

## A History of Japanese Archery, the Bow and the Arrow

By Godai Katsunaga

Throughout history, the inhabitants of Japan have used many different types of bows. Small crossbows, repeating crossbows, short bows and longbows all have a place in the history of the archipelago. But of all the bows used, one—the dia-kyu—or more commonly called a yumi is still in use today.

Early evidence from archeological finds show that the earliest inhabitants of Japan, the Jomon, (12,500-250 BC) relied heavily on a stave bow, a bow made from one single piece of wood that was similar to northern Asian short bows. The next major culture, Yayoi (250BC- 300 C.E.), introduced the longbow from the southern Asian forest regions to Japan. The Wa people, as the Yayoi were know in China, had contact with the Wei Kingdom, the following description is from the Sanguozhi, a Chinese history book of the 3<sup>rd</sup> Century. “Soldiers use spears, shields, and wooden bows. The wooden bows are short on the lower part and long on the upper part. Bamboo arrows have iron heads or bone heads.” (Translation from Decipher of "Wa Language" in Gishi-Wajinden--- Location of each Wa country and Structure of Yamatai Country by Koji Nakayama, Shinjinbutsu-Oraisha Co., 1991.)

During the 4<sup>th</sup> to 9<sup>th</sup> centuries C.E., Chinese influence on the Japanese court was at its height. The bow was the mainstay of many court ceremonies and Shinto religious rituals. A scholar of the time wrote that civilized man should never fight to settle differences, but should resolve them through a test of shooting skills.

During early feudal times, specifically the Heian (794-1185) and Kamakura periods (1185-1330), the *bushi*, a Japanese name for samurai, were primarily mounted knights whose weapon of choice was the bow. Armies during this period in history were made up of samurai horse archers and farmers using spears and normally numbered only in the high hundreds and low thousands. The major drawback to this form of battle was the expense the samurai incurred for owning and maintaining a horse and the amount of practice required to become proficient at shooting from a galloping animal. The cost and

time invested in mounted warfare meant that it was limited to local nobles and members of the warrior elite. The fighting style was primarily one-on-one combat. It is mentioned in several texts from the period of samurai warriors loudly declaring their heritage to find a worthy opponent with which to engage. Usually, arrows were marked with the samurai's name so all would know who had fired them, as archery was regarded as the best way to ascertain a warrior's ability. Battles were occasionally settled not by armies but by the commanders in an archery duel. The archers would start separated and gallop towards each other, discharging an arrow as they passed. This was repeated until a victor was named or honor was served. The victor would be the archer that killed or unhorsed his opponent because of wounds or if neither party was killed it could be decided by the most arrow hits. These duels did not always result in the death of either party, not because of the archer's inability to hit his mark, but because of the protection samurai armor provided.

In 1274, the Mongol invasion made significant initial progress against the samurai defenders. Kublai Khan's army used unit tactics and massed arrow fire against a samurai army that was used to fighting individual, man-to-man duels. Many of the Japanese generals were inexperienced at managing large forces and coordinating units during warfare. After the fortunate arrival of the "divine wind" that destroyed the Mongol fleet, Japanese commanders started a major shift in battle tactics. The emphasis moved from individual combat to fighting as a coordinated unit. Individual glory was still important, but the practice of one-on-one combat was for the most part being replaced with large-scale battle formations and more centralized command and control of units.

The bow remained the dominant weapon on Japanese battle fields of the 13<sup>th</sup> and 14<sup>th</sup> centuries. Swords and pikes were in use but their effectiveness was often overcome by the mounted archer. As one man summed it up after surviving an encounter with mounted archers, "even the strongest warriors cannot withstand the bite of arrows nor can the fastest man outrun a horse." Most cavalry battles took place at close range, between 20 to 30 yards with mounted troops maneuvering to take advantage of the terrain. The attacker preferred to keep the enemy to his front left or at least his left side to allow the effectively use the bow while mounted. Data from battles show on the average 73% of

all wounds in the 14<sup>th</sup> century were caused by projectile weapons, while swords and pikes made up the rest.(Conlan, 2008) Most of the warfare during this time period was skirmishes, as units could easily avoid contact if desired. The intent of 14<sup>th</sup> century battles was to destroy the opposing army and not to capture land, so cavalry remained the most effective fighting force.

During the 15<sup>th</sup> and 16<sup>th</sup> Centuries, the use of the bow reached its zenith and arrows remained the dominant projectile until the late 16<sup>th</sup> century. In the 15<sup>th</sup> century most armies were still comprised of a large number of farmers and mounted samurai and numbered in the thousands. An example is the army of Shimazu Takehisa in 1484; it only contained 5000 fighting men. It was during the 16<sup>th</sup> century that armies changed in both size and complexity; they were now made up almost entirely of trained warriors, *ashigaru* or light foot soldiers and samurai. Agriculture advances allowed farms to become more efficient, this led to a population grow of 50-70% from 1400 till 1600 and freed up more men for service to the local Daimyo.(Farris, 2009) Formations now were in the tens of thousands and made up of massed archers, gunners, spearmen and cavalry. The mounted samurai, still an effective tool was comprised of bowmen and lancers designed to exploit weaknesses in the enemies formations. For an example of the size increase of armies, we look at Shimazu Yoshihisa's army during the siege of Minamoto Castle in 1578, where he fielded more than 115,000 men in fighting and support roles. ([www.hi.u-tokyo.ac.jp/iriki.html](http://www.hi.u-tokyo.ac.jp/iriki.html), University of Tokyo)

Although there was a decline in the use of the bow after the introduction of the matchlock gun in 1543, archers were never completely replaced. The gun was first introduced from China in the mid 15<sup>th</sup> century as a three barreled weapon that made more noise and smoke than casualties and was not considered a real battlefield weapon. The matchlock gun had a better effective range (50 meters) than the bow (30 meters) but a slower reload time. Records indicate that during the time period of 1467 to 1600 arrows caused 58% of projectile casualties and guns caused 28% with the remainder being thrown weapons. After 1600 documents show that gun casualties rose to 80% of all projectile weapon casualties. (Conlan, 2008)

Archer formations were supplemented with gunners; they were easier to train and required less skill development than archers. In battle, gun units took more time to

reload, and effective armies used both archers and gunners in supporting roles. Two examples of effective use of archers and gunners together occurred in 1575 at Nagashino and in 1584 at Okita Nawate.

At Nagashino, Oda Nobunaga deployed an army of 38,000 troops with a reported strength of 3,000 gunners, and an estimated strength of 5,000 archers. The gunners fired in a rotating volley with archer support from behind barricades against the famed cavalry of the Takeda clan. This battle led to the complete destruction of the Takeda cavalry and the beginning of the end of the clan. (Turnbull, 2005)

At Okita Nawate, an army from the Shimazu clan and Arima Harunobu in the Hizen area fought against Ryuzoji Takanobu. The combined army of about 10,000 samurai and ashigaru faced an army estimated at 50,000. The battle took place along a road in a narrow stretch of marsh land that was between the mountains and the sea shore. The swampy ground along the road and the coast effectively limited their ability to maneuver and set them up for gunner and archer teams deployed to either side of the road and in small boats along the coast. The constant barrage of guns and arrows demoralized Ryuzoji's army and when the Shimazu added a frontal assault along the road Ryuzoji's army disintegrated. This combined-arms tactic resulted in massive casualties and led to the total defeat for Ryuzoji, including the loss of his head to a Shimazu samurai.

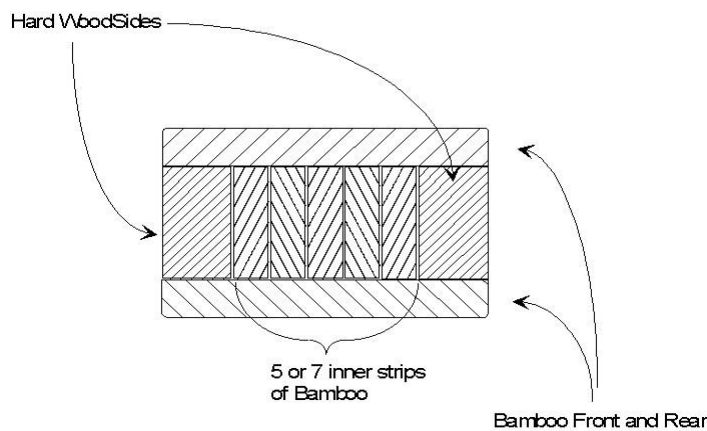
### **Construction of the Yumi**

Originally a stave bow—a bow made from one piece of wood—the yumi became a powerful longbow when lamination was introduced from China in the 9<sup>th</sup> Century. Lamination is adhering different woods together with glue, often along with some form of strengthening material for endurance.

A typical yumi is between 7- and 9-feet tall. Though normally classified as longbows, they do not look or act like their European counterparts. The yumi bow construction was developed over a few centuries, during which time its design progressed from a staff bow to one constructed with multiple laminates. The wood used for the core of the bow was often Azusa (related to catalpa), Keyaki (related to elm), or Haze (related to waxwood)

and the laminate was bamboo hardened by fire. The laminates were glued together with natural glue made from fish scales, bladders or hide glue. The yumi was then strengthened in critical areas by adding horn to the tips and by wrapping selected areas with rattan.

Lamination progressed from two pieces of material, one of wood and the other of bamboo around the 9<sup>th</sup> Century, to more elaborate designs of three pieces of bamboo laminated for the core then surrounded by wood on each side and more bamboo on the front and back of the bow by the mid 16<sup>th</sup> century.



To protect the bows from the rain and high humidity of Japan, the bows were often coated with multiple layers of lacquer. Then they were polished to enhance their beauty. Today the yumi core is five layers as displayed in the above drawing, with laminated wood and bamboo core with wood sides and bamboo belly and back.

The strings were made from natural fibers, often hemp, and coated with wax or laminated for protection from the weather. (Sinclair, 2004) Samurai always carried extra string into combat in a Tsurumaki, a type of round string basket, worn at the waist.

### **Asymmetrical shape**

The asymmetrical shape and the graceful curves of the yumi have been influenced by several factors. When the yumi is gripped at about the lower one-third point and is between 7- and 9-feet tall, the reverse curves and shape allow the bow to be shot from this asymmetrical position with no impact on the flight of the arrow.

The shape and length allowed the makers to produce a more powerful bow within the limits of the materials available. The lower grip on a longer bow produces more tension on the string and less tension on the wood while still being usable from a kneeling position. This allowed hunters to use the bow from a crouched position without giving up power.

Mounted archery, the Samurai's primary means of attack in ancient Japan, helped to maintain the asymmetrical shape. The mounted archers could move the bow quickly from one side of the horse to the other without difficulty and still shoot a powerful longbow on horseback.

As archery became a martial art, the archer's hand position helped maintain the asymmetrical shape. While holding the bow the hand is at a natural 60 degree angle that lines up the bones in the wrist and arm for maximum strength and stability. This allowed stronger bows to be produced. Legend has it that Minamoto no Tameomo, a large and very powerful samurai, used a bow that took five men to string.

### **Shooting the Yumi**

The draw of the Yumi is also unique to Japanese archery. The string is normally a little off center to the right of the bow, which allows the bow to be shot off the right side when held with the left hand. The string is drawn back with the thumb of the right hand while two fingers grip the thumb for support. A glove or possibly a thumb ring of wood or bone was used to protect the thumb from the string.

Today this type of pull is often called the Oriental or Mongolian draw. In modern *kyudo* (Japanese archery), on release, the bow is allowed to pivot in the left hand until the string touches the back of the left wrist; this is called *yugaeri*. This technique would not

have been possible when the bow was used for combat as it would have slowed down the archer's ability to fire quickly.

### **Effectiveness of the Yumi**

The effective range, where an archer has a chance of hitting the target, is about 140 meters, with a maximum range of about 280 meters. From Miyamoto Musashi's, "Go Rin No Sho" written in approximately 1645:

"The bow is appropriate when moving troops forward or back in the strategy of battles. It makes possible rapid fire in parallel with the use of lances and other arms. It is therefore particularly useful on battlefields in open terrain. But its effectiveness is insufficient for attacking fortresses or for combating enemies who are further than twenty ken away." (Tokitsu, 2004) A ken is 1.8 meters, 20 ken is 36 meters.

The optimum range for using the yumi against an armored opponent is estimated to be about 30 meters. This allows for the archer to hit unarmored areas, such as under the arms or the eyes, or for the arrow to penetrate the armor and cause a fatal wound.

### **Competition**

Archery competitions have been held in Japan for thousands of years. Some of the more notable ones were held at temples like the Sanjusangendo Temple in Kyoto.

Competitions at this temple were of four different types: the 24 hour shoot, the 12 hour shoot, the 1,000 arrow shoot, and the 100 arrow shoot. The shoots were conducted in an open veranda or hall. The ceiling rafters are 18 feet from the floor and still have the scars from arrows that hit them. The distance of the hall shoots were either full hall or 66 ken (130.68 yards) and half hall or 33 ken (65.34 yards). In 1686, Wasa Daihachiro, shot 13,053 arrows in a 24 hour period. Due to the height of the ceiling, he had to shoot from a seated position. He reportedly shot every 6.6 seconds but taking some rest time into account the average time might be slightly quicker. By the way he hit the target 8,133 times, still a current record. Other impressive records include Katsuranishi Sonouemon, who scored 960 out of 1000 arrows at full distance in 1667 and Chikurin Kichimen, who

shot 6,110 arrows in 12 hours and scored 4,500 times at full distance in 1821. (Hurst, 1998)

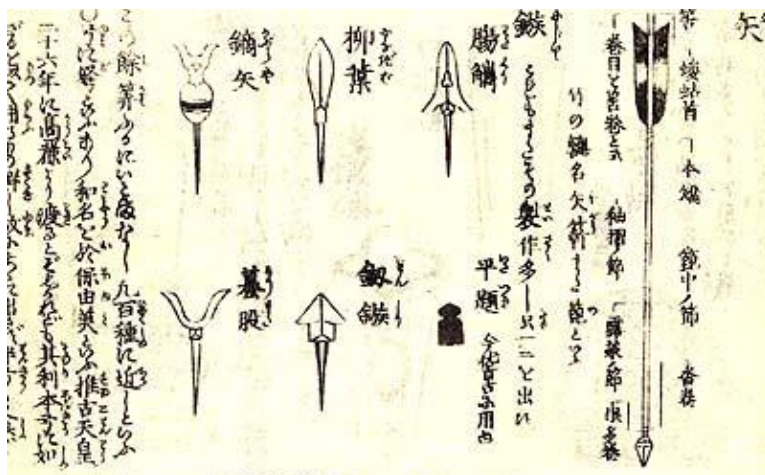
## The Ya

The ya, or arrow was between 34 and 38 inches in length and had a hardened steel arrowhead, made by a process similar to the steel used in swords. During the periods of samurai history, the arrows were often marked to identify the shooter; this allowed samurai to get proper credit for killing an opponent.

The bamboo arrow shafts were harvested in the early winter when the plant's saps were down. Each shaft was prepared by having the nodes shaved off. The bamboo was then softened by placing it in hot sand and it was straightened by hand while hot. (Friday, 2004) After being straightened, the shafts were hardened with fire.

Fletching was done with hawk, eagle, crane, swan or pheasant tail feathers, sometimes wing feathers were also used. The feathers of owls, chickens and Blue Herons were never used. The fletching could be either three or four flights depending on the arrowhead. The fletching was glued on the bamboo shafts with fish-based glue and tied front and back with silk threads, and then lacquered.

The nocks were made of bone, horn or a self-nock above a node in the bamboo. Bindings of silk thread covered with lacquer provided strength to the nock area.



Ink drawing showing arrow heads and arrow from the Article Kyudo: Way of the Bow.



Japanese arrowheads (*yajiri*) were often elaborate and came in hundreds of different styles. Simple designs were used for combat while very elaborate designs were used for ceremonial functions. The arrowhead is attached to a 4- to 6-inch shaft that was heated and inserted into the bamboo arrow. Some of the most common types of *yajiri* are:

- hiniki: a whistling arrows carved from wood
- hira-ne: a flat shape with sharp edges, sometimes with an extended shaft
- karimata: a two pronged fork
- muto: a target point
- sankaku: triangular or diamond armor piercing
- tsubeki-ne: chisel shape
- yanagi-ba: a willow leaf shape
- watakushi: barbed

### **Development of Japanese Archery**

*Kyujutsu* the art of the bow is simply warfare archery. The first *ryu* or school of archery is considered to be the Henmi Ryu which was founded by Henmi Kiyomitsu in the 11<sup>th</sup> century. Prior to this there was no formal systematic training, archers practiced on their own and developed their own style. Decedents of Kiyomitsu established the Takeda Ryu and the Ogasawara Ryu of archery, both primarily dealing with mounted archery in the 12<sup>th</sup> century. In the 15<sup>th</sup> century, Heki Danjo Masatsugu, an archer of exceptional skill developed a devastating and accurate way of shooting. He called his technique “*hi, ken, chu*” or “fly, pierce, center”. This style was a ground based shooting and quickly spread through Japan. This “walking archery” was so popular that as many as 12 different schools were associated with Heki-Ryu.

*Kyudo*, the way of the bow differs from *Kyujutsu* in goal. Both require the understanding of techniques for the use of the *yumi* and *ya* and both require similar levels of training for the archer. The levels of Japanese archery are often described as: *toteki*, *kenteki*, and *zaiteki*. (Onuma, 1993)

The first level, *toteki*, is found in all archery forms and styles. It is the basics of all archery—accuracy and being able to hit the target. Many of the past and current archers

achieve this level and become very skilled. In modern kyudo, it is described as recreational shooting.

The second level, *kenteki*, is where the arrow does not just hit the target, but pierces it. This is the essence of *kyujutsu* used by the warrior archers. It is the focus of the mind and body to achieve a smooth and rigorous shooting style with the goal of killing an adversary.

The third level is the *zaiteki* which encompasses the true meaning of *kyudo*. The target is neither a goal nor an opponent. The mind, body and the bow come together and hitting the target is no longer the ultimate goal but the art of shooting becomes a window on the archer.

*Kyudo* is possibly the purest of all the martial ways. It is practiced to improve physical, moral and spiritual development and is often practiced with Zen. In *kyudo*, the goal is to awake the inner self (the spirit) and find a balance between the mind, the body and the bow.

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