

The *Soroban* – a Sino-Japanese Mathematical Connection



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The Japanese abacus, known as the *soroban*, is said to have had its origins in the *suànpan* – the Chinese abacus. Many cultural artefacts and streams of thought from ancient China had a significant impact on ancient Japan. This extended to arithmetic, in the guise of the abacus, which is said to have found its way from China to Japan via the standard route of those times – Korea. Like almost all items in Japan which have their origin elsewhere, the abacus too went through successive transformations after its arrival, finally morphing into a distinct Japanese version.

This article stays completely clear of talking about the differences between the Chinese and Japanese abacus, or for that matter the abacus in general – whether Graeco-Roman, Mesopotamian, Indian, or otherwise. It also does not delve into any arithmetical aspect of the abacus. It certainly is not a manual to learn the abacus – however advisable it may be to do so. Plenty of excellent material, workshops and classrooms are available on that aspect of the abacus. It is a highly recommended skill from the perspective of cerebral health and education systems worldwide would do well to include it in an elementary school curriculum.

What this article aims to do is look at the significance of the *soroban* across the centuries, through a few interesting tidbits of information. Some of these may be fact, some may be fiction, but irrespective of that, the historical significance of this wonderful instrument will hopefully be evident.

The Japanese Ministry of Finance

Chiyoda Ward in central Tokyo is home to most of the government ministries of Japan, in addition to both the political establishment and the apolitical Imperial Household Agency, which includes the Imperial Palace. The ministries typically go by the Japanese name for ministry, *sho*. For example, the Foreign Ministry is the *Gaimusho*, the Ministry of Justice is the *Houmusho*, the Defense Ministry is the *Boeisho* and so on. The country's finances are headquartered in the *Zaimusho*. Curiously, in common parlance, this vital ministry is instead

referred to as the *Okurasho* and indeed until 1964 it had been known as such for centuries. A lot of parliamentary debate took place at that time, with the suggestion of a name change even being described by some as “a meaningless reform”. Yet, on a sad day in 1964, the signboard of the *Okurasho* was tearfully brought down, to be replaced by that of the *Zaimusho* (*Photos 1 & 2*).

So is there a reason behind this ministry being called for centuries by a term which has nothing to do with money and colloquially continuing to this day? Here is a story of interest.

The *Okurasho*

I was at one of my favorite restaurants having as usual a chat with another regular customer, Yukio Hara. He and I share a common love of history. He is in particular very knowledgeable about his own country and is fascinated by my interest in the subject. He is a native of the Fukuoka region in faraway Kyushu. When I mentioned about my visits there to research the deep connections between Japan and her immediate neighbors across the Sea of Japan, he sprang the information that his ancestors were from China and there are six surnames including his own in present day Japan, many of whose bearers would be like himself of Chinese ancestry. This ancestry dates to over 1,500 years ago, so he would also caution that there is no such thing as pure ancestry in Japan. Over the centuries, the Japanese archipelago effectively became a melting pot of Asian, Pacific-Islander and local ethnicities.

One of the surnames he mentioned was Okura. He had gone on to explain how the original Okuras (of course, known in China by a different name) were professional accountants, and that it was they

Photo 1: Author



The Japanese Ministry of Finance in Tokyo

Photo 2: Wikimedia Commons



The Okurasho, Tokyo

who brought the Chinese *suanpan* to Japan, which over time developed into the Japanese *soroban*. While their initial home in Japan, like most arrivals from the Asian mainland, was in Kyushu, over time they migrated eastwards, finally making the area of the coast of the Inland Sea in the then Harima domain of western Japan their home. In modern times, the erstwhile Harima domain is the southwestern coastal area of Hyogo

Prefecture, west of the large port and prefectural capital of Kobe, centred on the city of Akashi.

A search in Akashi revealed an area along the coast of the Inland Sea less than a kilometer from the headquarters of the Akashi municipality called *Okuradani* (Okura Valley). The coastal part of this area is *Okura Kaigan* and is a well-kept municipal park. Could this area have been the adopted home of the *soroban* Okuras? Nestling in the narrow but tidy backstreets off Okura Coastal Park is a small temple, the OkuraIn. The young temple priest said his family has been looking after the temple for about 150 years. The actual start of the temple is said to go back into antiquity and there was no recorded evidence of its origin. Upon mentioning to him about the purpose of my visit in pursuit of the legend of the *soroban* Okuras, he smiled. He said that while he had not heard about that legend, local lore has it that there used to be an enormous camphor tree in a bygone era in that vicinity. The tree would cast a shadow so large that in the morning hours the spiritually acclaimed island of Awaji just across the coast towards the southwest would be eclipsed by it and as the day progressed towards sunset, the northeast area towards the old imperial capital of Osaka would be bedimmed. Due to the giant shadow cast by the camphor tree, the area would be in darkness even on sunny days. He said that the place name “Okura” could have been from that, that is, a wide area engulfed in darkness. He further suggested that as wealth was closely protected in large dark storehouses, the government’s treasury may have derived its name from Okura. I would prefer a more romantic interpretation based on the titbit from my friend Mr. Hara. Yes, the valley may have got its name from the giant camphor tree, but the ancient custodians of the treasury may have taken their name from that of the valley they had decided to settle in (*Photos 3 & 4*).

Okura Haruzane & Taira Masakado

One of the better known Okuras of yesteryears was a 10th century nobleman, Okura Haruzane. Recorded history says that he was a descendant of second century Emperor Ling of the Han dynasty of China, through Prince Achi no Omi – a great-grandson of Ling – who is said to have settled in Okuradani and become naturalized in Japan. While the first records of the Chinese abacus *suanpan* are said to be

Photo 3: Author



Okuradani in Hyogo Prefecture

Photo 4: Author



The entrance of OkuraIn in Hyogo Prefecture

those of the second century, whether there was any connection between Okura Haruzane eight centuries later and the *soroban* is unknown. He was best known for being a Genji loyalist who could be relied on to protect the then imperial order. As a reward, he was elevated to the regional political center in Dazaifu, near present-day Fukuoka city in Kyushu. Okura Haruzane’s exploits included protecting the imperial headquarters in Kyoto from a rumored attack by remnants of the followers of the late Heike clan samurai Taira Masakado. It is interesting to know that the memory of Taira Masakado lives on to this day in the financial district of Otemachi in central Tokyo amidst gleaming glass-front high-rise office buildings. After the unfortunate samurai literally lost his head in the war between the Heike and Genji, it – the head – is miraculously supposed to have flown more than 500 kilometers, landing in an area close to what would become Edo Castle, and became enshrined there. In the late 19th century, as part of the Meiji Era’s modern redevelopment plans for Tokyo, the *Okurasho* was given the land around the enshrined spot as its headquarters. The building, however, faced a series of subsequent unfortunate incidents, including being burnt down twice, once in the aftermath of the 1923 Tokyo earthquake and the second time due to a lightning strike. These incidents were compounded by the sudden demise of a series of heads of the treasury, prompting the idea that the spirit of Taira Masakado should be appeased. Ultimately, the Kasumigaseki area some kilometers away was earmarked for the offices of the central government and the *Okurasho* was rebuilt there. In a country where earthquakes are the norm and architectural excellence tries to keep pace with them, new buildings are frequently built. The Shrine of Taira Masakado is suitably protected and venerated and is given an external uplift with every new development (*Photo 5*).

The Castle Town of Miki

In the 15th-16th centuries, the eastern Harima Province, of which Okuradani was a part, was centred on the castle town of Miki about 25 km north of Okuradani. It is plausible that some descendants of the *soroban* Okuras had their dwellings there, with their accounting skills being put to good use in the castle town. However, the only mention of Miki that I have come across in connection with the



Photo 5: Author

The Shrine of Taira Masakado in Tokyo



Photo 6: Author

Miyamoto displaying his creation in Ono, Hyogo Prefecture

soroban is that during the 16th-century siege of Miki, the townspeople fled eastwards towards the then metropolis of Kyoto and settled in Otsu just beyond Kyoto's eastern outskirts. Some of them learnt the *soroban* there. After the siege was over, they gradually returned to their homeland.

About 15 km to the west of Miki is the town of Ono. It is a scenic ride by the two-car diesel powered train through luscious countryside on a single track. During the past century, this little town became known as the largest producer of *soroban* in the country.

Soroban Town

The small town of Ono is supposed to have been an important crafts center during the 16th century and the local people even today are proud of this history. A national museum near the railway station has giant *soroban* artefacts and a few kilometers away there is a small workshop where people can practise making a *soroban*. In the heady Showa years, the town became a center for producing the *soroban*. Even today, it is home to Kazuhiro Miyamoto who at the age of 84 continues to make the arithmetic tool with love and diligence. The venerable teacher is one of the best-known experts on the subject in present-day Japan. In 2008, he received Japan's highest award, the Order of the Emperor, for his life's dedicated work on the *soroban* (Photo 6).

The Soroban of Banshu & Unshu

Some records state that the *soroban* arrived in Japan during the 15th century. There is unanimity that the Kyushu region was the initial landing spot and this typically does not require justification, barring the fact that there were other areas of landing in Japan from China and Korea during ancient times, namely, on the western section of the Japanese coastline of the Sea of Japan. The progress of the *soroban* after this becomes hazy. Some say that it found its way from there to Otsu near the Imperial center of Kyoto. Suffice to say that to this day Otsu lays claim to nurturing the Japanese abacus. Its museums talk about it; Otsu even has a memorial dedicated to the *soroban* at Sonjoji Temple. The term *Otsu soroban* has become common parlance in the *soroban* world and is often believed to be the

forerunner of the common *Banshu soroban* of Hyogo Prefecture.

In the late 18th century the *Unshu soroban* was born in the Okuizumo area of eastern Shimane (the Unshu area) on the Sea of Japan and in later years entered into competition with the *Banshu soroban*. Credit is given to Kichigoro Murakami, a carpenter who lived there. It is said that he spent some years in Kyoto where he learnt the *soroban*, modified its construction with his carpentry skills using wood native to Shimane and started making it. It may be mentioned here that the carpenter in Japan is a skilled craftsman in whose hands wood acquires various forms with precision and care, based on its characteristics which the craftsman diligently studies.

In some texts it is said that the *soroban* arrived in Unshu from Hiroshima to the south. While this could well have been the case, it would not be unrealistic to hypothesize that the Chinese *suanpan* had arrived directly several centuries earlier along one of the sea lanes connecting Japan to the Asian mainland. Irrespective of the route it took, the *Unshu soroban* got firmly established in the town of Yokota where it continues to be made to this day.

Until the Meiji Era set in about 150 years ago, the *soroban* was used daily and widely. One can imagine a busy Edo Era marketplace with traders and customers using the *soroban* to do their arithmetic. It was a standard subject in the old temple-home grown system of education known as *terakoya*. Apparently, in the revolutionary rapid modernization mindset of the Meiji Era, there were attempts to dismiss the *soroban* in favor of modern Western mathematical approaches. This was effectively resisted by the populace and through modern times the *soroban* was in considerable use. It was a standard and compulsory part of elementary school education. Ironically, with the advent of the calculator and with it a desire for speed and convenience, the need for the *soroban* as a mathematical tool has been drastically reduced.

It is saddening to watch the *soroban*'s decline in daily use. In children's compulsory education, the *soroban* has been relegated to one or two weekly lessons in public elementary schools. There are of course plenty of off-school workshops to which parents send their children with the understanding that the ancient arithmetical tool develops the brain. However, this cannot be a substitute for the *soroban* being given a proper place in the mainstream curriculum. Even though its necessity as a mathematical tool has been reduced significantly, the impact it has on cognitive thinking and overall mental health is being recognized both in Japan and overseas. Perhaps the *soroban* will be resurrected in daily life as a tool for mental health.

The father of modern Japanese finance, banking and trade, Eichi Shibusawa, who was born in the late Edo Era and contributed significantly to Japan's modernization through the Meiji Era, deified the *soroban* in his philosophy of "*The Analects and the Abacus*". Shibusawa uses the term abacus as a symbol of numbers which as every salesman knows is at the core of successful business. The *Analects* refer to the teachings of Confucius, signifying business

ethics. It was Shibusawa's earnest direction to the corporate world that smart business acumen must go in tandem with ethics, including considering the good of society. It is gratifying that by and large the Japanese corporate world follows this important code.

The Shiroi Soroban Museum

Some 30 km east of Tokyo in neighboring Chiba Prefecture is the town of Shiroi. Kenichi Ishido, a long-time resident, ran a *soroban* tutorial center here. His interest in the *soroban* developed to such an extent that after decades of teaching it to local children he decided to create a *soroban* museum. As exhibits, he housed his huge collection of *soroban* from across Japan along with a variety of artefacts themed upon it, including fortune-beckoning cats (*maneki neko*) and lucky porcelain racoons (*tanuki*). Paintings and scrolls with the *soroban* integrated in them are also on display. Ishido's collection includes centuries-old *soroban* and yellowed *soroban* textbooks of the Edo Era. His most expensive *soroban* on display would be two small ones – one made of ivory and the other having pearls for beads. The Shiroi Soroban Museum is a two-storied wooden building and includes classrooms where he and his teachers deliver *soroban* classes and workshops. It was interesting to know that Ishido sources all his *soroban* needs for his tutorial center from Miyamoto in Ono.

Ishido has spared no effort to introduce and promote the *soroban* both in Japan and around the world. His students participate in global mathematics contests, and he receives groups of foreign children residing in Japan from international and foreign schools. His collection includes the abacus from other countries and related writings.

Ishido is passionate about *soroban*-related history. In Japan, he opines that the *Sakai soroban* of Osaka is the oldest dating back to the 16th century. His research further tells him that the earliest known record of the Chinese *suanpan* is a scroll which is over 1,000 years old – a National Treasure of China – and which depicts a market street scene in ancient China. In this picture, there are people holding the *suanpan*. Ishido has displayed a copy of this scroll.

Any *soroban* enthusiast would do well to spend some time at the Shiroi Soroban Museum. Ishido enjoys engaging in *soroban*-related conversation and is a veritable treasure trove of *soroban* lore (Photo 7).

Soroban Art

Ishido had mentioned that the *soroban* is as much a piece of art as it is a mathematical instrument. Through the centuries, several expert mathematicians have shown the gray zone where the rigors of mathematics blend into the imagery of art. An Indian mathematician of the early 20th century, Srinivasa Ramanujam, astounded his Western peers by his deep association of mathematical genius with spirituality. In the West itself, 19th century English author-mathematician-philosopher Lewis Carroll has packed intricate mathematics into what appears to be a fascinating children's tale –

Photo 7: Author



Shiroy Soroban Museum founder Kenichi Ishido, in Shiroy, Chiba Prefecture

Photo 8: Author



A roadside sculpture in Shiroy, Chiba Prefecture

Alice in Wonderland.

One of the best-known Japanese creators of *soroban* in modern art form was Yoshio Sekine (1922-1989). He explored the *soroban* as an art motif, inspired by how the movement of the beads was used to solve mathematical problems. Inherent in the *soroban* was an abstraction which Sekine found fascinating. Here was the realism of mathematics conveying different thoughts but free of illusions, which is the artistic expression Sekine was curious about.

The Finale

Kyoto is located about 10 km west of Otsu. In the years when Kyoto was the Imperial capital and the political center of the country, Otsu would have been like a part of what we would call today a national capital region. The *soroban* would have been commonly used by the mathematicians, traders, accounting officials and educationists (most of whom doubled as temple priests) of the capital. The impact of the instrument on daily life would have been huge. This influence seems to have been felt even in the local ethereal world. In the precincts of Seikoji Temple in the Warouji area of what is present-day Kameoka city in Kyoto Prefecture, a Buddhist monk busy with a *soroban* would appear sitting late at night under a nutmeg tree. This was supposed to have been the ghost of Eishu Bannan, the monk who founded Seikoji. Along similar lines, the nearby Susano Jinja Shrine would have a young visitor practising the *soroban* in the still of night. Bannan is said to have mastered the *soroban* by diligently studying through the night. Old memories die hard, so it is understandable that the monk's ethereal form would be continuing to study. The ghost was fondly referred to as *Soroban Bozu*, that is, the *soroban* priest.

It may be best for the efforts of people like Ishido to be complemented by ethereal forces to ensure that the legacy of the ancient Okuras survives (Photo 8).

JS

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