exterior of the sculpture: a vertical seam line on the left side of the chest and a corresponding step on the upper edge of the *sampot* mark the junction between two wax sheets. Once the body was completed, decorative details were carved into the wax. These include the eyes, hair, *sampot* pleats, palm *cakra*, toenails, and nostrils. Separate wax appliqués were applied to form the ears, nipples, small front knot of the *sampot*, necklace with pendants, armlets, bracelets, belt with pendants, and anklets.

The wax model of the hollow-cast pedestal consisted of two parts: a base and a tang **[Figures 6a–b]**. The following construction sequence may be proposed, combining both direct and indirect processes. Once the wax figure was completed, 3–6 mm-thick wax sheets were joined to the feet to form an open square base composed of a top plate and four plinths, with two corresponding openings cut into the top plate. The base was then filled with a clay-based core. To form the tang, an additional trapezoidal clay-based core, built around a single vertical iron rod (Diam. 10 mm), was joined to the base core. The armature, running through the center of the tang from top to bottom, remains visible at the lower end and is round in cross-section **[Figure 6c]**. The clay tang was coated with 3–5.5 mm-thick wax sheets, while additional 3.5–4 mm-thick wax sheets were applied around the tang to close the open square base. The heels were positioned at the center of the pedestal, with the toes of the right foot extending toward the front edge. This arrangement helped distribute the weight of the statue centrally on the pedestal and ensured its balance and stability after casting.

Manufacture Marks

To guide the joining of the wax models of the body and pedestal, as well as to ensure the correct placement and spacing of wax appliqués on the model, shallow lines were incised into the wax. These marks were not removed before casting and remain visible in the metal of the statue. A continuous line was engraved on the top of the pedestal, precisely centered between the feet **[Online Appendix 3: Fig. 4a]**. A corresponding line is visible on the chest, below the central medallion of the necklace and aligned with that on the pedestal **[Online Appendix 3: Fig. 4b]**. Individual marks incised in the wax are also preserved on the back of the necklace, above the central medallion and between the pendants **[Online Appendix 3: Fig. 2c]**.

Armature Extensions, Core Pins, and Core Extensions

The wax model, including the body, pedestal, and tang, was invested with refractory clay, allowing the armatures to extend beyond the head, arms, and bottom of the tang. These extensions served to secure the clay-based core within the refractory investment during casting after the wax had melted out. They were cut off only after casting.

Iron core pins were inserted at strategic points in the wax sculpture to reinforce the armature system. Of those that could be identified, two are located on the shoulders (right: square, 3–3.5 mm; left: round, Diam. 5 mm); two on the hips, on either side of the *sampot* (square, 3 mm; **Online Appendix 3: Figs 5a–b**); one on the back of the *sampot* (both sides?); one at the center of the chest (square, 3 mm); and one at the center of the back. Additional iron core pins were inserted into the side plinths of the pedestal: one was observed on the left plinth (elongated, 6 × 2 mm; **Online Appendix 3: Fig. 5c**). The tang also contains three pins: two on the front (square, 5 mm) and one on the back.

In addition, on the top of the pedestal, each corner bears a square depression that originally accommodated a clay-based core extension, preventing displacement of the core during casting. These extensions were removed and the resulting cavities filled with metal after casting (see below; **Online Appendix 3: Fig. 6b**).

Casting, Repairs, and Finishing

The extensive porosity extending from the shoulders into the head provides evidence that, after the wax was melted out, the image was cast upright, allowing gas bubbles to migrate upward through the metal during cooling **[Fig. 5]**. The main pouring gate was likely located at the top of the head, which was left undecorated.

After the casting had cooled, the investment was broken off and the main gate and any additional runners were cut off. The statue shifted slightly during casting, resulting in cracks in the right ankle and a gap in the left foot. To fill these gaps and stabilize the right ankle, repair patches were added, as indicated by their differential corrosion compared with the tin-bronze substrate (see below).[29] Two small holes along a crack just above the right anklet were repaired with rectangular patches that are now missing **[Online Appendix 3: Fig. 6a]**, while two larger rectangular patches were applied to the right calf and right foot. The core inside the ankle was removed, and molten metal was poured into the cavity. Two round holes (Diam. 10 mm) visible on the pedestal, on the right side of the right foot, may be related to this repair.

Additional repair patches are located on the surface of the statue and pedestal: one on the lower back, corresponding to a break in the clay-based core (square); two on the right side and back of the right leg (rectangular and square); four on the top of the pedestal, one at each corner, corresponding to the former core extensions (square; **Online Appendix 3: Fig. 6b**); and one, missing, on the front plinth (rectangular; **Online Appendix 3: Fig. 6c**). Overall, the casting process appears to have been successful, requiring relatively few repairs.

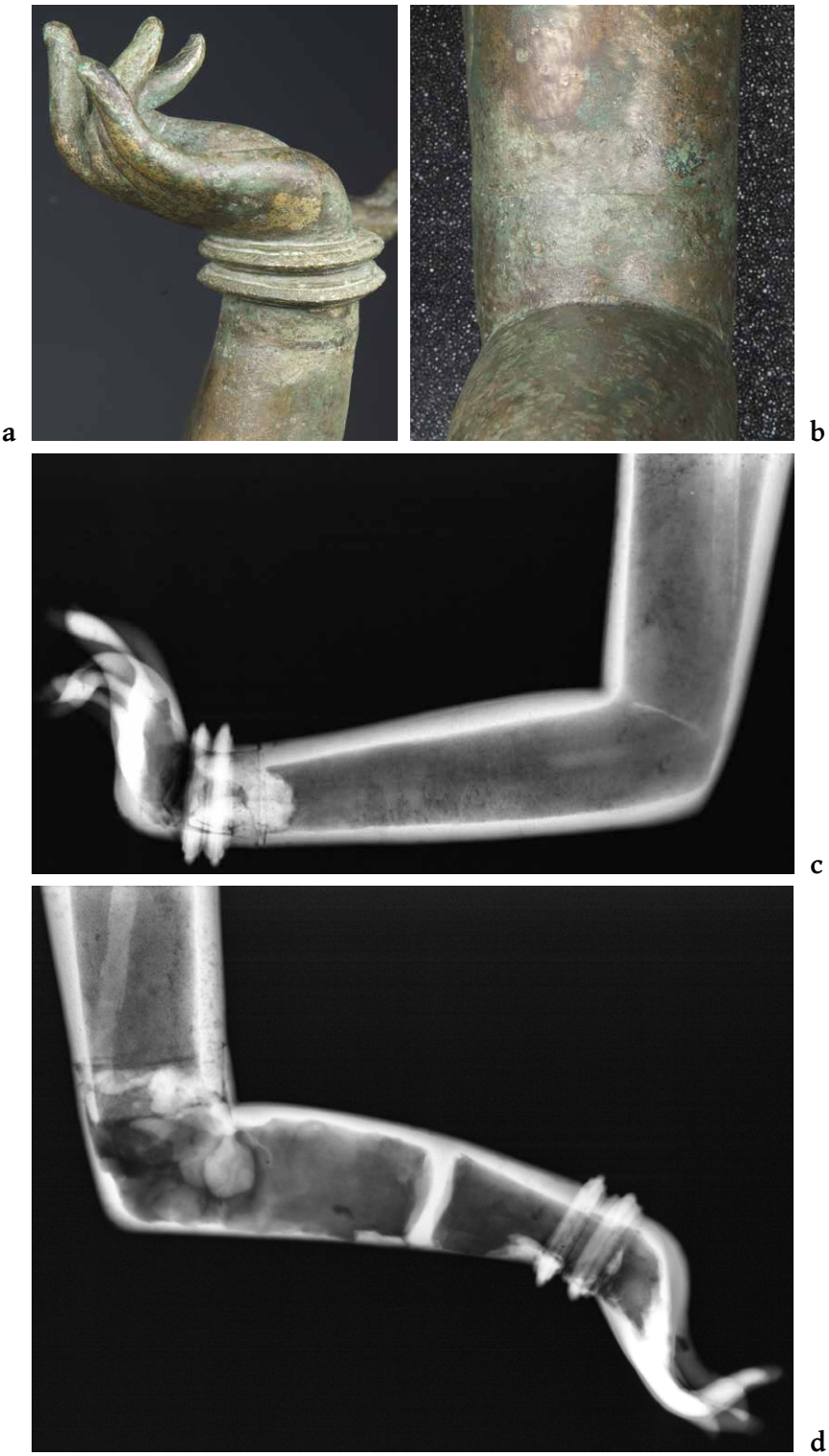
Once repaired, the surface was finished, particularly to eliminate porosity in the upper part of the statue, most likely through chasing and polishing with tools of different granulometries and made of various materials (sandstone, ceramic, and organic materials). Because of the gilding layer (see below), chasing and polishing marks were difficult to examine, except on the back of the butterfly-shaped bow. It should also be noted that the surfaces between the legs and between the arms and chest were left as-cast, as was the tang of the pedestal; these areas still preserve metal bumps and fins.

Assemblies

After casting, the separately cast sections were assembled onto the main figure using mechanical methods (back bow and chignon-cover), soldering (front fold, diadem and earrings), or brazing (right hand and left forearm with hand).[30]

[29] The metal of the repair patches has not been analyzed.

[30] For further details, see Bourgarit et al. 2025.



Figures 7a–d: Brazing of the right hand and left forearm with hand of male deity from Ban Yang Pong Sadao; a–b. Joints on the right wrist and left arm; c–d. X-radiography (side view), right and left arms © Brice Vincent/Met

In the case of the right hand and left forearm with hand, the body section formed the tenon, while the hand and forearm sections functioned as mortises. The clay-based core was partially removed after casting, allowing the two parts to fit together. They were then joined by pouring molten metal into a thin, circular channel between the two sections (1.5–2 mm in width; **Figures 7a–b**). The joints remain preserved and are visible through differences in the surface patina. For both the right hand and left forearm, the color and similar radiographic density of the joint metal compared with the surrounding tin-bronze substrate rule out soldering with tin- or lead-based alloys. Instead, brazing with a leaded tin-bronze alloy was employed, as suggested by XRF analysis.

During this process, the right hand shifted slightly downward. Areas of higher-density metal observed in X-radiography indicate that some of the assembly metal flowed into the statue. On the right side, the metal accumulated inside the forearm, suggesting that the statue was lying face up during the assembly process **[Figure 7c]**. On the left side, the metal accumulated inside the elbow, and the presence of fallen metal droplets indicates that the statue was standing **[Figure 7d]**.

The solid front fold of the *sampot* was soldered to the body using a tin-based alloy, as evidenced by XRF analysis **[Online Appendix 3: Figs 7a–c]**. Traces of the dark grey solder remain visible between the legs and in the X-radiographs. Additionally, the solid back bow was mechanically fixed to the *sampot*: its rectangular tang was inserted laterally into an oval opening at the back of the belt and then rotated 90 degrees to lock it in place, with the larger wings facing downward **[Online Appendix 3: Figs 8a–c]**.

The missing diadem was originally secured behind the ears and only grey solder traces remain visible; these areas were inaccessible to XRF analysis. A small rectangular iron pin on the back of the head may also have served to secure the diadem's bow **[Online Appendix 3: Fig. 9]**. The diadem may likewise have been made of gilded cast bronze or possibly of hammered gold, as proposed for other contemporary productions.

Each earring was originally composed of two separate solid parts: an inner element, longer because of its conical tip, and an outer element, now missing. They were attached through the pierced earlobes using a similar tin-based solder, as evidenced by XRF analysis, traces of which remain visible on both sides **[Online Appendix 3: Figs 10a–b]**.

The armature extension protruding from the top of the head was used to thread the three separate parts of the chignon-cover (from bottom to top): a plain disk; two other disks cast in one piece, decreasing in size and decorated with rows of lotus petals and engraved indentations; and probably a smaller disk decorated with lotus petals and surmounted by a conical tip, now missing but apparently found with the statue at the time of its discovery.[31]

Remains of a dark grey material were found between the head and the lower disk, between the lower and

[31] For a contemporary example, see the stone statue from Prasat Phnom Bok mentioned above in note 21.



Figure 8: Chignon-cover of male deity from Ban Yang Pong Sadao (incomplete): lower and upper disks threaded on iron armature extension (with modern restoration material) © Brice Vincent/Met

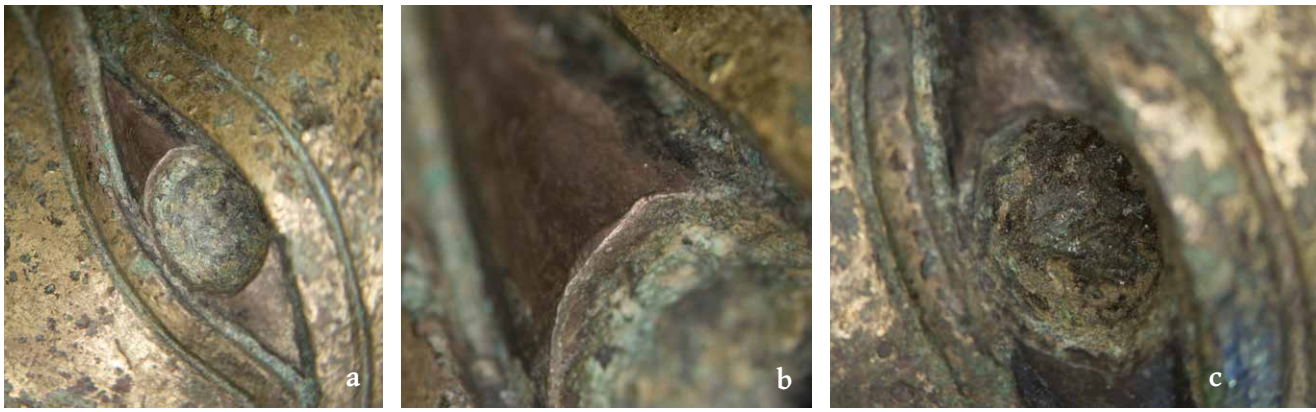
upper disks, and on top of the chignon-cover, around the square-shaped armature **[Figure 8]**. Although no density variation was visible in X-radiography, SEM-EDS analysis indicates that this filling consists of a compact assemblage of very fine, well-sorted particles of talc set in a calcium-rich matrix (Carò & Rizzo 2014). Additionally, Py-GC/MS identified the presence of a synthetic resin composed of styrene and phthalic anhydride, possibly a styrenated alkyd resin, which is clearly of modern manufacture. This synthetic restoration material may have masked the original material. A second microsample collected from the same area (between the lower and upper disks) contains very fine, well-sorted grains of silicates, mainly quartz, together with abundant undetermined clay minerals (possibly kaolinite and illite). Both types of particles contain, or are surrounded by, tin-rich bronze corrosion products.

Polychromy

The statue was entirely gilded, except for the hair, chignon-cover, tang, and the back surfaces of the front fold and back bow of the *sampot*. XRF analyses performed on several locations (face, neck, chest, arms, right hand palm, front fold, back bow and pedestal) confirmed that the surface is mercury gilded (see also Strahan 1998: 101; Bunker 2008: 299).

Deep cavities were carved into the wax prior to casting to receive inlays for the irises and pupils **[Fig. 4; Figures 9a, c]**. Remains of black material are present inside both pupils. Py-GC/MS and SEM-EDS analyses of a sample from the right pupil identified it as carbonized plant matter, possibly part of an adhesive used to hold black glass or a black stone or, alternatively, the remains of the original pupil itself (Carò & Rizzo 2014).[32]

[32] Only a few Angkorian bronzes retain their original



Figures 9a–c: Inlaid eyes of male deity from Ban Yang Pong Sadao: a–b. Right eye: iris and pupil (now missing black glass or stone), eye whites (silver), BM: 6X and 20X; c. Left iris and pupil (now missing black glass or stone), BM: 10X © Brice Vincent/Met

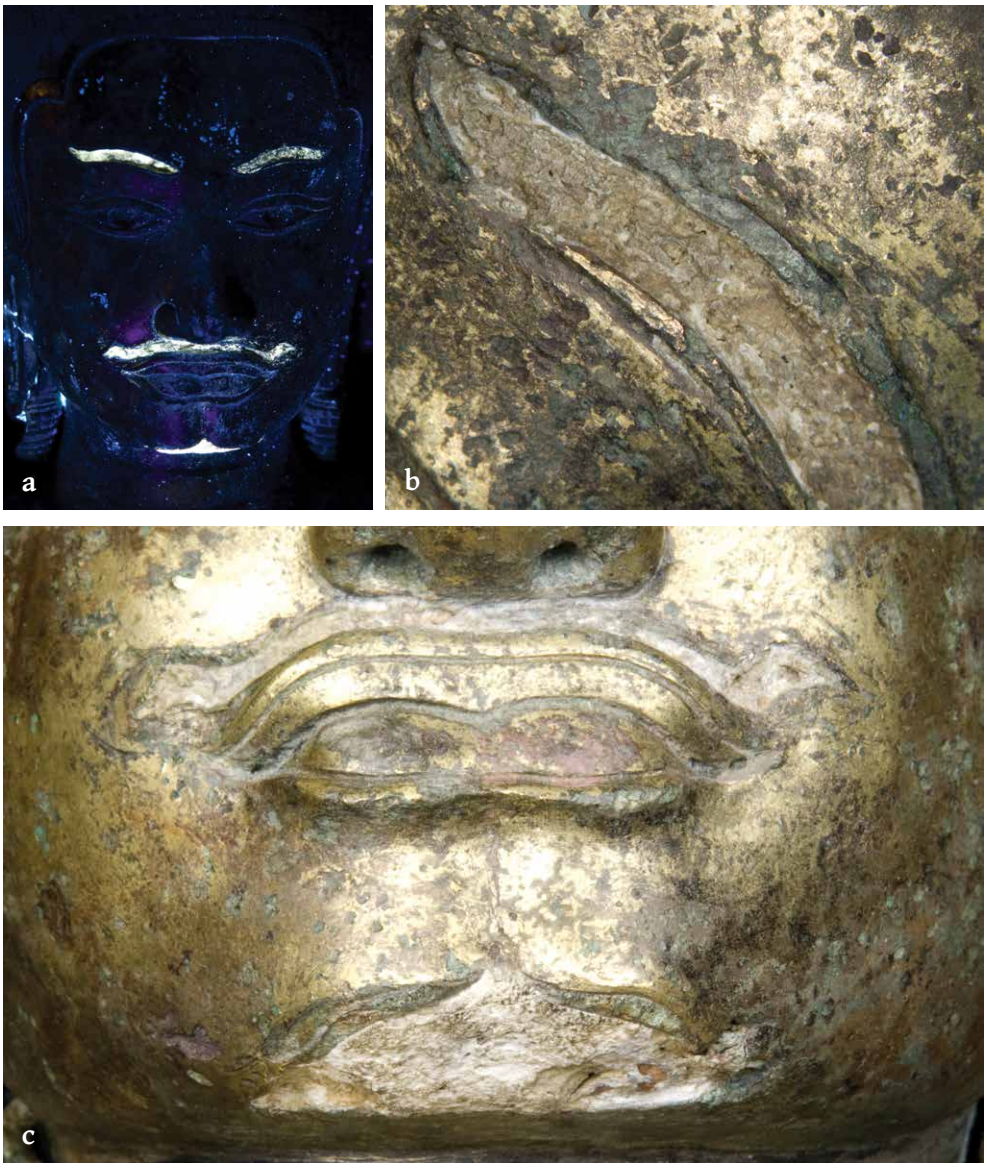
Cavities for the eyes whites and the beauty marks on neck were likewise prepared in the wax. These were inlaid by cold working with hammered silver sheet, as evidenced by XRF analysis: two pieces for each eye white and four for the beauty marks **[Fig. 4; Figures 9a–b; Figure 10]**.

White material is present in the inlay channels of the eyebrows, mustache, and chin beard **[Fig. 4; Figures 11a–c]**. Those in the left eyebrow and chin beard are smooth and completely fill the cavities, with additional inlays on both sides of the beard's upper edge, indicating that no other material was added. A sample from the right side of the chin beard was identified as lead-based by XRF analysis before further characterization by FTIR (Carò & Rizzo 2014). The white material was identified as cerussite, a lead carbonate that can occur either as a pigment or as a corrosion product of metallic lead. Its presence therefore allows two possible interpretations. First, cerussite may have been intentionally used and mixed with a binder to create a white inlay material. Second, the mineral may indicate the former presence of a grey or black patinated metallic lead inlay, which was



Figure 10: Inlaid beauty marks on neck (silver) of male deity from Ban Yang Pong Sadao © Brice Vincent/Met

eyes and even fewer have had them examined and characterized: for example, blue potassium glass, possibly colored with copper, in cat. no. 2 (**Online Appendix 1**; based on an examination by Yvan Coquinot), and opaque yellowish-brown lead glass in cat. no. 3 (**Online Appendix 1**; based on an examination by Anna Bennet).



Figures 11a–c: Inlaid eyebrows, mustache, and chin beard (lead) of male deity from Ban Yang Pong Sadao; a. Face under ultraviolet light; b. Left eyebrow inlay channel, BM: 8X; c. Mustache and chin beard inlay channels © Brice Vincent/Met

entirely converted into lead carbonate during burial. This corrosion process, accompanied by volume expansion, would have filled inlay cavity. Since no binder has been identified by FTIR,[33] the second interpretation appears more plausible.

Finally, traces of red pigment are visible on several parts of the statue, primarily on hair—especially at the back—but also on face (lips, eyelids, eyebrows, mustache, and hairline), chignon-cover (upper disks), *sampot* (front knot and upper edge), and jewelry (armlets, necklace, and belt)

[33] Py-GC/MS analysis was not conducted.



Figures 12a–d: Colored pigments of male deity from Ban Yang Pong Sadao; a–b. Red ochre remains on hair, BM: 8X; c–d. Cinnabar (and minium?) remains on lower lip and left eyelid, BM: 6X and 10X © Brice Vincent/Met

[Figures 12a–d]. Painting is clearly ancient and applied over the gilding before burial, as corrosion products have since developed over much of the surviving pigment. Extensive areas of the hair were painted red. A sample taken from hair at the top of the head (right side) and analyzed by SEM-EDS was identified as red ochre (Carò & Rizzo 2014). The presence of red ochre is also indicated by XRF analysis of pigmented areas on the *sampot*. In contrast, XRF analysis of the red pigment on the lips revealed abundant lead in addition to mercury, suggesting either the use of minium, also known as red lead and characterized by an orange-red color, or a combination of minium and cinnabar, possibly applied at different times.[34]

[34] Red ochre and cinnabar were already known as pigments used for interior wall paintings in Angkorian brick temples of the 9th and 10th centuries (Runkel et al. 2012) and, in the case of

Table 1: Metal Composition and Analytical Results for Six Parts of the Statue (ICP-AES)

	Sn	Pb	Zn	Ag	As	Ni	As/Ni	Co*	Bi*	Fe	S	Sb	Pb/Sb	Au*	Hg*
Body	12	1.6	0.011	0.11	0.30	0.25	1.2	614	166	0.29	0.0034°	0.064	25	380	56
Pedestal	11	1.3	0.022	0.12	0.28	0.25	1.1	666	152	0.45	< 0.0019	0.060	22	182	4.1
Tang	12	1.3	0.019	0.12	0.28	0.26	1.1	679	144	0.45	< 0.0024	0.060	22	195	7.2
Front fold	11	0.5	0.040	0.22	0.22	0.31	0.7	328	57	0.14	< 0.0024	0.030	17	161	5.7
Back bow	11	4.3	0.032	0.15	1.1	0.20	5.5	350	219	0.19	0.011	0.1	43	111°	5.9
Upper disks	11	3.5	0.085	0.13	0.36	0.15	2.4	229	303	0.073	0.029	0.088	40	92°	4.5

* Results in part per million
° Value below the quantification limit

Metal Composition

All six analyzed parts (body, pedestal, tang, front fold, back bow, and upper disks) are made of the same copper-based alloy, namely an 11–12 wt% (weight percent) tin bronze with relatively low lead contents (0.5–4 wt%) **[Table 1]**. The similar main impurities characterize the copper used, namely silver (0.1–0.2 wt%), nickel and arsenic (0.2–0.3 wt%), iron (0.1–0.5 wt%), antimony (0.03–0.10 wt%), and cobalt (0.03–0.06 wt%). This composition corresponds to the chemical pattern recently designated as "Angkorian copper" (Vincent & Bourgarit 2025).

Two distinct metal batches appear to have been used. On the one hand, the body, pedestal, tang, and front fold of the *sampot* are characterized by very similar metal compositions, most probably reflecting production in the same workshop within a narrow chronological range. Specifically, the body, pedestal, and tang clearly derive from the same melt, as indicated by their very similar contents of lead, arsenic, nickel, cobalt, and antimony, whereas the front fold was cast separately. On the other hand, the back bow and upper disks were cast from a distinctly different metal batch. Their much higher lead content may even indicate a different alloy, namely a leaded bronze, also characterized by a relatively higher sulfur content and arsenic/nickel ratio. Furthermore, if the chignon-cover elements were cast independently from the statue, these three sections were probably produced at the same time from the same metal batch.

Clay-Based Core Composition

Remains of the original clay-based core are preserved in the pedestal of the sculpture, specifically at the junction between the base and the tang along the break **[Online Appendix 3: Fig. 11a]**. Macroscopically, the core appears as a homogeneous, moderately porous aggregate composed of fine framework grains embedded in a very fine, dark carbonized matrix **[Online Appendix 3: Fig. 11b]**. Elongated plant fibers are also visible to the naked eye.

Petrographic analysis reveals that the framework consists of silt and sand (49% of the total surface area), embedded within a subordinate clay-rich matrix **[Figure 13; Online Appendix 3: Figs 12a–c]**. The framework is composed primarily of quartz (38.5–40% total surface area), with some feldspars (2.4–3.6% total surface area). Identified accessory

cinnabar, for Koh Ker stone statuary (Bourdonneau 2020: 39). Minium is only documented in Khmer epigraphy; it appears once under the Sanskrit name *sindūra* in the digraphic stele K. 281, dated to the reign of Yaśovarman I (r. 889/890–ca. 910 CE; Face D, st. 8; Bergaigne 1893: 458, 471).

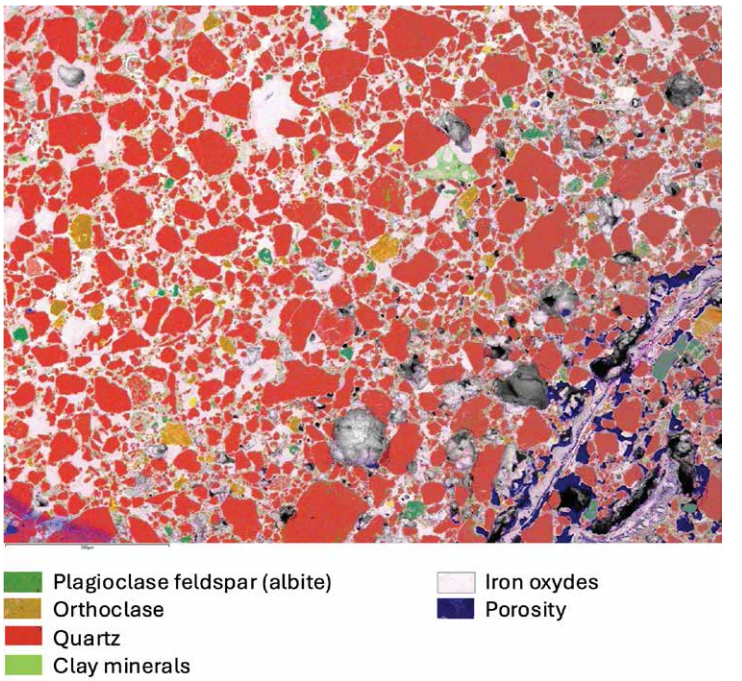


Figure 13: Clay-based core composition of male deity from Ban Yang Pong Sadao; SEM-EDS: chemical mapping (mineral and rock fragments, organic additives) © Yvan Coquinot/ C2RMF

minerals include rutile, ilmenite, apatite, zircon, xenotime, and small mica needles (<0.1% total surface area).

Leaching by percolating water has removed most of the clay from the core, which now occupies only 2–3% of the total volume. The clay matrix has been replaced by iron oxides (goethite) resulting from the corrosion of the nearby iron armature (58.6% total volume). Consequently, the microstructure of the core, including its porosity and grain-size distribution of the clay and silt fractions, has been altered. Nevertheless, the quartz and feldspar grains retain their original characteristics in terms of size and shape: they are angular to subrounded, very fine, and moderately sorted (mean grain size = 77 µm). A few coarse grains, up to 1 mm, are also present. Quartz occurs mainly as non-undulose and undulose monocrystalline grains with subordinate polycrystalline grains. Feldspar grains are often altered and consist predominantly of potassium feldspars (orthoclase), whereas plagioclases (albite) are less abundant and smaller. The core also contains organic additives (0.2%), including rounded carbon fragments and, more abundantly, carbonized to uncarbonized rice husk.

The very fine clay matrix (<2 µm) consists of a mixture of clay minerals that could not be identified because an insufficient quantity remains. However, SEM-EDS analyses conducted on small areas where clay is still preserved reveal the following mean composition: 59% silicon dioxide (SiO_2), 17% alumina (Al_2O_3), 17% iron oxide (Fe_2O_3), 1.8% calcium oxide (CaO), 1.6% titanium dioxide (TiO_2), 1.4% potassium oxide (K_2O), 0.7% magnesium oxide (MgO), and 0.2% sodium (Na).

Technical Choices and New Dating Arguments

Following the methodology applied in the stylistic study, the statue was examined and compared with the same group of large 11th-century bronze

sculptures in order to identify additional distinguishing features that may further support the proposed dating.

• *Armatures and model*. The complex internal armature system, two complementary iron rods extending from the feet to the hands and emerging through an open hole in the head, is characteristic of 11th-century bronze statuary (Vincent 2014a). The pedestal, with its long tang, is also nearly identical to that visible beneath the Prasat Sa Kamphaeng Yai statue mentioned above (cat. no. 10 in **Online Appendix 1**; Warangkana 2535: figs 5 and 15).

• *Casting direction*. The choice to cast the statue upright—rather than upside down, as observed in several Angkorian bronzes (Woodward 1997: 88–94, 97–111, based on examinations by D. Strahan; Vincent 2012: 277–278)—appears unusual and may reflect a specific workshop practice.

• *Metal*. The alloys used for the body, pedestal, tang, and front fold of the *sampot* correspond closely with those documented for 11th-century bronze statuary, including the West Mebon Viṣṇu mentioned above (cat. no. 11 in **Online Appendix 1**; Vincent & Bourgarit 2025). Only the upper disks and back bow exhibit relatively higher sulfur contents and arsenic-to-nickel ratios, which do not entirely exclude the possibility that these two elements were produced later, during the 12th century.

• *Assemblies*. Assembly of separately cast sections has not been observed among the earliest Baphuon bronzes. Moreover, the combination of the three identified assembly techniques—mechanical fixing, soldering, and brazing—is only attested in bronzes produced from the middle to the second half of the 11th century.[35]

• *Polychromy*. The statue represents the best-preserved example of polychrome effects currently known, combining gilding, inlays, and painted decoration. Such complex and elaborate treatment is documented only from the second half of the 11th century onward. To date, only two other analytically characterized examples displaying a comparable combination of techniques and materials (mercury gilding, silver or silver-gold alloy and lead or lead-tin alloy inlays, and cinnabar pigment) are attested.[36]

Thus, the study of the statue's manufacturing techniques does not contradict the stylistic analysis. Instead, it supports a production date in the second half of the 11th century, possibly during the reign of Harṣavarman III in the 1060–1080s.

Reconstructing the Statue's History

Based on the results discussed above, it is now possible to reconstruct the statue's original religious, political, cultural, and technological contexts.

Place of Manufacture

The statue was discovered in Ban Yang Pong Sadao, Buriram province, in present-day northeast Thailand. The Buriram region came under substantial Khmer control as early as the late 9th to early 10th century, before becoming integrated into the Angkorian kingdom, Kambujadeśa (Woodward 2005;

[35] See cat. nos 9 and 11 **[Online Appendix 1]**.

[36] See cat. nos 11 and 12 **[Online Appendix 1]**.

see also Pira 2016). Angkorian political and cultural expansion in the region is particularly evident in major religious foundations, notably the three Śaiva complexes of Plai Bat Hill (PPBH 1 and 2), Prasat Phanom Rung, and Prasat Mueang Tam **[Map 1]**, as well as in other epigraphic, architectural, and sculptural remains. During the same period, the territory was traversed by a royal road linking the capital of Yaśodharapura (Angkor) to the holy place of Vimāy (Phimai), further reinforcing Khmer authority over the region.

Stylistically, the statue can be compared with both bronze and stone productions from the Angkor region and northeast Thailand. Technologically, it likewise shares features with bronze sculptures from both areas. Given its place of discovery, manufacture in the Buriram region might initially seem the most plausible hypothesis. This possibility is supported by evidence for a local bronze-casting tradition extending back to the 7th–9th centuries which produced large and small Buddhist bronze statuary, notably those allegedly found at the later 10th-century temple of Prasat Plai Bat Hill 2 (PPBH 2), located 8 km east of Ban Yang Pong Sadao, as well as farther north at Ban Mueang Fai (Bunker 2002; Tanongsak et al. 2024; Revire 2025).

Recent metal analyses of a series of 11th-century bronze statues reportedly discovered in present-day Buriram and Sisaket provinces—although these reported proveniences must be treated with considerable caution—also support the hypothesis of a so-called Buriram bronze-casting tradition active from the early 11th century through the late 11th or early 12th century.[37] These statues are characterized by particularly high cobalt contents (0.1–0.9 wt%), a feature also observed in several bronzes reportedly found at PPBH 2 (Vincent & Bourgarit 2025).

In the case of the present statue, however, the relatively low cobalt content measured in all six analyzed parts does not support an attribution to this proposed Buriram production group **[Table 1]**. Instead, the close similarity of the metal with that of the West Mebon Viṣṇu (cat. no. 11 in **Online Appendix 1**) suggests a manufacture in the Angkor region. Specifically, the produced metal alloy may be linked to the foundry associated with the royal capital and installed near the Royal Palace in present-day Angkor Thom. This appears to have been one of the principal—if not the principal—centers of bronze production for the Angkorian kingdom during the 11th century (Polkinghorne et al. 2014; Vincent & Bourgarit 2025; Baptiste et al. 2025).

While metallic copper is a mobile raw material, clay generally originates from the immediate surroundings of a bronze workshop, making it a more discriminating indicator for locating the place of manufacture (Bourgarit et al. 2025). Reexamination of the statue's clay-based core, in comparison with other samples as part of ongoing research on Angkorian clays, reveals that its clay fraction clearly differs from that of the West Mebon Viṣṇu's core, as well as from a series of clay samples collected at the royal foundry site in Angkor Thom. These differences include

[37] See cat. nos 4, 7, 12, and 16 **[Online Appendix 1]**.

a distinct chemical composition and the absence of volcanic rocks, laterite fragments, and volcanic quartz.

Moreover, the unusually high proportion of potassium and plagioclase feldspars in the statue's clay-based core (3–6% of the total volume of grains) does not correspond to the "Grès Supérieurs" sandstones, which constitute the source rocks of the alluvial deposits around Angkor within a radius of approximately 20 km. Instead, this suggests that the silty-sandy material used for the core originated from an area where feldspathic sandstones contributed significantly to the source rocks of the alluvial deposits.

Available geological data from the historical territory of the Angkorian kingdom allow two possible interpretations. First, the statue may have been manufactured within the royal capital of Angkor using silty-sandy material transported from areas located more than 20 km east or northeast of the urban center. Second, it may have been produced in the Buriram region, or possibly in neighboring Surin, more likely in the upstream areas of river drainage basins —as appears to be the case for Ban Yang Pong Sadao—where the absence of basalt inclusions in the clay-based core can be explained. Given the characteristics of the clay material, the second hypothesis currently appears more plausible.

Commission

Further questions concern the statue's patron and the artisans who crafted it. Given its large size, technical sophistication, and quality, as well as the use of precious materials (gold and silver) and imported substances (mercury and cinnabar), the statue's commission must be attributed to a high-status, wealthy patron, most likely connected with the Angkorian royal court. Examples of royal commissions for 11th-century bronze statuary are known both within and beyond the royal capital of Yaśodharapura.[38] As previously noted, the statue may have been produced during the reign of Harṣavarman III, suggesting the possible patronage of the king himself or members of his entourage as a royal offering to a provincial sanctuary and as an instrument of political consolidation (Lavy & Polkinghorne 2023).

The processes of commissioning and production, however, remain only partially understood. If the statue was indeed produced locally in the Buriram region, two possibilities may be considered regarding the founders involved. The first is that local craftspersons, inheritors of a long-established bronze-casting tradition—particularly in the Ban Kruat district (อ. บ้านกรวด) of southern Buriram, known for its craft production (ceramics and iron; Pira 2016)—were responsible for its manufacture. The second is that mobile artisans, possibly dispatched from royal workshops in Angkor for a specific commission, produced the statue. These craftspersons may have held the status of royal artisans (Skt, *rājaśilpin*; Old Khmer, *śilpi rājakārya*). Although poorly documented in epigraphic sources, such

[38] Royal commissions are attested during the reign of Sūryavarman I (the Śiva image commissioned by Queen Vīralakṣmī, according to inscription K. 1064) and during that of his successor, Udayādityavarman II (the West Mebon Viṣṇu commissioned by the king himself); cat. nos 6 and 11, respectively **[Online Appendix 1]**.

artisans appear to have been regularly employed by royal authority following the administrative reorganization of the 10th–11th centuries (Vincent et al. 2025). The similarity between the statue's manufacturing techniques—particularly the creation of complex polychrome effects—and those documented for the West Mebon Viṣṇu lends support to the second hypothesis.

Place of Worship

Another issue concerns the statue's original place of worship. Based on interviews and field observations conducted in July 2015, the surviving remains of the Ban Yang Pong Sadao sanctuary tower appear to consist of a small laterite shrine surrounded by a platform and a moat. These modest architectural remains provide little support for identifying the sanctuary as the destination of an elaborate royal offering. Moreover, as discussed above, no definitive conclusion can be reached regarding the association between the statue and the sandstone pedestals discovered within the sanctuary tower.

At the very least, one possible pedestal (**Fig. 3,** Pedestal 2) can be compared stylistically with pedestals from the brick shrines of nearby Prasat Mueang Tam, located more than 10 km east of Ban Yang Pong Sadao and generally dated to the 11th century (Woodward 2005: 123–124; construction of the brick shrines is associated with the early 11th century). However, the third pedestal—perhaps the one originally associated with the statue—remains unidentified. It should also be noted that three statues were probably originally installed in the Ban Yang Pong Sadao sanctuary tower. The possibility that the statue was transferred from another sanctuary before being buried (see below) should therefore not be excluded.[39]

When searching for the statue's original place of worship, the nearby complex of Prasat Phanom Rung (Old Khmer, Vnaṃ Ruṅ; Skt, Pṛthuśaila, among other Sanskrit names), located 9.5 km northeast of Ban Yang Pong Sadao, emerges as another possible location. Characterized by continuous occupation and religious use, the Phanom Rung hill constituted a major holy site of the Angkorian kingdom between the 10th and 13th centuries. Its importance is attested both by epigraphic sources and the successive religious foundations and architectural additions established on and around the hill. The principal deity venerated there was Śiva, known from the 10th century as Kamrateṅ Jagat (K.J. or "Lord of the World") Vnam Ruṅ. As a major holy site, the sanctuary functioned as a place of pilgrimage and attracted substantial patronage, particularly from Khmer kings and members of the royal entourage. During the third quarter of the 11th century, two inscriptions document such high-status donations made in honor of K.J. Vnam Ruṅ. First, the so-called "Lovek" stela (K. 136) records offerings of statue ornaments and ritual objects in precious metals by *vraḥ kamrateṅ añ* (V.K.A.) Śaṅkarapaṇḍita, who successively served as chaplain (Skt, *hotar*) to kings Sūryavarman I, Udayādityavarman II, and Harṣavarman III. These offerings formed part of a long list of donations to renowned deities of transregional prominence (l. 40; Cœdès

[39] A similar and nearby example is represented by the group of 7th-9th-century Buddhist bronzes reportedly found within the enclosure of the 10th-century PPBH 2 sanctuary (Tanongsak et al. 2024; Revire 2025).

1954: 284–286). Second, the Preah Nok stela (K. 289) reports that Saṅgrāma, a military commander (Skt, *senāpati*) under King Udayādityavarman II, visited the Pṛthuśaila hill before a battle to seek Śiva's favor and, following his victory, returned to make comparable offerings of precious materials in recognition of his success (Face C, st. 32, 51–54; Barth 1885: 166–168). Considering the prominence of K.J. Vnam Ruṅ during this period and the well-attested practice among the Angkorian politico–religious elite of dedicating elaborate metal objects to major sanctuaries, the statue may plausibly have originally formed part of such offerings to the holy-site deity, Śiva. It may have been presented either to the main sanctuary or to one of its associated shrines, such as the Ban Yang Pong Sadao sanctuary tower.

To ensure completeness, attention should also be drawn to the four-faced Sanskrit stela K. 384, discovered in the Phanom Rung sanctuary and recently reassessed through a revised translation (Goodall 2026). The text consists of a eulogy in five chapters dedicated to Narendrāditya, now identified as the son of King Sūryavarman II (r. 1113/1114–1149/1150 CE). As a follower of the Paśupata sect, Narendrāditya devoted part of his life to ascetic practices and religious devotion to Śiva; he is also frequently credited with founding the principal shrine of Prasat Phanom Rung. Three additional lines were engraved at a later date, corresponding to 1150/1151 CE (1072 *śaka*), although the events they record occurred earlier, during the reign of Sūryavarman II. Notably, the stela was likely produced to commemorate the installation of a golden statue of Śiva, which simultaneously functioned as an image of Narendrāditya and was named Hiraṇyajanaka. This statue was dedicated by his son and disciple, the dignitary Hiraṇya, who also composed the inscription, "after crossing the age of twenty" (Face D, st. 27), during Narendrāditya's lifetime.

This Śaiva context, combined with its emphasis on asceticism, is reminiscent of the iconographic characteristics of the statue under discussion. Nevertheless, although it is tempting to identify the statue with the golden image mentioned in the stela—as an idealized portrait of the Śaiva ascetic Narendrāditya—such an interpretation remains conjectural. In light of the stylistic and technical features discussed above, assigning the statue's manufacture to as late as the reign of Sūryavarman II remains problematic. One possibility worth considering is a case of "archaism", a creative process documented in Khmer art (Lavy & Polkinghorne 2023), whereby the statue may have been produced deliberately in an earlier Baphuon style. This hypothesis, however, remains highly speculative, as it would require an artificial reconciliation between the statue and the historical information provided by the stela.

Life Cycle

Continuing to chart the statue's life cycle, possible evidence for later repairs exists. As noted above, the relatively higher sulfur contents and arsenic-to-nickel ratios detected in the metal of the upper disks and back bow **[Table 1]** may support a 12th-century production date, suggesting that these two elaborate and structurally vulnerable elements were not original but later replacements.

Evidence for deconsecration is also suggested by the possible intentional removal of the eyes **[Figs 9a, c]**. As part of the installation rituals (Skt, *pratiṣṭhā*), the "opening of the eyes" (Skt, *unmīlita*) constituted the essential act of consecrating a deity-image. An image could become an object of worship once it was considered alive and animated by the actual presence of the deity. In material terms, this ceremony involved engraving or inserting the pupils into the eyes. From the 9th century onwards, in bronze statuary, this ritual act was often expressed through the use of metal and glass—or stone—inlays for the eye whites and pupils.

The statue's ritual destruction would have taken place before its burial, in the immediate vicinity of the Ban Yang Pong Sadao sanctuary tower, approximately 50 cm below ground level. Supporting this interpretation, comparable ritual destruction has been documented for the Prasat Sa Kamphaeng Yai bronze statue mentioned above (cat. no. 10 in **Online Appendix 1**), which was found lying on its left side just below ground level, with the pupils missing from its face (Warangkana 2535: figs 1–3).

Within the life cycle of Angkorian statues, deconsecration could occur for various religious and non-religious reasons. These included the replacement of an older deity-image by a new one and its subsequent abandonment, or shifts in religious affiliation, particularly from Hindu to Theravada cult practices. Political motivations may also have played a role, including the concealment of images in "caches" to prevent their loss, destruction, or transfer. This possibility is particularly relevant in the regional historical context of the late Angkorian period. According to the bilingual stela K. 1361 (Thai inv. no. NM 78) found in Nakhon Ratchasima province, Ayutthayan King Borommaracha II (r. 1424–1448 CE) victoriously subjugated several cities in 1431 CE, including Phanom Rung and Phimai, during a campaign that began at Angkor (Santi 2558).

Concluding Remarks

From the Metropolitan Museum of Art's Gallery of Southeast Asian Art in New York City to the Ban Yang Pong Sadao village and the nearby Phanom Rung religious complex in Buriram province, this artwork, initially praised only by scholars, curators, and collectors, has become the material support of local memories as well as a newly contextualized and dated deity-image with both Śaiva and royal connections. In addition to its inestimable historical, religious, cultural, and art-historical value, the innovative interdisciplinary research conducted by the authors of this article confirms that the Ban Yang Pong Sadao male deity represents a technical *tour de force*. This masterpiece, in every sense of the word, demonstrates the extraordinary skill of Angkorian bronze founders in the 11th century. It also offers new insights into contemporary preferences for polychrome effects and the original appearance of large bronze statues within temple settings. Together with unresolved questions surrounding the long-life cycle of the statue, these findings contribute to its ongoing historical and cultural reappropriation on both sides of the ancient royal road linking Angkor to Phimai.

Acknowledgments

Brice Vincent initiated this research, in collaboration with Donna Strahan, Federico Carò, and Adriana Rizzo, during a six-month Andrew W. Mellon Conservation Fellowship at the Sherman Fairchild Center for Objects Conservation of the Met (Sept. 2012–Feb. 2013). David Bourgarit (C2RMF, Paris) subsequently conducted PIXE and ICP-AES analyses of the metal samples (Dec. 2013 and Oct. 2014), while Yvan Coquinot (C2RMF) carried out complementary investigations of the clay-based core sample in 2025. The authors sincerely thank John Guy, Florence and Herbert Irving Curator of South at the Met, for his scientific collaboration and support. They also thank Emmanuelle Delqué-Količ, Philippe Dillmann, Janet Douglas, Dominique Goodall, Helen Jessup, Paul Jett, Stéphanie Leroy, Benoît Mille, Stephen Murphy, Pierre Pichard (†), Christophe Pottier, Adriana Proser, Richard Stone (†), Surakarn Thoesomboon (Sai), Enrique Vega, Hiram Woodward, Marlene Yandrisevits, Thierry Zéphir. Finally, the authors acknowledge the village chief of Ban Yang Pong Sadao, Montri Muraka, and other villagers interviewed on site in July 2015.

Abbreviations

BM: binocular microscope
FTIR: Fourier Transform Infrared Microscopy
ICP-AES: Inductively Coupled Plasma Atomic Emission Spectrometry
PIXE: Particle-Induced X-ray Emission
Py-GC/MS: Pyrolysis Gas Chromatography Mass Spectrometry
SEM-EDS: Scanning Electron Microscopy with Energy Dispersive Spectrometry
XRF: X-ray Fluorescence

References

• Baptiste, Pierre & Zéphir, Thierry. 2008. *L'art khmer dans les collections du Musée Guimet*. Paris: Réunion des Musées Nationaux.

• Baptiste, Pierre et al., eds. 2025. *Royal Bronzes: Cambodian Art of the Divine*. Minneapolis: Minneapolis Institute of Art, Musée Guimet & In Fine éditions d'art.

• Barth, Auguste. 1885. *Inscriptions sanscrites du Cambodge*. Paris: Imprimerie nationale.

• Bergaigne, Abel. 1893. *Inscriptions sanscrites de Campā et du Cambodge*. Paris: Imprimerie nationale.

• Boisselier, Jean. 1955. *La statuaire khmère et son évolution*. Saigon: EFEO.

• Bourdonneau, Éric. 2020. La statue du « roi-danseur » de Koh Ker (Cambodge, X^e^ siècle). Des histoires extraordinaires et des terribles méfaits qui décidèrent de sa restauration. *Comptes rendus des séances de l'Académie des Inscriptions et Belles-Lettres* 164(1): 15–51. https://doi.org/10.3406/crai.2020.97000.

• Bourdonneau, Éric & Mikaelian, Grégory. 2020. L'histoire longue du *Devarāja*. *Pañcaksetr* et « figuier à cinq branches » dans l'ombre de la danse de Śiva. *Puruṣārtha* 37: 81–129. https://doi.org/10.4000/14vi8.

• Bourgarit, David et al., eds. 2025. *Guidelines for the Technical Examination of Bronze*

Sculpture. Los Angeles: Getty Publications. https://www.getty.edu/publications/bronze-guidelines/.

• Bunker, Emma C. 2002. The Prakhon Chai Story: Facts and Fiction. *Arts of Asia* 32(2): 106–125.

———. 2008. Amalgam Gilding in Khmer Culture. In *Interpreting Southeast Asia's Past: Monument, Image and Text*, ed. by Elisabeth A. Bacus et al., 296–305. Singapore: NUS Press.

———. 2011–2012. CKS National Museum of Cambodia Inventory Bonus. *In Focus. The Center for Khmer Studies* 9: 20–23.

• Bunker, Emma C. & Latchford, Douglas. 2004. *Adoration and Glory: The Golden Age of Khmer Art*. Chicago: Art Media Resources.

———. 2008. *Khmer Gold: Gifts for the Gods*. Chicago: Art Media Resources.

———. 2011. *Khmer Bronzes: New Interpretations of the Past*. Chicago: Art Media Resources.

• Burn, Barbara. 1993. *Masterpieces of the Metropolitan Museum of Art*. New York: The Metropolitan Museum of Art.

• Campbell, Thomas P. 2012. *The Metropolitan Museum of Art Guide*. New York: The Metropolitan Museum of Art.

• Carò, Federico & Rizzo, Adriana. 2014. *Examination and Analysis Report*. Unpublished Report. New York: The Metropolitan Museum of Art, Department of Scientific Research [8 p.].

• CAST:ING. 2018. Angkorian Founders and Bronze Casting Skills: First Technical Investigation of the West Mebon Viṣṇu. *Bulletin de l'École française d'Extrême-Orient* 104: 303–341. https://doi.org/10.3406/befeo.2018.6276.

• Chiu, Angela S. 2026. Angkorian Deified King. *Museum of Looted Antiquities*: https://mola.omeka.net/items/show/2236.

• Cœdès, George. 1954. *Inscriptions du Cambodge, Volume VI*. Paris: EFEO.

• Crosbie-Jones, Max. 2024. Golden Boy Goes Home—But Where is That, Exactly? *Apollo: The International Art Magazine* (May 2024). https://apollo-magazine.com/golden-boy-restitution-thailand-cambodia-met-khmer-douglas-latchford/.

• Giteau, Madeleine. 1965. *Les Khmers. Sculptures khmères. Reflets de la civilisation d'Angkor*. Fribourg: Office du Livre.

• Felten, Wolfgang. 2006. Khmer-Skulpturen. Geschichte – Grundlagen – Bestimmungskriterien. *Vernissage* (June 2006): 44–51.

• Felten, Wolfgang & Lerner, Martin. 1989. *Thai and Cambodian Sculpture from the 6th to the 14th Centuries*. London: Philip Wilson Publishers.

• Feneley, Marnie. 2023. *Reconstructing God: Style, Hydraulics, Political Power and Angkor's West Mebon Viṣṇu*. Singapore: NUS Press.

• Gerschheimer, Gerdi & Vincent, Brice. 2010. L'épée inscrite de Boston (K. 1048, 1040-41 de notre ère). *Arts asiatiques* 65: 133–158. https://doi.org/10.3406/arasi.2010.1708.

• Goodall, Dominic. 2026. A Sanskrit Eulogy of Narendrāditya, Son of the Twelfth-Century Sovereign of the Khmers Sūryavarman II—an Edition and Translation of the Four-Faced Stela K. 384 of 1072 śaka (1150 CE), from Phnom Rung, Thailand. In *Essays in Honour of S.L.P. Anjaneya Sarma*, ed. by Hugo David et al., 639–704. Pondichéry: Institut français de Pondichéry & EFEO.

• Kossak, Steven M. & Lerner, Martin. 1994. *The Arts of South and Southeast Asia*. New York: The Metropolitan Museum of Art.

• Lavy, Paul & Polkinghorne, Martin. 2023. Bodies of Glory: The Statuary of Angkor. In *The Angkorian World*, ed. by Mitch Hendrickson et al., 435–458. Abingdon: Routledge.

• Pira Venunan. 2016. *An Archaeometallurgical Study of Iron Production in Ban Kruat, Lower Northeast Thailand: Technology and Social Development from the Iron Age to the Imperial Angkorian Khmer (Fifth Century BC–Fifteenth Century AD)*. PhD Dissertation. University College London.

• Revire, Nicolas. 2025. A Preangkorian Bronze Bodhisattva at the Art Institute of Chicago. *Journal of the Siam Society* 113(2): 215–242. https://doi.org/10.69486/113.2.2025.13.
• Runkel, Susanne et al. 2012. Interior Polychromy and Wall Paintings in Khmer Brick Temples of the 9th and 10th Century in Cambodia. In *Connecting Empires and States: Selected Papers from the 13th International Conference of the European Association of Southeast Asian Archaeologists*, ed. by Mai Lin Tjoa-Bonatz et al., 276–289. Singapore: NUS Press.
• Santi Pakdeekham (ศานติ ภักดีคำ). 2558 BE (2015 CE). ศิลาจารึกขุนศรีไชยราชมงคลเทพ [Inscription of Khun Si Chaiyarat Mongkolthep]. In ซับจำปาพิพิธภัณฑ์ซับจำปาจังหวัดลพบุรี; *Sap Champa Museum Lop Buri*, ed. by Surapol Natapintu et al. (สุรพล นาถะพินธุ และคนอื่น ๆ), 69–79. Bangkok: Amarin Press.
• Strahan, Donna K. 1998. A Technical Study of 11–12th c. Khmer Bronze Sculpture. In *Proceedings: The Forum for the Fourth International Conference on the Beginnings of the Use of Metals and Alloys (BUMA IV), January 16–17, 1996, Shimane, Japan*, 97–102. Sendai: BUMA-IV Forum Organizing Committee & The Japan Institute of Metals.
• Tanongsak Hanwong et al. 2024. The Prakhon Chai Hoard Debunked: Unravelling Six Decades of Myth, Misdirection, and Misidentification. *International Journal of Cultural Property* 31(2): 177–201. https://doi.org/10.1017/S0940739124000262.
• Thompson, Ashley. 1999. *Mémoires du Cambodge*. PhD Dissertation. Saint-Denis: Université de Paris 8.
• Vincent, Brice. 2012. Saṃrit. *Étude de la métallurgie du bronze dans le Cambodge angkorien (fin du XI^e^ – début du XIII^e^ siècle)*. PhD Dissertation. Université de Paris 3–Sorbonne nouvelle.
———. 2014a. *Bronze Metallurgy in Angkorian Cambodia (10th–13th c.): Technical Investigations on a Selection of Khmer Bronzes from the Metropolitan Museum of Art*. Unpublished Report. New York: The Metropolitan Museum of Art, The Sherman Fairchild Center for Objects Conservation [178 p.].
———. 2014b. *Searching for the Bronze Workshops of Angkorian Cambodia: Petrographic Study Applied to Casting Cores of 11th–12th c. Khmer Bronzes*. Unpublished Report. Washington, D.C.: Freer Gallery of Art & Arthur M. Sackler Gallery, Department of Conservation and Scientific Research [62 p.].
• Vincent, Brice & Bourgarit, David. 2025. New Appraisals of Angkorian Copper-based Metallurgy (Ninth to Fourteenth Century): Mines, Foundries, and Cast Products. In *Technical Studies of Asian Art: Proceedings of the Seventh Forbes Symposium at the Freer Gallery of Art*, ed. by Blythe McCarthy et al., 1–17. London: Archetype Publications. https://doi.org/10.5479/10088/124228.
• Warangkana Iamkaeo (วรางคณา เอี่ยมแก้ว). 2535 BE [1992 CE]. การอนุรักษ์ประติมากรรมสำริดพบ ณ ปราสาทสระกำแพงใหญ่ อำเภออุทุมพรพิสัย จังหวัดศรีสะเกษ [Conservation of a Bronze Sculpture Found at Prasat Kamphaeng Yai, Uthumphon Phisai District, Sisaket Province]. ศิลปากร/*Silpakorn Journal* 35(4): 16–38.
• Watt, James C.Y. et al. 1989. Recent Acquisitions: A Selection, 1988–1989. Asian Art. *The Metropolitan Museum of Art Bulletin* 47(2): 80–95.
• Woodward, Hiram W., Jr. 1997. *The Sacred Sculpture of Thailand: The Alexander B. Griswold Collection, The Walters Art Gallery*. Baltimore: Walters Art Gallery.
———. 2005. *The Art and Architecture of Thailand: From Prehistoric Times through the Thirteenth Century*. Leiden: Brill.
———. 2010. Bronze Sculptures of Ancient Cambodia. In *Gods of Angkor: Bronzes from the National Museum of Cambodia*, ed. by Louise Allison Cort & Paul Jett, 30–77. Washington, D.C.: University of Washington Press.