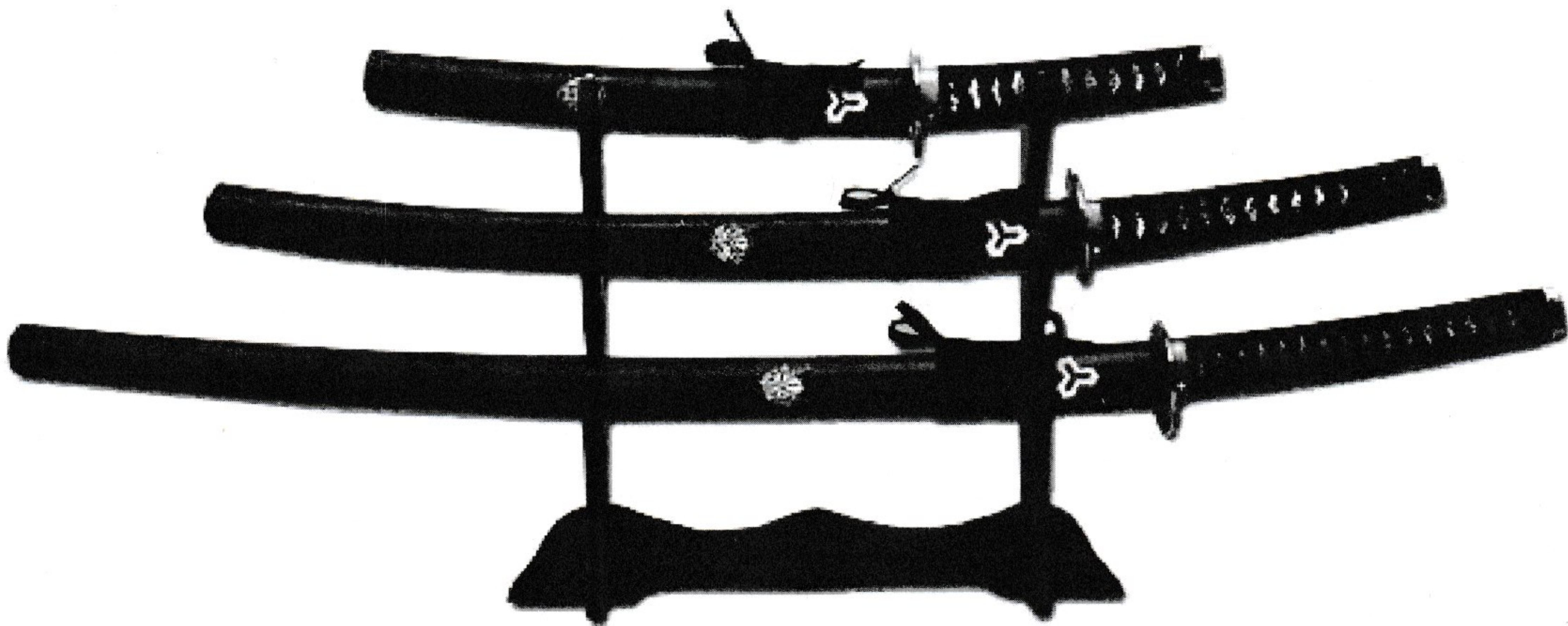


HISTORY OF THE JAPANESE SWORD

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September, 2019

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INTRODUCTION

Many consider the Japanese sword to be the finest sword ever constructed. Given its extraordinary beauty and efficiency as a weapon, it can be said without hesitations that, it is an artistic and technological marvel. This paper tries to tell the story of how this symbol of Japanese culture came to be. It focuses first on the manufacturing process and all the intricacies for the creation of such admirable weapon. It then dives into the evolution it took from the first swords in the region to the modern times Katana, stepping through the different periods of Japanese history and the marks they left in the sword. Furthermore, it makes reference to two of the greatest swordsmiths of Japan with the purpose of explaining the symbolism the sword has in Japanese culture.

THE MAKING OF A JAPANESE SWORD

The creation of a fine katana was, and still is, a matter of tradition and religious solemnity. Even though none of the actual techniques used by early swordsmiths (Tosho) was apparently ever written down, the smiths' traditions are so strong that even today some superb swords are made using the presumed methodology of a past age.



Figure 1. The swordsmith of Inari Mountain by Ogata Gekko

When forging a sword, the kami (deities) will first be invoked, while the swordsmith wears white robes similar to Shinto priests, before transforming raw materials into one of the most beloved and finest products of Japan.

Chemically speaking, steel is a combination of iron and carbon. Pure iron is too soft to be given a sharp edge. The more carbon is present, the harder the steel will be; however, too much carbon will make the sword brittle. The skill of the early

Japanese swordsmiths lay in their ability to control

the carbon content despite having no knowledge of modern metallurgical processes or access to microscopic viewing techniques.

We now know that when steel with a carbon content of 0.7 per cent (the usual proportion found in Japanese swords) is heated to 750°C it becomes a substance known as austenite. This

has an open crystalline structure and in it carbon atoms combine readily with iron. When austenite is cooled rapidly its crystalline structure changes so that it becomes martensite, a compound that allows the locking of carbon molecules into the iron to produce the hardest form of steel. However, if austenite is allowed to cool slowly it produces, among other substances, a softer steel called pearlite. It was by producing these two forms of steel and then

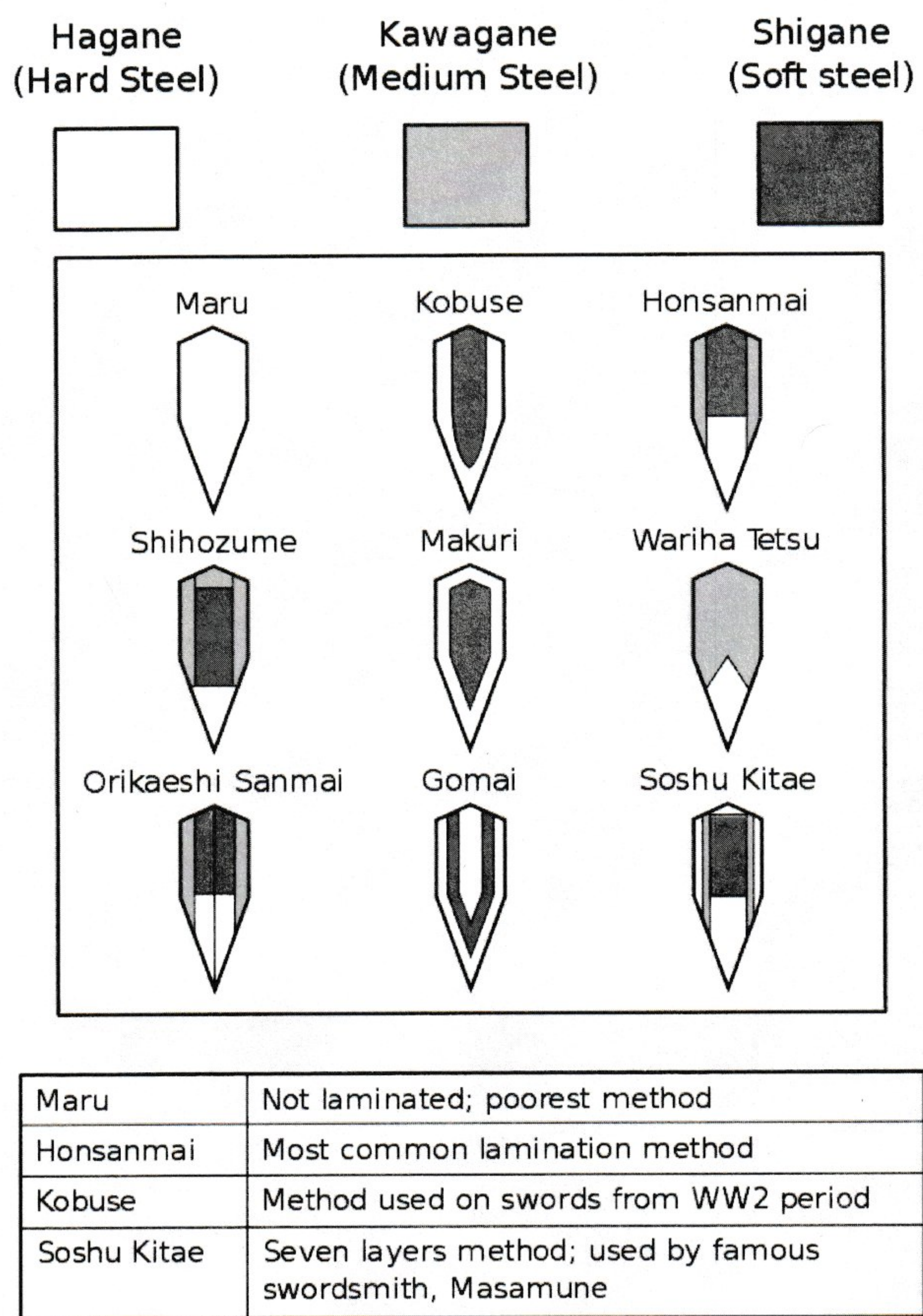


Figure 2. Cross sections of Japanese sword blade lamination methods

of steel, although multiple combinations are also to be found. The simplest twofold design has a soft inner core, the shingane, which has a lower carbon content than the outer skin, or hadagane. This outer surface is of harder steel that will provide a cutting edge; the softer inner core will give resilience.

combining them to make a blade that the Japanese tosho were able to create a weapon with a super-hard cutting edge but also a resilient body that would absorb the shock of impact. The change in surface appearance along the length of a Japanese blade, a feature readily noticed when one examines a good specimen, marks the transitional zone between the martensite crystals of the hardened cutting edge and the softer pearlite of the body.

The basic structure of a Japanese sword is therefore a duplex one, with different types

These sections were initially created similarly. Pieces of *tama-hagane* (raw steel) are piled up on a long rod with paper tied around them to hold them together and then placed in the furnace at near 1300°C to fuse them together. This resulted in a block of steel that was heated, beaten, and continually folded back upon itself to create a complex structure of several layers. The difference between the shingane and hadagane was the number of folds; the later one receiving the most, making it higher in carbon content and its ultimate level of hardness.

After this, the two sections are put together by creating a U-shape with the hadagane and inserting the shingane in the interior. Although there are several more complex methods and designs, the hadagane encloses the core of the sword till near the tip. This entire piece is then heated and hammered again to form the elongated shape of the blade and remove any air pockets. At this point the blade is still rectangular and is when the point (*kisaki*) is created by cutting off the edge. This long proto-sword is called a *sunobe*.

With every strike the familiar shape of the sword is made evident. The sword back (*mune*) is made thicker than the cutting edge (*ha*). The interface between the smooth blade and the rough tang is formed. Also, the curve is now starting to become evident throughout the length of the blade.

What follows is one of the stages in the sword creation process that is more shrouded in mystery: The selective hardening of the cutting edge. This is the process by which the swordsmith plunges the hot blade into cold water to harden it. But to prevent the whole blade from being hardened at the same rate, it is carefully coated entirely in slurry clay that is then carefully removed from the cutting edge; as to create a wavy pattern that will appear in the

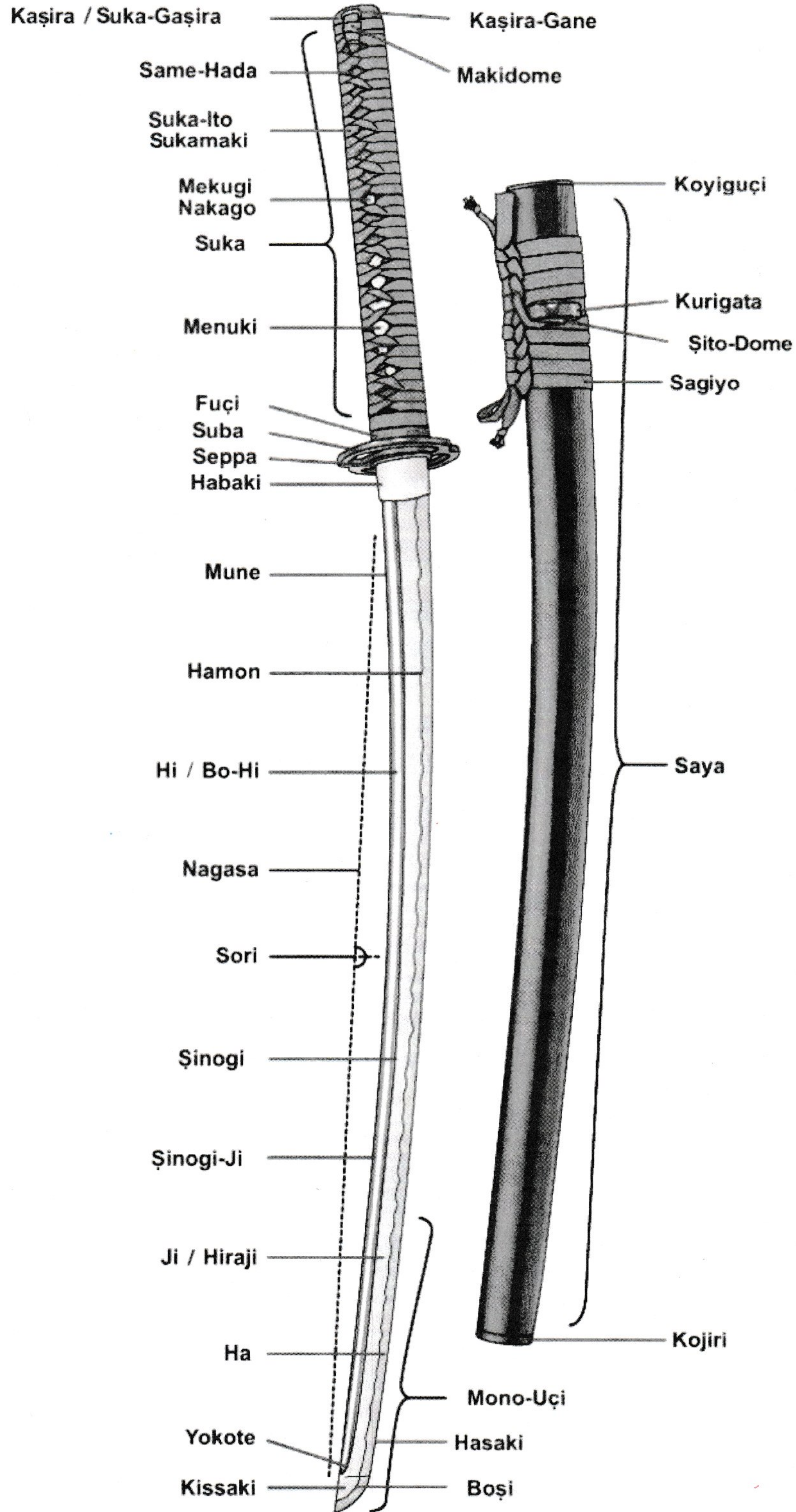
interface between the body of the sword and its edge (the *hamon*). This is the boundary between the two degrees of hardness. Swordsmith devote a great deal of effort into this given that it is one of the sword's most prominent and appealing features.

The precise thickness of differential clay layer to be used, the exact immersion period, the crucial temperature of the steel (said to be about 730°C) and the temperature of the water into which the steel would be thrust were all a matter of lore and experience, and together served almost as a swordmaker's signature. Assessing the blade's temperature was done purely by eye, so at this stage the forge was deliberately plunged into darkness. (Turnbull, 2010)

At this stage the blade is ready to receive its polished finish and its edge. Polishing and sharpening was accomplished by the use of a succession of coarser to finer stones until the desired finish is attained. Additionally, adjustments to the curvature of the sword as well as grooves to the side of the blade (*bo-hi*) could be made if desired.

Finally, the blade is mounted in a *tsuka* (handle) and assembled together with a *tsuba* (sword guard) to protect the hands. Also, a made-to-measure scabbard (*saya*) is made of wood, specifically for that sword. The testing of the sword is carried out to ensure the correct balance and effectiveness of the cut. In the past, cutting tests would be carried out on live bodies of condemned criminals; although most of the time it was done on corpses or bundle of rushes bound around a bamboo core to simulate the bones and muscles of a person.

PARTS OF A KATANA



HISTORY OF THE JAPANESE SWORD

EARLY SWORDS

The history of swords in Japan can be traced back over nearly two millennia. One of the most precious treasures in Japan is a sword known as the Seven Branched Sword from the year AD 369 used for ceremonial purposes. Early documents from Chinese origins mention swords in their content. Early Japanese swords were evidently of Chinese origin. These swords have been given the name of *chokuto* and they consist of straight blades about 70-80cm long, with a triangular cross-section and only one sharpened edge.

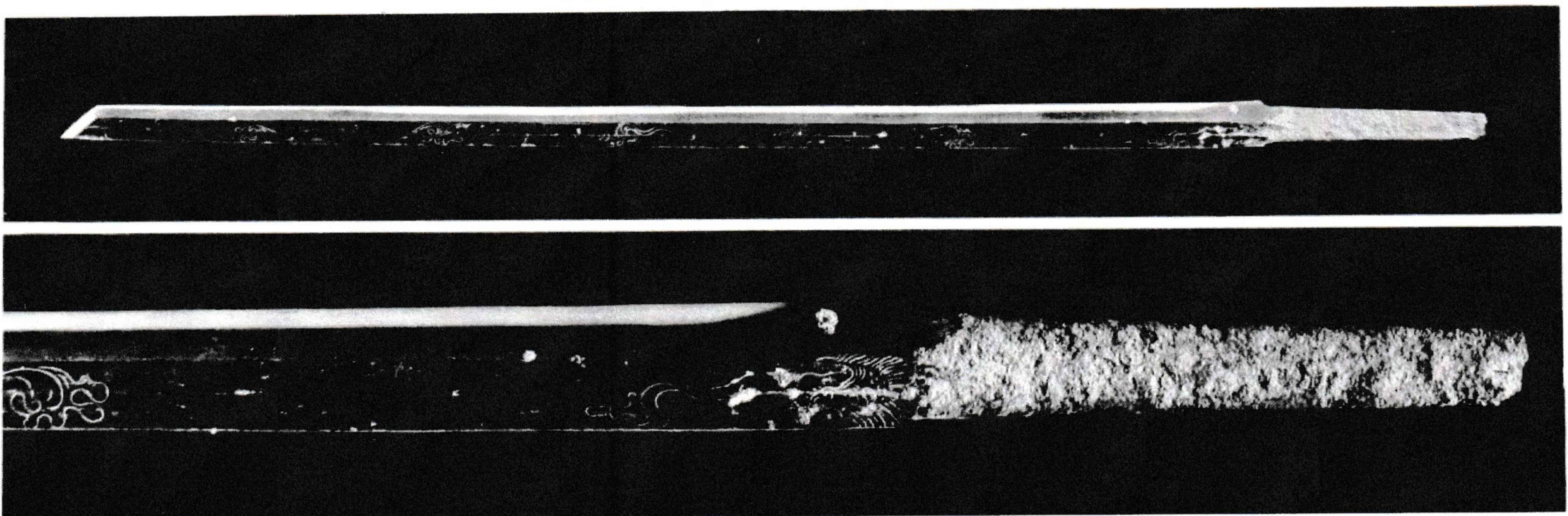


Figure 3. Shitenno-ji Shichiseiken, single-edged straight sword

The **Nara period** in Japan, which started around the year 710 AD, was a time of stability and several swords from this era have survived. The main development observed in these swords is that they are made more solidly than earlier types and have a pronounced ridge running the length of the blade on one side. Blades were still straight during this time.

DEVELOPMENT OF THE TACHI STYLE

By the year 794 AD, during the **Heian Period** (794 to 1185 AD) the first swords to possess the basic characteristics of the Japanese swords we know today appeared. These swords were called TACHI and incorporated a curved blade and a temperline, highlighting its differentially hardened steel.

There are many theories that try to explain the origin of the curved blade. One theory goes to say that over the years the draft armies of Nara (then capital of Japan) were replaced by mounted warriors – the first samurai, who adopted this new military technology. With the lessening of Chinese influence and the rapid development of Japanese swordmaking techniques, the new mounted warriors required a weapon that was better for slashing than for thrusting; giving birth to the classic Japanese sword. Other theories state that the development of the curved blade on the Japanese swords was a fortuitous consequence of the forging process of the blade in which temperature differentiation (for the selective hardening) is applied to the cutting edge and back of the sword.

The TACHI was worn edge down and tied to the outside of the armor. It was designed to be drawn and used with one hand (usually while riding a horse). The blades were sharp and resilient, yet durable and not brittle; hence marking the beginning of the Japanese sword. Early TACHI were beautiful works of art; from their mountings to their fittings, and their wooden

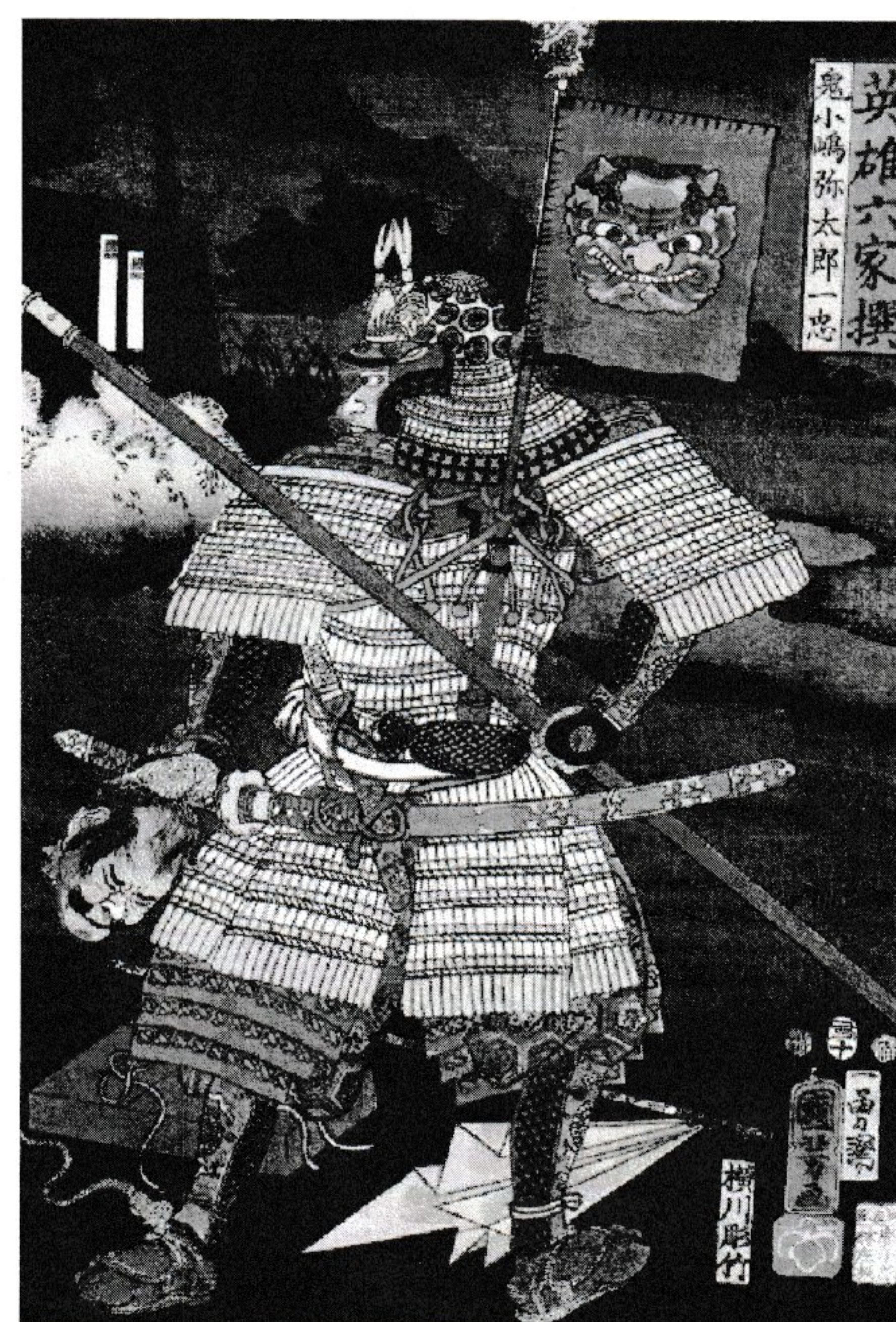


Figure 4. A back view of a samurai in armor carrying a tachi sword, on his back is a sashimono, holding a spear and a severed head.

scabbards covered in leather, beautifully painted and lacquered and with gilt ornaments, they showcase the development in native swordmaking that became famous around the region.

These curved swords began the period of **Koto**, an expression meaning “*Old Swords*”. This period lasted till about 1600, after which the new period known as **Shinto** started, meaning “*New Swords*”.

Unfortunately not too many TACHI have survived from early years. During the Medieval Period many of these blades were shortened to be worn more conveniently in katana style, with the cutting edge facing up.



Figure 5. Tachi by Bizen Osafune Sukesada and koshirae, on display at the British museum

The **Kamakura Period** (1185 to 1333 AD) was marked by many power struggles from the outside and within the country and between powerful warlords, the imperial court, and religious leaders. One of the most significant events during this period was the Mongol invasions that, although unsuccessful, had an incredible impact in the evolution of the Japanese weapons and technology. Changes in the sword didn't affect too much the design of the blade but simply made it more effective. During this era swordsmiths began carving *hi* (grooves) and *hōrimōnō* (talisman design) into the surface of the swords. Although the later ones had a more symbolic and religious purpose, the use of the *hi*, also known as *bō-hi* had another purpose entirely. These grooves carved lengthwise on both side of the blade made it lighter while not impacting its strength. Also during this period swordsmiths began signing the *nakago* (tang) of the blade.

THE EMERGENCE OF THE KATANA

Moving into the **Muromachi Period** (1392 to 1573 AD), this was a particular bloody era for Japan, although it was also marked by major cultural growth; particularly under the influence of Zen Buddhism. The Ashikaga Shogunate (1338-1573) reestablished its base of military operations to Kyoto. Increased agricultural productivity and trade, strengthening the lower classes. But, despite the relative economic growth and refinement of cultural arts, like tea ceremony, theater, flower arranging, etc., the country found itself in a struggle for power between the powerful families in the region. This era was also referred to as *The Age of the Country at War*.

During this period one of the major shifts in the application of the sword was that some samurai started tucking the sword edge-up into their belts. This will later become the daily norm. Some of the factors that played a role in this change were that it allowed for a smooth draw-and-cut in one motion, and also that it eliminated the need of bulky hardware to carry the sword especially during daily activities when the armor was not used. This change offered a quicker response in both the ability for the swordsman to draw and cut with one stroke and maintaining a heightened state of readiness, being constantly armed and ready for battle.

By the end of this period nearly all TACHI were replaced by the KATANA, and this trend was even reinforced by a decree dictated by the Shogunate that required all samurai to wear a DAISHO,

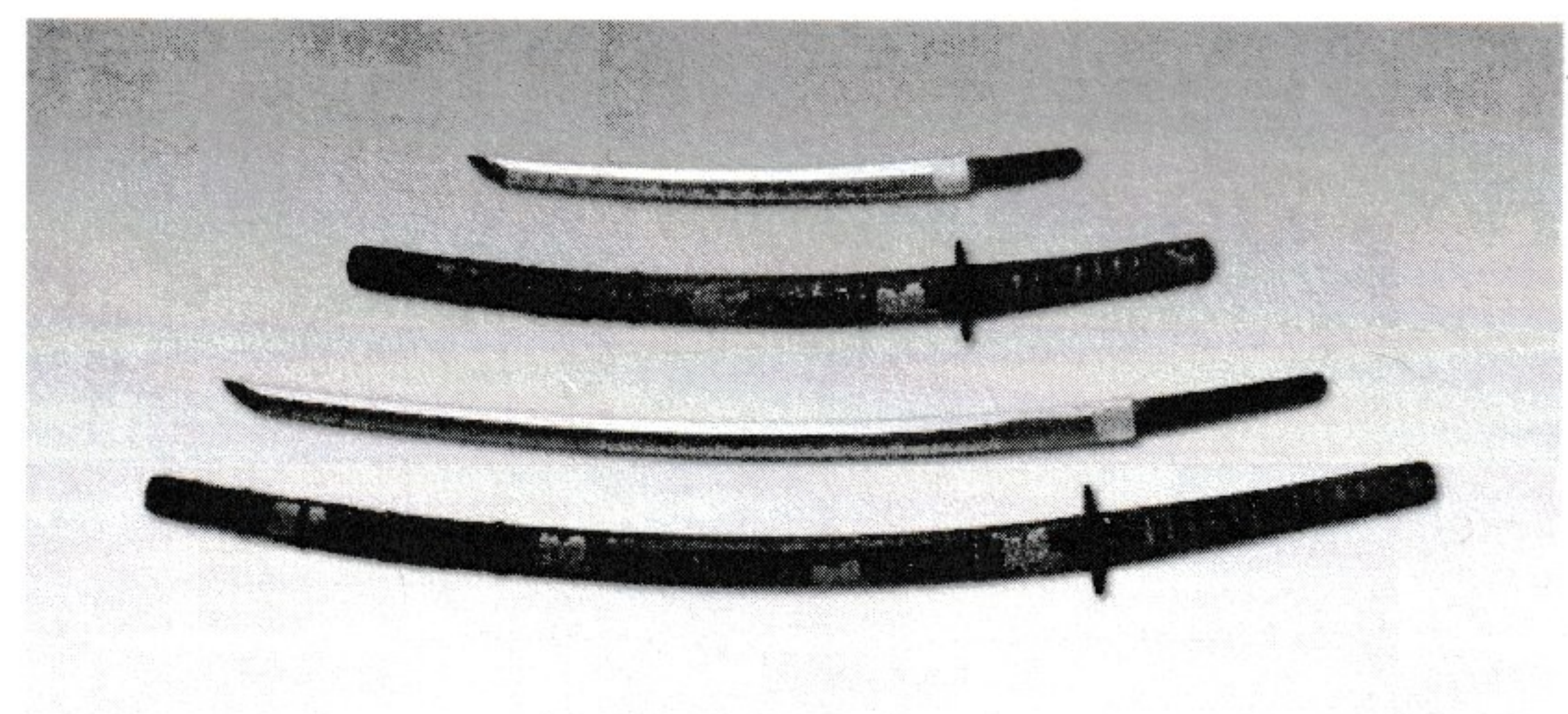


Figure 6. Antique Japanese daishō, the traditional pairing of two Japanese swords which were the symbol of the samurai, showing the traditional Japanese sword cases (koshirae) and the difference in size between the katana and the smaller wakizashi

or set of blades, as a symbol of their rank and status in the Japanese society. A DAISHO would consist of a KATANA long sword and a WAKIZACHI short sword.

The **Edo Period** (1603 to 1867 AD) was a Japanese renaissance. It was characterized by a relatively peaceful time in which the samurai had no major battles and, although the arts flourished amidst the ruling warrior-class, it was a period of isolation in which the country closed its border to foreign influences. This had a profound impact in the culture and lifestyle of the Japanese people. This period marked the beginning of the **Shinto** or new swords; these were swords produced after the era of warring states. Demand for swords saw a major decline due to the peaceful times and many swordsmiths had to change trades in order to obtain other sources of income. Sword quality declined and many of the old ways of sword-making were lost due to the tradition of passing these secrets orally amongst craftsmen.

Other than minor adaptations to sword length and tip shape, one of the most prominent differences between **Koto** and **Shinto** swords was in the steel itself. **Shinto** blades seem to have a difference in luster when compared to their predecessors. **Koto** blades were characterized mainly by a grayish color and velvet-like looking surface texture; while **Shinto** blade had a something similar to a chrome finish with a glassy or wet appearance.

Another distinction is in the use of ornamental carvings instead of the religious *hōrimōnō* in the surface of the blade. Superstition didn't play such an important role in an era with limited battlefield action. Additionally, inscriptions of test cutting results started to being carved on the *nakago*. Test cutting on dead corpses of criminals became common and, for swordsmiths, it represented a means to get more commissions and money to receive positive endorsements from notable test cutters.

Towards the late 18th century, many *daimyo* (Japanese feudal lords) became increasingly discontent with the current Shogunate system. These samurai started plotting a rebellion and pushing for the modernization of Japan which ultimately led to the eradication of the Shogunate and the resurgence of the Emperor Meiji assuming military control and governance of Japan. This conflict led to an increase in the production of swords and the development of the **Shinshinto** or "*new new swords*" which ranged in design and quality.

The **Meiji Period** (1868 to 1912 AD) saw the samurai class fall and the country struggle to modernize. The country opened its borders to the world, abolished feudalism, and developed a completely modern military; all within the first 20 years of the start of the era. Swords made during this period and up to 1945 were known as **Gendaito** or "*modern swords*". Blades were usually of very poor quality. The era of the samurai has passed and the lack of resources and skilled craftsmen during the times leading to the end of the Second World War only exacerbated this fact. Factories were created and swords were mass-produced for officers of the new military. Mounting and fittings became homogenized and highly regulated.

Gendaito swords can be divided in two major eras **Showato**, or factory-made blades, and the **Gendaito**, or new modern sword.

At the end of World War II the production of swords in Japan was banned and the craft nearly disappeared during the post-war aftermath. However, in 1953 the American occupying forces lifted the ban and allowed the Japanese to begin making swords again. This marked the final chapter in sword evolution to date.

Westernization and modernization revitalized the Japanese arts and led to the birth of the **Shinsakuto** (modern art sword). These blades are produced as a matter of cultural preservation

and are considered pieces of art. They are extremely functional and crafted using the traditional methods. Bladesmith’s works are highly regulated so as to limit the number of swords in circulation and must be licensed in order to produce Japanese blade weapons, including but not limited to KATANA, WAKIZACHI, and TANTO.

HISTORICAL PERIODS RELATED TO SWORD PRODUCTION

Period	Year	Sword Name
Nara	710-794	Chokuto (ancient straight swords)
Heian	794-1185	Koto (old swords)
Kamakura	1185-1333	
Nambokucho	1333-1396	
Muromachi	1396-1568	
Aizuchi-Momoyama	1568-1596	
Edo or Tokugawa	1596-1780	Shinto (new swords)
Bakamatsu (late Edo Period)	1780-1877	Shinshinto (new new swords)
Maiji, Taisho, early Showa	1877-1945	Gendaito (modern swords)
Later Showa to Heisei	1945-	Shinsakuto (modern art sword)

FAMOUS SWORDSMITHS OF JAPAN

There have been many very notable swordsmith in Japan history, whether because of their contribution to the art of swordmaking or because of the outstanding quality of their work; they have gone down in history as legends. Some of these legends have been used to inspire generations; but others, sometimes, to frighten even the bravest warrior.

GORŌ NYŪDŌ MASAMUNE

Gorō Nyūdō Masamune is, till this day, considered the greatest swordsmith in Japanese history. He lived during the Kamakura Period from 1264 till 1343 and experts agree that most of his swords were produced between 1288 and 1328.

The swords Masamune created are known for their superior beauty and quality in a time when the steel used to make swords was often impure. His works are characterized by the perfection in the art of “*nie*” (martensitic crystals embedded in pearlite matrix, thought to resemble stars in the night sky)

His most famous sword is called the “*Honjo Masamune*” and it is a symbol of the Tokugawa Shogunate that was passed down from Shogun to Shogun. Although it is consider one of Japan’s greatest treasures, the whereabouts of this sword is unknown. It was turned over by Tokugawa Iemasa to the American forces in December 1945, right after World War II, and has never been seen again. It is believed to be lost.

SENGO MURAMASA

Sengo Muramasa lived in Japan during the Muromachi Period in Kuwana, Ise Province. It is believed that he was born before 1501. The years in which Muramasa stayed active are cloud in confusion. Some say he was a student from Masamune during the 14th century, but his works are too new to be from that era. Others state that he was the student of a prominent swordsmith near Kyoto during the 15th century; however, some of his swords are dated in the early in the 1500s.

One of the most prominent features Muramasa is known for is the sharpness of his blades.

Taking it to the point that adjectives are fabricated using his name as prefix – *Muramasa-ba*

(Muramasa-like edge). Other features attributed to him are the shape of his *hamon* which

forms randomized wave-like shapes, called *gunome-midare*; his particularly has very long,

shallow valleys between a cluster of *gunome* shapes. Furthermore, the pattern from both sides

of the blade would coincide. Another easily identifiable feature from Muramasa blades was the

fish-belly shape of the *nakago*.

Presently, Muramasa is extremely famous in popular culture; however, it is interesting to know

that none of his works are designated as National Treasures in Japan. This is probably a

consequence of the reputation his blades had during the Ieyasu Tokugawa Shogunate. Although

his swords were originally preferred and used by Tokugawa forces, due to a series of

misfortunes, they were banned from ownership and many of them even melted down.

Tokugawa believed these swords had a curse and blamed them for the demise of many of his

friends and relatives; including his grandfather, father, wife, and adopted son.

LEGEND OF MASAMUNE AND MURAMASA

A legend tells of a test where Muramasa challenged his master, Masamune, to see who could make a finer sword. They both worked tirelessly and eventually, when both swords were finished, they decided to test the results. The contest was for each to suspend the blades in a small creek with the cutting edge facing against the current. Muramasa's sword, the Juuchi Yosamu ("10,000 Cold Nights") cut everything that passed its way; fish, leaves floating down the river, the very air which blew on it. Highly impressed with his pupil's work, Masamune lowered his sword, the Yawarakai-Te ("Tender Hands"), into the current and waited patiently. Only leaves were cut. However, the fish swam right up to it, and the air hissed as it gently blew by the blade. After a while, Muramasa began to scoff at his master for his apparent lack of skill in the making of his sword. Smiling to himself, Masamune pulled up his sword, dried it, and sheathed it. All the while, Muramasa was heckling him for his sword's inability to cut anything. A monk, who had been watching the whole ordeal, walked over and bowed low to the two sword masters. He then began to explain what he had seen.

The first of the swords was by all accounts a fine sword, however it is a blood thirsty, evil blade, as it does not discriminate as to who or what it will cut. It may just as well be cutting down butterflies as severing heads. The second was by far the finer of the two, as it does not needlessly cut that which is innocent and undeserving.

CONCLUSION

It is apparent that the evolution of the Japanese sword is intimately related to the different events occurring throughout Japan's history. From the shape and size of the blade to the chemical composition of the steel and the manufacturing process, it was all driven by the need to develop a weapon that could hold its ground in battle; and the Japanese succeeded. More than that, wearing a sword became the greatest symbol of aristocracy and authority in feudal times in Japan. So much that, the ban for sword wearing, was one of the elements that lead up to the total abolition of the samurai class.

Nowadays, the katana continues to be a symbol of a nation and it is imbued in almost every legend and history tale. And although it continues to be a weapon of incredible efficiency and power, and its mastery continues to be practiced by a great number of dedicated people, it is also a work of art which beauty is admired by enthusiasts all over the world.

BIBLIOGRAPHY

Morimoto, M. (2004, June 14). *The Forging of a Japanese Katana*. Colorado: Colorado School of Mines.

Roach, C. M. (2014). *Japanese Swords: Cultural Icons of a Nation; The History, Metallurgy and Iconography of the Samurai Sword*. Tuttle Publishing.

Turnbull, S. (2010). *Katana: The Samurai Sword*. Long Island: Osprey Publishing Ltd.

Wikipedia contributors. (2019, September 10). Katana. In Wikipedia, The Free Encyclopedia.

Retrieved 11:08, September 5, 2019, from

<https://en.wikipedia.org/w/index.php?title=Katana&oldid=915015288>

Wikipedia contributors. (2019, August 31). Muramasa. In Wikipedia, The Free Encyclopedia.

Retrieved 10:02, September 9, 2019, from

<https://en.wikipedia.org/w/index.php?title=Muramasa&oldid=913274934>

Wikipedia contributors. (2019, August 25). Masamune. In Wikipedia, The Free Encyclopedia.

Retrieved 10:10, September 9, 2019, from

<https://en.wikipedia.org/w/index.php?title=Masamune&oldid=912368634>

Wikipedia contributors. (2019, September 12). Japanese swordsmithing. In Wikipedia, The Free Encyclopedia. Retrieved 13:55, September 9, 2019, from

https://en.wikipedia.org/w/index.php?title=Japanese_swordsmithing&oldid=915251429