Kolhapur Roman bronzes make international debut

A grand exhibition that opens at New York's Met celebrates ignored Buddhist art of the south, including Maharashtra, shining light on the piece that completes the Indo-Roman trade story

Poseidon (after Lysippos), Alexandrian Roman, 1st century CE, copper alloy, 57/8 × 115/16 × 115/16 in. (15 × 5 × 5 cm), excavated at Brahmapuri in Kolhapur of Satara district, Maharashtra, 1944–45, collection: Town Hall Museum, Kolhapur, Maharashtra; (right) An ivory statuette discovered in the ruins of Pompeii, a Roman city destroyed in the eruption of Mount Vesuvius 79 CE. It was found by Italian scholar Amedeo Maiuri. The yakshi or tree spirit representing fertility is evidence of commercial trade between India and Rome in the first century CE. According to the Naples National Archaeological Museum, it was created in India in the first half of that century. **PIC/GETTY IMAGES**

SUCHETA CHAKRABORTY

THE understanding of Buddhism as we see it today is a 19th century reinvention, largely premised on scholars who were studying the texts and the core of Buddhist literature—the sutras, jatakas, avadanas—in the abstract as purely religious documents. This, in a sense, detached the understanding of Buddhism from the reality on the ground. They were also focused on the holy sites of the Buddha, i.e., those touched by his presence in his lifetime, from his birth through to his paranirvana or "complete extinction" and therefore, became pilgrimage sites. All of those are located in North India," John Guy, Florence and Herbert Irving Curator of the Arts of South and Southeast Asia, Department of Asian Art, The Metropolitan Museum of Art (Met), New York, tells mid-day over a video call.

Guy is the curator of Tree and Serpent: Early Buddhist Art in India, 200 BCE—400 CE, an exhibition opening at the Met this week, featuring more than 125 objects, including major loans from India, which gives long due recognition to the lesser-known Buddhist art of the Deccan. "I felt it was important to look at the most important surviving intact monuments we have for all early Buddhism. There is Bharhut, Sanchi, the early phase Ajanta, and early phase Amaravati. These are the four greatest surviving monuments we have of early Buddhism in India and they're all in the South. Nothing approaching them survives in the north, except Sarnath, most of which has been subjected to extensive renovation. And because Buddhism today, has become a global religion, people almost lose its connection with India sometimes. But of course, it is born in India. It is an Indian religion. It originated and was nurtured in India. I wanted to bring that point home very strongly," he says.

The publication Tree and Serpent: Early Buddhist Art in India accompanies the exhibition and features a catalogue of the items on display, plus essays by Guy and other scholars about pre-Buddhist nature cults, stupas and relic worship, the role of commerce and patronage and India's international trade with the Roman world. As Guy writes in his Preface, "Much that we need to learn about Buddhist India in the early centuries CE is increasingly recognised as being shaped by the dynamics of global exchange". He explains that the flourishing of Buddhist art and culture in the south at this time was occurring against the backdrop of the prosperity of the Satavahana kingdom comprising

JOHN GUY

Portrait of a donor, Sarnath, Uttar Pradesh, Maurya, 3rd—2nd century BCE, sandstone, 71/2 × 4 × 6 in. (19.1 × 10.2 × 15.2 cm), collection: National Museum, New Delhi.

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the present-day Andhra Pradesh, Telangana, and Maharashtra, which had the advantage of the west coast maritime connections. While there was royal patronage going back to emperor Ashoka, inscriptional evidence suggests that monastic Buddhism and all the great monuments that embodied it were predominantly built on the prosperity of the mercantile communities.

"The monasteries no longer comprised just small community living spaces, wooden structures or even forest hermit retreats. This is a big institutionalised Buddhism with large complexes and permanent communities, with the stupas, spectacular two-three storey high building equivalents encased in blazing white limestone in the south in a landscape which were otherwise very modest in scale and would've been awe inspiring to the local communities," Guy explains. Almost all the sculptures in the exhibition are directly related to the adornment of the stupa: from the toranas or ceremonial gateways, processional railings to the super structure, evoking a sense of the grandeur of the monuments. "I also try and blow up the idea that monasteries were only quiet places for prolonged periods of meditation and learning. They were also commercial places and lived places where traders, travellers, pilgrim monks and tradesmen came. During festivals, the people came and made a lot of noise with musicians and dancers. We see this in Sanchi. where the celebrations honoring the Buddha resemble melas It's very explicitly depicted, but the textual scholars have in the past tended to ignore this because it doesn't fit with the image that

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emerges from the texts, which have a certain sobriety."

There was also a burgeoning international exchange with the Roman world. Guy speaks of the dynamic trade system between the Mediterranean and the western coast of India where trade in cotton goods, gemstones and ivory was common. There were circulating Roman objects, which included coins with equestrian portraits of Roman emperors, and influences filtering into the art where the lotus flower alternated with the acanthus leaf, a Mediterranean motif. For this exhibition, the government of Maharashtra has lent for the first time the Roman bronzes excavated at Kolhapur at the so-called Brahmapuri excavation of 1944-45, which sit in the Kolhapur Town Hall Museum. They'll be shown alongside an ivory figurine of a young woman, clearly from the Deccan, excavated in 1934 in Pompeii from a merchant's house, which has never travelled since the day it was excavated. "We are showing the Kolhapur Roman bronzes, which includes a beautiful diminutive figure of Poseidon alongside the Indian Ivory from Pompeii. It encapsulates the whole Indo-Roman trade story."

Ayaka platform panel with the Buddha in meditation venerated by Nagaraja. Mucalinda and his clan Nagarjunakonda, Guntur district, Andhra Pradesh, Iksvaku, late 3rd—4th century CE, limestone, 143/16 × 26 × 913/16 in. (36 × 66 × 25 cm), collection: Archaeological Museum ASI, Nagarjunakonda, AP

The earliest Buddhist imagery, Guy explains, didn't represent the Buddha anthropomorphically, but were iconic representations like footprints (buddhapada) the wheel, the riderless horse, the umbrella and the empty throne. "The exhibition traces that process so that its climax is the fully revealed Buddha. Thus, it takes us from 200 BCE through to 400 CE to capture the emergence of Buddhist art as we know it." A factor that contributed to the stylistic distinctiveness of the South, Guy tells us, was the important role of nature, nature spirits, cults, and deities of yakshas, yakshis, nagas and naginis, which populated the landscape that the Buddha was born into and was especially strong in the South. The Yaksha cult imagery, he explains, is the earliest known figurative imagery in India, which provided the means by which sculptors could then turn their hand to Buddhist imagery. "These spectacular two-metre high monumental yaksha figures from the third, second centuries, BCE became the prototypes for the early standing Buddhas." The wish fulfilling tree is also an ancient motif depicted on the Barhut railings and in Sanchi. "Almost every seminal moment of the Buddha's life is linked to trees, from his mother clutching a tree branch in a sala grove in Lumbini where he was born to his death when he was again, in a sala tree grove and cremated on fragrant wood timbers. So the power of the tree is enormous and continues with the Buddhist bodhi tree sapling planted in every monastery ground."

← Mahapurusa figure, a yaksa honouring the Buddha Phanigiri, Nalgonda district, Telangana, Iksvaku, 3rd–4th century CE, excavated in courtyard adjoining the apsidal shrines, Phanigiri, 2002—3, limestone, 193 × 100 × 31 cm, collection: Department of Heritage Telangana. **PICS COURTESY/TREE AND SERPENT: BUDDHIST ART FROM INDIA BY JOHN GUY. REPRODUCED WITH PERMISSION FROM MAPIN PUBLISHING**

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Your smart doorbell is a disaster

A cybersecurity researcher shares shocking findings exclusively with mid-day to expose how your fancy Internet-connected domestic devices are putting you at huge risk

GAUTAM S MENGLE

IT can show you who's at the door, let out an alarm in case of an intrusion and give you a log of all the visitors who came by. It can also be hacked and become a critical tool in a cyberattack.

In January this year, Ayyappan Rajesh, a student of computer engineering at UMass, Dartmouth, decided to mess around with his neighbour. Rajesh, who was home on a short holiday, saw that the neighbour had installed an Internet-connected smart doorbell. The 22-year-old was curious if he could hack it.

"My fellow researcher and I wanted to test its security. We ran a simple scan on the device, and to our shock, it had an application known as Telnet, which was first produced in 1983 and not protected by a password. After discovering this, it was extremely easy for us to connect to it," says Rajesh, who submitted a report with research data that emerged from this episode to the Indian government the same month.

His findings were officially recognised in the form of a vulnerability advisory this month, published by the Indian Computer Emergency Response Team (CERT-In) on its website. It has also been assigned a Common Vulnerabilities and Exploits (CVE) number, which is the global cybersecurity community's way of confirming a vulnerability.

"The vulnerability allowed any user on the same Wi-Fi network to remotely connect and run commands on the device. If exploited, the vulnerability would give hackers access to all the information stored in the device," Rajesh tells mid-day over a telephone call.

For a product like a smart doorbell, this information would include the live stream captured by the camera; the visitors' log; Wi-FI router and any other devices connected to the doorbell, like the owner's computer and mobile phone, for instance. A smart doorbell, like most Internet-connected devices, will contain data pertaining to the current network and its owner. The neighbour's had stored user email addresses and passwords, all useful to gain access to other systems connected to it. Explaining the larger picture, Rajesh says that a vulnerability such as this can equip a hacker to execute a malicious code and turn the device into a cog in the wheel of a botnet, to be used for anything ranging from mining cryptocurrencies to launching DDoS attacks.

Internet connected doorbell. **PICS/GETTY IMAGES**; (right) Smart home device

Ayyappan Rajesh decided to mess with his neighbour's new internet connected doorbell as a prank and ended up exposing a serious flaw in the technology; (right) Internet connected refrigerator

A DDoS or Distributed Denial of Service attack is one where a single server is bombarded with millions of pings per second. Any interaction with a server, like opening a website, is a ping. Servers have a limited capacity to handle pings per second and an overload can cause them to crash, denying service to their users. This is done by putting together a network of crores of hacked devices, called a botnet, and using these devices to send pings simultaneously.

While botnets earlier were made only of hacked computers and mobile phones, with the advent of IoT doorbells, refrigerators, speakers, vacuum cleaners and smart home devices, the scope for botnets has increased a thousand-fold. According to Kaspersky's DDoS report for the third quarter of 2022, the longest DDoS attack recorded during this period lasted for a dizzying 18 days and 19 hours. In simpler words, malicious hackers have botnets that can enable them to make a server stay consistently crashed for nearly three weeks nonstop. For this same time, Kaspersky also observed that Indian devices ranked third in terms of the number of bots used to execute DDoS attacks.

The targets, too, have changed. While earlier, DDoS attacks were aimed at entities, corporations or government services, hackers are now going after the domains that host these servers, taking down scores of services in one fell swoop. Rajesh cites the example of Mirai, one of the largest botnets in cybersecurity history. "The Mirai botnet orchestrated a series of DDoS attacks, targeting the domain name system provider Dyn. As a result, numerous popular internet platforms and services became inaccessible to scores of users in Europe and North America," he says.

And if you thought the vulnerabilities were only limited to a single type of smart doorbell, Rajesh has more bad news. His discovery with the doorbell sent him on a quest to assess the security of other IoT devices. He found that most use a protocol known as MQTT. While researching how many devices with MQTT were exposed to the Internet in India, he came across two instances where two sensitive MQTT servers were left open with no password nor encryption.

"The first was an app-based taxi service that operates in Delhi, Bengaluru and Goa. It exposed names, phone numbers and locations of all their customers, along with detailed location logs of the vehicles. The second was a company in Maharashtra that sells devices used in smart electric scooters. The scooters are fitted with an app and also have a remote kill feature. The devices were vulnerable to hostile takeover and control. Along with this issue, the server had live information of all the vehicles connected to it, and live GPS coordinates for each vehicle, along with its speed and other information, which I was able to alter. I changed the location of one of the scooters to that of my University," Rajesh claims.

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