

Purification by Fire and Water

Last time, I explained the processes as far as tsukuri-komi. This time we will continue from the sunobe process.

Sunobe –The completed tsukuri-komi billet is now returned to the forge, heated and gradually hammered out to length in the form of a long bar.

Hi-zukuri—This process is performed only using a small hammer. The long square bar is beaten into the shape of a katana forming the mune (spine), shinogi (ridgeline) and cutting edge. The important task of making the point section (kissaki) is called *kissaki no uchidashi*. First, the tip of the sunobe is cut off obliquely. Then, with a small hammer, the cut edge is forged back on itself until it is in line with the spine. This can be seen in the hada of the completed blade. This is so that the cutting edge continues smoothly through the point section. Hada is the visible grain in the steel formed by the fold-forging process. There are various patterns such as ayasugi (cedar tree), itame (wood grain), masame (straight grain) and so forth. It has been compared to a wood grain pattern. For example, carpenters do not work against the grain of the wood. This also applies to swordsmiths, in that the grain must appear to run smoothly.

The shape of the blade formed during hi-zukuri can also determine the period of manufacture. The shape of the kissaki can also help to determine the period. In addition to shinogi-zukuri (ridgeline construction), there are also other forms such as hira-zukuri (flat).

Next is tsuchioki (tsuchitori), the clay application process. The material used for tsuchikoi is made from a combination of clay, charcoal dust, and ground whetstone mixed in water. First, a thin layer is applied to the whole blade, followed by a thicker layer along the back edge. This controls the cooling rate of the different parts of the blade at the quench. The thinner layer of clay along the cutting edge causes that part of the steel to become hard. The place where different clays meet produces a dividing line between the softer and harder steels called a hamon. By using the clay, the smith can also determine the shape of the hamon.

Next, yaki-ire. This is another popular image of swordsmithing. Once the clay has dried, the blade is put back into the fire. Temperature-controlled by a traditional bellows called a fuigo, the fire is brought up to 700-800 degrees. It is imperative that the temperature is correct. If a mistake is made in the temperature in this final stage, the condition of the steel will deteriorate. Additionally, the temperature must be the same along whole length of the blade. If this last process is not performed correctly, all the previous processes will have been a complete waste of time.

Yaki-ire takes place after sunset. Why is this, you may ask? This is because the swordsmith has to judge the temperature by the color of the heated steel. This is a test of the swordsmith's experience and intuition. When he feels the blade is ready, at that exact moment he must plunge the red-hot blade into a trough of water. As the hot steel is quickly cooled in the water, it makes a sizzling sound and a cloud of smoke fills the

forge. Unlike the forging process, the swordsmith only gets one chance at success when performing yaki-ire.

The temperature of the water is secret to each school. There are legends of smiths trying to discover the water temperature used by famous smiths and getting their hands cut off! The carbon content of the blades and temperature of the water used for quenching differs within the various traditions of swordmaking (Bizen den, Soshu den, etc). In actual fact, there is no predetermined temperature. It is probably around 30 degrees (known as hitohada in Japanese—body temperature).

This stage is when the familiar curvature of the Japanese sword is induced. The steel's differing carbon contents display different qualities when cooled quickly. The cutting edge becomes hard, whilst at the same time the softer steel induces curvature and retains durability. These qualities can be controlled somewhat by adjusting the cooling rates and the temperature of the water. As with variable temperatures suitable to different steels, each swordsmith has a preferred moment of quenching. The smith can ascertain if he has been successful or not by the sound of the heated blade entering the water and the way in which the smoke rises.

With only the refining work remaining, the main production process is completed. Until now, you were probably unaware of the importance of the fire and the water.

Many old swords from sword making towns, such as Osafune in Bizen province (present day Okayama prefecture), are ranked as National Treasure or Important Cultural Property. There are also many swords made by the same smiths that do not attain these standards. Why is there such a gap in the workmanship of the same smiths? This is because the Japanese sword undergoes a baptism of fire. Our ancestors believed that even though the sword is produced by man from natural resources, the fate of its completion is decided by the gods.

Japan also has an indigenous lacquerware. However, lacquerware production is controlled at every single stage by man, and therefore does not obtain godliness. Evil and impurity are removed on a level where human intellect cannot reach, by passing through fire and water. This is the basis of the shinto purification ceremony.

A brief explanation of the finishing stages.

Once quenching is complete, the curvature of the blade is adjusted and it is roughly filed into shape. Gradually finer stages of filing remove any distortions. This is called kaji-oroshi. Put simply, it is the foundation before applying make up. Next is kaji-togi, a rough polish by the swordsmith on a whetstone to bring out and check the quality of the hamon. It is then passed to a professional polisher.

Next is nakago-shiage, the finishing of the nakago (the part that is inserted into the handle or tsuka). The shape is refined and the hole for the bamboo retention peg is drilled. After this, the tang is filed to grip the inside of the handle. The filing patterns vary from smith to smith.

Lastly is *mei-kiri*. The swordsmith inscribes his name into the tang using a small metal chisel type tool. Tachi and katana (uchigatana) are worn with this inscription facing outwards, and the nenki (date) facing inwards.

The swordsmith's work is completed. However, the sword is not yet finished. Up to this point we have a weapon that will not break, will not bend, and cuts well; but does not have the soul of the samurai yet.

I spoke earlier of the Shinto ceremony seeking purification. The ceremony must be one of purity and cleanliness as it involves the gods. For the same reason, it must also be beautiful. Our ancestors thought that because the Japanese sword is the soul of the warrior, it too had to be beautiful.

Next is the polishing process, but let's talk about that next time.