THE KINGDOM THAT WALKED ON WATER

SRI LANKA & THE GREAT INVENTION

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"No wise fish would go anywhere without a porpoise."

ALICE'S ADVENTURES IN WONDERLAND
LEWIS CARROLL 1865

The Lost Laboratory

Far into the north of Sri Lanka, forty kilometres from Anuradhapura to the south, and fifty more to the western seaboard, lie the ruins of a shrivelled reservoir - Kuda Vilach Chiya.

The tank is close to some of the country's most iconic and mythical sites, including the landing place of Prince Vijay, the nation's paterfamilias, the palace of his forsaken native queen, and the country's first recorded Singhala kingdom.

Kuda Vilach Chiya sits on the eastern edge of what is now Wilpattu National Park. Reaching the spot is no easy matter, since it lies within a deep, entangled jungle, for which special permission must be granted to gain access. Even after that, it requires a tractor to get you any closer to the site, followed by a lengthy journey on foot. For countless centuries, this has been leopard country.

Wilpattu's vast 130,000-hectare wilderness is one of the island's best kept wildlife secrets, so well off the tourist trail as to exponentially nurture its hundreds of rare species of fauna and flora - along with many endemic species: the Toque and Purple-faced Leaf Monkeys, Golden Palm Cat, Mouse Deer, Dwarf Toads, Hour-Glass Tree and Wood Frogs, Ceylon Jungle Fowl and Ceylon Grey Hornbill.

Even the ultra-rare Sloth bear can be seen here, attracted by the sweet golden fruit of the Palu Tree.

But despite all these exceptional features, it is for its water that Wilpattu matters most. Its name is more literally translated as the "land of Villu," "villu" meaning "lakes." The whole area is pockmarked with shallow rainwater lakes. But the lakes are eclipsed by Kuda Vilach Chiya, a much more deliberate water feature that is hard to make much sense of at first.

Today, it amounts to little more than a long, two- to three-kilometre-long embankment overgrown with trees and grasses, breached in many places by migrating elephants. It is all that remains of the extraordinary man-made lake that was constructed here sometime after 67 BCE by the first Lambakanna king, Vasabha.

Hardier survivors from that time are two masterpieces of ancient aqua engineering, the creation of which allowed Sri Lanka's builders to construct astonishingly vast water reservoirs. These, in turn, would

The constructions – Bisokotuwas – allowed water to exit a reservoir without exerting excessive pressure on the dam embankment, thereby preventing the embankment from collapsing.

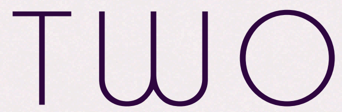
As a result, the size of the reservoir could scale to unprecedented levels, and water in unimaginable quantities could be collected to expand agriculture, support ever-larger and more urbanised populations, and produce crops whose surplus would rapidly and exponentially enrich the young state.

The Bisokotuwas at Kuda Vilach Chiya are precision-made structures; the stone slabs on the inner face fit together so perfectly that there is no room for even the smallest weed to grow.

Rising above it, the sluice tower itself can still be seen, part of the same remarkable lost laboratory of water.

The same Lambakanna king, Vasabha, is also credited with the construction of the Mahavilach Chiya Wewa, a tank barely five kilometres from Kuda Vilach Chiya, with a storage capacity of 2,400 acres, which is still a key part of modern Sri Lanka's water infrastructure.

Quite why two such large tanks were built so close to one another is a mystery. But their very existence, and that of the Bisokotuwas that made them possible, is the point that matters most.



Crying Out for Water

The area around Kuda Vilach Chiya, though remote even by Sri Lankan standards, has been shaped by multiple significant historical events.

Not for nothing was it chosen for its capacious reservoirs. It was once a place of some importance. Ten thousand years earlier, and thirty kilometres north, are hypnotic Neolithic cave paintings at Tantirimale.

Two hundred or so years earlier, the local temple, Thanthirimale Rajamaha Viharaya, marks the spot where the sacred Bo tree rested as it travelled to Anuradhapura from India under the protection of the Indian Emperor Ashoka's daughter, Sangamitta.

Some historians even believe that the site was once home to the lost kingdom of Panduvasdewu Nuwara, the early Vijayan realm that most immediately predated Anuradhapura itself.

A monastery lies on the same site, its excavated gardens littered with stone containers carved to hold gems, and the statues of gods and lions, ruined when the country's last unitary kingdom fell to invaders in 1215 CE.

And in the nearby jungle, ancient monastic caves crouch, decorated with a script that predated Buddhism itself – Brahmi.

All around it stretch the flat and softly undulating lands of the country's massive Dry Zone. Much of Sri Lanka is very dry - as if the land itself had been bled white and hung out to dry. It is not perennially wet like Bangladesh.

This is especially true of the Rajarata, the land most immediately around Anuradhapura - stretching from Jaffna and Trincomalee to Puttalam and Kandy - that lay, like Kuda Vilachchiya itself, solidly within the king's control.

To achieve anything more than a rudimentary agricultural existence required the availability of year-long water, and plenty of it.

Water, after all, permitted greater areas to be used for growing crops and higher yield densities.

It meant food surplus, profit, trade - and with it the capacity to develop an urban and industrial capability, underwritten by technical advances from construction and weaponry to horticulture, and transport. It meant that the state could better develop the

organisational and professional skills essential to its success – commerce, industry, engineering, labour, planning, law, medicine, food storage, and finance.

Water management and irrigation, water storage and collection, water distribution – all this was what made the Anuradhapuran Kingdom possible in the first place. A defendable island state it may have been, and a centralised Buddhist one at that, but without water it could go nowhere, do nothing, be nothing.

This focus on water technology was not a new preoccupation introduced by the first Lambakarnas in 67 BCE. Still, they, more than any other dynasty, ensured the rapid development of the resources and technologies that provided their domain with year-long water.

The Gathering Wave

The scattered Vedda and other pre-Sinhalese populations of the island had mastered the construction of small tanks before the fifth century BCE, and, with it, limited forms of agricultural production.

This was the start of what is now known as the Tank Cascade system. Rainwater was collected in shallow ponds, and crude distribution methods were used to dispense it.

This quickly developed into the construction of low embankments across valleys to dam small rivers or rivulets, directing their water into a series of downstream tanks and, ultimately, paddy fields. Large seasonal rivers were next targeted with dams and distribution channels.

Soon enough, a profoundly detailed understanding of how to refine and improve the technical requirements to maximise water availability developed. Inceptor zones were created between the tank and the paddy fields.

Studies have shown that 77 types of trees and plants, such as arjun, butter, mango, and cashew trees, with well-developed root systems, were typically used to help absorb salts and heavy metals from the water before it reached the paddy.

Tree belts were planted well above the water tanks to stop wind, waves, and evaporation. Sedges, grasses, and special shrubs were planted to purify water run-off. Extensive catchment forests were planted to raise the groundwater table and regularise water supply to the tanks during the dry season.

And in the nearby upper catchment areas, small dams and miniature tanks were constructed to deliberately make the land marshy and capture silt that would otherwise run into the tanks.

Then within barely a hundred years of running a kingdom, the Vijayans, the country's first royal dynasty, set about building huge tanks or reservoirs, two of the earliest still in use today – the Gamini Vapi (now known as the Karam Bewa Wewa) and the Abhaya Vapi (known now as Basawak Kaluma Reservoir) with its colossal four hundred and twenty-nine acres of water storage. Anicut dams were invented to regularise the water supply.

By the time Vasabha, the first Lambakarna king, came to power in 67 BCE, the state's technical and organisational ability to construct

truly massive and complex water infrastructure was maturing most agreeably.

Vasabha himself is credited with building eleven massive reservoirs and extensive canals to transport water over long distances, thereby making later ones possible. One of them is the Yoda Ela, an eighty-seven-kilometre canal that takes excess water from the one hundred and twenty-three million cubic metre Kala Wewa reservoir south of Aurandurapura to the Tissa Wewa Reservoir that supplies water to the city of Anuradhapura itself.

Its construction was a remarkable feat of ancient engineering, using gravity to propel water along its course by creating a gradient of 10 centimetres per kilometre.

The king also built underground canals and water pipes to feed the ponds of Ranmasu Uyana Gardens in Anuradhapura. This innovation found its most significant expression in the Water Gardens of Sigiriya, created by the ill-fated King Kashyapa to carry water from the Sigiri Wewa Reservoir.

A State of Radical Technology

Under the Lambakanna, the Bisokotuwa sluice controls and accompanying surge tanks, which the kingdom's inventive engineers perfected, made possible the damming of whole perennially wet rivers.

This technology enabled the state to create even vaster reservoirs that were unthinkable just fifty years earlier. Like the steam engine or spinning jenny that fired the Industrial Revolution nearly two thousand years later in the West, the improvements made then in Bisokotuwa technology, though seemingly modest to uninformed observers, powered a profound series of changes that were to revolutionise Sri Lanka.

The young Lambakanna kingdom would grow, indeed, and walk on water.

Governing the country for over five hundred years, the Lambakarnas used water to transform the moderately successful kingdom they had seized into an unapologetically dominant state that, for prolonged periods, controlled the entire island.

It also maintained a flourishing and confident international presence in South Asia within the Indian Ocean trading zone.

This critical trading hub, which Fa-Hien, a Chinese visitor to the island during the dynasty's rule, noted, acted like a magnet for merchants who 'flocked in large numbers till it became a great nation." It was to set the measure for the future.

Sri Lanka may rank only 120th in the world by land area, but Colombo Port is today the planet's 25th-busiest port.

Water, and its management, lie at the bottom of all this.

"It is possible," wrote a Mr Bailey, Assistant Government Agent of the District of Badulla in 1885, "that in no other part of the world are there to be found within the same space, the remains of so many works of irrigation, which are at the same time of such great antiquity and of such vast magnitude as in Ceylon.

Probably no other country can exhibit works so numerous and at the same time so ancient and extensive, within the same limited area, as in this Island."

So robust was the water infrastructure that today, in the dry zone alone, ten thousand ancient tanks are still in productive use – and these represent just a third of the total estimated to

have been built.

A 2018 study of ancient grants associated with water infrastructure found that almost half were linked to individual or family ownership. The Lambakarna state might be encouraging the development of water resources and even the construction of mega projects. Still, most of the ownership was local—only 28% of the grants enriched royal or elite groups. With water came the intricate development of a massive administrative system that helped the kingdom maintain its grip and dominance.

Unsurprisingly, the management and upkeep of the systems were also highly localised, and warnings were posted to prevent misuse. “The water flowing here from the Kolob canal,” reads one pillar inscription of the tenth century CE, “shall not be hindered; may those who transgress the regulations laid down here and commit unlawful acts become crows and dogs”.

FIVE

The Gift That Gave Once More

For hundreds of years, the massive technology and infrastructure that had been created slowly decayed.

The final obliteration of the Anuradhapuran Kingdom in 993 and 1029 CE; the destruction of its successor state in Polonnaruwa in 1215 CE; and the nearly three hundred wilderness years that lasted till the arrival of the first colonists saw the administration and maintenance of the water infrastructure languish, especially in the Dry Zone.

The Portuguese and Dutch did little to improve the situation, and the British, arriving in 1792, did much to make the problem worse, including the mandatory dismantling of forced labour. For one and a half thousand years, water had been the heartbeat of the country, and nothing except Buddhism itself could compete with it for the national focus it accrued.

And, as the nineteenth century slid into the twentieth, water returned once again as a main item on the country's priorities - but this time for its ability to generate power as much as for the gifts it bestowed on horticulture.

Today, 40-50% of the country's electricity comes from hydropower – a figure well beyond that of most other countries. Unusually for an island state, its focus on water was inwards, not outwards.

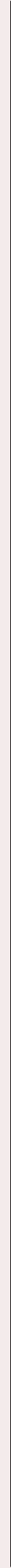
Sri Lanka did not, like Britain, construct a grand navy to conquer far and wide, invest in large merchant fleets to trade across the Indian Ocean, or even build a substantial fishing fleet to harvest its seas.

Boats – like much of the outside world itself - were never much of an island preoccupation. Most of what it really wanted from beyond its shores came to it like a willing Amazon delivery van, courtesy of merchants eager to trade anything for Sri Lankan spics, gold, elephants, pearls, and sapphires.

This unusual stimulus left its people free to focus on all that was most immediately around them, enriched and made possible by water, a Nirvana H2O, tantric in the good times, and a comfort in the bad.

Water and water technology, like Buddhism, or the country's island status, was – and remains – one of the unique characteristics that make Sri Lanka Sri Lankan; that have shaped its history and development; that determines its future and makes what

you see from your passing car or train, or, better still, plane so spellbindingly distinctive.



ABOUT THE AUTHOR

David Swarbrick is a publisher, planter, hotelier, hermit, and writer. He was born in Colombo and, with few concessions to modernity, raised in India, Singapore, and the Middle East. Cornish gained his degrees on the Celtic fringe: at the Universities of Wales and Stirling, prolonging an introduction to accepted working hours for as long as possible.

Having worked at News Corp's HarperCollins UK as a board director across departments including sales, art, and marketing, and at HarperCollins India, he ran Hachette's consumer learning division. Prior to this, he launched Oxford University Press's first commercial online business, Oxford Reference Online.

When the doubtful charms of boardroom bawls and bottom lines diminished, he returned to Sri Lanka, the land of his birth hundreds of years earlier, to rescue a spice plantation and a set of art deco buildings that had gone feral in the jungle.

Today, as The Flame Tree Estate & Hotel, it has become one of the country's top ten boutique hotels, run by the kindest and most professional of hospitality teams, and overseen by several small schnauzers.

It also helps fund The Ceylon Press, set up to make Sri Lanka's rich and complicated story more accessible. The Press' books, companions, podcasts, blogs, and guides are freely available at theceylonpress.com.

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A GIFT FOR READERS

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