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*Article*

# The Singapore Stone: Documenting the Origins, Destruction, Journey and Legacy of an Undeciphered Stone Monolith

Kelvin Cahya Yap [1,*] , Tony (Wenyao) Jiao [1,*] and Francesco Perono Cacciafoco [2,*]

[1] St Joseph's Institution, Singapore 308274, Singapore
[2] Department of Applied Linguistics (LNG), School of Humanities and Social Sciences (HSS),
Xi'an Jiaotong-Liverpool University (XJTLU), Suzhou 215123, China
[*] Correspondence: kelvincahyayap@gmail.com (K.C.Y.); tonyjiaowy@gmail.com (T.J.);
francesco.perono@xjtlu.edu.cn (F.P.C.)

**Abstract:** The Singapore Stone was a large monolith present at the mouth of the Singapore River, clad with a faded inscription that was a point of interest for local and foreign antiquarians and other enthusiasts, as no person—native or otherwise—could decipher the meaning of its tongue. Tragically, the stone was blasted in 1848 by East India Company engineers as part of works to widen the mouth of the river. Only four fragments were saved; these were sent to Calcutta's Asiatic Society of Bengal and later placed in the custody of the Indian Museum. Today, only one fragment remains, which was returned to Singapore in 1919 and at present is displayed in the National Museum of Singapore. Over the past century and a half, there has been great interest in the fate of the lost fragments and in the mysterious inscription that the fragments hold. There have been various attempts at deciphering the Stone, with a variety of suggested interpretations and languages. This research paper compiles and documents both the physical journey of the fragments and the various attempts at deciphering them, aiming to comprehensively detail the Stone's origins and journey from its erection to its present residence while providing an analysis of the past attempts at decipherment and the future of this effort.

**Keywords:** Kawi; Sanskrit; stone inscription; stone fragments; epigraphical analysis; Southeast Asian archaeology; National Museum of Singapore; Indian Museum; Asiatic Society of Bengal

## 1. Introduction

The Singapore Stone (hereafter the Stone) was a monolith constituted of coarse red sandstone, standing ten feet (3 m) high, ten feet wide and two to five feet thick (0.6–1.5 m). Having been formed by a larger stone split in half, it had a distinct wedge shape and a flat, smoothed-down face on its interior, on which an inscription of about fifty lines was chiseled. Weather-worn and antiquated, the writing was faint and was indecipherable to both the local population and foreign antiquarians (Makepeace et al. 1921; Prinsep 1837).

In 1843, the Stone was destroyed by the British Army when the site was requisitioned to build housing for British Army commandants (Makepeace et al. 1921). In the subsequent years, several fragments were recovered and sent to the Asiatic Society of Bengal in Calcutta (Laidlay 1848). There, they were subsequently placed in the care of the Calcutta Museum, later the Indian Museum. In 1918, the Raffles Museum, today the National Museum of Singapore, requested the return of the fragments, for which they received one, which arrived in 1919 (noa 1919). The fate of the other fragments remains unknown.

The Stone's journey from Singapore to Calcutta and back remains one with sparse detail and much ambiguity, as it occurred nearly two centuries ago. Through the collection of a variety of contemporary sources, we seek to combine the Stone's story into one cohesive narrative, divided into several sections: its origins, destruction, its transportation to Calcutta and its return to Singapore.

The Stone remains undeciphered to this day. Many theories have abounded as to its language, but no consensus has been reached. In this paper, we also intend to collate the various conjectures as to the Stone's language and meaning and discuss the merits of each.

**2. Literature Review**

In this paper, we have collated a variety of sources to shape our understanding of both the physical history of the Stone and the previous scholarship relating to its inscription.

*2.1. Origins*

Relating to the origins of the Stone, we have relied on the *Sejarah Melayu*, one of the most comprehensive written works on the history of the Malay Peninsula. Composed in the 15th or 16th century, it details a romanticised version of events in early Malay history, including several candidates for the erection of the Stone. However, it has been widely criticised for exaggerations and embellishments in its account and is largely taken as folklore or mythology. In spite of this, we have chosen to include the tales in the *Sejarah Melayu*, as it is one of the only written sources regarding the Malay Peninsula between the 10th and 13th century, which is the timeframe in which the Stone was likely erected.

The sources we cited as opinions on the origins of the stone are *The Malayan Peninsula: embracing its history, manners and customs of the inhabitants, politics, natural history, etc. from its earliest records*, "Was Malaka emporium voor 1400 A. D., genaamd Malajoer? En waar lag Woerawari, Mā-hasin, Langka, Batoesawar?" in Dutch research journal *Bijdragen tot de Taal-, Land- en Volkenkunde van Nederlandsch-Indië* and an article in *From Sojourners To Settlers—Tamils in Southeast Asia and Singapore*, a 2019 anthology of studies revolving around the Singaporean Tamil diaspora.

*The Malayan Peninsula* is an 1834 book on the history of the Malay Peninsula written by Captain[1] Peter James Begbie, an EIC officer, in which he proposes three possible origin stories from the *Sejarah Melayu* for the Stone. Begbie was an accomplished soldier, linguist, writer and historian. This book was one of the first attempts to document the history of Malaya in English and includes many interviews, sketches, photographs and descriptions of the Malay Peninsula. Although Begbie's writing reflects his colonialist perspectives, they are a valuable source of information on Malaya in the early–mid 1800s. Begbie also speculates on the Stone's script being in Tamil, reflecting his belief that the Malay peoples originated in India.

"Was Malaka emporium voor 1400 A. D., genaamd Malajoer? En waar lag Woerawari, Mā -hasin, Langka, Batoesawar?" is a 1921 article in Dutch research journal *Bijdragen tot de Taal-, Land- en Volkenkunde van Nederlandsch-Indië*. In the nearly 100-page long article, Dutch indologist Gerret Pieter Rouffaer compiles and comments on vast swathes of early Malay history; in relation to the origins of the Stone, he posits an alternative origin tale to the three proposed by Begbie, relying on this story's setting in Tamsak, possibly a corruption of "Temasek", an early name for Singapore island.

In the article, we have cited from *From Sojourners to Settlers*, Dr Iain Sinclair, then a research fellow at the ISEAS–Yusof Ishak Institute, supports Rouffaer's analysis and proceeds to draw links from the cited origin story to the Tamil Chola dynasty.

We have also included an article from the *Journal of the Asiatic Society of Bengal* by Dr William Bland, a Royal Navy surgeon who visited the Stone as the ship he was serving on stopped over in Singapore. Bland attempted the first known facsimile of the Stone's inscription, and this is the only copy of the inscription before it was blasted. Alas, his sketch is sparse and is superseded in detail by later attempts at copying the Stone's writing.

*2.2. Destruction*

In our reconstruction of the events leading up to and immediately following the destruction of the Stone, we have relied on the *Hikayat Abdullah*, a letter in the *Journal of the Asiatic Society of Bengal*, *One Hundred Years of Singapore* and *Singapore and the Silk Road of the Sea*.

The *Hikayat Abdullah* is an autobiography written by Munshi Abdullah, an administrator for the British in early Singapore. The book details his perspective on the events in early Singapore, including the destruction of the Stone. As the first commercially published Malay language book, it is significant as a unique perspective for the early history of the Stone. Abdullah writes from a layman's perspective, at least in contrast to the academics who examined the Stone after him. This is reflected in his conclusion that the script is Arabic (largely due to its shape), a conclusion with which no other academic source concurs. His work is therefore more useful as a primary source of events rather than as an analytical perspective.

The *Journal of the Asiatic Society of Bengal* was a journal published detailing the proceedings and matters of the Asiatic Society of Bengal, based in then-Calcutta, India. The Society is an integral part of the Stone's history, with early writings studying the Stone published in their journal and the fragments eventually being shipped to Calcutta for their safekeeping. The article relevant to the destruction is Colonel (See note 1 above.) James Low's recollection of the events leading up to the Stone's destruction, and his work to preserve the remnant fragments of the Stone. Despite his crucial work in preserving the Stone, Low does not comment in detail on his opinions of the Stone's provenance, commenting only that "any one who may set about decyphering it may derive assistance by adverting to inscriptions which may have been discovered at the ancient Bijanagara in Orissa, or Cuttack, or wider still, along the coast of central Kalinga". His allusion to the southern and eastern coast of India reflects the conclusions of some other researchers on the origins of the Stone being Tamil or Chola; the Chola dynasty being an ancient precursor of the Vijayanagara Empire.

*One Hundred Years of Singapore* is a 1921 book collating the history of Singapore for the 100 years since its founding (1819–1919); it details the circumstances preceding the Stone's destruction as well as its aftermath.

*Singapore and the Silk Road of the Sea* is a 2013 book by acclaimed Singaporean archaeologist and researcher John Miksic, which includes some detail on the early history of the Stone. Significantly, he also writes about his own trip to Calcutta in 1989 to meet with the then-director of the Indian Museum, where the lost fragments of the Stone are theorised to be stored.

### 2.3. To Calcutta

For our recreation of the Stone's journey to Calcutta, we have relied on two articles in the *Journal of the Asiatic Society of Bengal* and shipping records in an archived copy of *The Straits Times*.

The articles in the *Journal of the Asiatic Society of Bengal* are written by Colonel (See note 1 above.) Low; Major-General (See note 1 above.) William John Butterworth, the then-Governor of Singapore; and John Watson Laidlay, then-Secretary of the Asiatic Society of Bengal. Low's article includes his promise to send three fragments of the Stone to the Society, while Butterworth's article details how he obtained the fourth fragment of the Stone and the fate of the other remaining fragments; Laidlay's article combines his receipt of the four fragments and his analysis of the characters on the Stone, including his lithograph of the three smaller fragments sent by Low. Laidlay's lithograph includes two of the lost fragments and is the only remnant copy of their inscription. Laidlay identified some characters to be of the Kawi script, a Brahmic script that is the ancestor of many traditional Indonesian scripts, although he did not manage to decipher any words or sentences.

The shipping records in *The Straits Times* show the departure of the British barque *Rob Roy*, which carried Butterworth's fragment to Calcutta.

### 2.4. To Singapore

For this section, we cited records in the "Raffles Library and Museum Annual Report", a report in the URA's *Skyline* magazine, along with an article in *The Straits Times*.

The records in the "Raffles Library and Museum Annual Report" record the return of a singular fragment of the Stone to Singapore after more than 70 years in Calcutta.

The report in *Skyline* details the movement of the Merlion statue, originally situated near the original site of the Stone, to a more prominent location.

The article in *The Straits Times* outlines the highlights of the 2016 National Day Parade, including the depiction of Badang and the Stone.

*2.5. Decipherment*

Along with all the opinions included in the sources mentioned above, we have also cited Johan Hendrik Kern's 1907 article in the *Journal of the Straits Branch of the Royal Asiatic Society* and John Miksic's *Archaeological Research on the "Forbidden Hill" of Singapore: Excavations at Fort Canning, 1984.*

Johan Hendrik Kern was a renowned Dutch linguist, and his article in the *Journal of the Straits Branch of the Royal Asiatic Society* includes his opinion that the Stone's script was Kawi; Kern identified some characters but, akin to Laidlay, failed to identify any known words.

*Archaeological Research on the "Forbidden Hill" of Singapore* is a book focusing on Miksic's archaeological work on Fort Canning, but it also includes Miksic's analysis of earlier artefacts and discoveries relating to Singapore. This includes the inscription on the Singapore Stone, which he interviewed contemporary regional linguists on, including Drs Boechari of the Indonesian National Research Centre for Archaeology and Johannes Gijsbertus de Casparis, a prominent Dutch indologist. Both experts concurred on the script's likely provenance being Kawi, but they disagreed on what language the script was being used to write: de Casparis suggested that the language was Old Javanese (also known as the Kawi language), while Drs Boechari found a closer affinity to Sanskrit uses of the Kawi script than Old Javanese uses of the script in the Stone's inscription.

### 3. Methodology

The materials for this study were collated through the use of the National Museum of Singapore's Resource Centre, the National Archives of Singapore and the National Library's reference collection, alongside online archives of articles, journals and books. These materials were organised by date and by their material's relevance to the various sections of our study prior to analysis.

To parse the sources, details from the works were sorted by section and date, especially since some information was repeated or contradictory. In cases where sources contradicted each other, we relied on the historical timeframe of the source, the author's perspective and its author's cited sources to judge their accuracy, and thus our determination of the timeline and sequence of events we included in our amalgamation of these sources. By doing this, we have formed a cohesive and comprehensive sequence of events that is the basis of our paper.

For our analysis of the Stone's characters, we relied on J. W. Laidlay's facsimile of the Stone's inscription. By identifying potential characters in his facsimile and comparing them to known characters in the Kawi alphabet, we have attempted to identify some characters io the Stone. These visual comparisons were done with a modern rendering of the Kawi alphabet. Although many characters have clear equivalents in the known Kawi alphabet, some characters do not, and we have indicated samples of these characters in our analysis.

### 4. Origins

The Stone was first discovered, at least according to modern records, in 1819, when several Bengalese sailors tasked with clearing land on the promontory then known as Rocky Point Figure 1) encountered the Stone. Frightened by the presence of inscriptions on the stone, they refused to continue any work, and the clearing was later completed by Chinese workers with added pay (Laidlay 1848).

**Figure 1.** An 1825 map of the mouth of the Singapore River, with Rocky Point, where the Singapore Stone once stood, marked on the right side of the map (noa 1825).

From 1819 onwards, the Stone attracted the attention of both curious locals and visitors with an interest in antiquities. Dr John Crawfurd, who would later serve as the second and last Resident of Singapore, visited the Stone *en route* to Siam, describing its appearance and theorising that its inscription was in Pali, an Indian abugida and the sacred language of Theravada Buddhism (Makepeace et al. 1921).

Another significant visit was made by Dr William Bland of the Royal Navy. During a stopover in Singapore, Bland took an interest in the Stone's inscription and attempted the first facsimile of the Stone. His replication was published in the *Journal of the Asiatic Society of Bengal*, and James Prinsep's analysis of these drawings were the first academic work published on the Stone (Prinsep 1837).

The stone most definitely had its beginnings centuries beforehand, however. Tales within the *Sejarah Melayu,* or Malay Annals, contained mentions of a large stone in Singapore as early as the 13th century (ley 1821), while modern experts date the stone between the 10th and 13th century.

The Stone has various origin stories from Malay folklore. In the *Sejarah Melayu* (ley 1821), there are several stories that mention the formation of large monoliths in Singapore. Captain (See note 1 above.) Peter James Begbie, an EIC officer who later wrote a book on the history of the Malayan Peninsula, proposed three stories as those most likely (Begbie 1834).

The first legend is that of Tun Jana Khateb, a visitor to the island of Singapore. On his arrival, as he approached the Raja's (King's) compound, a betel tree broke as he was looking at it. With this having been done in full view of the Raja and one of his wives, the Raja conceived it as an arrogant display of his skill, intended to attract his wife's attention. Offended, the Raja ordered him executed. As his blood flowed on the ground near a sweetmeat seller, it morphed into stone and remained in Singapore, while his body was buried in Langkawi (an island off the west coast of the Malay Peninsula).

The second tale is that of Sang Ranjuna Tapa, an advisor to the Raja of Singapore. In revenge for the execution of his daughter (one of the Raja's wives) on suspicion of infidelity, he betrayed Singapore to the Javanese, who then conquered the island. As punishment for his perfidious behaviour, the heavens turned Sang Ranjuna Tapa and his wife into stone, forming two stones at the mouth of the Singapore River.

The third myth is that of Badang. Badang was a strongman in the service of the Singapore Raja, and his name was known across the region, with neighbouring rajas often sending their champions to Singapore to contest Badang. In one such contest, Badang faced Nadi Vijaya Vicrama, the champion of the raja of Kling. In one of their tasks, the Kling champion attempted to lift a large boulder, but was only able to lift it to the height of his knee. When Badang attempted the same, he lifted and poised it several times with ease before throwing the stone out to the mouth of the Singapore River. Having staked seven ships and the goods they contained on the challenge, the Kling champion returned to his raja with great shame. Upon Badang's death many years later, the raja of Kling, in respect to Badang, sent two stone pillars to Singapore to be raised on top of his grave and with an inscription commemorating Badang on them.

Of these three stories, the most well-known and accepted story explaining the Singapore Stone is that of Badang, with this version of events even narrated in Singapore's national celebrations (Yeo 2016). However, there have been detractors to this view of history: most notably Dr Iain Sinclair, who in 2019 had his work published as part of a collection jointly published by the Indian Heritage Centre and the ISEAS–Yusof Ishak Institute. In his writing, he condemns Badang's lore as "the most emphasised in Singapore today, in spite of its obvious unbelievability" (Sinclair 2019), and he instead suggests an alternative passage from the *Sejarah Melayu.* This tale begins on the beach of "Tamsak", presumably an alternative spelling of "Temasek", an early name for the island of Singapore.

Sinclair cites Gerret Pieter Rouffaer, a Dutch Indologist, for this view on history: Rouffaer's impassioned essay in the 1921 *Bijdragen tot de Taal-, Land- en Volkenkunde van Nederlandsch-Indië* (a prominent Dutch academic journal on the history of Southeast Asia), running almost 100 pages in total, has a large section solely about the Stone's history as known to him in the 1920s. It includes his ridicule of the British administrators at the time of the destruction of the stone, alongside his collation of the various material at the time as well as this alternative tale explaining the origin of the Stone (Rouffaer 1921).

On this beach, Raja Suran (or Chulan) is resting from his conquests and travels with his troops. The name Chulan, Sinclair suggests, is a Malay corruption of the Chola, a Tamil dynasty known to have had some influence in Malaya by the 9th century. After a spiritual journey involving a flying horse, Raja Chulan decides to engrave an account of his journey, calling a man of science and an artificer (or alternatively, an official and an artificer) to engrave a record of his exploits in stone for posterity. Of great interest is the Raja's next order: he orders this record be written in the "Hindostani language". In other words, he ordered an inscription in Sanskrit, the dominant language of the region at the time.

The stone was then engraved accordingly before being "adorned by gold and silver" (Sinclair suggests this in the form of a traditional Hindu–Buddhist style consecration deposit) and left as a monument that would be "found by one of his descendents who should reduce all the rajas of the countries under the wind." Sinclair also proceeds to posit that Sang Nila Utama, a man credited later in the Sejarah with founding Singapore on the island of Temasek, was a descendent of the Cholas (in the Sejarah, his bloodline is traced to Alexander the Great, with scant detail between these periods) and fulfilled the prophecy of Raja Chulan.

It is undoubtedly difficult to determine which of these interpretations is accurate as to the origins of the Stone. The Sejarah Melayu, being one of the only literary records present in the region at the time, is often the only source for the stories it contains and is often criticised for embellishments and exaggerations. This debate—and many others like it—may well never be fully resolved.

## 5. Destruction

In January 1843, the Superintendent of Convicts and Public Works, one Captain (See note 1 above.)  D. H. Stevenson (or Stephenson), ordered the blasting of the Stone, as the site was to be requisitioned for the construction of commander's quarters for Fort Fullerton (Abdullah 1955).  Some earlier sources blame Stevenson's predecessor—renowned colonial architect and Superintendent of Convicts and Public Works up till 1841—George Drumgold Coleman for the blasting  (Abdullah 1955; Rouffaer 1921), but Coleman had returned to Europe for health reasons in 1841, eventually marrying there (Hancock 1986). After a period of tumultuous leadership in the Department of Convicts and Public Works, Stevenson took on the role in November 1842 (Bonham 1842a, 1842b) and was thus the man responsible for the blasting.

Despite the protests of various antiquarians, including one Colonel (See note 1 above.) James Low, who were appalled at the prospect of such a callous end for a landmark of significant historical value, the destruction commenced as planned. After the detonation, there was some effort to salvage the remnants of the Stone. Col. Low, the abovementioned EIC officer, managed to save several fragments of the Singapore Stone he deemed most legible and hired a Chinese mason to chisel them into smaller slabs (Low 1848). Of these, he presented one to the then-governor of Singapore, Sir[2] Samuel George Bonham, to be preserved at his residence (Makepeace et al. 1921).

Having been weathered for centuries and subjected to the great force of the blasting, much of the inscription was effaced and illegible. Such was the state of the Stone even then that only three other fragments were judged by Low to be legible, and these were the only ones he preserved (Low 1848).

Bonham only served as the Governor of Singapore for the remainder of the month. He later served for some years with the British EIC before serving as the Governor of Hong Kong from 1848 to 1854. His successor, Major-General (See note 1 above.)  William John Butterworth, would later recover this fragment of the Stone (Butterworth 1848).

There have been other tales of wayward fragments of the Stone.  For instance, one William Henry Macleod Read, a prominent businessman and politician in early Singapore, recalled the sighting of one fragment of the Stone "at the corner of Government House, where Fort Canning is now".  This fragment, however, was unfortunately broken up by a group of convict labourers, unbeknownst to its value, as material to construct a road (Miksic 2013).

It is quite probable, then, that the remainder of the stone faced the same fate—a remnant of Singapore in antiquity used in the foundations of Singapore present.

## 6. To Calcutta

By 1848, there were only four known remaining fragments of the Stone—three from the aforementioned Colonel (See note 1 above.) James Low. Low was a devoted antiquarian and took a great interest in collecting artefacts and working to preserve and decipher them. He, in his capacity as an EIC mediator, often had opportunities to study local art and artefacts, and this included the Singapore Stone. In 1848, upon the request of John Watson Laidlay, a secretary of the Royal Asiatic Society of Bengal in Calcutta (now Kolkata), Low sent three of the fragments he had preserved, deeming them the "most legible" (Laidlay 1848; Low 1848).

Alongside Low, Laidlay also requested Major-General (See note 1 above.)  William John Butterworth, the then-Governor of Singapore, to forward any fragments in his possession. Butterworth acceded to this request, reporting that the only fragment he was in possession of was once used as a seat for the guards at the Treasury of Singapore in 1843. He "lost no time" in acquiring the fragment, preserving it at his residence until the request came in 1848 (Butterworth 1848).

On 19th February 1848, Butterworth's fragment left for Calcutta on the British barque (light sailing ship) Rob Roy (noa 1848). It is not known what date Low sent his fragments to Calcutta, but it was after Butterworth had sent his. By July 1848, Laidlay had received all

four fragments, and he proceeded to make several drawings of the characters on the Stone (Figure 2). By sweeping fine charcoal into the indentations in the Stone, Laidlay was able to clearly make out the characters when under strong light, making great progress from earlier attempts to write down the Stone's inscription (Laidlay 1848). His efforts yielded a clear replication of the Stone's characters on Low's three fragments, and these drawings remain the largest corpus of the Stone's writing to this day.
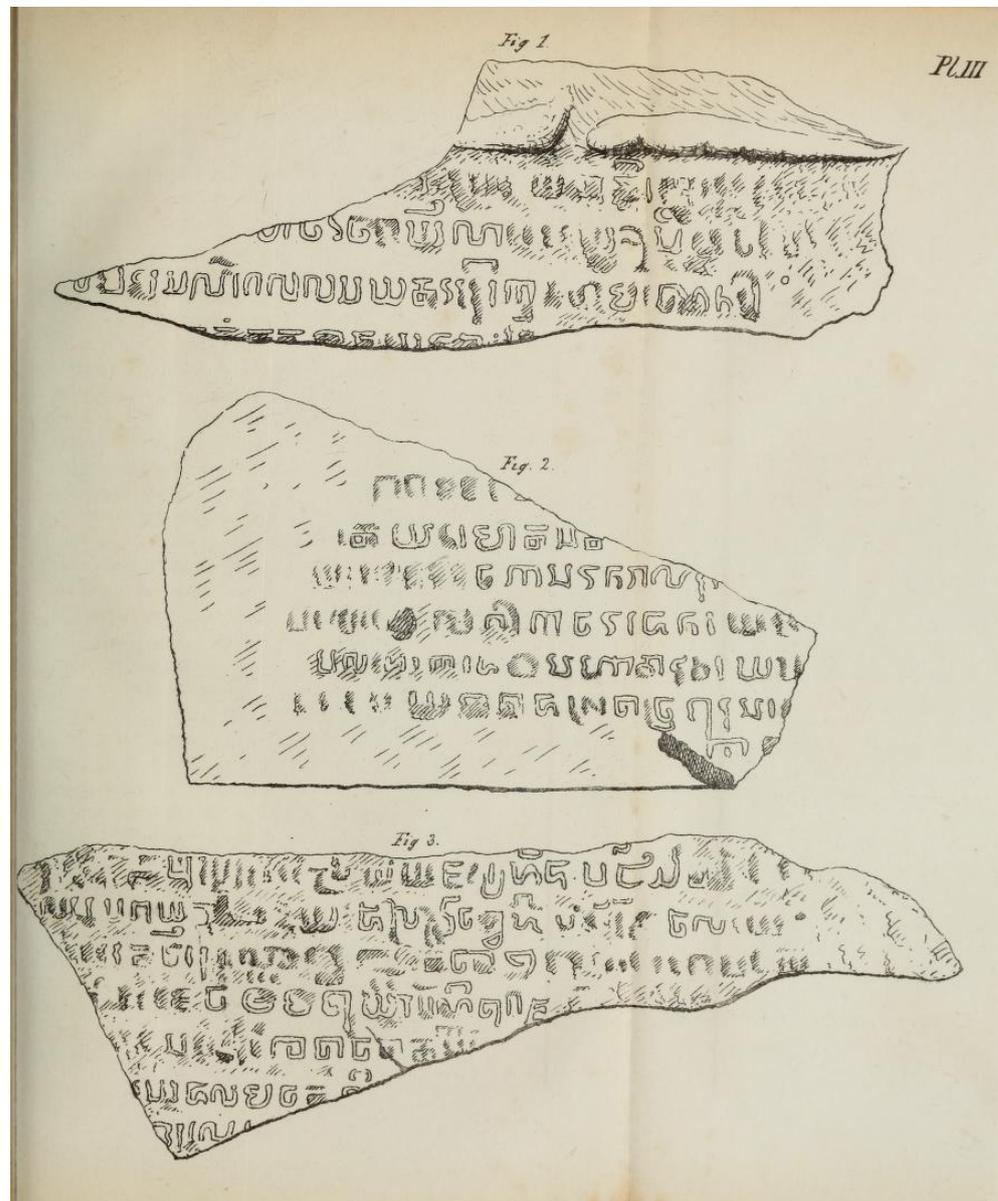


**Figure 2.** The then-Secretary of the Royal Asiatic Society of Bengal John Watson Laidlay's transcription of the characters on Colonel James Low's three fragments of the Stone. Laidlay published this drawing in the July 1848 edition of the *Journal of the Asiatic Society of Bengal*, although he only made copies of three of the four fragments he had in his possession at the time (Laidlay 1848).

Butterworth's fragment, despite being described by Laidlay as being much larger in size, proved a task he was unwilling to invest undue amounts of time accomplishing. Noting that the fragment's inscription was much less clear (probably due to its use as a seat for some time) and because of its massive size, Laidlay deferred the work of copying that fragment's characters. Laidlay eventually returned to Britain the following year, leaving Butterworth's fragment without a copy.
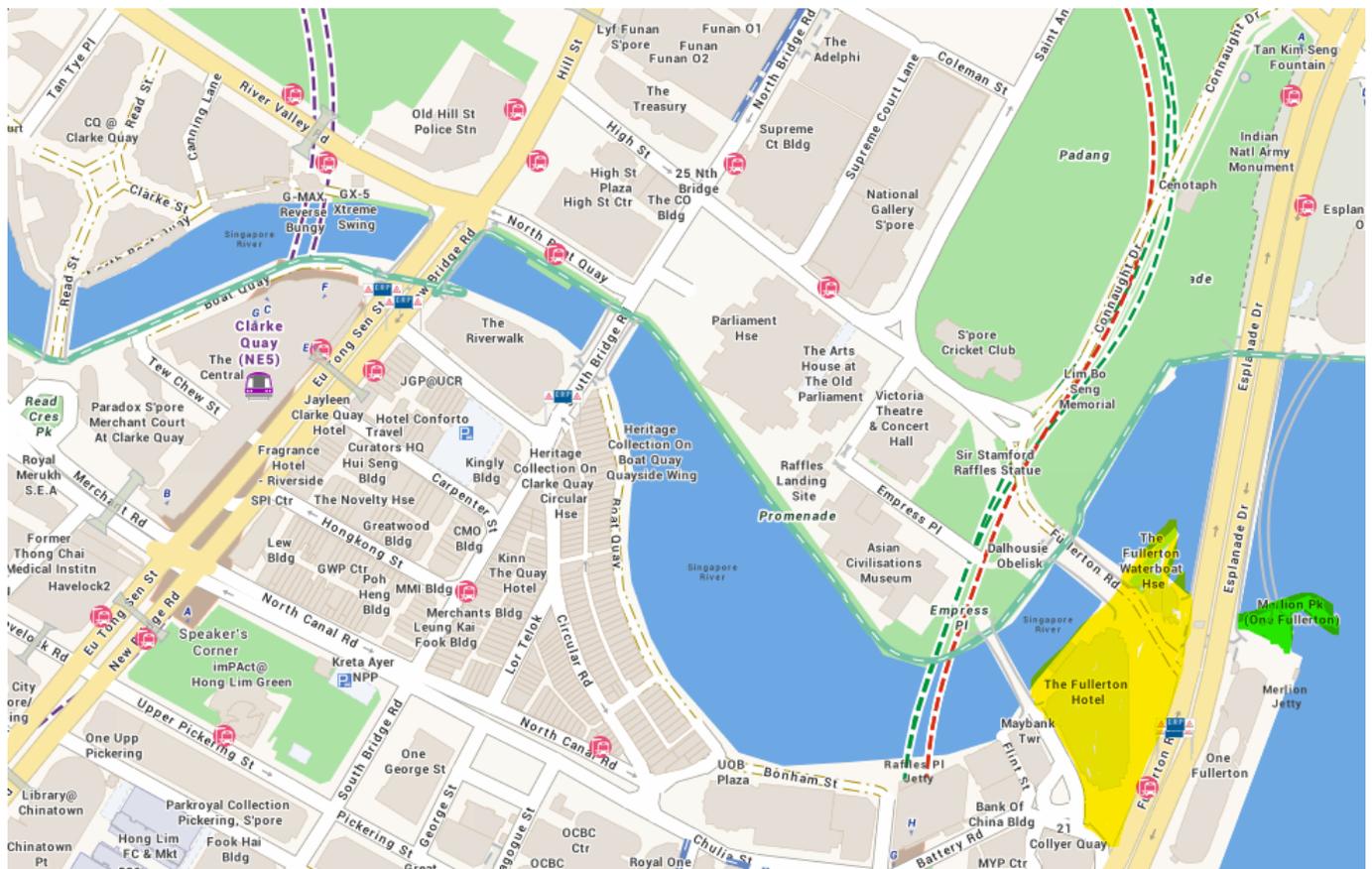
### 7. To Singapore

Some 70 years after the Stone's arrival in Calcutta, an effort began to repatriate the remnant fragments of the Stone to Singapore. The Raffles Museum and Library (today known as the National Museum of Singapore) in 1918 requested the Indian Museum in Calcutta to return any fragments of the Stone to Singapore. The Indian Museum obliged, shipping one fragment to Singapore on indefinite loan, with the fragment arriving in 1919 (noa 1919). This fragment is currently on display in the National Museum as part of its Singapore History Gallery.

That raises the question of the fate of the other three fragments of the Stone. Custody of the fragments was transferred to the Indian Museum (founded by the Asiatic Society) some-time afterwards, and the other three fragments were soon buried in the Museum's archives, with their location being unknown to this day. John Miksic, a prominent archaeologist with expertise in Southeast Asia and Singapore, recalled in *Singapore and the Silk Road of the Sea* about his visit to the Indian Museum in 1989 alongside the then-head of the National Museum, enquiring about the location of the remaining pieces (at the time, thought to be two). They were told that the fragments were in all likelihood still within the museum's storage warehouse, but that no specific records remained of their location (Miksic 2013). It is feared that the inscriptions of these fragments, especially Butterworth's uncopied fragment, have been lost to time.

The original location of the Stone, the Rocky Point, continued to be a significant location in Singapore even after the Stone's removal. Fort Fullerton would eventually become the Fullerton Hotel, an icon of the Singapore bay's skyline. The original location of the stone would also play host to another symbol of Singaporean culture—the Merlion, a half-mermaid–half-lion figure formed to promote Singaporean tourism. An 8.6 m statue of the Merlion was erected in 1972 near the original site of the Stone Figure 3 before being moved away in 2002 (Figure 4) when construction of a bridge obscured its view of the bay (Khoo 2000).



**Figure 3.** A 1994 photograph of the Merlion, a half-mermaid–half-lion figure that is the official mascot of Singapore and is used for promoting Singaporean tourism. At this point in time, the Merlion still stands at its original location, close to the site of the Singapore Stone (Tichy 1994).

**Figure 4.** A 2023 map of the mouth of the Singapore River (Urban Redevelopment Agency 2023).
Extensive land reclamation and development works have significantly transformed the landscape (as
seen in comparison to Figure  1). Where the Singapore Stone once stood on a seafront promontory,
the Fullerton Hotel (highlighted in yellow) now stands, overlooking a dammed freshwater basin.
The Merlion was originally erected on the site of the Stone before being moved to its present location
(highlighted in green) after its view was blocked by the construction of the Esplanade Bridge (major
arterial in yellow separating the two sites).

The Singapore Stone has also continued to play a pivotal role in the Singapore story:
retellings of the founding of Singapore—including the 2016 National Day Parade—often
include the legend of Badang (Yeo 2016). The Stone's significant historical value has been
noted throughout the years, with the National Heritage Board of Singapore naming it one
of its most valuable artefacts (National Heritage Board 2007) and placing it in a prominent
position near the entrance of its permanent exhibit. The repatriation of the Stone has given
to Singapore an imposing visual representation of its rich and storied past, capturing the
minds of Singaporeans for years to come.

## 8. Decipherment

### 8.1. Extraction

Over the years, various techniques have been applied to the Stone in attempts to
extract and record its inscription. The earliest recorded attempt to reproduce the Stone's
inscription was by curious residents upon the Stone's discovery in 1819. As recalled by
Munshi Abdullah in the *Hikayat Abdullah*, there were "many learned men" who attempted
to make sense of the Stone, with some bringing "flour-paste which they pressed on the
inscription and took a cast", while "others rubbed lamp-black on it to make the lettering
visible" (Abdullah 1955). However, these efforts yielded few results.

Sir Thomas Stamford Bingley Raffles, a British colonial official oft-credited with the
foundation of modern Singapore, also tried his hand at deciphering the characters.  P. J.

Begbie's *The Malayan Peninsula* writes of Raffles applying powerful acids to the Stone in an effort to accentuate the carvings on its surface (Begbie 1834). However, as the *Journal of the Asiatic Society of Bengal*'s J.W. Laidlay later notes, the Stone is constituted of coarse red sandstone and would not have reacted with any acids Raffles applied to its surface.

The next recorded attempt was when Dr William Bland, a Royal Navy surgeon serving on convict ships bound for Australia, attempted a facsimile of the Stone while on stopover in Singapore in 1837. Bland extracted the characters by pressing soft dough into the depressions on the Stone, and as such, obtained shaped characters for his sketch. After obtaining these characters, he painted over the characters with white lead, attempting to corroborate the obtained characters with the coloured indentations in the Stone. This yielded the only known sketch of the Stone's writing before its blasting, although the sketch is scant on details and has large blanks in it (Prinsep 1837).

After Bland, the next facsimile of the Stone was created by J.W. Laidlay when he received the remnant fragments of the Stone from Low and Butterworth in 1848. Laidlay swept fine charcoal[3] over the Stone's surface, filling its indentations and emphasising the characters of the Stone. By studying the characters under varying light, Laidlay completed sketches of three of the four fragments in his possession, and these are the most detailed sketches available to this day (Laidlay 1848).

In more recent times, the singular fragment of the Stone in NHB's possession has been 3D-scanned, with the scan serving as a definitive record of the inscription on the Stone. However, the scan does little to assist the identification of any characters, as the Stone has simply been so worn and effaced that many characters can barely be distinguished against the rest of the Stone. Laidlay's sketches thus remain the most convenient repository of the Stone's characters.

### *8.2. Interpretation*

Over the past two centuries, there have been a myriad of interpretations of the Stone's inscription, with both interested onlookers at the Stone's discovery and seasoned researchers having a suggestion as to the Stone's language, script and origin. These theories have been whittled down over the years as the spread of updated information and continued informed discussion have shaped our present understanding of the inscription. Differing views remain, however, and the inscription has not been deciphered, and its language is not conclusively known.

### 8.2.1. Tamil

Some observers believed the characters inscribed on the Stone to be related to the Tamil language. Citing the belief in an Indian origin to the Malay peoples, Captain Peter James Begbie, an EIC officer with an interest in Malay history, noted his view that at the time of the inscription, there was no native Malay script, and he expressed his belief that the inscription was an extinct variety of the Tamil language (Begbie 1834).

### 8.2.2. Pāli

Early attempts by antiquarians to decipher the Stone settled on Pāli due to its characters' similar rounded, squarish shape and references to Ceylon (today's Sri Lanka) as an origin for the Malay peoples in the *Sejarah Melayu*. Dr William Bland, a Royal Navy naval surgeon and one of the first people to attempt a facsimile of the Stone, believed the characters to correspond to letters in the Pāli alphabet (Prinsep 1837), as did Dr John Crawfurd—who would later serve as Resident of Singapore—when he visited Singapore in 1921 (Makepeace et al. 1921). James Prinsep, a renowned scholar who in his lifetime deciphered the Kharoṣṭhī and Brahmi scripts of India, concurred with this opinion when he examined Bland's facsimile in his position as the Secretary of the Asiatic Society of Bengal (Prinsep 1837).

### 8.2.3. Old Javanese (Kawi Script)

Kawi was a script used widely in Southeast Asia from the 7th to 13th centuries Figure 5 and was used primarily to write the Kawi language, also known as Old Javanese. Later analyses of the Stone's writing mostly settled on the Kawi script and, accordingly, the Kawi language.
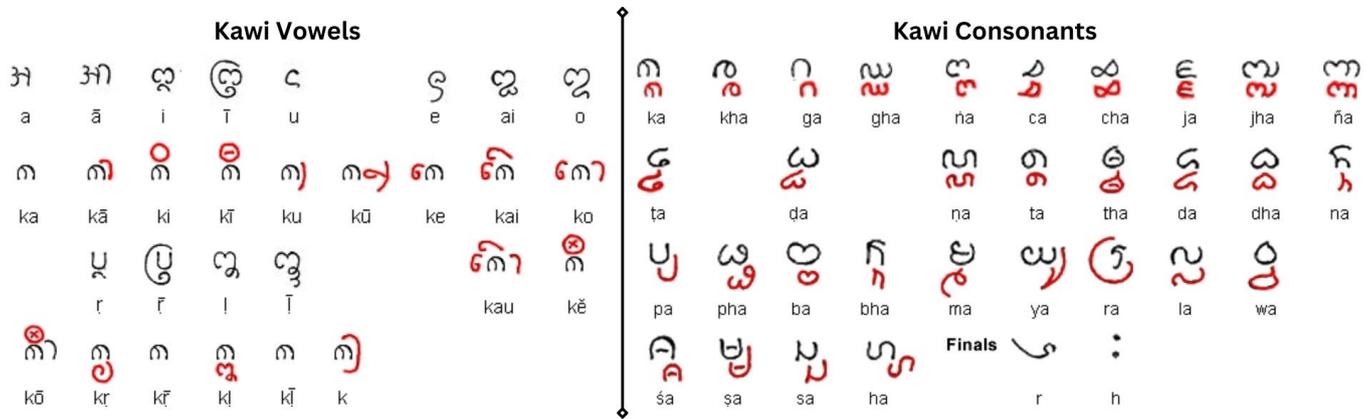


**Figure 5.** The Kawi script's standard alphabet (Omniglot 2023). As an abugida, Kawi is written with base consonants modified with either diacritics—to indicate a vowel—or other consonants—forming a ligature and indicating a consonant blend. In this rendition of the alphabet, the consonants are displayed in black with their equivalent form when combined in a ligature in red. The vowel modifiers are also depicted in red. Base consonants with no vowel attached default to /a/.

The earliest suggestion of Kawi as the language came from John Watson Laidlay, secretary of the Asiatic Society of Bengal, who wrote in 1848 that after comparison of the characters with known Pāli and Kawi scripts at the time, he found the characters to be identical to that of Kawi, contradicting his predecessor Prinsep's analysis. He could not identify any words, only managing to assign some characters with their respective alphabets (Laidlay 1848).

Johan Hendrik Kern, a prominent Dutch indologist active in the late 19th and early 20th centuries, wrote in 1907 that he concurred that the characters were most likely of the Kawi script and deciphering several of the characters but failing to match these to any known Javanese words at the time (Kern 1907).

Johannes Gijsbertus de Casparis, a Dutch indologist, deciphered one or two words in his 1975 book *Indonesian Paleontology* and venturing a guess that these words were in Old Javanese due to their script (de Casparis, 1975, in Miksic 1984).

### 8.2.4. Sanskrit (Kawi Script)

Sir Stamford Raffles, the founder of modern Singapore, took an early interest in the Stone. After attempting with a group of learned men to extract the characters by means of pressing a soft dough into the engravings, Raffles pronounced the characters to be of Hindu origin, as the Hindus were the oldest immigrants to the Southeast Asia region and the inhabitants of the area had all descended from the Hindus. It is not known which language Raffles meant specifically, but Sanskrit in colonial-era sources was sometimes referred to as the "Hindoostani Language", and it is probable that Raffles meant as such (Abdullah 1955).

Several prominent researchers have concurred with this opinion, although most have agreed that rather than being written in the more common Brahmi or Nagari scripts, the Stone was written in Kawi, a derivative of the Brahmi script that was often used in Southeast Asia. Although the primary use of the Kawi script was to write the Old Javanese language, the script has also been used to write Sanskrit, as have other Indonesian scripts over the centuries.

According to Drs Boechari, an epigraphical expert at PUSLIT ARKENAS, there is a closer affinity in the style of the Kawi inscription to the Sumatran variant—used mostly in

Sanskrit writing—rather than the Javanese variant—used in Old Javanese. Although John Miksic, who cited Boechari's analysis in his work, refrained from commenting on the style of his inscription, he concurs that the language is Sanskrit, primarily because of the dearth of Javanese influence as far north as Singapore prior to the 13th century (Miksic 1984).

Iain Sinclair in his research has identified a word fragment, "kesariva", which he believes is part of the title "parakesarivarman", used by several Chola kings. This, alongside his belief in the Chola origin story in the Sejarah Melayu, leads to his agreement with the language of the Stone being Sanskrit (Sinclair 2019).

### 8.2.5. Others

There have been a variety of other suggested origins to the Stone's language, including European languages like Dutch, or Sinic languages like Tibetan (Prinsep 1837).

Munshi Abdullah, author of the *Hikayat Abdullah*, the first modern Malay book to be published commercially, conjectured the writing to be Arabic, citing the similar shape of the characters (Abdullah 1955).

## 9. Discussion

With today's advances in communication and information sharing, it is clear that the inscription is not in Tamil, Arabic, Dutch or Tibetan. These languages have extensive corpuses and hundreds of thousands—if not millions—of speakers, and the fact that the Stone is unreadable to them and does not match known texts rules these suggestions out completely.

At first glance, Bland and Prinsep's conjecture that the language is Pāli holds water: Prinsep's prior works in deciphering the Brahmi and Kharoṣṭhī scripts of India lend his opinion credence, and the shapes of the characters at first glance are quite similar. However, Pāli remains a language in widespread use as the sacred language of Theravada Buddhism, which raises questions as to why the script was still unreadable. Laidlay's later investigation into the inscription and his work with a fluent reader of the language convincingly rule out Pāli (Laidlay 1848). His research into a corpus of Pali writing found no correspondence with the characters on the Stone, and Mr Ratna Paula, his Pali-reading colleague, was unable to decipher the inscription. It is therefore a reasonable conclusion that the inscription could not be in Pali.

Taking a holistic view of prior scholarship on the Stone therefore leads to the conclusion that the script is most likely Kawi. All the most recent scholarship on the Stone concurs that the script is Kawi, differing only on whether the language is Sanskrit or old Javanese. Unfortunately, this is where current research has reached a dead end: although some of the characters can be deciphered, the inscription is not very clear, leading to possible mistranslations (Dr Sinclair's decipherment included minor edits to Laidlay's drawings, for instance) and phrases that are cut off or lack essential context. This challenge is exacerbated by the fact that Kawi is an abugida, meaning that minor marks can change the interpretation of characters dramatically. In addition, the corpus of Kawi writing, especially in Sanskrit, is not very large, adding to the difficulty of corroborating any potential decipherment of the Stone. In spite of this ambiguity, we agree with Boechari and Miksic that the language is probably Sanskrit. The greatest progress with decipherment so far has been made with the assumption that the writing is Sanskrit, and, assuming a pre-13th century origin to the Stone (with most estimates ranging from the 10th to 12th centuries), there was unlikely to be much, if any, Javanese influence in Singapore.

The correlation of the Stone to the Kawi script is also evident through a visual comparison of the characters inscribed on the Stone to characters in the Kawi script (Figure 6).

Referring to Laidlay's transcription of the Stone, most of the characters directly correspond to Kawi characters. These include the most common symbols on the Stone: /y/, /l/, /n/ and /k/. However, issues arise when attempting to match the diacritics—the diacritics on the Stone differ greatly from those in standard Kawi. In standard Kawi, the /ai/ vowel utilises a leftward curl on top of the consonant, while only rightward curls

appear in the Stone's inscription. There is also an unusual double-hooked bar diacritic that appears multiple times on the Stone, with no clear Kawi equivalent. Several consonant characters also do not match Kawi, such as the hooked box topped with a flat line that appears regularly across the three fragments. In general, the Stone's inscription is neatly carved with a less fluid style than the sample Kawi script. This leads to a 'boxy', angular appearance that is distinct from other Kawi writings.
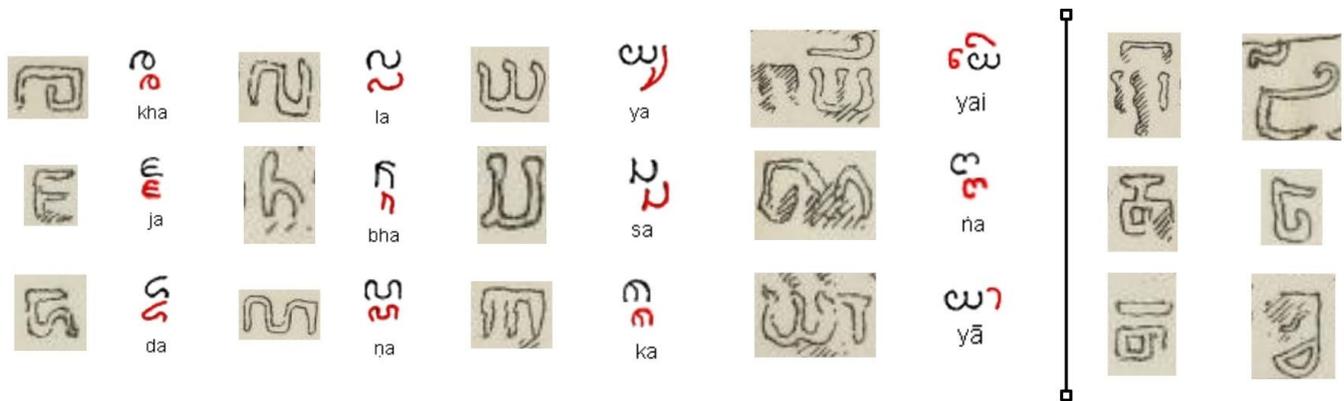


**Figure 6.** (**Left**) Selected characters from the Singapore Stone and corresponding Kawi characters (Laidlay 1848; Omniglot 2023). (**Right**) Characters or inscriptions that are not easily reconciled with Kawi (due to unusual diacritics or consonants).

Although the Kawi letters in the script are distinct, forming words from the deciphered syllables is difficult. The syllables formed do not readily separate into distinct words, and the limited breadth of the fragments leads to many potential words being cut off and rendered indecipherable without some level of guesswork. The uncertain nature of Laidlay's inscription also hinders decipherment—where the Stone was slightly effaced, Laidlay tends to reflect this in his transcription, leading to many ambiguous characters. This is compounded by the fact that his works are the only remnant documentation of two of the fragments, leaving no alternative to clarify his work with.

## 10. Conclusions

### 10.1. Findings

Our research has come to several conclusions about the Singapore Stone: some clarifications with respect to its chronology, the existence of a fourth fragment sent to Calcutta, and the nature of its inscription.

The Stone was demolished in January 1843—some earlier research was unclear as to which point in Bonham's term as Governor the Stone was destroyed. This lack of clarity also led to some confusion in earlier reports, which blamed the renowned colonial architect and Superintendent of Convicts and Public Works up till 1841, George Dromgold Coleman, for the destruction. The man to blame was, in fact, his successor in the role of Superintendent of Convicts and Public Works since November 1842, Captain D. H. Stevenson (or Stephenson) (Bonham 1842a, 1842b).

We have also worked on obtaining a clearer timeline of the fragments' travel: obtaining a departure date for Butterworth's fragment (noa 1848) and the ship it was on. Records in Calcutta are scarce, however, leaving us unable to confirm its date of arrival. Low's fragments are even more elusive, with no indication of their transit or arrival in any sources we have access to.

There was also one more fragment of the Stone that conclusively survived the blasting, at least after 1848. Writings about the Stone as recently as 2013 referenced two fragments that remained at Calcutta (Miksic 2013), when there are, in fact, three that were sent to Calcutta and received by Laidlay but not returned to Singapore (Laidlay 1848).

Our research suggests that the Stone is in the Kawi script and is probably in Sanskrit rather than Old Javanese. A visual comparison of the Stone's script and Kawi yields several promising matches, although there are many discrepancies and incongruities.

### 10.2. Limitations

Our project has several limitations, which have restricted the scope and depth of our project. Of course, there is great difficulty in piecing together the Stone's history, with its destruction having been nearly two centuries ago and virtually no information remnant from the pre-colonial era. Additionally, it is very difficult to find relevant contemporary records from Calcutta to Singapore. It is a given that a visit to Kolkata and the Indian Museum may yield further information, which may further shape our understanding of the Stone.

Owing to the different colonial powers in the region at the time, our sources are in a variety of languages. Being based in Singapore, we have inherited the British lingua franca, lending us easy access to British records and English translations of Malay sources. The Dutch (who colonised Indonesia) also had influence in the region however, leading to some of our sources being in Dutch and inaccessible to us. We had to rely on possibly inaccurate machine translations for these sources, which may have led us to incorrect understandings of these sources. A professional translation may yield insights that we have missed.

We are not experts in any of the abovementioned languages and have relied heavily on the works and opinions of others in our discussion of the decipherment of the Stone. We believe our advantage of hindsight, however, has allowed us to have a better overview of the progress on the decipherment and has permitted us to clarify previous works on the subject.

### 10.3. Future

There is still much more to be done in the research effort on the Stone. Most promising would be a search for the three remaining fragments: Butterworth's fragment, especially, would prove a great addition to the corpus of characters, being of a much larger size than Low's three shards. However, such an effort would be difficult and time-consuming; such an endeavour will require effort and cooperation that will be challenging to organise.

In terms of deciphering the currently available characters, the assumption of the characters as Sanskrit Kawi may prove useful, and a future effort of cross-referencing the source to previously deciphered works may yield some results for unusual characters and diacritics. In addition, since Kawi is an abugida, it is easy to confuse diacritics between characters, and badly worn sections may also be confused for diacritics. By comparing Laidlay's work to modern 3D scans (done by NHB, National Heritage Board 2019), we can see where Laidlay may have made mistakes in his drawing and use this to correct his drawings for two of the lost fragments, expanding our corpus of characters.

Advances in machine learning and deep learning tools could also prove pivotal in future efforts at interpreting the Stone. Algorithms like Deepmind's Ithaca are trained on known samples of text (in Ithaca's case, ancient Greek inscriptions) and with sufficient information can predict missing characters and sections of text in recovered inscriptions while estimating additional geographical data such as geographical and chronological information (Assael et al. 2022).

These tools represent an incredible opportunity for the decipherment of the Stone, but many roadblocks lie in the way of such models' implementation in this situation. Kawi has a known corpus of characters and some deciphered texts, but this pales in comparison to the extensive collections of other languages and scripts—for instance, ancient Greek. This comparative dearth of data is a major obstacle because these algorithms are reliant on past data for future inferences and are not reliable if insufficient data are available. The Stone's characters also do not exactly match known Kawi writing, and these novel unknowns may also render predictive algorithms ineffectual in deciphering the Stone.

It remains to be seen if these algorithms can be successfully applied to the Stone, though it is abundantly clear that this would be a major step towards a fuller understanding of its writing. Some early steps in this direction have been made in this regard, with a small team in Singapore's Nanyang Technological University previously exploring the possibility of developing a similar system for Kawi scripts and, thus, the Stone.

The Singapore Stone is a valuable piece in Singapore's history and is an object of great importance in our understanding of Singapore's antiquity. Progress in either retrieving the remnant fragments or deciphering the extant one would be monumental, and we hope that this will one day occur.

## Abbreviations

The following abbreviations are used in this manuscript:

| | |
|---|---|
| EIC | British East India Company |
| URA | Urban Redevelopment Authority, Singapore |
| NHB | National Heritage Board, Singapore |
| NTU | Nanyang Technological University, Singapore |
| PUSLIT ARKENAS | Pusat Penelitan Arkeologi Nasional, Indonesia (EN: National Archaeological Research Centre, Indonesia) |

## Notes

[1] Officers in the EIC are denoted with their highest known rank.

[2] Noblemen are denoted with their highest known title.

[3] Laidlay notes that for this task, he preferred animal charcoal over plant charcoal, as animal charcoal is heavier and thus better fills the depressions in the Stone.

## References

Abdullah, Munshi. 1955. *Hikayat Abdullah*. Kuala Lumpur: Malaysian Branch of the Royal Asiatic Society. Original work published 1849.

Assael, Yannis, Thea Sommerschield, Brendan Shillingford, Mahyar Bordbar, John Pavlopoulos, Marita Chatzipanagiotou, Ion Androutsopoulos, Jonathan Prag, and Nando de Freitas. 2022. Restoring and attributing ancient texts using deep neural networks. *Nature* 603: 280–83. [CrossRef] [PubMed]

Begbie, Peter James. 1834. *The Malayan Peninsula: Embracing Its History, Manners and Customs of the Inhabitants, Politics, Natural History, etc. from Its Earliest Records*. Madras: Vepery Mission Press.

Bonham, Samuel George. 1842a. *Appointment of Captain D H Stephenson as the Assistant in Charge of Convicts and Public Works*. (Straits Settlements Records, Accession Number Z14). Singapore: National Archives of Singapore.

Bonham, Samuel George. 1842b. *Captain Stevenson Arrival and Suggests New Arrangements for the Convict Establishment and Other Duties*. (Straits Settlements Records, Accession Number Z15). Singapore: National Archives of Singapore.

Butterworth, William John. 1848. Inscription at Singapore. *Journal of Asiatic Society of Bengal* 17: 154–55.

Hancock, T. H. H. 1986. *Coleman's Singapore*. Kuala Lumpur: The Malaysian Branch of the Royal Asiatic Society.

Kern, Johan Hendrik Caspar. 1907. Concerning some old Sanskrit Inscriptions in the Malay Peninsula. *Journal of the Straits Branch of the Royal Asiatic Society* 49: 100–1.

Khoo, Helen. 2000. A new home for the Merlion. *URA Skyline Magazine* (Jul/Aug 2000). Available online: https://eresources.nlb.gov.s g/printheritage/detail/c03a6108-7ea2-46d0-9ac1-08addfdb6593.aspx (accessed on 13 March 2023).

Laidlay, John Watson. 1848. Note on the inscriptions from Singapur and Province Wellesley. *Journal of Asiatic Society of Bengal* 17: 66–70.

Low, James. 1848. An account of several inscriptions found in Province Wellesley on the Peninsula of Malacca. *Journal of Asiatic Society of Bengal* 17: 66.

Makepeace, Walter, Gilbert Edward Brooke, and Roland St. John Braddell, eds. 1921. *One Hundred Years of Singapore: Being Some Account of the Capital of the Straits Settlements from Its Foundation by Sir Stamford Raffles on the 6th February 1819 to the 6th February 1919.* London: John Murray.

*Malay Annals*. 1821. London: Longman, Hurst, Rees, Orme and Brown. Original work published ca. 1400–1500.

Miksic, John Norman. 1984. *Archaeological Research on the "Forbidden Hill" of Singapore: Excavations at Fort Canning, 1984.* Singapore: National Museum of Singapore.

Miksic, John Norman. 2013. *Singapore and the Silk Road of the Sea, 1300–1800*. Singapore: NUS Press.

National Heritage Board. 2007. Our Top Twelve Artifacts. Available online: https://web.archive.org/web/20070614224406/http: //www.nhb.gov.sg/WWW/top12.html (accessed on 7 March 2023).

National Heritage Board. 2019. Singapore Stone. Available online: https://sketchfab.com/models/c497c80a97f74dba8aaf2a2c9c5aa69 5/embed?autostart=1 (accessed on 7 March 2023).

Omniglot. 2023. Kawi Alphabet. Available online: https://www.omniglot.com/writing/kawi.htm#:~:text=The%20Kawi%20alphabet %20developed%20from,of%20Indonesia%20and%20the%20Philippines (accessed on 12 March 2023).

Part of Singapore Island. Map. 1825. Available online: https://commons.wikimedia.org/wiki/File:Part_of_Singapore_Island_~(Britis h_Library_India_Office_Records,_1825,_detail)_-_cropped.jpg (accessed on 7 March 2023).

Prinsep, James. 1837. Inscription on the jetty at Singapur. *The Journal of the Asiatic Society of Bengal* 6: 680–81.

*Raffles Library and Museum Annual Report*. 1919. Technical Report. Singapore: Raffles Museum.

Rouffaer, Gerret Pieter. 1921. Was Malaka Emporium Vóór 1400 a. D., genaamd Malajoer? En waar lag Woerawari, Māhasin, Langka, Batoesawar? *Bijdragen tot de Taal-, Land- en Volkenkunde van Nederlandsch-Indië* 77: 34–75.

Sinclair, Iain. 2019. Traces of the Cholas in Old Singapura. In *Sojourners to Settlers—Tamils in Southeast Asia and Singapore*. Edited by Arun Mahizhnan and Nalina Gopal. Singapore: Institute of Policy Studies (Singapore); Singapore: Singapore and Indian Heritage Centre. vol. 1, pp. 48–58.

Singapore Shipping News Arrivals. 1848. *The Straits Times*, February 23.

Tichy, Ion. 1994. "Merlion 1994". Photograph. Available online: https://commons.wikimedia.org/wiki/File:Merlion_1994.jpg (accessed on 12 March 2023).

Urban Redevelopment Agency. 2023. URA Space map of the Singapore River Area. Available online: https://www.ura.gov.sg/maps/ (accessed on 25 March 2023).

Yeo, Sam Jo. 2016. NDP 2016: 7 magical moments you should not miss. *The Straits Times*, August 5.