

SECTION 6: THE WORK OF THE GILDERS (*kinpakuoshoshi & Fundameshi*)

CONTENTS:

INTRODUCTION:

History of gold leaf making:

6.1 STYLE

6.2 TOOLS (brushes, wadding, other tools)

6.3 MATERIALS

6.3.1 ADHESIVE MATERIALS (*urushi*)

6.3.2 GILDING MATERIALS (gold leaf & gold powder)

GOLD LEAF (*kinpaku*)

THE LEAF MAKING PROCESS:

Making the paper for gold leaf production

The *kamishikomi* Process

Production process for gold leaf:

Characteristics of Gold leaf:

GOLD POWDER (*kinpun*):

6.4 TECHNICAL PROCESSES

6.4.1 *KINPAKUOSHI* (gold leafing):

6.4.2 *FUNDAME* (gold powdering):

CONCLUSION:

FOOTNOTES

REFERENCES and ACKNOWLEDGEMENTS:

INTRODUCTION:

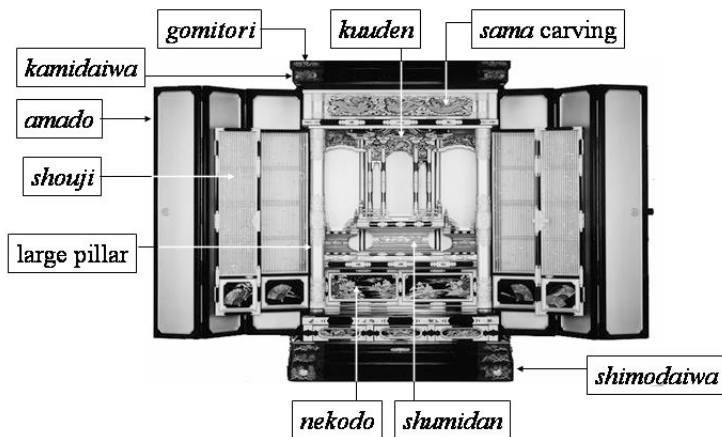
General:

In this website, we are using the making of a Hikone *butsudan* (see general introduction) to describe traditional Japanese craft skills. As already mentioned, there are seven separate skills that can be grouped loosely into woodworking, lacquer working and metalworking. The wood working skills include making the body (*kiji*), the Buddha canopy or palace (*kuuden*) and the carvings (*choukoku*). In the section on lacquering skills we have included the lacquering process itself (*nuri*) and the making of lacquer and gold pictures (*makie*). This latter could just as well be combined with metalworking, in that gold materials are used. However, for our purposes we are including only the gilding processes and the making of the decorative metal fittings within the metal working section. Because the various skills are so wide-ranging, they are in fact representative of a considerable cross-section of traditional craftsmanship. Therefore, before continuing with this section we suggest readers refer to the general introduction.

Because of the economic situation today, where people do not have the money to indulge in luxury items and where expensive Japanese-made products are facing growing competition from cheaper foreign imports, traditional artisans are finding themselves in an increasingly harsh situation. Fewer young people are choosing to become apprentices for this kind of work and as the older artisans retire or pass away,

the details of their skills are being lost. Although a lot of it is already beyond recall, it is our purpose here to document what information we can, while it is still available.

As has already been mentioned in the general introduction and *kuuden* sections, Hikone *butsudan* can be divided into three quite recognizable styles depending on the sect of Buddhism. The easiest way to tell them apart is to look at the shapes of the *kiji* and *kuuden* (see relevant sections). In this way, we can clearly see which sect (*shuu*) or sub-sect (*haa*) of Buddhism the *butsudan* belongs to: Joudoshuu, Joudoshinshuu (Higashi honganji) or Joudoshinshuu (Nishi honganji). As a quick reminder of the main parts of a *butsudan*, please refer to the following labelled photo.

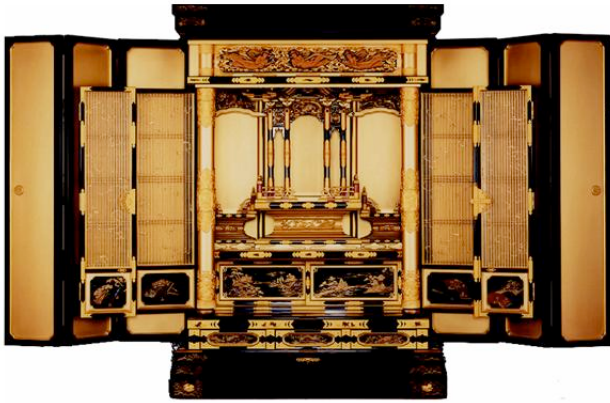


Kin photo 01: Joudoshinshuu butsudan (labelled)
[courtesy Eirakuya Co Ltd] (see Kin photo 02a)

Although when customers buy such expensive items they can specify exactly what they want, they do tend to stick quite strictly to the structural characteristics connected with their own sect of Buddhism. Since we are focusing on gilding in this section of the website, it is worth noticing that often, but by no means always, *butsudan* made for the Nishi honganji sub-sect of Joudoshinshuu emphasize the gilding, while those made for the Higashi honganji sub-sect highlight the lacquering. The customer's choice depends on both Buddhist affiliations and personal preference.

Because of its long history as an agricultural area and the relative wealth of the farmers resulting from the land reforms of the early 1970s under Prime Minister Tanaka Kakuei, Hikone became well known for its large-sized '*kin*' *butsudan*. Even during the recession of the 1990s, the traditional Hikone makers resisted bringing their designs into line with the trends towards smaller houses, secularism and reduced expenditure. The photos below, one finished with gold powder and the other finished with gold leaf show Hikone *butsudan* in their full splendour and are excellent examples of this defiance. One of the special treats experienced when visiting a well-to-do family home is to see such items *in situ* (please compare these with the small *butsudan* described in the general introduction).

note the soft luxuriant surface when the finish is gold powder



Kin photo 02a: butsudan finished with gold powder [photo courtesy of Eirakuya Co Ltd] (cf *Kin photo 02b*)

note the highly reflective surface when the finish is gold leaf



Kin photo 02b: butsudan finished with gold leaf [courtesy of Hikone *butsudan kumiai*] (cf *Kin photo 02a*)

History of gold leaf making:

The technique of gold leaf production was introduced from China to Japan between the late Nara and early Heian periods (late 8th C to early 9th C). Since then, a lot of gold leaf has been used for temples, *butsudan* and Buddhist images. More recently, the use of gold has been extended to crafts such as weaving and *makie*. (FN.1)

According to a pamphlet produced by the Kanazawa Yasue Gold Leaf Museum, leaf production was introduced to Kanazawa from Kyoto in the second half of the 16th century. There is a document dated 1593 in which the Lord of Kanazawa ordered craftsmen to make gold and silver leaves. Then, during the Edo period (1603 to 1867) the Tokugawa Shogunate ruled that making gold and silver leaf was illegal outside of Edo (Tokyo) and Kyoto. However, disregarding the ban, Kanazawa continued producing gold leaf under its policy to promote arts and crafts. In 1808, part of Kanazawa Castle burned down. When it was rebuilt, a secret gold leaf workshop was

established inside the castle area. Production continued until the Meiji period began in 1868 and gold leaf making became legal throughout the whole country.

Until World War I, most gold leaf used throughout the world came from Germany but then supplies were cut off and Japanese gold leaf became popular. The climate and water of Kanazawa are suitable for leaf making. Just as important, the clear water is good for making the paper (*kamishikomi*), an essential part of leaf production (see the materials section). The weather is rather humid, making it easy to handle the leaf, which does not develop too much static electricity.

Today, gold leaf making is a traditional industry in Kanazawa, which has almost 100% of the domestic market. According to a leaf seller who visits Hikone once a month, there are ten *kinpaku* shops in Kanazawa; but there are 100 workshops or family businesses (*toyasei kanai kougyo*) producing gold leaf. 70% of the gold leaf is sold to Hikone. Akita, Kagoshima and Nagoya.

In this section on gilding, we will look mainly at the two styles: gold leafing (*kinpakuoshi*) and gold powdering (*fundame*).

6.1 STYLE

There are several possible starting points for a discussion of the different styles and types of gilding. The following gives a simplified overview of what is covered in more detail later in the text. Starting with the gold material itself, we will go on to the different methods of gilding, the types of pre-gilding surfaces prepared by the lacquerer (*nurishi*), and finally, the distribution of gold on the final *butsudan*. All these aspects will have some bearing on the appearance of the finished work.

Types of gold:

A large, high quality *butsudan* requires 1,700 leaves. Of these, 300 are necessary for the inside walls of the *kiji (ita)* while the rest are used for the doors, pillars, *komono* and carvings. Each gold leaf measures approximately 12.6 cm square. Its thickness varies between 0.1 to 0.2 microns, the miniscule variation being invisible to the layman. Copper and silver are added to improve the colour and malleability of the gold ingot for purposes leaf making, but by and large, it has a purity of 96%, equivalent to 23 K gold [$23 \text{ karat} = 23/24 = 0.958$].

For an expensive *butsudan*, each leaf is cut individually and sandwiched between sheets of specially made paper. This leaf is called *entsuki* and is used for the large flat surfaces (*ita*) and sometimes the smaller parts (*komono*). Cheaper *butsudan* are gilded with a type of leaf called *tachikiri*. As the name implies, these leaves are cut all together after being put between sheets of paper to make stacks of over 1000. It is the stacking paper used for *entsuki* that determines its price. As the gold leaf seller from Kanazawa explains, "The quality of the gold is the same. As for flaws, such as breaks and holes, there is no difference. It is the quality of the papers that differs and of course the cutting time. *Tachikiri* paper is much quicker to make but it contains some sulphate and carbon, which are applied to the paper to prevent static. Sometimes the carbon sticks to the surface of the leaf. Also, there will be a colour change after 10 or 20 years."

When the leaf is cut, the edges are not wasted, but rather turned into powder (see *makie* section and materials section 6.3 below). Thus gilding can be done with leaf (*kinpaku*) or powder (*fun*) or even both together (*nugui fun*).

Methods of gilding:

As will be seen below, leafing produces a rather shiny surface where the joins between the squares are more or less visible. Powdering, on the other hand, gives a smoother, more luxuriant and absolutely uniform surface. A *butsudan* may be finished with either of these styles, but just as often both may be used in different places on the *butsudan* (see *Kin* photo 52). The ceiling and inner walls may be covered in leaf because it reflects light well, while the carvings, pillars and inner doors may be treated with powder. Rarely, a type of treatment called *nugui fun* (*nugui haku*) is used in which leaf is applied all over the surface and then powder is put onto any cracks or breaks. Except in the case of *mehajiki* work (see below) this is not ideal because of possible differences in colour between the leaf and the powder.

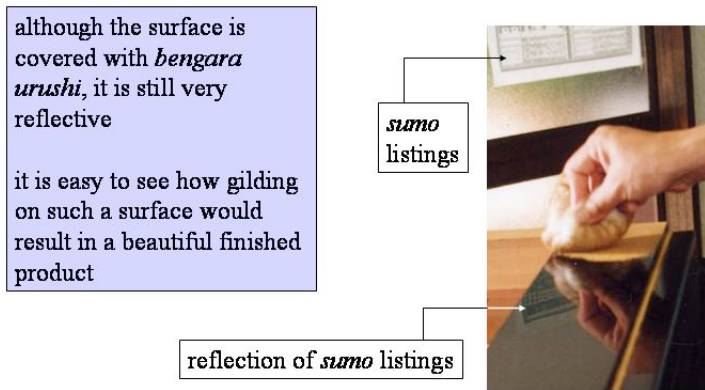
The choice of whether to gild with leaf or powder is a matter of preference for the final appearance. The photos in the following sections show clearly the differences. Furthermore, considering the lifespan of a *butsudan*, durability is an important factor.

In reality, leaf and powder are equally durable if they are not touched. Normally the gold surfaces, which are only on the insides of the *butsudan*, are handled as little as possible. However they must be dusted occasionally and in that case, leaf is more durable than powder. The gilding on the very highest quality items may occasionally be covered with a final coating of clear *urushi* to give maximum protection.

“To keep the gold leaf intact,” explains one artisan, “it’s better to dust quite often. It’s because dust absorbs moisture and makes the leaf tend to peel off. A feather duster is best. But a new feather duster must be used. With an old duster it’s like scraping with a needle. In a *butsudan* shop they use a feather duster but if it’s old and the soft feathers are worn down or broken leaving the brittle tips, they might damage the leaf. When leaf is damp and the dust is wiped, the leaf comes off,” he continues. “When gold leaf is fixed and dry, kerosene will not take it off, but water will. Water is used in the cleaning process (*sentaku*). They dip a cloth in water and squeeze it out and wipe, and the leaf will come off.”

Types of surfaces prepared by the lacquerer (*nurishi*):

From the discussion of lacquering, it will be remembered that the boards can be finished with a polished (*roiro nuri*) or an unpolished (*tate nuri*) surface (see *Kin* fig. 08) (see *Nuri* figs.25 & 29). The completely flat surface of *roiro* finishing makes gilding easier and the final product more beautiful.



Kin photo 03: showing reflective surface of polished (*roiro*) lacquering (see *Nuri* fig.25)

Tate nuri, on the other hand, is not completely smooth. Application of the *oshi urushi* adhesive coating (see processes section below) will exacerbate any imperfections and brush marks or “pimples” of *urushi* will appear on the surface of the leaves.

Finally, there is the exquisite but expensive surface where the texture of the wood grain is perceptible through the under-lacquering and thus through the gilding (see *Nuri* section). It is especially ideal for displaying the intricacy of zelkova (*keyaki*) and Hokkaido *keyaki* (*sen*) wood grains (see *kiji* section). This type of surface, called *mehajiki* lacquering, can be used effectively with the combination leaf + powder treatment (*nugui fun*), because irregularities in the wood grain mask any colour disparity between the two materials (see *nuri* section and photo in *kanagu* section).

Distribution of gold on the finished product:

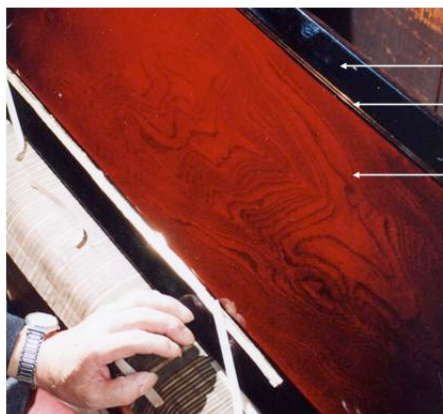
For Joudoshuu and Joudoshinshuu *butsudan*, the back and side inner walls are most often gilded. Carvings are usually gold, sometimes combined with plain wood and even colours (see *choukoku* section). The amount of gold found on the pillars is partly determined by the sub-sect (*haa*) of Buddhism, where Nishi honganjihaa tends to have the most. However, treatment of the inside of the doors (*amado*) shows greater variation and is not related to Buddhist sect. Looking at *Kin* fig. 04, we can see that the door is made of a flat board (*ita*), a frame (*kamachi*) and a moulding (*men*) where the two join. Sometimes both the *ita* and the *men* are gilded.



working on the moulding, with small pieces is more fiddly (but requires less concentration) than working on the board using whole leaves

Kin photo 04: applying gold leaf on both the ita and the moulding (*men*)

Sometimes just the moulding is gilded and the *ita* is left either black or reddish with the grain showing through the clear lacquer (see *nuri* section).



frame (*kamachi*)

moulding (*men*)

board (*ita*) showing the reddish colour of grain-showing lacquering (*mokume dashi nuri*)

the wood grain is obvious through the clear lacquer (see *Nuri* section & fig.28)

Kin photo 05: applying gold leaf on the moulding only

In any case working on a large flat surface, using whole leaves, presents its own difficulties as will be outlined later. The artisan trained for this type of work usually does not do small or intricate items (*komono*). Dealing with carvings and areas where small pieces of leaf are used, is more fiddly than large areas, but does not require the same level of concentration.

With this general outline in mind, let us go on to the discussion of the tools, materials and finally the processes used in gilding a *butsudan*.

6.2 TOOLS

Generally speaking, the tools used by gilders are divided into two categories: those for applying the *urushi* fixative and those for handling the gold. Depending not only on the materials but also on the skills and preferences of the artisan, brushes, spatulas or wadding may be used for these techniques. Further details will be given in both the materials and processes sections, but we will begin our discussion with the most commonly used types of brushes.

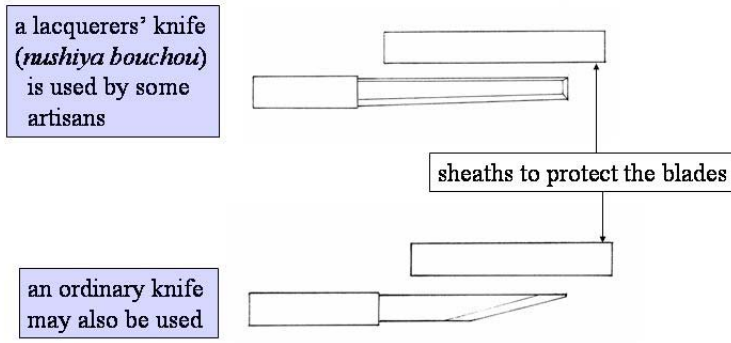
BRUSHES:

Introduction:

Gilders' lacquering brushes are more or less the same as those of lacquerers (see *Nuri* figure 07) since they are used for the same type of job, that is, to apply the lacquer coating that acts as an adhesive for the leaf or powder. Other brushes (to be described later) are used to press the gold leaf down onto the *urushi* and to remove excess gold after adhesion.

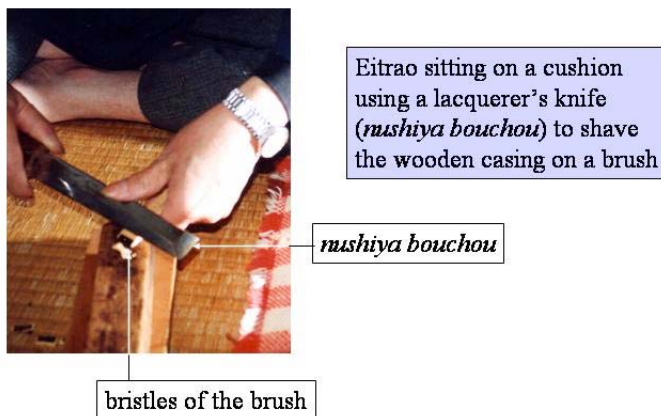
Lacquering brushes (*hake*): Generally referred to as '*hake*', they are good quality brushes that can be bought from specialist shops such as Hakeshou or Nakamurashou in Osaka. They are used to apply the adhesive lacquer coating, and thus they need to be stored in rapeseed oil after use to keep them supple.

In general, these brushes are made with human hair enclosed in a wooden casing. "I heard that these days they import human hair from China," explains *kinpakuoshishi* Fujii Eitaro. "In Japan most women have perms so the hair is too weak so it can't be used. I guess in the near future, also in China women will have their hair permed. It is red hair," he says, displaying several widths of brushes from 1 *bu* (about 3mm) to 1 *sun* (about 3cm). "I use one of these brushes depending on the size of the area where I will put the leaf. For tiny holes in carvings, I would use a 1 *bu* brush. For other parts of the carvings I would use 2, 3, 4 *bu* brushes. But since I seldom work on carving, I don't often use these. For the flat surfaces, the one I use most is 5 *bu* and once in a while I use this 1 *sun* kind. I shave the tip of the brushes (both the wood and hardened bristles) with a lacquerer's knife (*nushiya bouchou*), although some leafers use an ordinary knife."

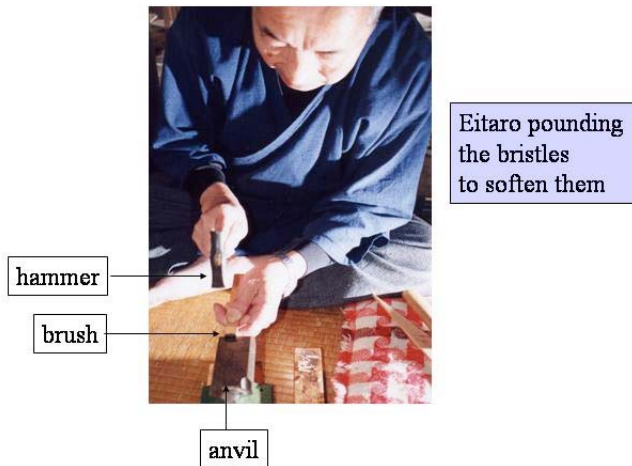


Kin figure 01: knives which can be used for shaving brushes

“After shaving it,” continues Eitaro, “I pound the bristles, on an anvil, with a metal hammer to make them soft. The hair is hardened with lacquer. Every time I shave the brush I pound the new bristles.”

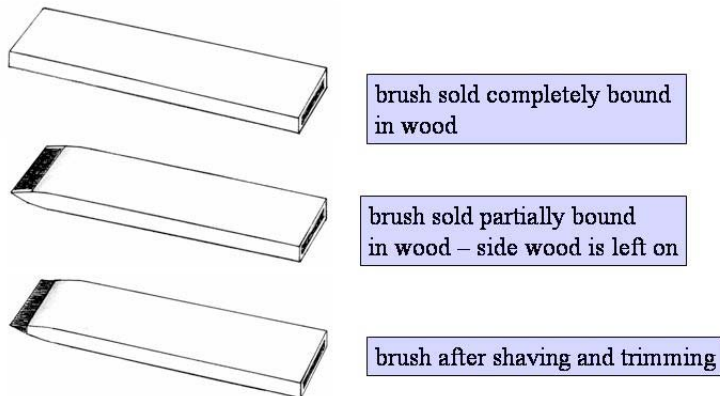


Kin photo 06: trimming a brush



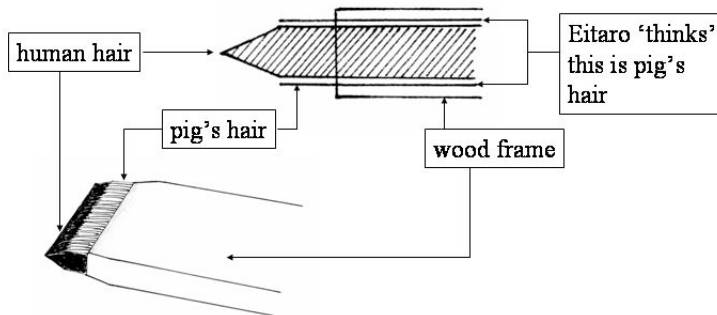
Kin photo 07: pounding the bristles

Some brushes come completely bound in wood right to the tip and in that case he has to remove the wood from all four sides. For others, only the sides are bound; the upper and lower surfaces are already shaved, so he just takes off the side wood.



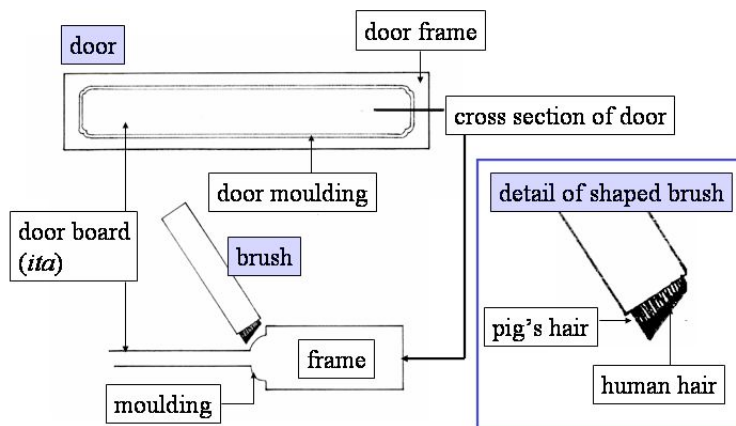
Kin figure 02: brushes before and after shaving and trimming

“This is a brush of another kind. The upper and lower surfaces are covered with a thin layer of pig’s hair. It’s like a sandwich,” explains Eitaro. “I’m not sure of the special name or what kind of hair it is, but I guess it’s pig’s hair because it’s harder than human’s. *Haku oshi urushi*, which I use as an adhesive to fix the leaf, is stickier than ordinary *urushi* so I can’t apply it with a brush made of only human hair because that’s too supple. So leafers mainly use this kind of brush with pig’s hair. But as for the smaller brushes, smaller than 3 *bu*, only human hair is used. Except when I am applying leaf to carvings, I use brushes made of human-hair with pig’s hair. Lacquerers do not use brushes with pig’s hair. They must use human-hair brushes because the *urushi* is softer (not sticky).”



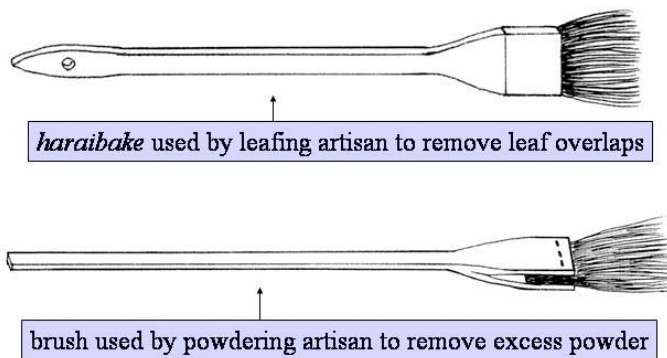
Kin figure 03: special brush with pig's hair

After trimming or shaving the wood and bristles, the latter have to be shaped for their particular use. "Sometimes I shape the brush horizontally and sometimes at an angle depending on what I want to use it for. To apply *urushi* to flat boards," says Eitaro, "the brush is straight. For the mouldings (*men*) on a door (*amado*) the brush is shaped at an angle that makes it easy to get the *urushi* into the crevices."



Kin figure 04: brush shaped for a special purpose (leafing of door mouldings)

Brush to wipe off pieces of leaf (*haraibake*): *Haraibake* is a good quality brush made with red hair because it is supple. "I don't know what kind of brush it is," says Eitaro in his usual noncommittal way. "It is soft hair of some animal and the tip of the fur is not trimmed so the ends are soft rather than blunt. It is used to brush off the excess pieces of leaf and to press the leaf down onto the lacquer, especially in cases of carvings and holes where less *urushi* has been used. If the tip of the brush is cut, it will leave a mark on the gold leaf. There are several widths from about 1cm to about 2 cm." It is used dry, so unlike the others it is not stored in oil.



Kin figure 05: brushes used to wipe gilded surfaces

Brush to wipe off excess gold powder: *Fundameshi*. Kitamura Junji uses a rat fur brush with quite long bristles of about 3.5 to 4cm for removing the excess gold powder after application is finished (see *Kin* fig. 05). After a lot of use the bristles get clogged with *urushi* and powder and they stiffen so it has to be discarded. “I need to start using a new brush,” says Junji, while he works. “But they are hard to get. The bristles wear down as I use them. I have about 30. They are enough for my whole life's work as an artisan.”

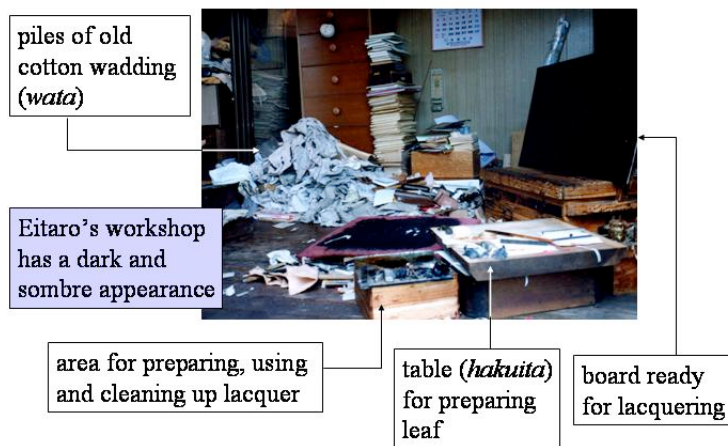
WADDING:

Cotton wadding (*wata*): Besides applying the adhesive *urushi* with a brush or spatula, it can be done with cotton wadding or even with a ‘chopstick’ tipped with cotton. Generally however, Eitaro uses wadding for the crucial process of removing just the right amount of adhesive before application of the leaf.

He explains, “There are two kinds of *wata*: one is old *wata* from kimono and the other is *wata* from used futon dipped in persimmon juice. I bought persimmon juice *wata* from a *wata* shop in Echigawa town (in Shiga prefecture). I heard this shop has already closed. I use this for chemical sprayed boards of cheaper *butsudan*.” Cotton wadding (*wata*) from old padded kimono, called *nukiwata*, is used for rubbing excess adhesive *oshi urushi* off *urushi*-lacquered pieces for high quality *butsudan*. *Nukiwata* is soaked in boiling water to remove cells, sweat and skin oil from the *wata*.

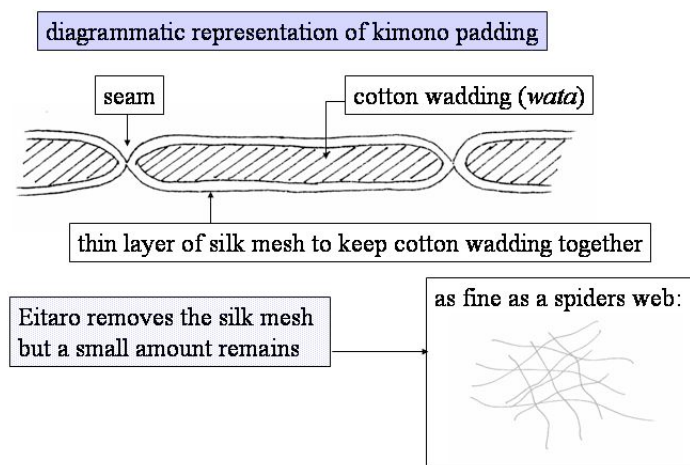
“For high quality *butsudan*,” he says, “I don’t use new *wata* because it is too soft. It sticks to the surface and leaves lint behind. The *wata* I make for myself has little fluff. It is white cotton from padded kimono and I use it straight from the kimono, after *washing*, but without persimmon treatment. Very old *wata* is convenient because it is compressed and the fibres are tangled (matted). In fact I need very old and very used cotton. So matted *wata* from a kimono is perfect. I don’t tease it before using it; I just pull off what I need and use it. I got the *wata* I’m using now about 10 years ago. Kimono padded with cotton, are used only in Touhoku or Hokuriku districts where it is cold. So I guess the person who sold me the cotton bought it there. Those who

come to sell old cotton don't tell where they got it. I guess it's because they have to earn a profit. They don't want me to buy it for myself. It's getting harder to find padded kimono because now everyone has heaters. This kind of *wata* is no longer available. But I have enough old *wata* to carry me along while I'm doing this job. I can never use it all."



Kin photo 08: Eitaro's workshop

Wata from an old kimono has a very thin layer of silk mesh on the outside to bind it together. He removes this before *washing*: but it's so fine that he does not get it all off. He demonstrated with a washed piece of *wata*, where he pulled the strands of silk that were still present after *washing*. It was as fine as a spider's web.



Kin figure 06: silk mesh on old *wata*

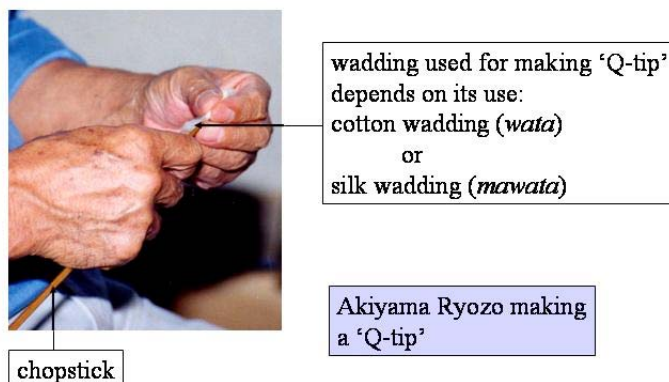
"I wash the old *wata* myself," explains Eitaro. "It is so dirty, that it makes the washing water black. I make the water in the bathtub hot, almost boiling, and soak the *wata* in it for overnight. It is to disinfect the *wata* and the dirt won't come out unless I

use very hot water, because I don't use soap. If I use soap, a bit of soap will remain in the *wata* and it will not absorb *oshi urushi* well. Moreover some people use soap to wash the padded kimono so that *wata* will include a little soap in it. So I have to use very hot water to remove the remaining soap. The next day I stomp on it and wash it in the tub. The water becomes very black and I change it many times until it becomes clean. Dust and sand come out. A lot of sand will collect on the bottom of the tub.”

“Some gold leaf artisans use only cold water for washing old cotton wadding,” he says. “Some people wash it in the river, because they don't want to get their family bathtub dirty. But it doesn't work as well because cold water won't remove as much dirt. In the case of lacquerers some use the cotton without washing it. Akimichi-san (see *nurishi* section) washes the cotton, but some other lacquerers use it without washing. The more time and energy you spend on something, the better finish you get. If it's not washed, the finish won't be as good. While using it, grit will come out and scratch the surface.”

Eitaro does not wash old futon *wata* himself because it is too thick. “If I did wash and use it,” he says, “I would have to make it thinner by pulling apart the layers and it would become too soft.” He only buys old futon *wata* treated with persimmon juice from a shop. However, as already mentioned, since the shop that used to sell it has closed, it is very hard to obtain.

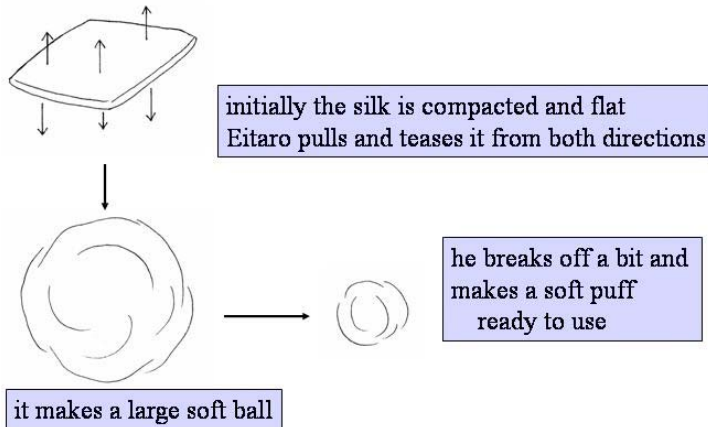
Unlike Eitaro, who does not use old futon *wata* to apply the adhesive *fundameshi*, Kitamura Junji does. In his case, the adhesive *bengara urushi* is applied with *wata* that is cleaned but not dipped in persimmon juice (cf *Kin* photo 23). He agrees with Eitaro, “It is getting more and more difficult to get old futon *wata*. With a piece of old futon *wata*, I rub the *makie (bengara) urushi* onto the lacquered surface in a circular motion.” When he is doing carvings or a lattice, Junji makes a kind of cotton bud with futon *wata* and a 30cm bamboo stick, or he uses a paintbrush to ensure the lacquer spreads and to remove the excess. For carvings, he has to wipe into the grooves carefully to make sure the pattern is not lost (see *Kin* photo 13).



Kin photo 09: making a 'Q-tip'

Silk wadding (*mawata*): This may be used to rub off the overlapping edges of the gold leaves and also for the application of the gold powder.

In the case of leafing, Eitaro uses silk wadding (*mawata*) for rubbing the leaf after application, to smooth it and remove the overlapping edges between the squares. It comes in a flat sheet, which he gently pulls out to make a fluffy wad. “Good quality *mawata* is used. I buy it from a specialist shop in Maihara” he says. “I tease the fibres to make a big soft ball.”



Kin figure 07: making the silk puff (*mawata*)



mawata before puffing



Eitaro pulling the *mawata* pad apart

Kin photo 10: making silk puff (*mawata*)

For the application of gold powder, Junji uses pads of *mawata*. The pads are different sizes depending on the width of the area being treated. Using a pad wider than the area would mean a waste of gold powder. To get into the angles of very narrow areas and grooves he uses a ‘Q-tip’ made by wrapping the *mawata* around a ‘chopstick’.



Kin photo 11: tools for application of gold powder

OTHER TOOLS: for pictures of these tools please see the section on processes.

Leafing forceps (*hakuhashi*): Since gold leaf tends to stick to the hands or metal, the tools used for handling the leaf are all made of bamboo. The *hakuhashi* used by the leafer are made of good quality bamboo (see *Kin* photos 16 to 18 & 20).

Knives: The lacquerer's knife (*nushiya bouchou*) (see *Kin* figure 01) is used for making the spatula and shaving lacquering brushes (*hake*). Eitaro uses a knife with an ordinary safety razor blade for cutting leaves. Some other leafing artisans use a traditional Japanese razor for cutting leaves. The handle of the traditional razor is covered with rubber.

Leafing board (*hakuита*): Leafing boards are made of soft woods such as magnolia or gingko. The leaves are laid on the board for cutting (see *Kin* photo 08).

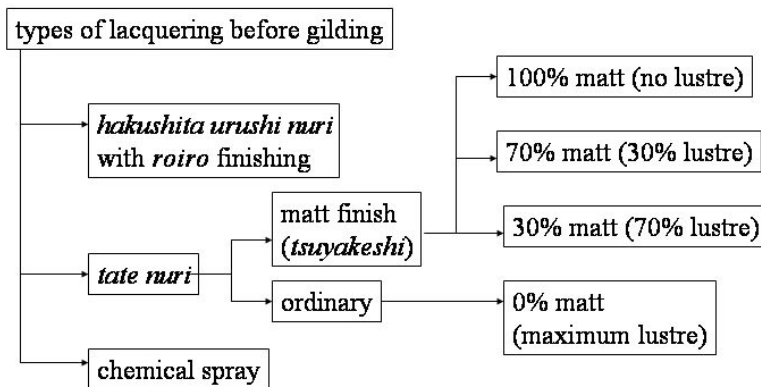
Spatula: Spatulas varies between 1 and 3 *sun* (or 3 to 9 cm) in size. They are made of cypress (*hinoki*) with a straight regular grain (*masame*) as described in the sections on *kiji*, *kuuden* (explanation of wood grain) and *nuri* (explanation of spatula making). *Hinoki* grown in present day Aichi prefecture is especially suitable.

6.3 MATERIALS

Materials used by the gilders fall into two categories: first, the special adhesive *urushi* used to stick the gold to the lacquered surface and second, the gold itself. This may be either gold leaf (*kinpaku*) or gold powder (*kinpun*). Before beginning the preparation for either type of gilding, the lacquered surface must be cleaned to remove dirt and greasy fingerprints. This is done with kerosene. Then the adhesive *urushi* is applied. Therefore we will talk about this adhesive first.

6.3.1 ADHESIVE MATERIALS (*urushi*):

In the previous *nuri* section, we discussed the various styles of lacquering used by the *nurishi* to get the required finish. As a reminder, there is the highly polished style called *roiro* finishing or the unpolished *tate nuri* finishing. Either of these may be left as such or may form the substrate for gilding. This will be the choice of the maker (*toiya*) or the customer and will depend partly on budget. However when the lacquering is to be covered by gold, the most likely choice will be the less complicated and less expensive *tate nuri* style. Nevertheless, gilding on a *roiro* surface, as in *Kin* photo 03, produces a much smoother and more luxurious finish, and will be done on the very highest quality *butsudan*. These alternatives are laid out in the following flow chart.



***Kin* figure 08: flow chart of types of lacquer finishing before gilding (cf *Nuri* figs.25 & 29)**

1) *Hakushita urushi nuri* with *roiro* finishing: This highly polished style, as described previously, is used on top quality DKH *butsudan*. After drying, the *roiro*-lacquered surface is ground and polished, and then raw *urushi* (*ki urushi*) is thinly applied and it is dried. For more details please refer to *Nuri* section fig. 25: *roiro*-lacquering processes. From here it will go to the gilder.

2) *Tate nuri* finishing: More commonly, this matt or lustrous style without the final grinding and polishing is done on both high and middle quality works (see *Nuri* fig. 29: *tate* lacquering processes and figure 30: *komono* lacquering processes). It can have a glossy or a dull (*tsuyakeshi*) finish to varying degrees as shown in *Kin* fig. 08.

3) Spraying: Spraying with substances like natural or artificial cashew is used for low quality *butsudan*, so we will not be considering it again in this website.

The above information applies to the lacquering before the gilding processes. Once the work reaches the gilder, another thin layer of *urushi* must be applied as a glue to ensure adhesion of the gold. Depending on whether the gilding is to be gold leaf or powder, there will be a slight difference in the *urushi* used. To a certain extent it depends not only on the preferences of the artisans but also on the type of base

lacquering done by the *nurishi*. It is up to the gilder to decide how important the different styles are in determining the outcome of his work.

Adhesive materials used by leafer (*kinpakuoshi shi*), Fujii Eitaro:

Haku oshi urushi: Eitaro uses ‘ordinary’ type of *haku oshi urushi* that he buys in 100gm tubes for 5,000 yen. “I call this *oshi urushi*,” he says, showing us a tube. “You mustn’t touch this in case you get a rash. Some leafing artisans prefer a different kind. If fast drying *haku oshi urushi (hayakuchi)* is added to ‘ordinary’, it dries quicker; or if sticky *haku oshi urushi (nebakuchi)* is added, it becomes stickier. The use of these types is personal. This *oshi urushi* is different from the *urushi* used for lacquering.” When asked what is in the tube Eitaro says, “Well I don’t know the contents of the tube. Since long ago, *urushi* shops sell this as *haku oshi urushi* and they don’t divulge the contents so I don’t know. It is a bit stickier. I guess something is mixed with the raw lacquer from the *urushi* tree.” In any case *oshi urushi* is high quality natural Japanese raw *urushi*. While he is demonstrating its use, he adds, “If the *urushi* is heated to more than 60 °C, it doesn’t dry. In winter I use only ordinary *haku oshi urushi* because the temperature is low and *urushi* tends to get hard. In summer I use *haku oshi urushi* mixed with a sticky type because *urushi* tends to get soft.”

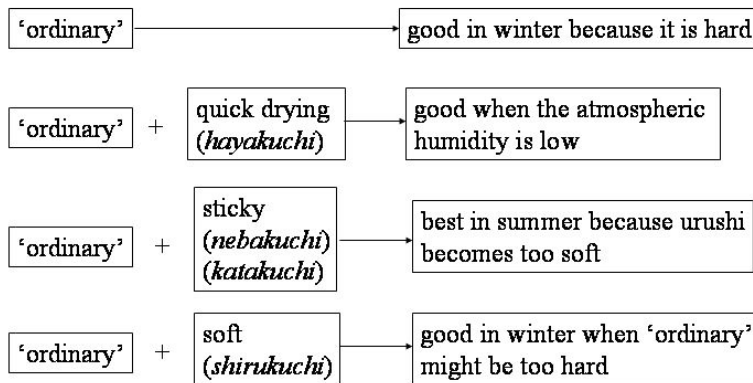


Eitaro mixing *urushi* to get the right constancy according to weather conditions

spatula

palette for mixing *urushi*

Kin photo 12: Eitaro mixing *oshi urushi*



Kin figure 09: flow chart of kinds of *oshi urushi* (Eitaro's choices)

After thinking about our questions for a few days, Eitaro has more to say about *oshi urushi* at the next visit. “It contains ‘Japan produced’ (*nihon san*) *urushi*. If it didn’t, I guess it would have less adhesive power and it would dry less quickly. The bad quality *oshi urushi* has less ‘Japan produced’ *urushi*. If I used bad quality *urushi* for gold leafing I would be able to see the circular marks left after wiping away the excess *oshi urushi* through the gold leaf after the leaves are dry. If it contains all Chinese *urushi*, its adhesive power is different. Japanese *urushi* has strong adhesive power, it dries quickly, and the finish is nice. Even through the surface I can sense good *urushi* or bad *urushi*. The bad one results in marks on the surface of the leaf, from where I wiped it with *wata*. The wiping marks appear through the leaf.” Please see *Kin* fig.24, in the processes section.

In addition to the ‘ordinary’ type of *oshi urushi*, other types can be added depending on the quality of the *urushi*, which is in turn dependent on the weather conditions. *Urushi* tends to get hard in winter so a soft type (*shirukuchi*) may be added to compensate. However Eitaro does not use the soft type. Conversely, in summer when *oshi urushi* gets softer, some of a stickier type (*nebakuchi* = *katakuchi*) may be added.

Fast drying *haku oshi urushi* (*hayakuchi*): He showed us another tube labelled ‘*hayakuchi haku oshi urushi*’. “This *oshi urushi* can dry quicker than ‘ordinary’ *oshi urushi*. I mix ‘ordinary’ with *hayakuchi* in suitable proportions to adjust the drying time. It is easy for me to work if *urushi* gets dry slowly,” he explains, “but when the *toiya* puts pressure on me, I sometimes have to use *hayakuchi* because it dries faster.”

Sticky *haku oshi urushi* (*nebakuchi* or *katakuchi*): The third kind of *oshi urushi* is sticky (*nebakuchi*) *haku oshi urushi*. It is stickier than ‘ordinary’ *oshi urushi*. It is also called ‘hard’ (*katakuchi*) *haku oshi urushi*. “In summer, *urushi* tends to get soft. *Nebakuchi* makes the consistency harder. I use *haku oshi urushi* mixed with some *nebakuchi* type to prevent *haku oshi urushi* getting too soft or to make it suitably sticky,” says Eitaro. Unlike *hayakuchi*, *nebakuchi* is not used to affect the drying time, but to get the right ‘stickiness’ for the *haku oshi urushi* application process. “If I used only the *nebakuchi* type alone, it would be too hard. If I asked the *urushi* shop,

they would make soft *haku oshi urushi* (*shirukuchi*), which is even softer than ordinary type,” adds Eitaro, “but I don’t need that kind.”

Adhesive materials used by gold powderer (*fundameshi*), Kitamura Junji:

In Junji’s shop, which is both a manufacturer (*toiya*) and a gilding workshop, instead of using a ready-made product they make their own mixture of *urushi* + *bengara* as an adhesive for the gold powder (*kinpun*). “It has the quality to solidify when it dries, so it hardens and increases the adhesion of the powder (*fun*),” says Junji. “The recipe is the shop’s secret.” However he admits, “It doesn’t contain *ki urushi* (like that of Eitaro), but rather processed *urushi*. And the amount of *bengara* is crucial. If it has too much, it becomes too solid and hardens (dries) too quickly.”

Depending on which kind of finishing was done for the pre-gilding, Junji’s father (who is more interested in antiques these days) judges how much *bengara* or what kind of *urushi*, such as slow drying (*osokuchi*) or fast drying (*hayakuchi*), to use. He seems to be much more concerned with this aspect of the work than Eitaro. As already mentioned, Eitaro usually uses a simple *ki urushi* mixture which comes in a tube and which he modifies slightly depending on his needs. Junji’s father, on the other hand, has turned *bengara urushi* making into a science.

Bengara urushi (may also be called *makie urushi* since it is basically the same as we described in the previous section on *makie*): “My father makes the *bengara urushi*,” says Junji. “It’s a mixture of *hakushita urushi* + *bengara* (see *makie* section). He first looks at the lacquered surface and then decides. If we put too much *bengara*, it can dry quickly but the finished product will be fragile. It will be brittle and easily damaged. So my father decides how much *bengara* he should put in, using his experience. He controls the amount of *bengara* or *urushi* depending the kind of lacquer already used by the *nurishi*. If we misjudge the amount the *bengara*, the *urushi* will dry too slowly or too quickly in which case the powder won’t stick. Judging this point is the most difficult and important aspect in our gilding process. I can even say this judging is ‘everything’ for powder finishing.”

As noted previously, when lacquering small and carved items (*komono*), it can be helpful to change the colour of the lacquer layers. That way it is easy to see when a spot has been missed. This is especially helpful in very complicated works such as the lattices of *shouji* frames or complex carvings. Therefore it is not unusual to apply a yellow coloured material (*urushi* + *kiou*) first, followed by *bengara urushi* which is red, and finally by the gold powder. Each layer contrasts clearly with the previous one.



Reddish colour of *bengara urushi* clearly indicates where any gaps have been left in applying the adhesive.

An even red colour also shows the approximate thickness of the adhesive.

Kin photo 13: *bengara urushi* applied to carving

6.3.2 GILDING MATERIALS: gold leaf (*kinpaku*) and gold powder (*kinpun*)

Having discussed the different types of *urushi* materials used as an adhesive to stick the gold, now let us move on to the gold itself. Depending on the preferences and the budget of the customer, either gold leaf or gold powder can be used. To compare the differences in appearance between gold leaf and gold powder, beside the references in this gilding section, please look at *Choukoku* photos 05 and 11. First we will describe gold leaf, including the processes whereby it is made.

GOLD LEAF (*kinpaku*):

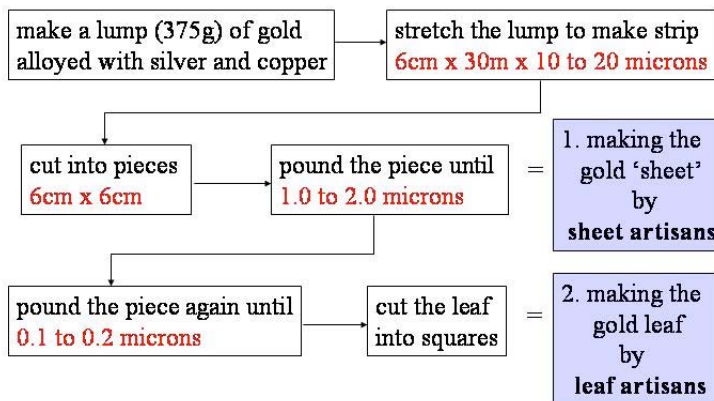
Miscellaneous:

Although gold rationing is not a problem these days, Eitaro says, “I don’t know until what year of Showa (1926-90), but for a long time even after the war, gold was controlled and we couldn’t buy it freely. The government decided the amount of gold that leaf makers could purchase and allocated it to them. Gold ingots were allocated to leaf making shops. In those days the international price for gold was 450 yen per gram, however in Japan the official price was 600 yen per gram. I often read about cases of smuggling in the newspaper. Those who went to foreign countries often came back with gold sewn into the inside of their clothes.”

In any case, these days the manufacturers (*toiya*) are in charge, in that they take both the *butsudan* components and the gold leaf to the *kinpakuoshishi*, so the artisan does not have any control over his materials. “It’s better that way,” says Eitaro. “Leaf can be different by colour and thickness as well as the processes used to make it (see *makie* section). So it is hard for me to keep all kinds of leaf because there are so many and the kind of leaf used is up to the *toiya*’s preference. So I’d have to keep all the kinds. And it deteriorates (for example it sticks to the interleaving paper) if it isn’t used quite quickly. So it isn’t practical. There are also silver and platinum leaves but I don’t use these.”

Gold leaf is usually sold in bundles of 1,400 to 1,700 pieces, made up of 100-leaf units. One bundle of gold leaves is made from 1 ingot. This is to ensure that the colour of the leaf in one bundle, i.e. for one *butsudan*, is the same. Of the leaves from one ingot, some pieces break or are punctured in the production process and have to be discarded, other pieces are removed and sold in smaller orders, and the rest are packaged.

Producing gold leaf may look like a simple process, but it is complex and needs very skilled techniques. Ultimately what happens is that a 375g gold ingot is turned into upward of 1500 leaves, each with a thickness of 0.1 to 0.2 microns. As a pamphlet from the Yasue Gold Leaf Museum in Kanazawa explains, “To put it simply, a lump the size of a small bean can become a leaf the size of a *tatami* mat. The mat is 1.62 sq m (84cm x 166cm).”



Kin figure 10: flow chart of gold leaf making processes

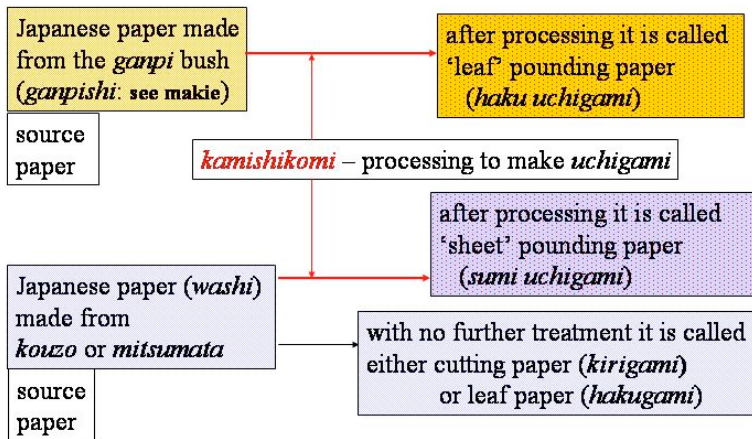
THE LEAF MAKING PROCESS: The following is a cursory description of leaf making. For more details (in Japanese) please refer to the website of Kanazawa Prefectural Museum Traditional Craft Industries (Ishikawa *kenritsu dentou sangyou kougei kan*) <http://shofu.pref.ishikawa.jp/shofu/kougei1/haku/kouter/index.html>. However for our purposes, the leaf making process can be roughly broken into three stages:

1. Melting the alloy of gold with some silver and copper, extending it and making gold 'sheets' (*uwazumi*) is done by gold sheet producing artisans (*uwazumi shokunin*).
2. Pounding the 'sheets' into 'leaf' (*haku*) and packaging them in a kind of 'notebook' are done by gold leaf producing artisans (*haku uchi shi*).
3. Removing the leaves from the notebook, cutting and stacking them into units of 100, where each leaf is separated by a special kind of paper, is usually done by specially trained women artisans. The leaves may be cut to different sizes, as requested by the *toiya*, 10.8 sq cm (3 *sun* 6 *bu* sq) or 12.6 sq cm (4 *sun* 2 *bu* sq) being the most common.

In fact, at each stage, every time the metal is flattened (pounded) a little more, it is repackaged in new paper. It is the time consuming production of this paper that is mostly responsible for the high cost of *entsuki* (see introduction) gold leaf. Therefore we will describe the processes of paper making to begin with.

Making the paper for gold leaf production:

According to the Yasue Museum, there are two basic kinds of Japanese paper (*washi*) used in gold leaf making: paper for the pounding process (*uchigami*) and paper for the cutting processes (*hakugami* or *kirigami*). Further, *uchigami* is divided into two types, depending on whether it is used for ‘sheet’ making or ‘leaf’ making (see flow chart *Kin* fig.10). That for the gold ‘sheet’ (*uwazumi*) pounding processes is called *sumi uchigami*. That for the leaf (*haku*) pounding processes is called *haku uchigami*.



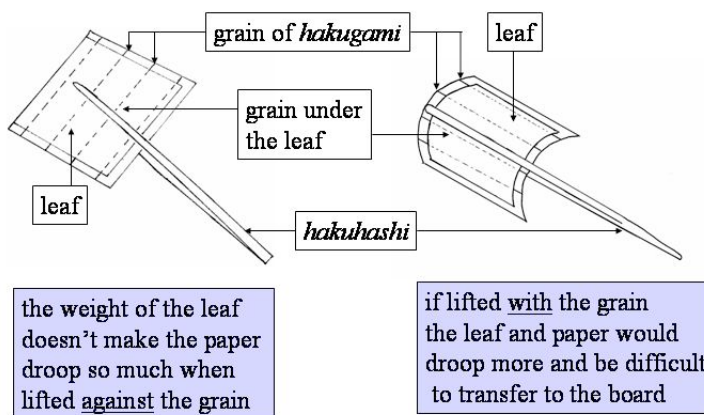
Kin figure 11: simplified overview of types of paper used in gold leaf making

The paper used for the final packaging and storage of the cut leaves is called *hakugami* or *kirigami* or even, somewhat confusingly, *aigami*. For the sake of consistency we will always use the term *hakugami*. As mentioned before, the artisans move the leaves to new paper every time they pound them, so the paper is very important for both the production processes and storage of the finished product.

Since *hakugami* is the most basic of the papers, we will deal with it at the outset. It is used to sandwich the final cut leaves into units of 100 for distribution, and is made from the bark of *kouzo* (paper mulberry) or *mitsumata* (paper bush: Edgeworthia). According to an NHK programme (Kawakikou) aired on January 19, 1999, the bark is boiled in limewater for 5 hours. The lime works to disintegrate the fibres. After boiling, the bark is washed thoroughly to remove impurities in the clean, clear water of the Yokono River (in Hiroshima). Then the washed bark is kept in the stream all night long. The cold, clear water in winter provides the best material for making Japanese paper (*washi*).

Kinpakuoshishi Fujii Eitaro says rather vaguely, “There is a workshop where they are making only *hakugami* in Hyogo prefecture or in the Tamba area of Kyoto prefecture, I don’t know which. After making it, it will be left 10 or 20 years and then used. I guess if we use the new one, some of the glue remains in the paper and the leaf will stick to it. They mix glue with Japanese paper (*washi*) when they make it. However, even after seasoning the paper, new gold leaf should be used within one or two years or the leaves will stick to the paper and cannot be used. So the leaf must be used quite soon after it’s been made.” During this description Eitaro was demonstrating the use of leaf that was 10 years old. It stuck to the paper and broke easily. He sometimes sells the paper to the gold buyer because of the scraps remaining on it.

Because of its grain, *hakugami* has a matt finish as opposed to the lustre of *uchigami*. The fine grain lines at 3.5cm intervals can be seen when held up to the light. This is a result of the paper making process. It is made by dipping a bamboo frame with a lattice pattern into a mixture of water and fibres. The frame is rocked back and forth in the mixture to pick up and evenly spread a mass of these fibres. When it is lifted out, the water drains away and the lattice pattern on the bamboo is transferred to the fibre distribution in the paper. When the gold leaf is picked up together with a sheet of *hakugami*, using special bamboo forceps (*hakuhashi*), it is done at right angles to the lines in the paper so it does not flop so much. It is then easier to transfer the gold to the board.



Kin figure 12: effect of the grain when the leaf is picked up

When used as *hakugami*, this kind of *washi* needs no further treatment. However, if used as a ‘source’ paper (raw material) for making *uchigami*, further processing (*kamishikomi*) is necessary. *Uchigami* comes in two types depending on the source material.

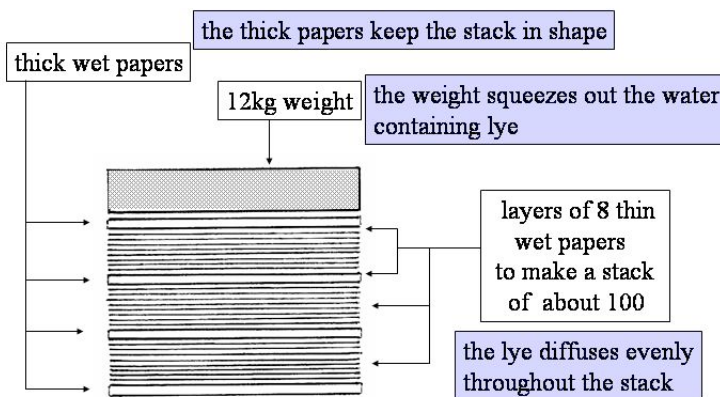
Uchigami for gold sheet pounding is made from the bark of *mitsumata* or *kouzo* with a little added rice-straw fibres or bamboo fibres. The paper is processed (*kamishikomi*) by the artisans (*uwazumi shokunin*) who do the *uwazumi* process, so the choice of source paper (fibre) is theirs. The finished product is called *sumi uchigami* and is the thickest and strongest of the three papers.

Uchigami for the gold leaf pounding is produced from the bark of a plant called *ganpi* (*Wikstroemia sikokiana*) (see *makie* section: FN.1). This paper (*ganpishi*), which also contains rice straw or bamboo fibres, is the source paper used by the leaf-making artisans (*haku uchi shi*) to make *haku uchigami*.

The *kamishikomi* process for making both these kinds of *uchigami* is virtually the same. Only the source paper is different. The artisans order the source paper from *washi* makers in Kanazawa. They order paper with their own favourite percentage of fibres. However, these days there is a shortage of *ganpi* trees, so the Kanazawa leaf-making co-operative (*kumiai*) is growing them nearby. For both types of artisans the paper making process is very important and time consuming; taking about three months.

The *kamishikomi* Process:

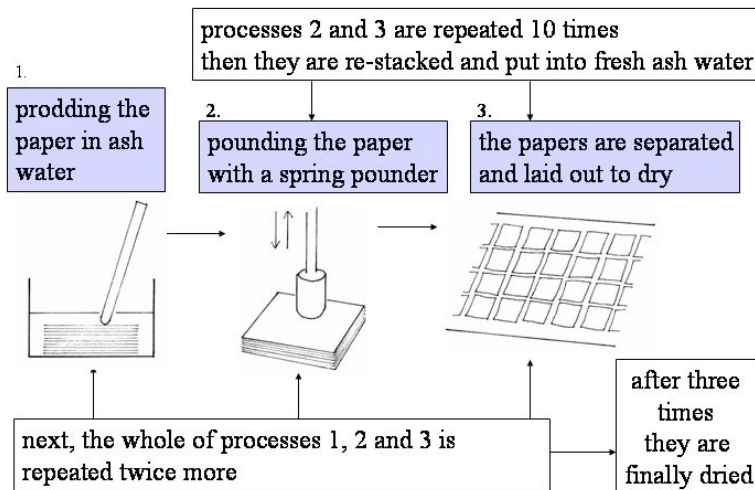
1. As already mentioned, the first stage in *washi* production involves softening the bark fibres by boiling in limewater. Thus, before making the *uchigami*, any remaining lye has to be taken out. The paper is cut and made into stacks of eight thin wet papers, between two thick wet ones to make a stack of about 100. The purpose of the thick sheets is to keep the shape of the thin ones. The lye in the thin paper diffuses evenly throughout the stack of papers. Then a 12 kg weight is put on top. While it sits overnight, the water is squeezed out under the pressure of the weight. Next day the sheets are spread out singly on a board to dry.



Kin figure 13: removing lye from source paper

2. Next the paper is soaked in ash water. To make this, ash is stirred into water and, when it sinks, the result is called 'ash water'. A little persimmon tannin (*kakishibu*) and egg white are added. The pile of 100 papers is made again and put into the ash water (the first time). They are pressed and punched with a wooden pestle to make the liquid penetrate between the fibres. The ash water and *kakishibu* make the paper strong by joining the fibres together. The egg makes the paper smooth. After the punching, the papers are removed as a block, put on a board and pounded with a

spring-pounding machine. This heavy, large diameter machine is used in the paper making process, as opposed to the air-pounding machine used in leaf making. This squeezes the ash water out. Then one by one they are laid out on the board to dry overnight. Next they are piled together and pounded again. This cycle of pounding and spreading out will be repeated ten times. At first the papers are sticky; but as this process continues they become less so.



Kin figure 14: ash treatment of papers

3. Then, after ten times, when the sheets stop sticking together, they are piled up again and put into new ash water (the second time) and punched again with a pestle. Then they are removed and the pounding and separating are repeated ten more times.

4. Then they go into fresh ash water for the third time and are pounded and separated ten more times.

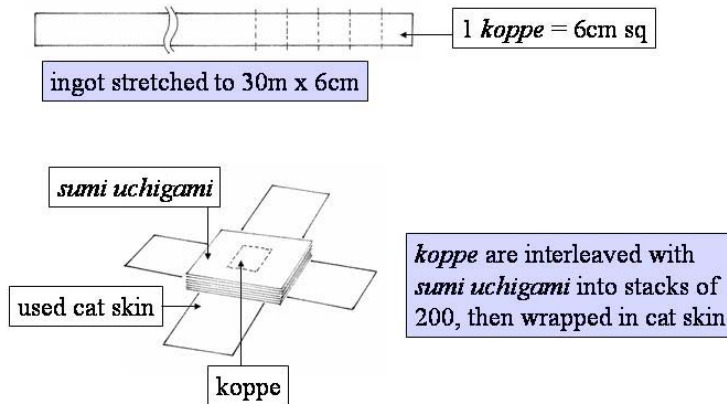
5. Finally they are dried and can be used for the gold pounding stages. Both sides of *uchigami* are a little shiny and feel smooth (FN.2).

Production process for gold leaf:

1) Mixing gold with copper or silver (*kin awase*): Gold containing more than 96% purity is used to decorate luxury Buddhist alters. Anything over 95% gold is called 'pure' according to JIS standards (see *Nuri* FN.5). The other 4 or 5% is copper or silver. Therefore the first step is to form a 375g sausage-shaped ingot of the three metals. They are alloyed together at a melting temp of about 2,400 °F (1,300 °C). The function of the silver is to determine the colour: the more silver, the whiter the leaf will become. The function of copper is to make it malleable, so it can be pounded without breaking. If there is no copper, it is more fragile and easily breaks into small pieces. Around 0.8% copper is ideal: too much makes the leaf colour reddish.

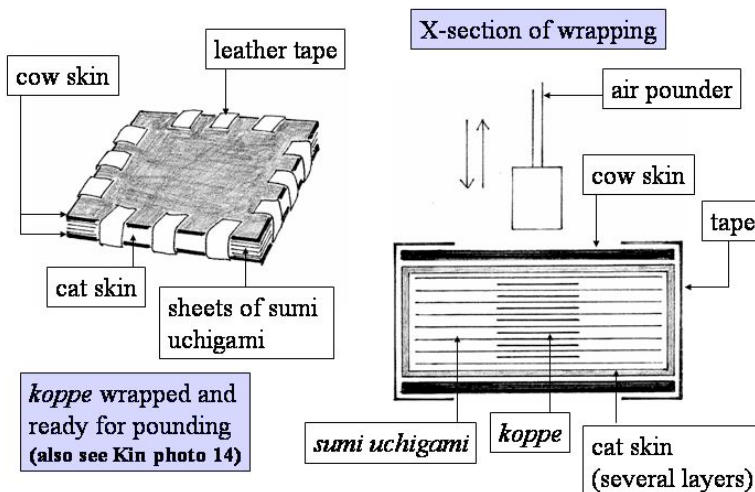
2) Extending the gold ingot (*nobegane*): The gold 'sausage' is extended with a machine roller into a strip 6cm x 30m, with a thickness of 0.01 to 0.02mm (10 to 20 microns). Then the strip is cut into 6cm squares. The 6 x 6 squares are called *koppe*.

Each *koppe* is put between sheets of special ‘sheet pounding’ paper (*sumi uchigami*), making a stack of 200 then it is wrapped in cat and cow skin for pounding.



Kin figure 15: stretching, cutting and interleaving the gold ingot

3) Air pounding to make gold ‘sheet’ (*sumi uchi*): The first stage is making *aragane*. The stack of 200 *koppe*, interleaved with *sumi uchigami*, is wrapped in used cat skin from a *shamisen*. From *Kin* fig. 15, we can see that there will be two layers of cat skin underneath and four layers above. The function of the cat skin is to wrap the stack of papers tightly so they do not slip when pounded. Then cow skin is put above and below and the whole thing is bound with wide strips of leather tape (see *Kin* photo 14).

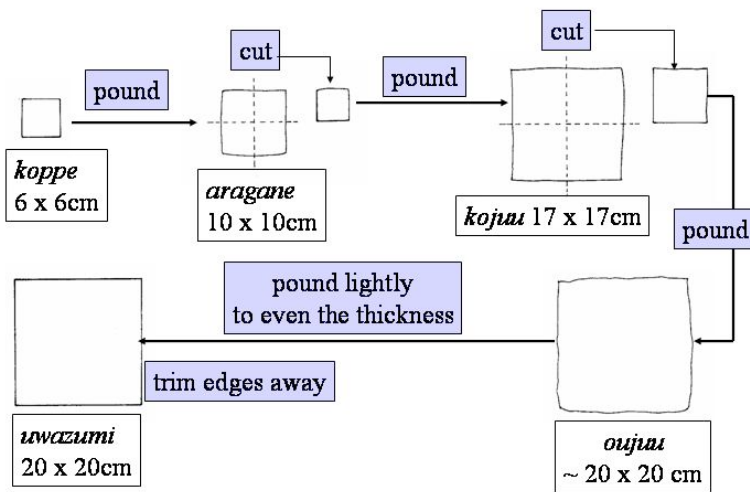


Kin figure 16: wrapped koppe

It is put onto the pounding machine, where the cow skin forms a cushion against the blows. At this stage an air-pounding machine, which is faster and lighter than the

spring one employed for papermaking, is used on the bundle. After air pounding, each *koppe* becomes a 10 x 10cm sheet called *aragane*.

The second stage (*shitate*) is pounding *aragane*. Initially the *aragane* is cut into four pieces and each piece is layered with paper to make a stack of 200 again. It is wrapped and pounded as before. This becomes *kojuu*. The process of cutting, wrapping and pounding is repeated again to make *oujuu*. It is then re-wrapped (without cutting) and pounded again to even the thickness and make *uwazumi*. By now each sheet will have been extended to 20 x 20 cm. This *uwazumi* has a thickness of 0.001 to 0.002mm (1 to 2 microns).



Kin figure 17: pounding koppe to uwazumi

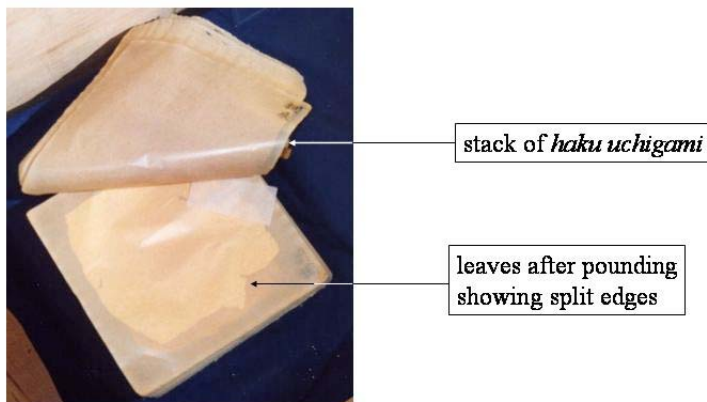
The processes outlined above both making the special paper and doing the pounding are done by artisans called *uwazumi shokunin* (more colloquially, *zumiya*). Until this point, the material is still technically gold ‘sheet’ (not yet leaf) and the thickness is 1 to 2 microns. The next ‘leaf’ stages, again including paper making, are done by leaf pounding artisans (*haku uchi shi*). The final cutting stage is done in the *haku uchi shi*’s workshop, usually by his wife but sometimes by himself.

4) Air pounding to make gold leaf (*haku uchi*): The *haku uchi shi* cuts the *uwazumi* into 16 pieces with a bamboo knife. Then each piece is put between sheets of ‘leaf’ pounding paper (*haku uchigami*), measuring 4 sq cm, to make a stack of 1600. The stack is wrapped the same way as before.



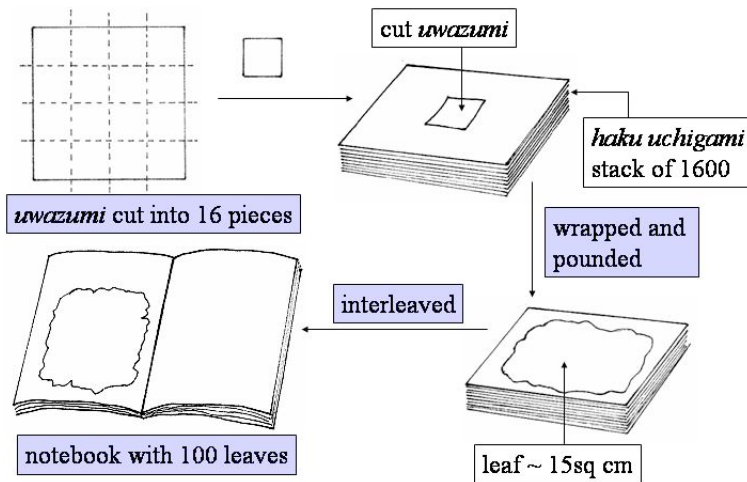
Kin photo 14: leaves wrapped for pounding
(also see *Kin* figs. 15 & 16)

It is pounded with an air-pounding machine at a rate of 750 times per minute (see *Kin* fig. 16). Each sheet becomes 0.1 to 0.2 microns thick. Now this is called leaf (*haku*) and it is thin enough to see the light through it. The leaf when it comes from the pounding process is about 15 sq cm and as thin as it will get. The edges are uneven and often split.



Kin photo 15: leaves packed in *haku uchigami*
before moving to 'notebook'

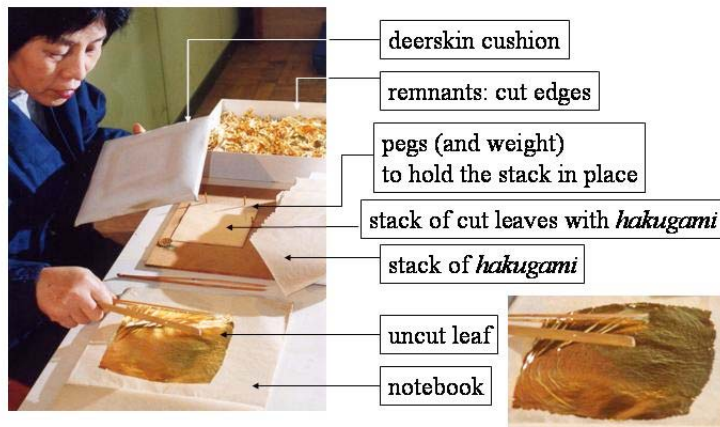
Using bamboo forceps, each leaf is put between the pages of a book, rather like a notebook. From here they will go to the leaf cutter who will cut then to the final size.



Kin figure 18: making the 'leaf'

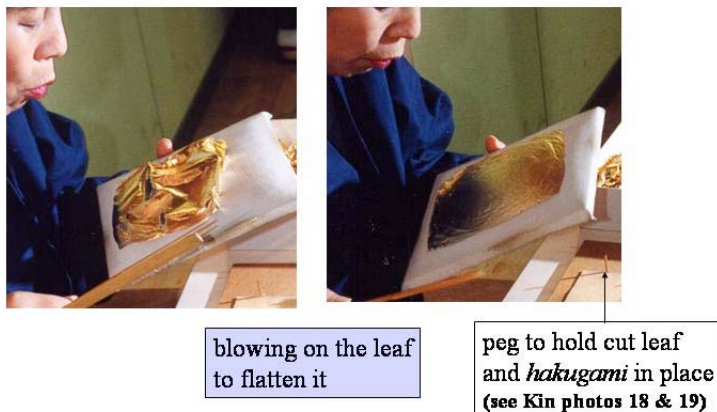
5) Cutting and stacking leaf (*haku utsushi*): This process involves cutting the leaf and making the 100-leaf stack. The person who does this is usually a woman. She uses bamboo forceps to handle the leaf. The bamboo forceps (*hakuhashi*) used in the leaf making processes are longer and thinner than those used during the application of the gold leaf. They are made from a 5mm diameter bamboo stick split lengthwise. This means they are curved and so come into contact with the leaf only at their edges and not across the entire surface. They are used for transferring the leaf from 'notebook' to deerskin and then to *hakugami* (see materials section and *Kin* photos 16, 17, 18 & 20). "Leaf cutters pick up only the gold leaf, without any paper," explains Eitaro with admiration. "When applying leaf to the board, we *kinpakuoshishi* always handle the leaf together with *hakugami*. Picking it up on its own (without the paper) and putting it in the centre of *hakugami*, exactly in the middle of the paper, is too difficult for me (see *Kin* photo 20). Women do this job. I once saw them doing it."

The artisan turns the pages of the 'notebook', picks up the leaves and cuts them one at a time.



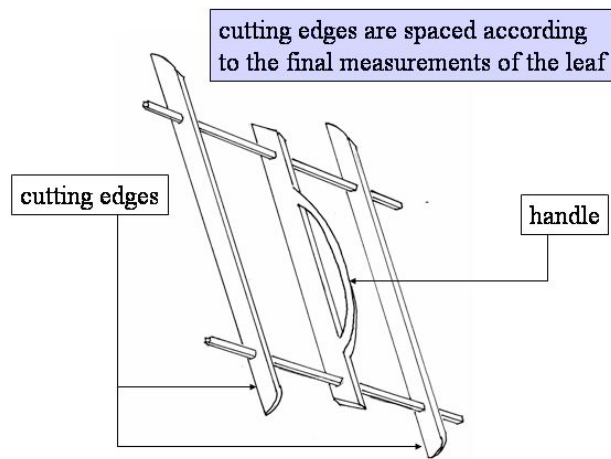
Kin photo 16: picking up leaf from ‘notebook’
using curved bamboo forceps

As she is working, she explains, “You must not touch the leaf or static electricity sticks it to you. So I pick it up with a pair of bamboo *hakuhashi*, put it on a leather cushion. It is often crumpled so I blow on it to flatten it. Then I cut it with a bamboo cutting frame.”

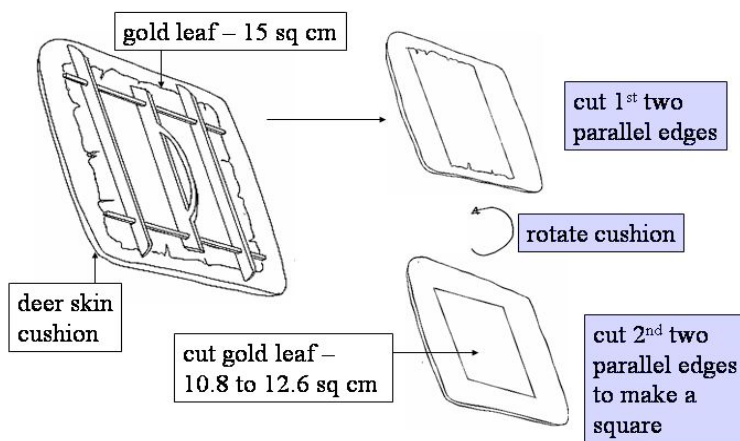


Kin photo 17: placing leaf on deerskin cushion

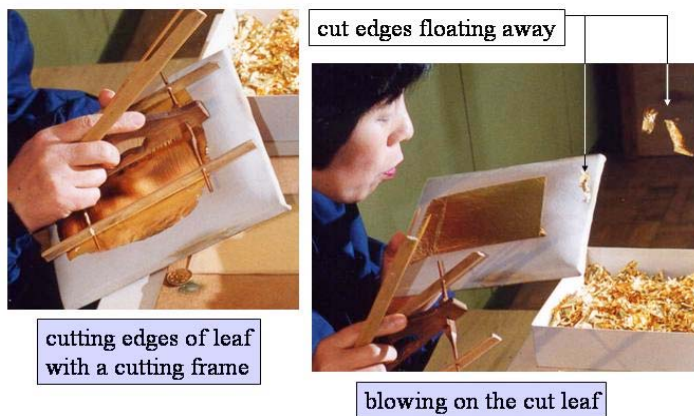
First she places the large leaf onto a soft deerskin cushion. Then using the bamboo cutting frame, she cuts the parallel side edges.



Kin figure 19a: gold leaf cutter

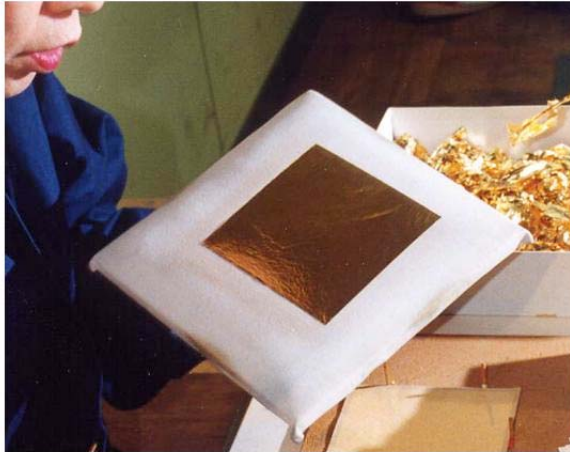


Kin figure 19b: cutting gold leaf



Kin photo 18: cutting and blowing

When she blows on it, the cut edges float away. Then she turns the cushion and cuts the other edges.



Kin photo 19: the leaf perfectly trimmed

A rabbit's leg or a feather can be used to brush off gold powder produced by cutting. The cut pieces are gathered and recycled into powder (see *makie* and *kinpun* sections). Then she lifts the cut leaf and puts it on the stack she is making in front of her. She manages to put the leaf on a piece of *hakugami* that is just slightly bigger than the leaf and then puts another piece of *hakugami* on top. If the leaf does not spread nicely onto the paper, she blows on it and it flattens out.



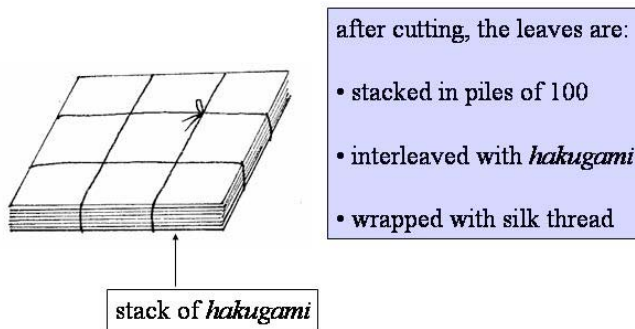
putting cut leaf on *hakugami*
blowing to flatten it



note the *hakugami* is just slightly
larger than the leaf

Kin photo 20: moving leaf to *hakugami* with
slightly curved *hakuhashi*

She makes a pile of 100 sheets about 4mm thick. This is bound with silk thread. Then it is combined into packs of about 1600 sheets, which is the output from the one original ingot and approximately what is needed for one *butsudan*.



Kin figure 20: leaves wrapped

Characteristics of Gold leaf:

Colour. There are five kinds of gold leaf defined by colour: grades 1 to 4 are used for *butsudan*. As usual, Eitaro is a little vague about this kind of information. However he explains, “The differences between these grades will not be apparent to laymen if they see the finished work, although when I put them side-by-side I can see the difference. Usually there is copper and silver and the ratio of these to gold determines the colour.”

Grade 1: the colour is reddish, with a purity of 97.7%. Of the types listed here, it includes least silver. This is used for *butsudan*.

Grade 2: the colour is between grade 1 and 3 and is a little bluish, with a purity of 96.7%. This is also used for *butsudan*.

Grade 3: the colour is between grades 2 and 4, with a purity of 95.8%. Eitaro uses this mostly for *butsudan*.

Grade 4: the colour is bluish, with a purity of 94.4%. It includes more silver than grade 3. It is also used for *butsudan*.

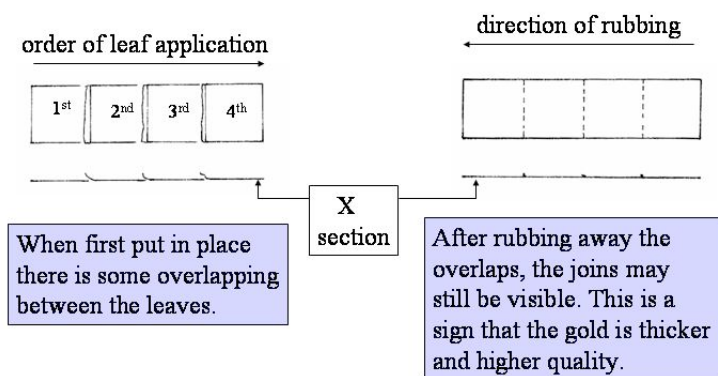
Grade 5: the colour is bluer. It is not used for *butsudan*

Thickness:

The thickness of gold leaf differs from maker to maker. However, since *haku* is between 0.1 and 0.2 microns thick, any differences will be infinitesimal. Nevertheless, it is separated into four categories.

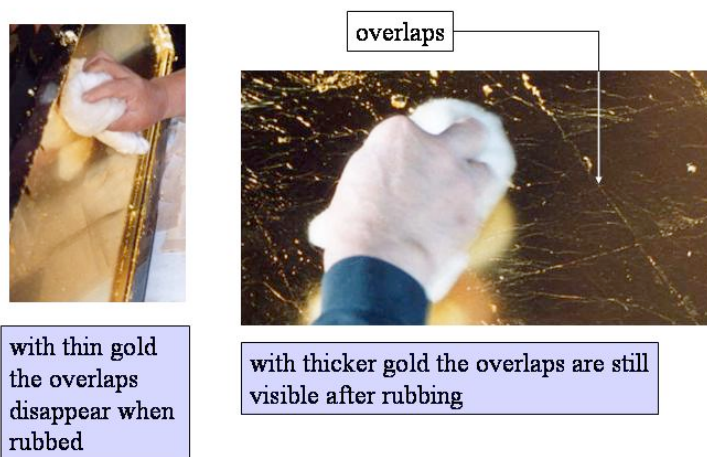
a) *ni mai gake*: This is the best and thickest. Eitaro uses it on the flat surfaces such as sideboards and backboards and inside the doors. He says, “If I use *ni mai gake*, when I rub the joins between the leaves the overlap doesn’t rub off easily and completely,

so the joins are still a little visible. The overlapping edges are called *tsugito*. If it is thick it is more difficult to hide the joins. In a way this is a difficulty, and yet the joins give a sense of quality and authenticity.” The thinner the gold, the more completely the joins are rubbed away.



(see Kin photo 21 & 32 & fig. 26)

Kin figure 21: rubbing away the overlaps



Kin photo 21: rubbing off overlaps

(see *Kin* figs. 21 & 26)

b) *ichi mai han gake*: This is the second best leaf and is used commonly on the insides of the doors.

c) *namijou haku*: “This is next in quality, about medium thickness,” says Eitaro as he demonstrates using this thin kind and rubbing the overlaps off completely so the edges butt exactly and the joins became almost invisible. “I can’t find so much difference between this *namijou haku* and the thinner *nami haku*. For *komono*, such as door mouldings (*men*), carvings and *kuuden*, I use either.

d) **nami haku**: It is lowest quality. It is thinnest. It may also be used for small, carved items.

Eitaro explains, “For example some makers’ *ichi mai han* is thicker than other makers’ *ni mai*. *Toiya* told me that one leaf of *ni mai gake* is 130 yen. I don’t know the prices of lower ranked leaves such as *ichi mai han gake*, *namijou haku* and *nami haku*. I guess the price will be 1 or 2 yen different depending on the leaf shops. The thickness of gold leaf is about 0.1 to 0.2 microns,” he continues, “so even if it is different, depending on the kind, the variation will only be about 0.001 micron. I think that if the leaves are not finished evenly they will be sold as if they are one rank lower: *ni mai gake* will be sold as *namijou haku*. The thickness will be slightly different, depending on the skill of the leaf-making artisan. Even if the label says *ni mai gake*, I sometimes feel they are not thick enough.”

Regarding the above types, he cannot really see much difference. However as mentioned in the introduction, there is another type of leaf (*tachikiri*) that is a little thicker or rather the thickness is more variable. As the name suggests, this *tachikiri* is cut in stacks rather than individually (*entsuki*).

e) **tachikiri**: As mentioned before, this leaf is cut by machine. It is thick but cheap because it includes some impurities. Hundreds of leaves are stacked between layers of paper and cut all at once into a square shape, so it is called *tachikiri*. Generally it is not used for high quality *butsudan*. However, in his usual ambiguous way, Eitaro seems to think, “They are used for leafing on *komono* (*kuuden*, *shouji*, ceiling) and carvings on lower grade *butsudan*, but not on *ita*. Their price is less than half of that of *ni mai gake*. I think it is about 60 yen for one leaf. I don’t know whether they use these for *komono* or carvings of DKH items.”

GOLD POWDER (*kinpun*):

As with gold leaf, usually *butsudan* shops bring their own gold powder (*fun*) to the workshop, because each *toiya* has their favourite kind or colour. However, our ‘powdering’ artisan (*fundameshi*), Kitamura Junji, who is both a gilder and a *toiya* in his own right, often supplies his own materials. He says, “I try to waste as little as I can. When I put too much *fun* on a flat surface, it will spread into the air or around the carving and will be wasted. These days the price of the gold is getting lower, but even so, it is still expensive. I sometimes use our own *fun* when a *butsudan* shop says it’s OK. This means they trust my choice. Mass produced *fun* can’t be used in this shop. On a low quality *butsudan*, the *fun* is made from *tachikiri*. But for a DKH item, good *fun* made from *entsuki* is necessary.”

The qualities of gold powder are the same as those used in *makie*, so for a more complete description please see that section. A lower number means a higher quality of *fun*, and the higher the quality, the more reddish it is. In Junji’s shop, the range he uses is from grades 1 to 4. He does not use grade 2. There is not much difference between grades 1 and 2 so he uses grade 1 or sometimes grade 3. Occasionally powder higher than grade 1, which is called *gomoufun*, is used for exceptionally high quality items. He says, “Gold is cheap now. One *momme* (3.75gms) costs 8,000 yen for grade 3 and about 9,000 yen for grade 1.” The work he is doing on a large DKH

butsudan will take about 50g for the flat surfaces (*ita*) and more for the carvings (see photos in the processes section of gilding).

Now that we have dealt with the materials and tools in some detail, let us move on to the processes themselves.

6.4 TECHNICAL PROCESSES

As mentioned before there are two basic ways in which to gild a *butsudan*: with gold leaf or gold powder. They can be used separately or combined together (see *Kin* photo 52), where the large flat surfaces (*ita*) may be done in one style, and the carvings, pillars and inside structures in the other. The choice is completely up to the customer's taste and budget. Because there are some significant differences between the methods, we will deal with them separately, starting with leafing.

6.4.1 KINPAKUOSHI (leafing):

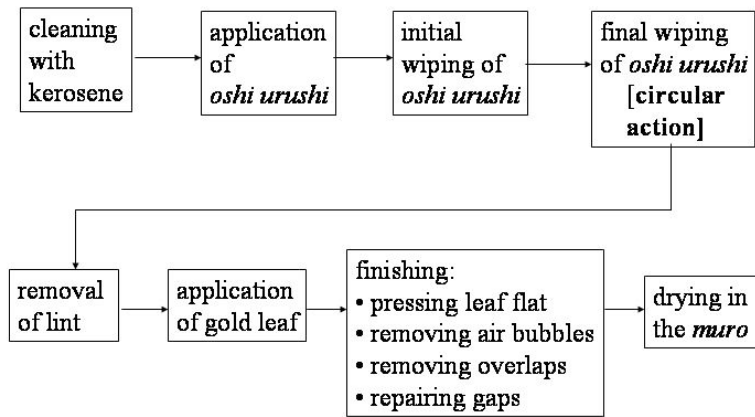
General:

Kinpakuoshi shi Fujii Eitaro says that if he were to do a complete leafing job on a big DKH item it would take about two weeks. In such a case, leafing on the carvings alone would require as much as two days. "It needs time and energy," he explains, "because the carvings are done in layers (see *choukoku* section), so they are leafed separately. Then there are the pillars, the *shumidan* and *kuuden*, the insides of the door boards, and the inside walls of the *kiji*." (see *Kin* photo 01) "However, these days, I am working only on boards. In the case of a *maebirakai*-type big DKH *butsudan*, it takes about eight hours to do four door panels and three body walls. For *sanpou biraki*, which has six door panels and the three body walls, ten hours are needed."

Stages of Leafing:

When working on boards that have been covered with chemical 'lacquer', first *suri urushi* (*ki urushi*) is applied to make them more receptive to the application of the adhesive *oshi urushi*. This *suri urushi* is wiped onto the *ita* and the insides of the doors, and then it is wiped away. After drying in the *muro*, *oshi urushi* is applied and then it in turn is wiped away, leaving a flat, even surface suitable for the application of leaf. Without the initial *suri urushi* process, the *oshi urushi* becomes uneven as it is wiped and the gold will appear streaked.

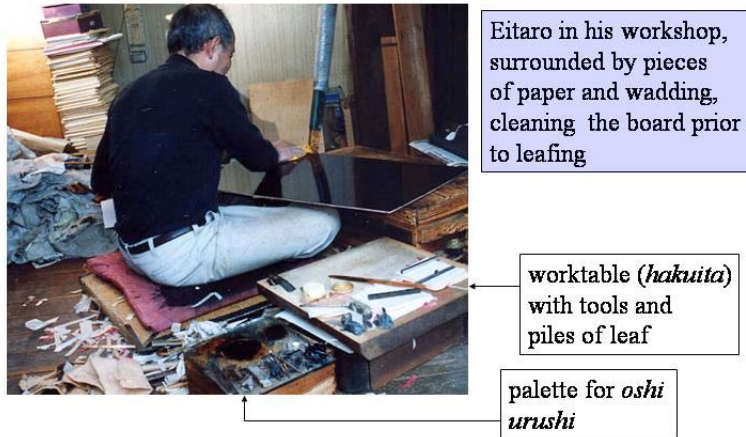
However, as mentioned already, we are dealing with high quality items previously treated with high quality lacquer, so Eitaro says, "In the case of *roiro* finished *urushi*-lacquered boards, I do not need to apply *suri urushi* because it has already been done by the *murishi*." (See *Nuri* section.) To explain the processes for treating flat boards (*ita*) clearly, Fujii Eitaro has prepared one especially to demonstrate.



Kin figure 22: flow chart of leafing processes

1. Cleaning:

First he cleans the surface with kerosene.



Kin photo 22: wiping the board with wadding and kerosene

2. Application of adhesive (*oshi urushi*):

Eitaro applies *haku oshi urushi* evenly with a spatula (*hera*), to the large flat surfaces of the *butsudan*, including the three inside walls of the *kiji* and the insides of the doors. Curved surfaces such as carvings, palace (*kuuden*) pieces, and door mouldings are done with a brush (*hake*) (see *Kin* fig. 04). “Some artisans use cotton wadding for applying *oshi urushi*,” says Eitrao. “In the case of *tate nuri* boards, I apply it with cotton wadding (*wata*) because it was not polished by the lacquerer and the surface isn’t even.” But if the board was finished with *roiro* polishing, he applies it with a spatula.



application of *oshi urushi*

- onto a flat surface (*ita*)

- using a spatula

kinpakuoshi shi, Fujii Eitaro sitting on a cushion

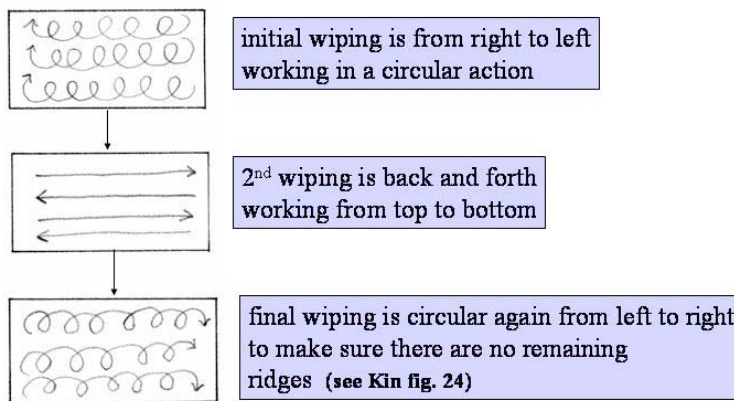
Kin photo 23: applying *oshi urushi*

“I squeeze some *haku oshi urushi* from the tube onto a piece of glass or directly onto my worktable (palette). Then I wipe it straight onto the flat, rather wide surfaces of the boards. Lacquering with a spatula is difficult. It takes more skill,” he says. “In the past they said you needed three years training just to learn how to make spatulas. It takes at least three years to be able to make every kind of spatula, from narrow up to widths of 10cm. And then learning how to apply the *oshi urushi* takes time. I dip the spatula into the pool of *oshi urushi* then spread it horizontally across the lacquered board.” He uses the spatula in the middle of the board and then he may go around the edges with a brush.

We have already explained *oshi urushi* in the section on materials. “In my workshop I always use *haku oshi urushi* as an adhesive,” Eitaro reminds us, alluding to some artisans who use inferior products. “If you use substitutes, the finished product will be subtly different, even though laymen will not be able to tell the difference. If I compare work using *oshi urushi* or using a chemical adhesive such as ‘Z-black’, I can see a difference in lustre. Side by side I can see a very subtle difference. Leaf on *urushi* looks nobler, more sophisticated, less lustrous. The finishing will be elegant and refined.”

3. Initial wiping (*shitabuki*):

After application, the *oshi urushi* must be wiped off little by little until just the right amount remains. Using rolled-up old futon *wata* (cf *Kin* photo 41), he wipes in gentle circles, moving from left to right, then back and forth and then circles again. If he only goes back and forth there will be ridges when the leaf is applied.

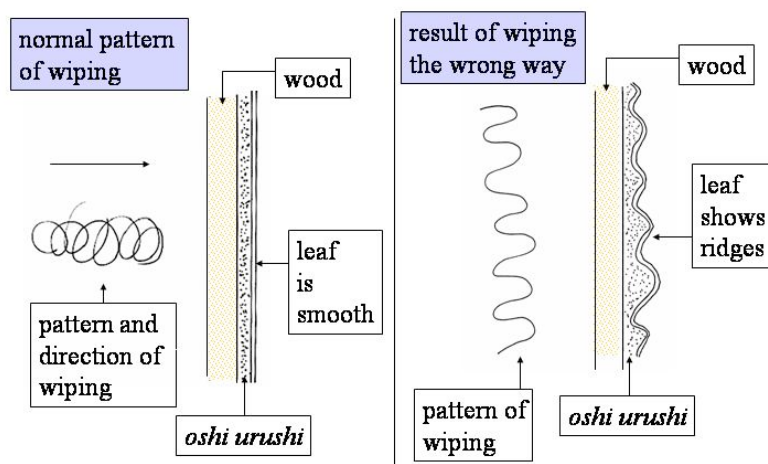


Kin figure 23: wiping patterns for removal of *oshi urushi*

The quantity remaining will determine both how well the leaf sticks to the board and how shiny the finished product is. "If I wipe the *haku oshi urushi* off well and attach the leaves skilfully the finish will be shiny. I can make the surface as shiny as a mirror and I can see my face in it. If I don't wipe the *haku oshi urushi* completely, after applying the leaf the finish will be elegant and refined," he explains pointing to the *amado ita* in his workshop where the finish is soft and silky (also see different styles described in the introduction).

4. Final wiping (*uwabuki*):

"I wipe the *haku oshi urushi* two or three times with old cotton wadding from a futon. On the *ita* at the last wiping, I make a circular motion to wipe it. If you wipe back and forth the last time, the grooves will appear on the leaf surface as lines. I sometimes use the same cotton and I sometimes change it for the last wiping," he explains. "The last wiping is the most important."



Kin figure 24: effects of final wiping patterns for *oshi urushi* (exaggerated)

5. Adjustment;

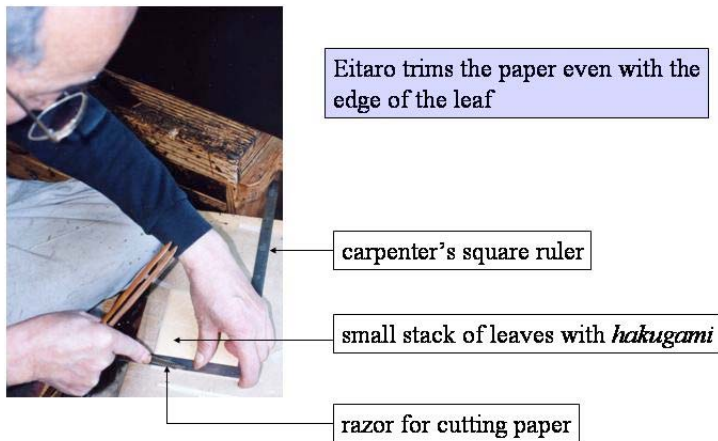
After giving the board its final wiping of *oshi urushi*, any dust or cotton fluff sticking to the surface is removed using the tip of a spatula, the corner bristles of a brush, or a needle (a tool he makes himself, by sticking a sewing needle into a chopstick).

Though cotton lint will not stick so much on a lacquered board, silk lint tends to stick more firmly. Silk fluff (lint) is hard to remove. Perhaps it is because silk is inclined to be static. That is why silk fibres must be removed from the surface of old cotton. As already explained, a thin layer of silk like a net covers both surfaces of the cotton padding, like an envelope to keep it from breaking apart (see *Kin* fig. 06). "I remove the silk before washing the old cotton, however it's difficult to remove it all, so I try to take off the rest before using it. But it's so fine that I can't get it all off," he says pulling strands of silk off previously washed cotton.

6. Application of gold leaf (*kinpakuoshi*):

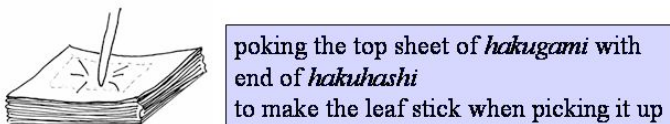
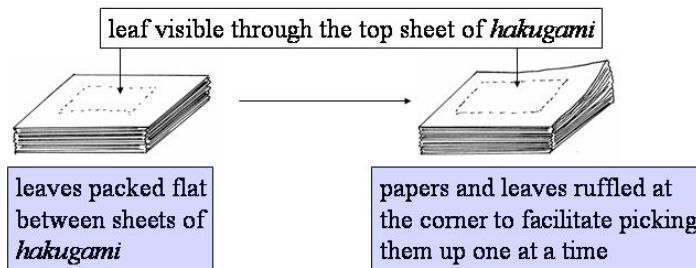
"As as soon as the *oshi urushi* has reached the right stage, I immediately apply the leaves. If I wait too long the *urushi* dries. On rainy days I have to work very fast because the *urushi* will dry quickly, and on sunny days I can work more slowly." He has to finish a large item (such as a door) at one go otherwise the adhesive conditions will differ over the whole surface: some parts will be too dry and some too sticky. "I apply leaves continuously, and if I do something the size of *amado*, I can finish it. But if it's bigger, I can't finish before the *oshi urushi* dries. I need to concentrate on the work and finish it quickly, because otherwise the first part will be different from the work finished at the end. It would look uneven. On rainy days, I can't work on a big sized *amado*." He changes what he does for the day according to the weather.

First, he places a few leaves, each separated by *hakugami*, onto his work board (*hakuita*) and trims about 3mm off the edge of the paper, using a safety razor, although he says some people use a cutter. He does this because the paper is bigger than the leaf and if they are even it is easier to abut the leaves.



Kin photo 24: trimming the *hakugami*

Then with the bamboo forceps, he curls the top right corner of the stack of leaves to make it easy to pick them up one at a time.

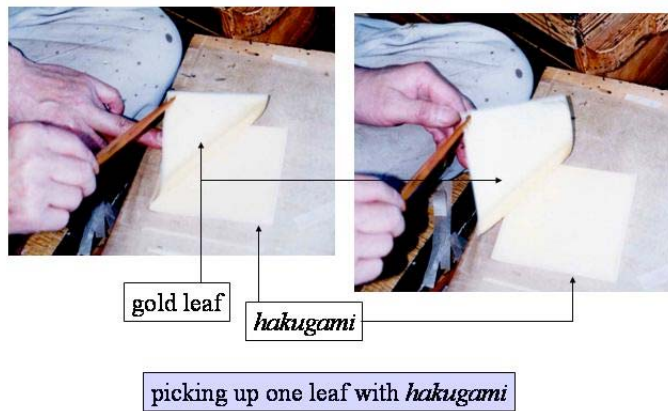


Kin figure 25: tricks for handling gold leaf

During application, he goes from left to right, but he says, “The order is not fixed. I’m putting the trimmed side upward. The gold leaves must be placed in the same direction. If they aren’t then the lustre is very delicately different.” While applying the leaves he removes any lint from the board.

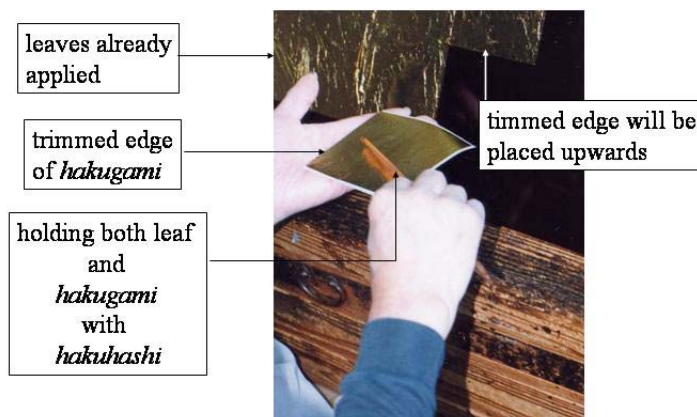
There are some secrets to keeping the leaf and paper together until after the leaf has adhered to the board. Eitaro licks the joined end of the tweezers and pokes it onto the paper so that the leaf will stay on the paper as he carries it to the board (see *Kin* fig. 25). Another way is to pick up the top paper and, after wiping your cheek with one hand, wipe it on the paper. Then put the paper, oil side down, back onto the leaf and

slightly smooth it with the *hakuhashi*. Then you can pick up the papers, one by one, with the *hakuhashi* and the gold will stick to them.



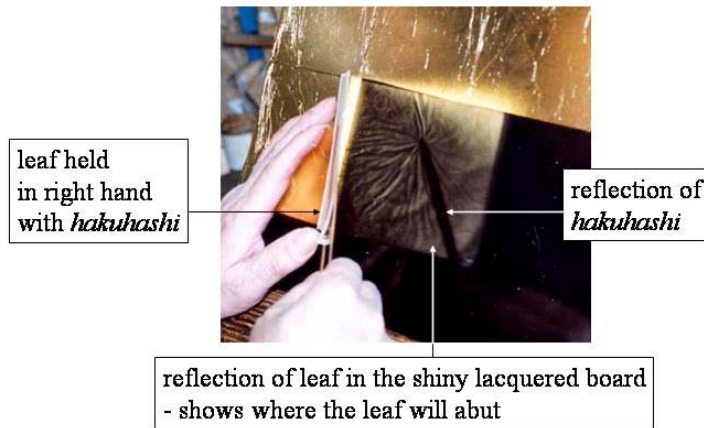
Kin photo 25: lifting one leaf from the stack

First he picks up the leaf and paper with his right hand and puts it upside down (gold side up) on his left palm.



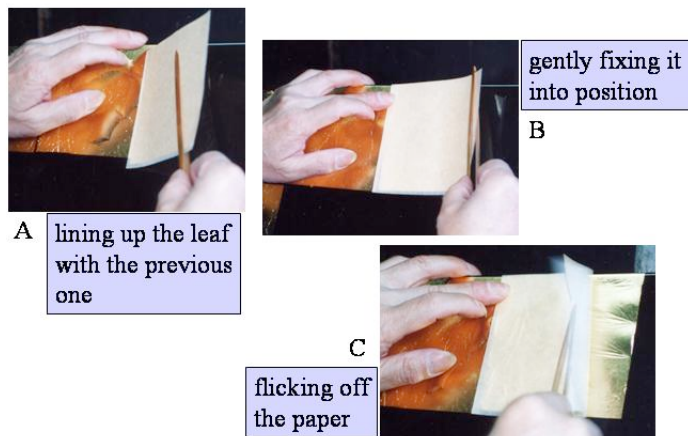
Kin photo 26: showing trimmed edge during application

Then he picks them both up with the *hakuhashi* and turns them over onto the board. “Make sure the adjacent edges of the leaf will be in exact contact with each other when they stick,” he says, because of course, once stuck, they can’t be moved.



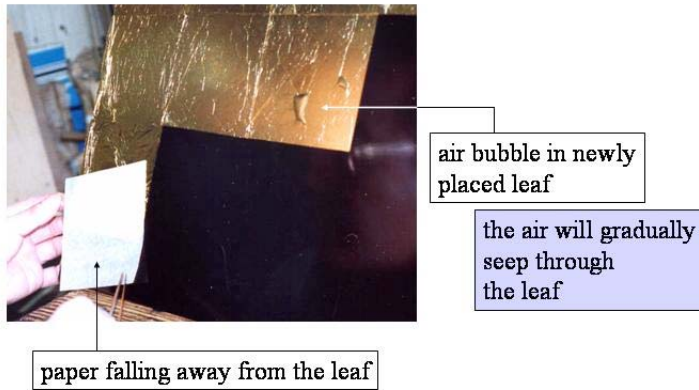
Kin photo 27: checking that the leaf will abut

“Then to fix the leaf, you need to press it gently against the board surface without putting force into the tips of the fingers.” He uses his finger to hold the paper as the leaf sticks to the *oshi urushi*.



Kin photo 28: holding paper and fixing leaf to board

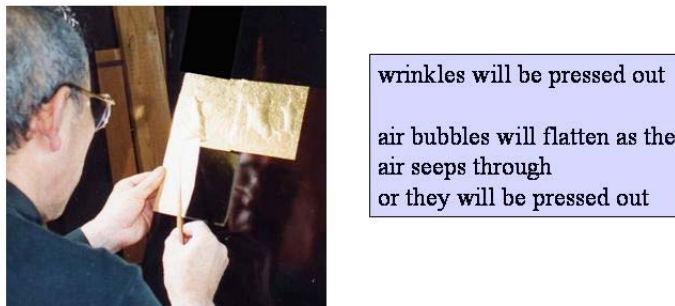
Finally, when he lets go, the paper falls away.



Kin photo 29: paper dropping off leaf

7. Finishing:

When the leaf is applied, it rumples and he blows gently on it to smooth it out. There are many air bubbles but they disappear as the air seeps through the leaf surface or as he gently presses them out.

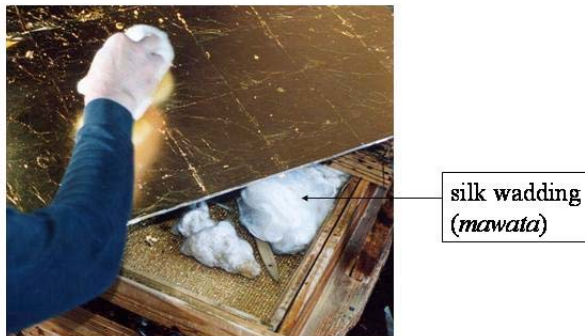


Kin photo 30: wrinkles and air bubbles

He rubs the leaf gently, pushing the air bubbles out and pressing it flat to hide the joins. “I rub lightly, just like stroking a cat without any pressure, to make the borders invisible. I do not pat,” he explains. “Or if I rub too hard, lines will appear.” The gold will mark and could even rub off. Before the *oshi urushi* dries, leaf can be rubbed off or damaged easily. After the *urushi* is dried, the leaf surface is more durable.

“When you put two pieces of leaf adjacent, they will overlap slightly so you wipe to remove the overlap,” he explains. To check how well the gold leaf is fixed and make the joins invisible, he gently rubs the abutting surfaces with teased silk wadding. He

opens the top of his workbench and uses *mawata* to rub the excess bits of gold into the compartment. The gold will then fall down through a mesh into a drawer below.



silk wadding
(*mawata*)

excess gold falls into drawer with mesh

Kin photo 31: wiping away gold leaf overlaps with silk wadding

When he goes over the leafed part with silk wadding, he does it in the direction opposite to the direction of applying the leaf. “Never wipe against the overlap,” he cautions, “or from bottom to top or straight. You have to wipe in a circular motion with the grain (of the overlap).”



when *oshi urushi* is almost completely rubbed off: result is mirror smooth



when some *oshi urushi* is left: result is a silky finish

Kin photo 32: results of wiping with *mawata*

After rubbing away the loose edges, holes or gaps will become apparent. He checks carefully over the whole surface, shading his eyes, looking for such problems.



after gentle wiping, Eitaro shades his eyes to look for minute holes or gaps in the leafed surface

then he cuts a piece to match the shape and attaches it

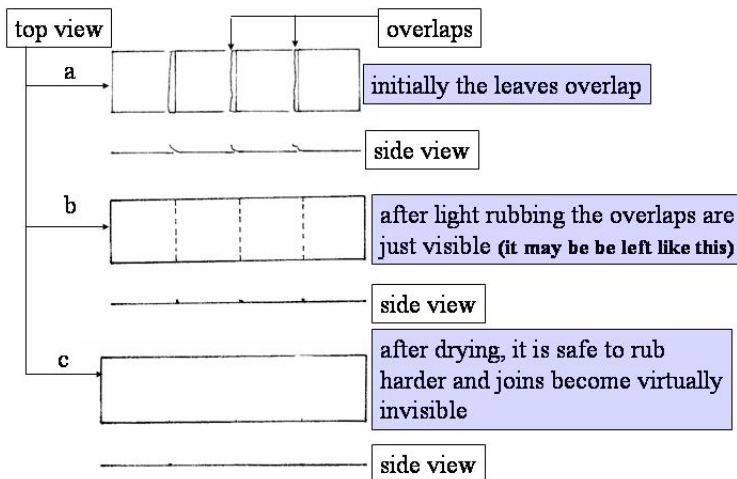
Kin photo 33: looking for gaps

“If there are gaps between the leaves or they have some holes, I cut small pieces to cover those places,” says Eitaro. Although using gold powder to fill any gaps in the finished work would seem to be a simple solution, he never does this because the colour would be different.

8. **Drying** in the constant atmosphere room (*muro*):

As gold leaf is placed on top of *urushi*, it dries slowly, needing many hours. “The pieces must be put in the drying chamber (*muro*) for 24 hours to dry or else the *oshi urushi* will seep out onto the surface both through and between the leaves. It will go over the whole leaf surface, and change the colour. Moreover they don’t dry easily,” goes on Eitaro. “If they were left as long as a month they might dry, but then the colour of the gold leaf would change by then. And it may never dry if it doesn’t go into the *muro*. But in the rainy season sometimes it dries more quickly, like overnight.”

After removing the *butsudan* components from the *muro*, they are checked to make sure the leaf has adhered firmly. Eitaro rubs the surface and, where there are slight remaining overlaps he rubs the excess off and the joins became all but invisible. Once the gold leaf sticks, he can wipe it in any direction.

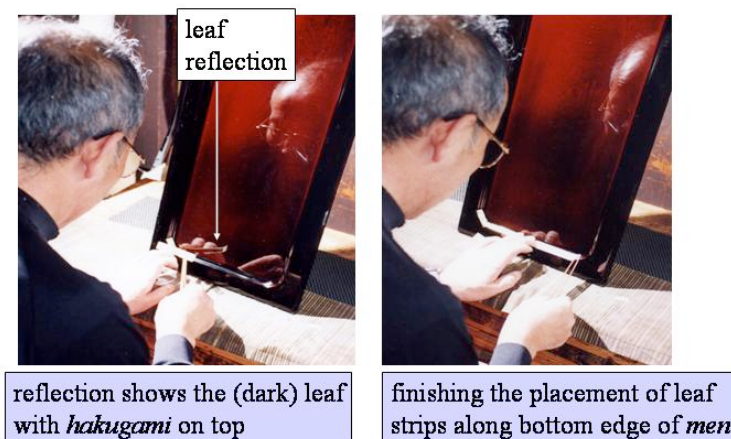


Kin figure 26: final result of rubbing the overlaps

Application of leaf to door mouldings (*men*):

When mouldings are to be leafed, first *oshi urushi* is applied onto deep *men* with a brush and into shallow ones with old cotton wadding from kimono. Next, the *urushi* is wiped off with the wadding two or three times, rubbing it back and forth rather than in circles.

On the worktable, he cuts the leaf and paper together into 1 to 1.5 cm wide strips. Next he curls the tip of the strips to separate them (as in *Kin* fig. 25). Using the bamboo forceps (*hakuhashi*), he picks up the top leaf with its paper and lays it lightly onto the *men*. He presses it down gently (see *Kin* photo 05) and then the paper slides away (or flies off because of the static).



Kin photo 34: applying leaf to door moulding (*men*) (also see *Kin* photo 05)

“Then I stroke over the leaves with a *haraibake* to press them flat. I use the brush because I can’t get into the crevices with silk wadding (*mawata*),” explains Eitrao.



In this case both the board (*ita*) and the moulding (*men*) have been leafed

the *men* is smoothed with a brush to get into all the crevices

Kin photo 35: using a brush to smooth *men*

“When the leafing is completed, I dip crumpled leaf paper (*hakugami*) into kerosene and rub the frame (*kamachi*) to remove any excess *oshi urushi* and gold leaf, and also to cut off the excess leaf and give a sharp edge to the *men*. Then I wrap *hakugami* around the tip of a flat bamboo stick and dip it in a pot containing cotton wadding drenched in kerosene. With the tip of the stick, I rub along the edges where the *men* and *ita* join. This is to take the excess leaf off the *ita*. I only put the tip of the wrapped paper into the kerosene soaked *wata* in the can. If I put too much kerosene, it will go under the leaf on the *men* and the leaf will be lifted.” The gold presses down firmly, and becomes shiny, and the excess bits flake off.



making the line of leaf beautifully smooth and sharp

Kin photo 36: finishing the edge of the moulding

Finally, he removes any kerosene remaining on the frame by rubbing with the palm of his hand. “In the past we did this with rapeseed oil, rather than kerosene, because

kerosene was more expensive. I can wipe it away with *hakugami* but the hand is easier.” If he uses paper, it creates static and makes dust stick to the board. If there is too much kerosene it will spread and lift off the leaves.

Sometimes repair work is necessary where a new item has been damaged during assembly. “This one was brought to me because the gold leaf on the mouldings (*men*) area came off in places during assembly at the manufacturer’s (*toiya*). Once *urushi* is dry, gold leaf can’t be removed by kerosene, so I apply *haku oshi urushi* again over the whole surface where the *haku* has become patchy and place gold leaf on it again.” This is different from *sentaku* done after many years and described below.

“Sometimes in such situations, the work has to be done quickly to meet a deadline. It will be taken to the *toiya* and assembled without drying properly, within that day. Or else it wouldn’t have met the delivery deadline. I suppose it will dry anyway because the part with *oshi urushi* on is small. But I can’t do that for large boards.” says Eitaro with a note of sadness at a job done too quickly and perhaps a little sloppily.

Applying leaf to *komono*:

A specialist *komono* artisan usually applies leaf onto carvings and other small parts (*komono*). Although Eitaro’s special skill lies in his work on larger surfaces, here he describes what he has done in the past. “*Oshi urushi* is applied with cotton wadding or a brush. Then the leaf is cut into small pieces with a Japanese razor on the cutting board (*hakuita*). After pressing the pieces onto the complex surfaces, I squash down the air bubbles with silk wadding. In these cases, bubbles often happen because so much of the *oshi urushi* has been wiped away.” When he works on *ita*, he leaves the *oshi urushi* relatively thicker than on the carvings so that the leaf sticks better and there are not so many air bubbles. However for *komono* or parts of the *kuuden* as much as possible of the adhesive has to be removed so that the detail is not lost. “After that,” he continues. “I brush all over the leaves with a *haraibake* or calligraphy brush, or *mawata* can be used. This is to take off the excess pieces of leaf and to make the leaf stick into the cracks and crevices.”



applying tiny pieces of leaf to *kuuden*



rubbing with *mawata* to press and smooth the leaf and remove overlaps

Kin photo 37: applying leaf to *kuuden*

Cleaning and repair (*sentaku*) (see *Kin* photo 51):

“In the case of *sentaku*, I sometimes have to apply leaves onto *tate nuri* lacquered boards. The condition underneath shows through the leaf so *tate nuri* finishing isn’t high enough quality, and the result will be inferior,” says Eitaro. However it is not as bad as trying to deal with artificially (chemically) ‘lacquered’ boards, which will be covered in our forthcoming book, under the sections on modernization.

Therefore considering high quality items, Eitaro says, “Recently I remove all the leaf and reapply it from scratch at the time of *sentaku*. This is because the gold price went down and wages went up, so if I take the time to apply gold to the damaged parts alone it will cost more in the end. Now since it’s cheaper, all the old leaf is removed. In the past, gold was expensive and not easily available, in other words it was scarce. At the time of *sentaku*, I tried to apply gold leaf only on the parts where it had come off or been damaged. That is, only the damaged leafs were removed and replaced. But it was not so successful.”

As mentioned before, old gold leaf is more resistant to kerosene than to moisture. “For *sentaku*,” says Eitaro, “using a piece of old cloth dampened with water, I rub the leaf and remove it. The leaf, which was applied with *oshi urushi* and dried, is not durable in a moist environment. But dried leaf cannot be rubbed off using kerosene.” Then he proceeds with the leafing as described.

6.4.2 FUNDAME (gold powdering):

General:

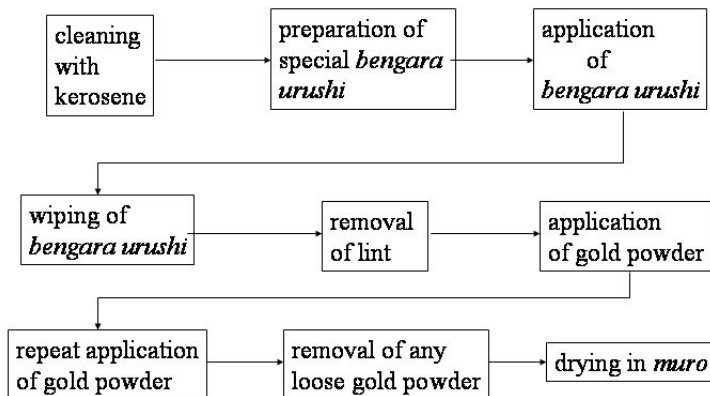
The particular purpose of this section is to highlight the differences between the use of leaf and powder. Although there are many similarities, it is interesting to study it from each artisan’s point of view. For this process, we visited Kitamura Junji who is both a powder gilder (*fundameshi*) and a manufacturer (*toiya*). As a *toiya*, his small company makes only a few *butsudan* each year. They are individual orders and always of the highest quality. As a *fundameshi*, his own work and that of his partner, Akiyama Ryoza, is highly sought after because they can do large flat surfaces such as walls or door boards and small surfaces such as carvings equally skilfully. He says, “Among the *fun* finishing, that on boards (*ita*) needs the highest skill. Because it’s flat, any tiny mistake shows. *Fun* finishing on *urushi*-lacquered board especially needs more skill. Finishing on pillars, *komono* and carvings doesn’t take so much skill. We (Junji, his father and Ryoza) may be the only artisans who do *fun* finishing on *urushi* lacquered boards.”

Their workshop is special, because according to Junji, “These days most *komono* and carvings are lacquered with chemical *urushi*. Even for powder gilding (which is expensive), chemical under-lacquering (which is cheap) can be used. *Urushi*-finished work needs more *fun* than a chemical one. But the lustre of the surface finished with *urushi* is better than with a chemical finish. Even the layman could see the difference. And we make our own *bengara urushi* to be used as an adhesive.”

Therefore prior to starting, the adhesive lacquer must be made. As mentioned before, Eitaro uses his *oshi urushi* directly from a tube. However Junji’s father takes a special

interest in it and that is one of the reasons why this workshop is so successful. He has to consider many factors, such as the type of lacquered surface he is dealing with and the weather conditions. With these things in mind he makes a mixture of *hakushita urushi* and *bengara* (see *Nuri* and *Makie* sections). This mixture is very similar to that used by *makieshi* and so may be called either *bengara urushi* or *makie urushi*. “The most important part is making the decision about how much *bengara* to add,” says Junji. “My father first looks at the *urushi* surface and then decides. If we put too much *bengara* it can dry quickly, but the finished product will be fragile, brittle and easily damaged. So my father decides how much *bengara* he should put in, using his experience. He controls the amount of *bengara* or *urushi* depending on the kind of *urushi* already applied by the *nurishi* (see flow chart *Kin* fig. 08). If we misjudge the amount of the *bengara*, the *urushi* won’t dry quickly enough or will dry too quickly and then the powder won’t stick. Judging this point is the most difficult and important point in our *fun* process. I can even say that judging this is everything for *fun* finishing. And *bengara urushi* makes a better and more durable product than other adhesives.”

The stages followed by these artisans are the same as those followed by the leafer: preparation, wiping on the adhesive, removing excess adhesive, applying gold, and drying.



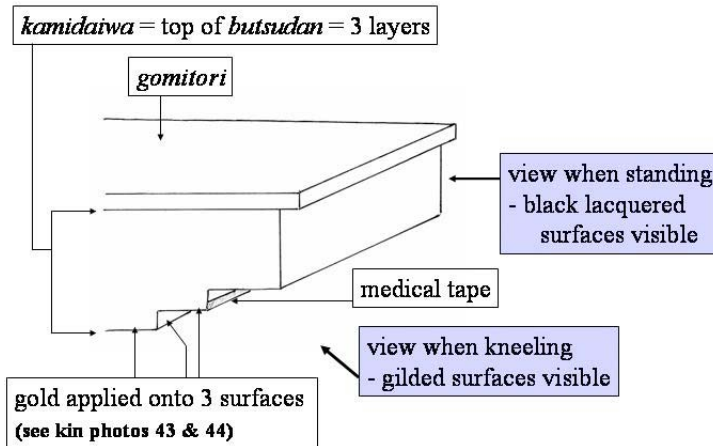
Kin figure 27: flow chart of powdering processes

Therefore to describe the work most comprehensively we will look at how the artisan deals with the following items: A) flat surfaces, B) lattices, C) carvings.

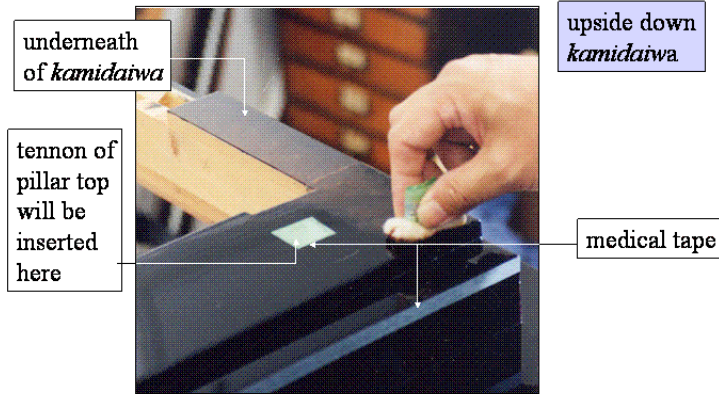
A) FLAT SURFACES: Junji demonstrated on the *butsudan* top (*kamidaiwa*). Even though the surfaces on this are not large, the technique is the same as for door and wall boards.

1. **Preparation:** As with all pieces, before beginning, Junji wipes the pre-lacquered surface with kerosene to remove dirt and greasy fingerprints. Then he wipes it with a dry cloth and if necessary he puts some medical adhesive tape along the edges where he doesn’t want the gold to go. For instance when he does part of the *kamidaiwa*, the

part you would look up at when kneeling in front of the *butsudan*, he covers various areas with medical tape to keep the *bengara urushi* and thus the gold off. The hole (socket), where the tenon of the pillar will go, is covered with a thicker piece of tape, so that *wata* won't stick to it. Some of the area around the hole will not be powdered, but it will be hidden when the pillar is in place. This tape is easy to remove.

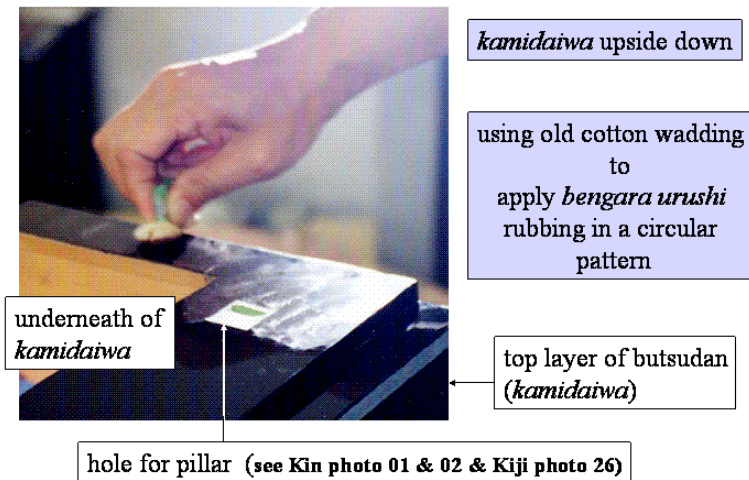


Kin figure 28: kamidaiwa



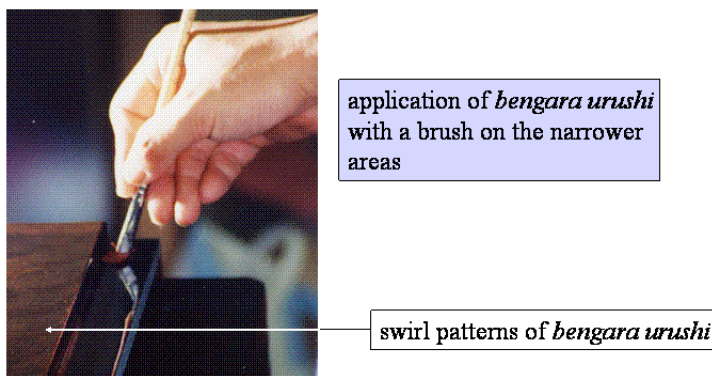
Kin photo 38: showing medical tape to protect lacquered surface

2. **Applying *bengara urushi*:** Then using a piece of *wata* from an old futon and a circular motion, he rubs the adhesive onto the lacquered surface. The process takes a long time.



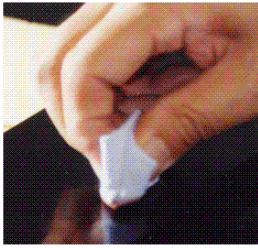
Kin photo 39: applying bengara urushi with wata

“Every part must be covered or the *fun* won’t stick. On the narrow edge I use a simple, ordinary, flat paintbrush with about 1cm bristles,” he says. He uses a circular action, and the bristles are compressed because of the pressure he applies.

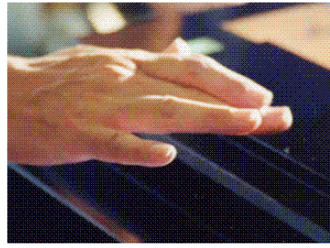


Kin photo 40: applying bengara urushi with a brush

3. Removal of excess *bengara urushi*: This process also takes a long time, and continues until the surface reaches a perfect tacky-dry stage. During repeated rubbings, he removes the excess adhesive, and makes sure the rest is spread out and covers the area evenly. He used a folded pad made of ordinary, lint-free cloth, or a brush, or an old rubber ball, or his fingers and hand to do the rubbings. With a tool similar to a Q-tip, he is careful to get into the angles. For the final stage, he uses the side of his hand applied in both directions to make sure the *urushi* is spread evenly. On narrow surfaces he uses his fingers. “In the end, I always use my hand or fingers. This removes the ridges and doesn’t leave fingerprints, and I can test the tackiness all over that way too,” he says.



rubbing with folded pad of ordinary lint-free cloth to remove excess *bengara urushi*



tapping with fingers to remove excess *urushi* - this is especially important in the final wiping

Kin photo 41: removal of excess bengara urushi

The time that this process takes varies according to the season and the type of previous lacquering applied by the *nurishi* (see *Kin* fig. 08). “Knowing when it’s finished is a matter of experience, sensing the dryness,” explains Junji. “It absorbs moisture from the air and becomes tacky. It sounds sticky when I hit it, either with my fingers or with the slightly rotten old ball, which is a bit sticky and picks up any dust. Sometimes when I’m just using my fingers, I occasionally hit them against the ball to remove the dust from them.”

4. Application of *fun*: Although making the decision about when the board is ready for the gold application is very important, the actual treatment with gold is no less so. “When doing *fun* on *ita*, I take more care about keeping dust off than I do on *komono* and carvings. *Komono*, “ he says, “are not difficult, but they take time and labour. The *ita* are much more difficult. I have to concentrate. When I do *fun* on *ita*, I feel tense. But when I do it on *komono* or carvings, I have to be patient, because it takes time, so my feelings are quite different.”

During the demonstration, while he talks to us he covers his mouth, “in case a drop of saliva should happen,” he explains. Before starting, he also changes the direction of the air from the air conditioner on the ceiling. Then using a silk pad, the size of which depends on the surface width to be treated, he touches it on a small pile of *fun* in a metal tray he keeps nearby. Then he tamps it onto the tacky *urushi* surface. In this case he uses a back and forth motion, dabbing a fair amount on and then spreading it back and forth.



initial application: gentle daubing



rubbing to spread the powder

Kin photo 42: applying gold powder (fun)



note:
his tools:
• wadding
• scissors
• medical tape
• cloths
• metal tray with gold powder
and:
• sumo listings in the background

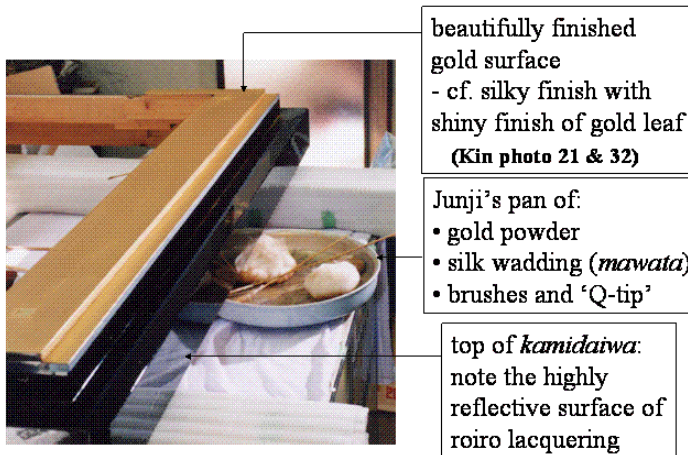
Junji applying and spreading gold powder into corners with his 'Q-tip'-like tool

Kin photo 43: application with 'Q-tip'

He uses his 'Q-tip' to get into the angles. Occasionally he brushes off the excess, but if he brushes the surface too hard it will be damaged.

After going around and doing all the surfaces once, he gets fresh *mawata* and 'Q-tip' and goes around the whole thing again. "If I find a missed part, after the *fun* is dry I apply *bengara urushi* all over the whole surface again and apply *fun* again. In this case I feel miserable because I need much more gold and much more time and it's troublesome and the *toiya* will blame me." But he says this with a smile, maybe because he is often the *toiya*.

After drying in the *muro* for about two days, the medical tape comes off easily.



Kin photo 44: finished work (upside down kamidaiwa) (see Kin fig. 28)

B) LATTICES: because of the delicate latticework of the inner *shouji* doors (see *Kin photo 45*), these pieces need special care. The other artisan in this workshop, Akiyama Ryoza, demonstrates the technique. In many workshops the initial base layer may be done by a chemical dip, in which case the gilding may be done cheaply as well (FN.3). However the pieces treated here have been given their base coat (*shitaji*) by hand, followed by a layer of yellow *kiou urushi*. This are done by the *nurishi* (see *Nuri* section) and the pieces then passed on for powdering. Next, Ryoza will apply the upper *bengara urushi* layer.



Kin photo 45: application of bengara urushi to shouji frame

He wraps some *wata* around a bamboo stick (see *Kin photo 09*) to apply the reddish *bengara urushi* onto the *shouji* frame. He then pats the front surface with the side of his hand to remove any excess, so the detail of the structure will not be lost. When it reaches the perfect stickiness, the powdering can be done.

As mentioned previously, the reason for the change of colour is so that any missed places can be seen easily. By doing red *bengara urushi* on top of the yellow *kiou urushi* and finally the gold, it is easy to see any places where the gold did not stick.

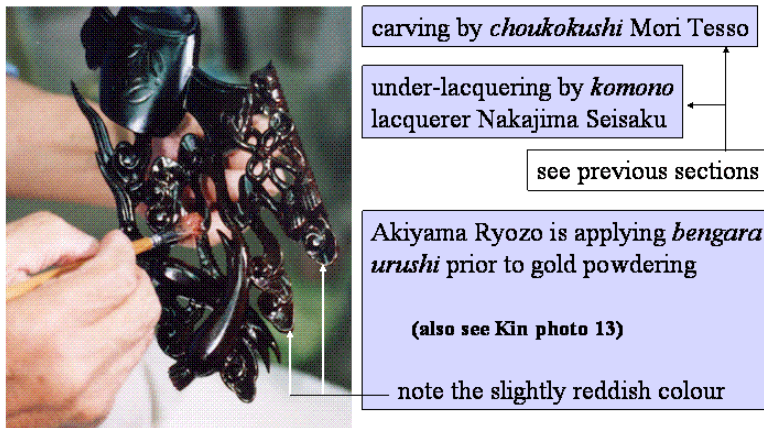
C) CARVINGS: because of their nooks and crannies, carvings also require special treatment. Junji puts four or five hooks on the back of each item so he can hold it during the powdering process.



Junji holding hooks at the back of the carving and tapping to remove excess *bengara urushi*

Kin photo 46: hooks on back of carving

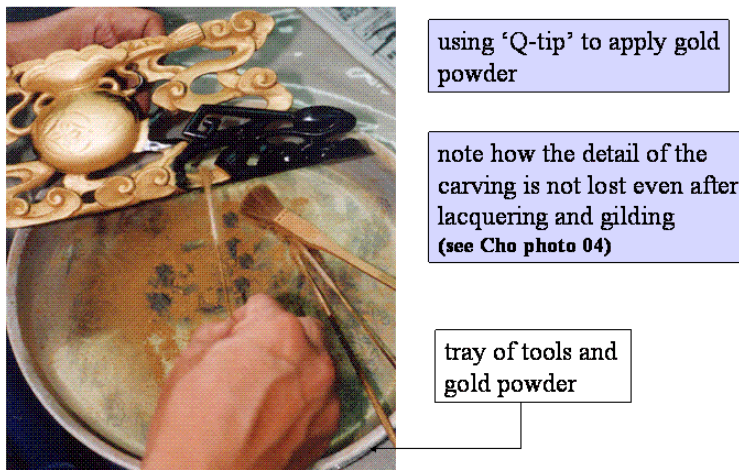
1. **Application of *bengara urushi* onto carvings:** When the carvings arrive from the *nurishi* (see *Nuri* section), they have been treated with black lacquer. When Junji applies *bengara urushi*, the important point is to spread the colour evenly over the surface. The brush is an ordinary brush for water painting. He uses this instead of a special *urushi* brush because it is less expensive and it doesn't matter when it becomes clogged and sticky and has to be thrown away. Using this brush, he puts the *bengara urushi* on in a small daub, and then spreads it around. He uses the depth of colour as an indicator of how even and thick it is. At first, where there is a lot, it is bright red and he spreads it until it is an even brown colour. He puts a little *bengara urushi* on at a time. If he puts a lot on at once, it is very hard to spread and it is important not to lose any detail. He gathers up the *bengara urushi* that has run down through the holes and spreads it all over again.



Kin photo 47: applying reddish *bengara urushi* with a brush

2. **Wiping away the excess:** The next process is removing the excess. He makes a kind of cotton bud with *futon wata* and a 30cm bamboo stick and he uses it to ensure even spreading and to remove the excess. He has to wipe the grooves out to make sure the pattern is not lost. “I have to apply the *bengara urushi* and then wipe it off and wait and wipe and wait and wipe and wait until it’s the right dryness (cf *Kin* photo 41). This is difficult to predict, depending on temperature and humidity.”

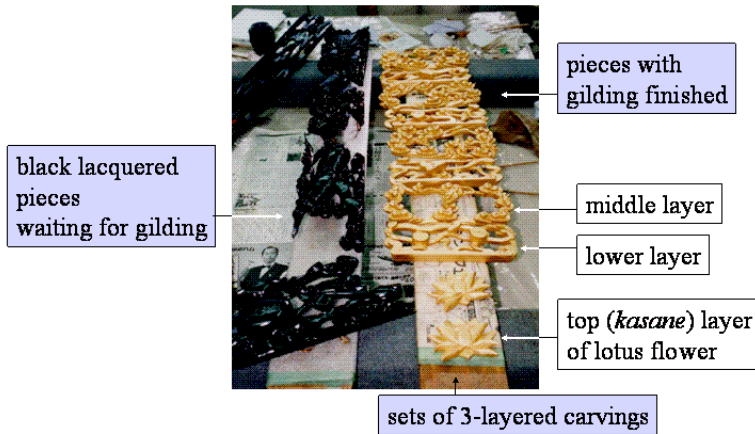
3. **Application of *fun*:** “First of all, I put *fun* into the grooves on the front side, using the silk wadding (*mawata*) bud. I start with the front side because those parts are the most visible.”



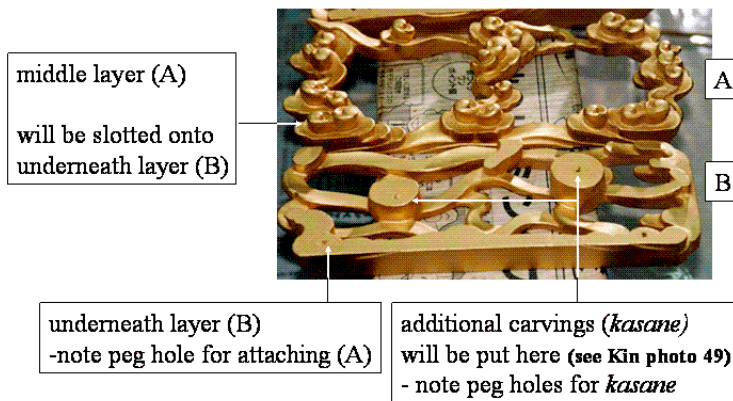
Kin photo 48: applying powder to carvings

“On the flat surfaces, I apply *fun* using *mawata*. I judge the dryness of the *urushi* looking at the front side. This is because I wait until the front is perfect for taking the *fun*,” he says. The whole piece is covered completely, including sides and back. When he turns to the back, he taps it to knock off any excess powder. Then he uses a pad on the flat surfaces at the

back. “I apply *fun* all over the back side too. But by the time I get there, it may have dried off too much, and the *fun* won’t stick so well, but it doesn’t matter as much. I do have to be careful though. If I don’t put *fun* completely over the backside, I mean if I leave a small bit, it will be visible because the colour contrast between the gold and the black *urushi* coating is so strong that it could be seen through the holes or layers of carvings. So I have to repair it later.”



Kin photo 49: works in progress
(see detail *Kin* photo 50)

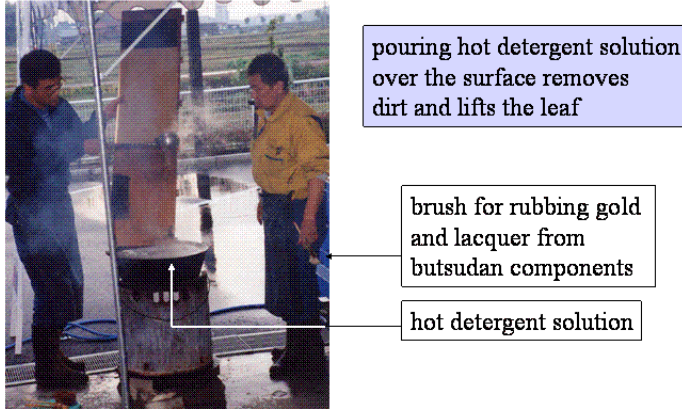


Kin photo 50: detail of finished works (also see similar carvings in *choukoku* section)

When the under-lacquering is done with yellow *kiou urushi* or yellow coloured chemical spray, the backside of the carvings will not be gilded. Then any mistakes or places where the *fun* is a little thin or where it gets knocked off in the assembly or moving stages won’t matter. However for Junji it does matter: “Even if we put *bengara urushi* on very carefully, sometimes there are some very small places we miss and then the *fun* won’t stick. In that case, after applying *fun* all over the piece, we put *bengara urushi* only on that part using a thin brush. Then we apply *fun* again only on that place.”

Sentaku:

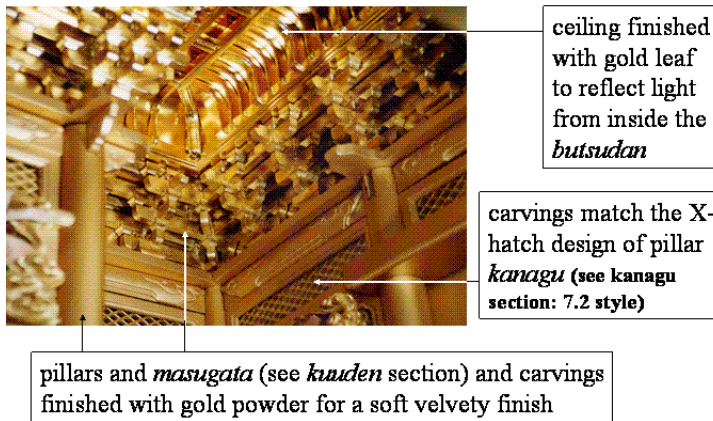
This is virtually the same as we have described in the leafing section. The gold will almost completely be removed. A warmed detergent solution is useful to remove dirt from the surfaces and eventually the moistened leaf or powder will lift away from the lacquered base.



Kin photo 51: sentaku

CONCLUSION:

This then finishes our description of gilding. After treatment by the artisans, the pieces are sent back to the maker for assembly. Assembly itself will be dealt with at the end of this website, however it is interesting to note that special care must be taken of the gilded pieces because the gold can so easily be rubbed off. The following picture was taken during the assembly process, when it was possible to see all the internal structures often hidden once all the parts are installed. This is an example of the two styles of gilding combined in one *but sudan*. In this case the ceiling (see *kiji* section) is done with gold leaf so it reflects light down and outwards and the more visible parts such as the *masugata* (see *kuuden* section), the pillars and carvings (cf *kanagu* section) are powdered to give a soft, velvety look.

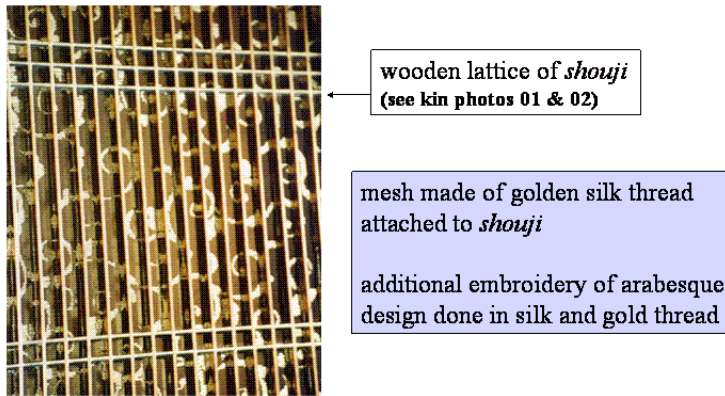


Kin photo 52: showing two styles of gilding inside the *butsudan* (visible during assembly)

Lacquering, and gilding are intimately connected together and both are tied to the weather conditions. Thus it is these stages that make timetabling difficult for the manufacturer. Meanwhile the artisan who makes the decorative metal fittings (*kazari kanagushi*) is waiting in the wings to complete the production processes for *butsudan* making. Therefore we will complete this website with an explanation of his work.

FOOTNOTES

(FN.1): The inner doors (*shouji*) of the *butsudan* consist of a gilded wooden lattice (see *Kin* photo 45) covered with a gauze fabric woven with silk and gold threads. This can vary from the quite simple to the very ornate and often involves some embroidery over the initial weaving. These fabrics, woven mainly by women working from home (*toyasei kanai kougyo*), are made in Kanazawa.



Kin photo 53: gilded cloth for *shouji* lattice

(FN.2): Old *uchigami* was sold as paper for removing oil from women's faces before making up. It seems to absorb the grease without breaking. These days it is not actually recycled leaf making paper, but is made especially for women's use. Some leaf making shops, feeling the economic pinch and resultant decrease in sales of leafed items, are switching their business to producing make-up papers.

(FN.3): This is known as *kikai haku* (machine leafing). This cheap and easy technique is used for lattices (*kumiko*) of *shouji* and ceilings, and also ceiling boards in cheaper quality *butsudan*. In some cases, it may even be used for *ita*. Instead of real leaf, gold coloured aluminium is applied to a cellophane layer. The cellophane layer is laid gold side down, onto the surface (lattice) to be leafed and a heated roller is pressed and rolled over it. Then the cellophane is peeled off leaving the 'leaf' behind. In higher quality cases the machine *haku* is then covered over with gold powder.

REFERENCES and ACKNOWLEDGEMENTS

History and Changes of Hikone *Butsudan*, in Collection of Japanese Traditional *Butsudan*, 1977; Edited by Nomura Hiroaki; Shoei Shuppan Corporation: Tokyo, p 58 to 59.

Workmanship – *Kinpakuoshi*, in Ohmi no *teshigoto* (Handiwork of Ohmi [now Shiga Prefecture]); Hikone *Butsudan* Business Cooperative Association, Hikone, 1996; p 60

Information for gold leaf was obtained from the following sources:

- Kanazawa Gold Leaf: Kanazawa Yasue Gold Leaf Museum (pamphlets in English and Japanese)
- NHK program aired Jan 19, 1999 called Kawakiko
- Unidentified women's magazine (1998)

Personal or telephone interviews with:

- Hikone leafing artisan, Satomi Yoichi,
- Leaf cutter at the 'open house' put on by *butsudan* manufacturer, Eirakuya Co Ltd, at their factory, Amago.
- Kanazawa Yasue Gold Leaf Museum
- *Kinpaku* seller from Kanazawa

As always, Miyagawa Takaaki and Tomiko of Eirakuya Co Ltd have given us continuing support as well as permission to use their photo as in *Kin* photos 01 & 02a. The Hikone *Butsudan* Kumiai gave permission for *Kin* photo 02b.

We wish to thank *kinpakuoshishi*, Fujii Eitaro and *fundameshi*, Kitamura Junji and Akiyama Ryoza for their painstaking explanations about gilding.

Figures are by Nishiyama Yuriko and Carla Eades
Photos are by Carla Eades