



jewelry processes - a notebook

dhokra, beaten metal jewelry, glass bead making

sasha
contemporary living

by naga nandini

the jewelry project

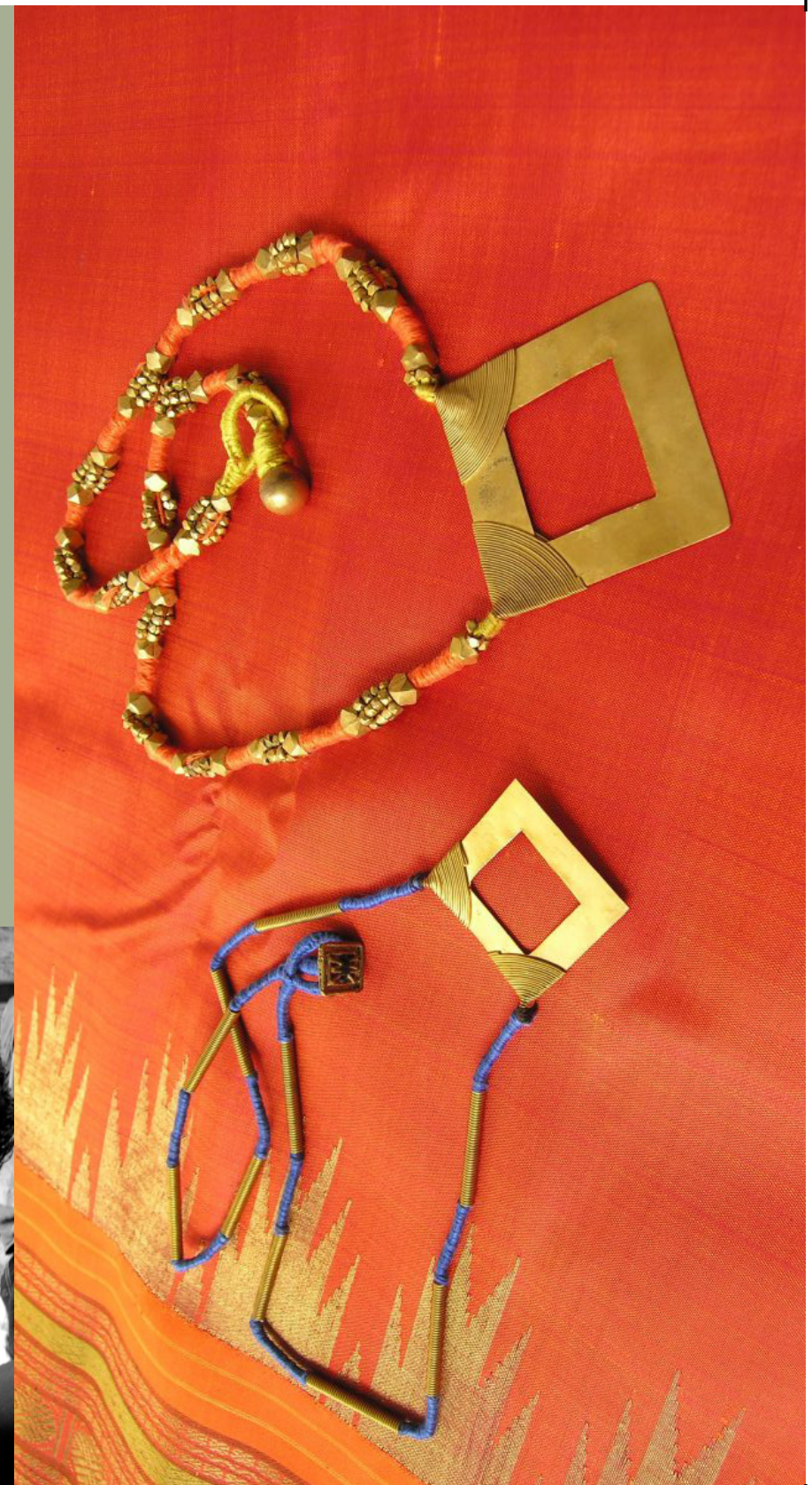
Sasha is a not-for-profit marketing organization working with over 150 craft groups across India. They work on revitalizing crafts through careful and sensitive interventions giving inputs in design, technology and management. This line of jewelry is the result of a series of workshops, involving glass bead makers from Varanasi, people who fashion jewelry (put it together) from Varanasi and Orissa, beaten metal crafts people and dhokra crafts people from Orissa.

The idea behind this line was to create something completely unique, young, light, fun and universal. To go beyond the “ethnic” look, and create something that mingled the new and the old, the traditional Indian and the contemporary global.

This notebook shows you the processes involved in these crafts. As you will see, only the simplest tools and materials are used, although the technology is quite complicated. It requires an intuitive knowledge of every stage by the crafts person. This knowledge is passed on and absorbed through generations almost unconsciously, as most of the work is done at home, with everyone in the family involved.

The connections between a craftsman, his tools and the materials he uses are so intimate, that it feels like they are made of the same thing. The wood is dark and smooth; the wax is honey-like in hue. The brass tool may have been made by an ancestor and is worn with handling and use. The iron knives are multi purpose and are the same dark brown as everything else, their edges worn but sharp. Every thing is an intimate part of the other

naga nandini





dhokra - lost wax casting

Dhokra is one of the earliest methods of non-ferrous metal casting known to human civilization. It existed under different names in all the primitive cultures of the world and was used for making everything from jewelry to utensils to images of Gods. The few metal objects found in Mohenjo-Daro and Harappa (ruins of the 5000-year old Indus Valley civilization) has a very strong resemblance to the dhokra objects created by craftsmen today. In India, these craftsmen are concentrated in the states of Madhya Pradesh, Bihar, Orissa and West Bengal.

Dhokra products range from small beads to larger statues of mythical animals and Gods. From a centimetre to 5 feet tall. The larger pieces are more risky to make since there is a lot of wastage involved and are only made by a few master craftsmen.





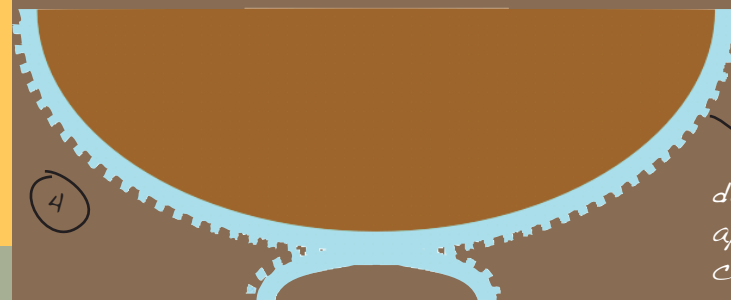
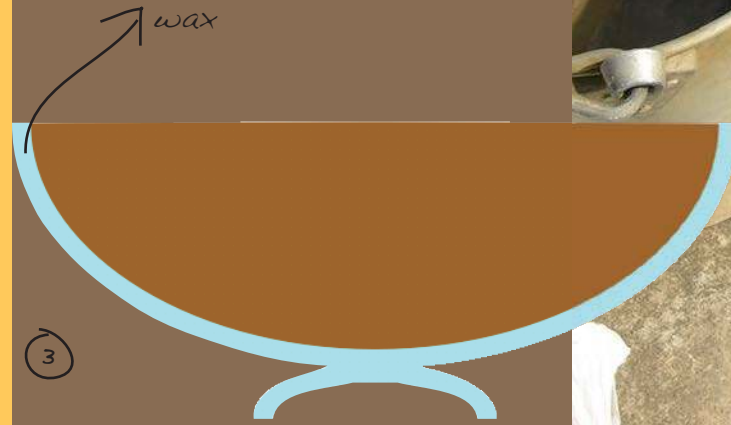
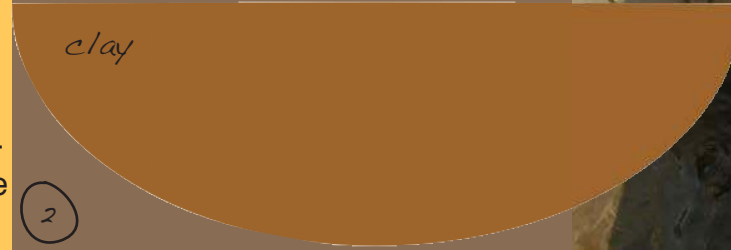
Originally, these craftsmen were nomads who went from tribe to tribe making their ceremonial and religious figures, ornaments and kitchenware. They were restricted to the materials of their immediate physical surroundings and the process of dhokra matched their nomadic biorhythm. It did not require any fixed place or structure, or any heavy, large tools. They used wax, resin and firewood from the forests, clay from the river bed and made the firing oven in a hole dug in the ground.

Today, these craftsmen have reached a wider market, thanks to the efforts of various marketing organizations. This has led to a degree of financial prosperity, and has changed their way of living and working.

Dhokra is the process of making an object first in wax and then casting it in brass.

Sometimes, pure bees wax is used, and sometimes pitch is mixed with it, or pure pitch is used. This depends on the fineness required in the piece or the region where the craftsman comes from or how expensive the final piece should be.

clay core
applying wax on the clay core



To make a bowl like this the first step is to make a clay core or mould over which the bowl will be formed.





The dhokra craftsman uses his entire body to extrude the wax. It is a very strenuous process.

The wax is first kneaded by hand like dough. The body heat makes it more malleable. In winter a coal fire is used to soften the wax. It is then put inside the extruder.



Wax is also sometimes used as sheets, and it is made by being beaten on a wooden board with a wooden tool

extruding the wax

the wax - tools



→
Brass
extruder
with different
sizes of sieves
for the wax to
come through



wooden tool for
beating wax into
sheets

mustard oil used as lubricant

Large wooden handles
for the extruder to
help craftsman use the
entire body to extrude



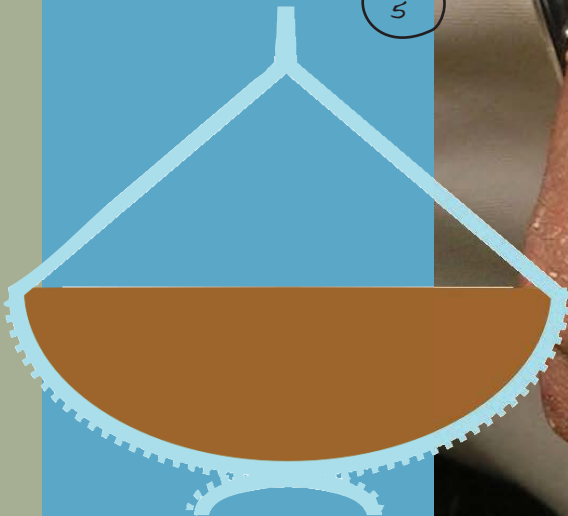
finished dhokra pendant, which is the same size as the wax model

clay core

finely worked wax strands over the clay core

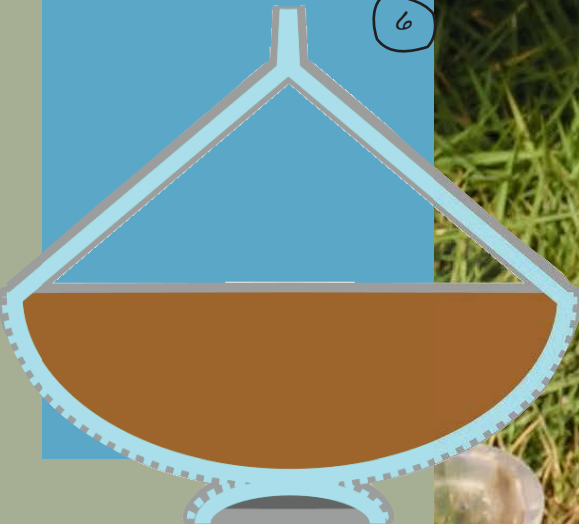
Wax rods are added to the bowl and join at a common point.

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The whole thing is covered with a thin layer of liquid clay.

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A group of dhokra craftsmen coating wax jewelry with liquid clay. Craftsmen carry their own clay, where ever they go, because the kind of clay used is different in different regions.




This is then covered entirely with another layer of clay in a cup shape on top, the bottom of which has a hole that touches the wax. The clay is first prepared by mixing finely, like dough and then mixed with chopped jute rope. Every group has its own recipe, since the kind of clay varies from region to region. This is left to dry near a fire for a day.



wax rods that form
the channel for the
brass to pass through





*The simple tools
used in dhokra
- this beautiful hand
wrought knife is
used for a variety of
functions - to chop
jute, clean dhokra,
dig, scrape etc.*

The cup on top is now filled with brass pieces from old brass articles which are broken into small parts.

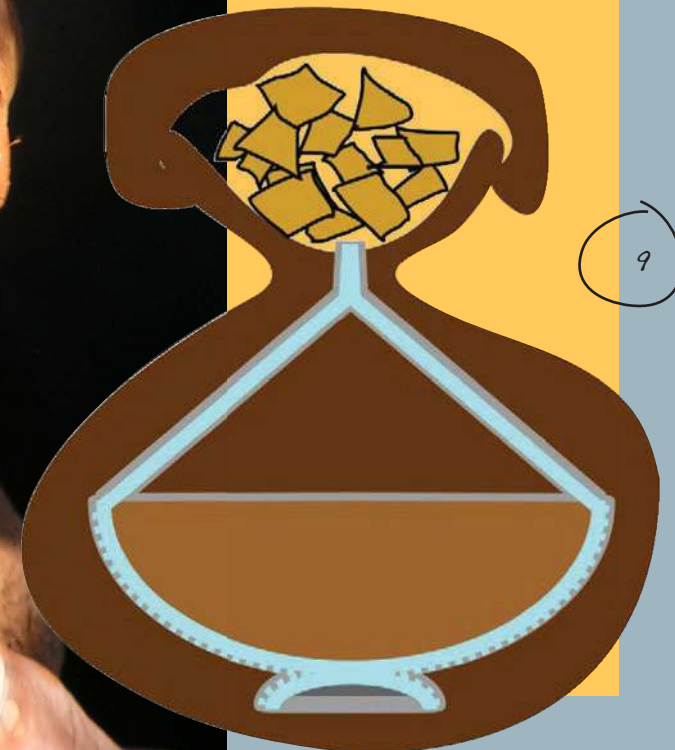
These could also be left-overs from previous castings or are bought from a shop selling old brass.

Instead of brass, aluminium can also be used.





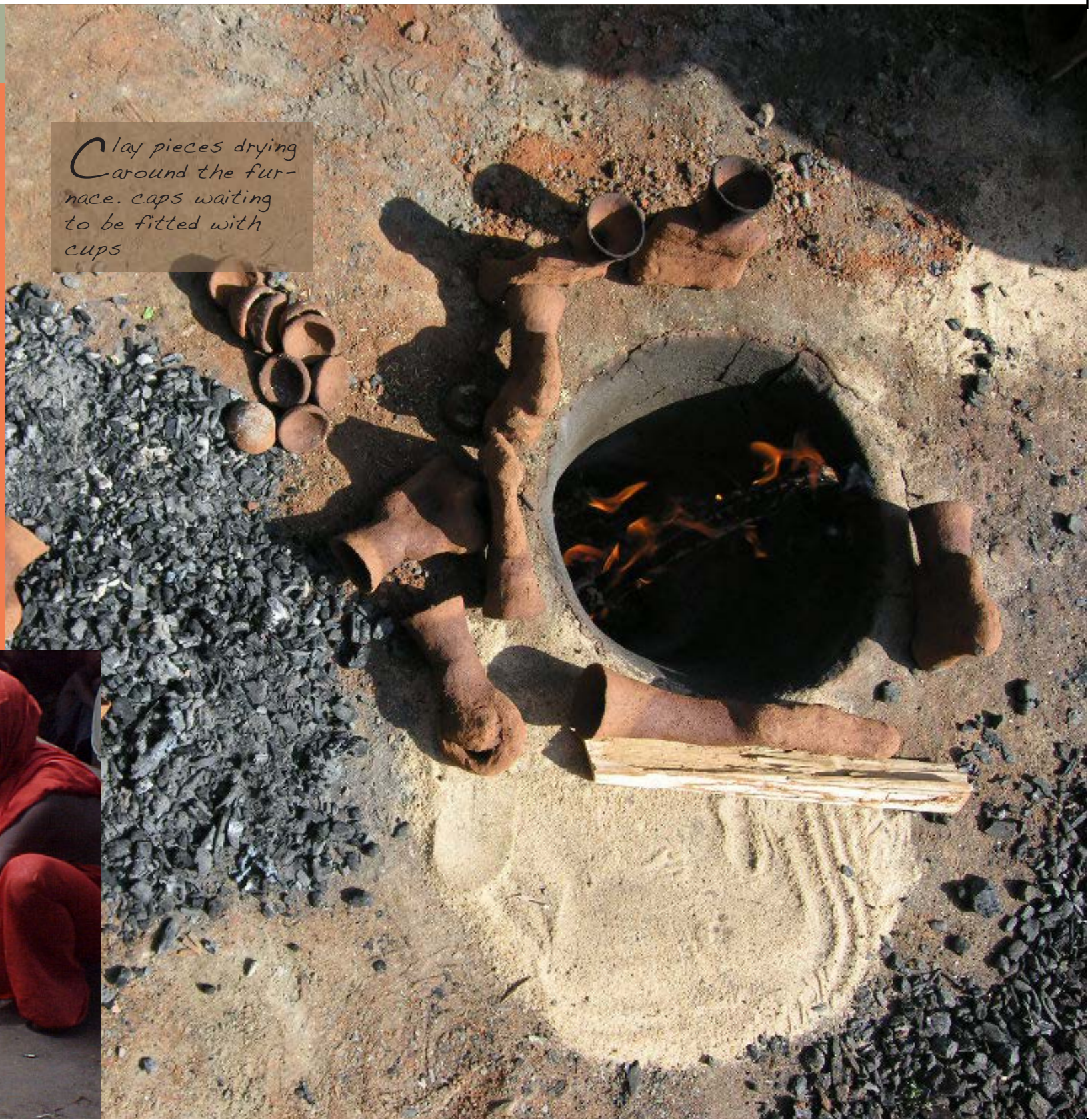
The brass is covered again with a cup of clay and sealed. This is dried again for a few hours.



Meanwhile, a hole is dug in the ground for the furnace. Within this, a hole goes sideways to a blower. A metal blower is used to feed the flames.

Bellows made from the skin of an entire goat were used before metal blowers became available and are still used by some craftspeople.

Clay pieces drying around the furnace. caps waiting to be fitted with cups



goatskin bellows



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The clay mould is put upside down inside the furnace and fired.

The brass melts inside the furnace. The craftsman has to guess precisely when the brass is fully melted and take it out from the fire.

iron tongs and ladle to use inside the furnace

fire in the furnace

blower connected underground to the furnace

coal used in the fire

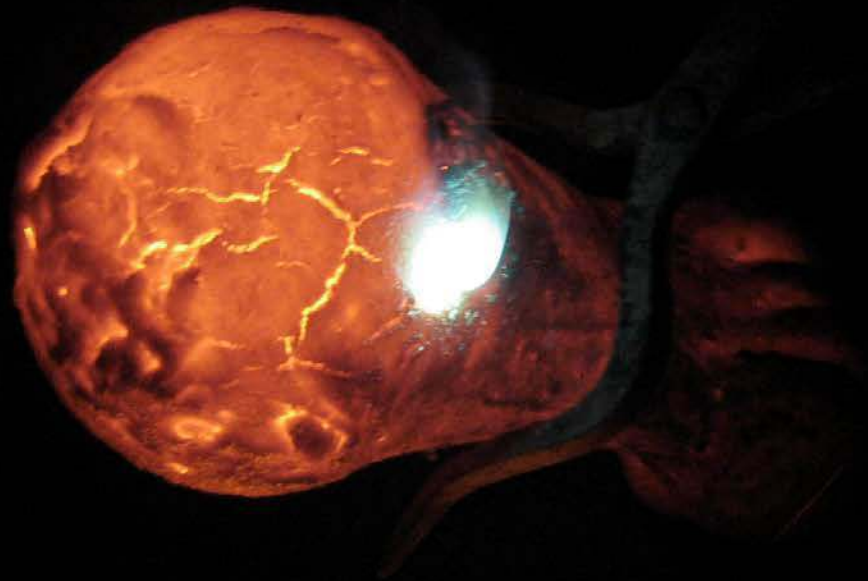
clay pieces waiting to be fired





The furnace

When the brass is beginning to melt, it gives off a greenish light and this indicates to the craftsman that it is time to take it out of the furnace.

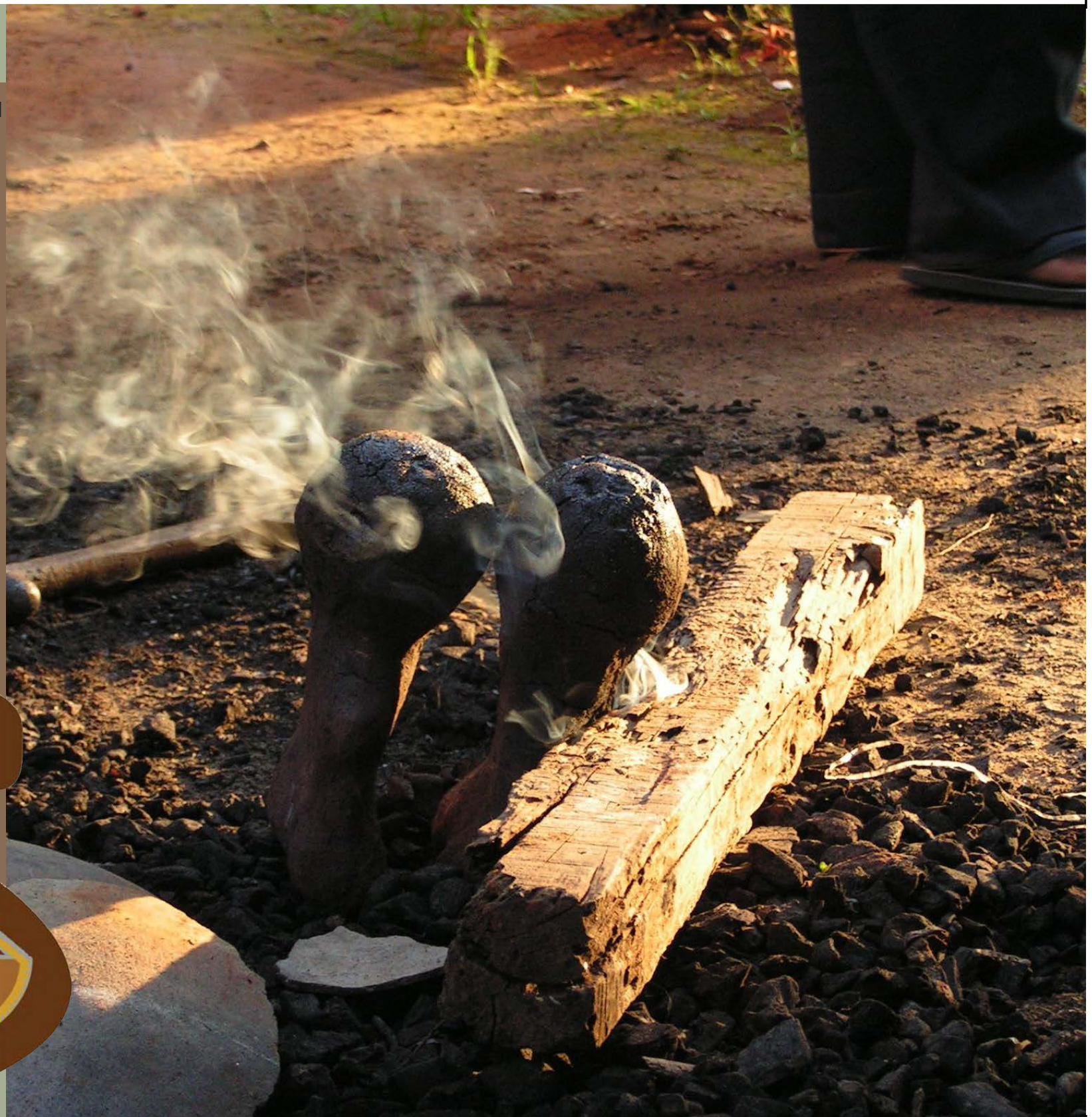


And the piece is placed right side up again. The wax has melted and the molten brass takes the place of the wax.

The craftsman waits for the whole piece to cool and then breaks it open.

A heart stopping moment...

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The moulds are broken open to remove the brass objects inside. These are caked with remains of the clay which are first removed roughly with a knife. And then with a wire brush. And then sometimes with a buffing brush.

In this stage, the mould is destroyed forever, and the next time the same object has to be made, the mould has to be made again from scratch. And this, really is the crux of dhokra, that each and every piece is unique and cannot be repeated exactly.








beaten metal jewelry

Karmul is a village in Orissa which is home to many jewelry craftsmen. They used to make silver and gold jewelry for people in the neighbouring villages as well as for tribal people in the district. But over the last forty years competition from machine made jewelry proved too much for them, and they lost their customers steadily. Design intervention and new urban markets in India and abroad have revived the craft in a new form.


There are two distinct sets of crafts persons working in Karmul. One is the women's groups who fashion jewelry, and the other is the men's groups who make the parts for the jewelry, like beads, pendants etc. They use the simplest of tools, and no electrically operated ones. Their main tools are their eyes and their hands.



Tools for fashioning jewelry - from left to right, monkey pliers (in two sizes), katturi (wire cutter), metal rod to turn wire on, scissors (in many sizes), needles, Rubber based glue (Feviquick)



From left to right - metal pipe to blow air into the fire, tongs (chimuta) used to hold pieces of burning coal as well as other things, bowl of water, asbestos sheets used to place the metal pieces for welding, small glass sheet holding the soldering material which is made of pure silver leaf (nisha jhal, khar or tanganu), water, Kerosene lamp for the fire (Dibbir), iron stove (Umaei), blower (Bhathi)

A close-up photograph of a person wearing an orange shirt, sitting on a burlap-covered surface. They are using a hand cutter to cut a piece of sheet metal. A large, dark, rectangular anvil is positioned in front of them. A pile of small, square metal pieces is scattered on the burlap surface next to the anvil. The person's hands are focused on the task, and a watch is visible on their left wrist.

The anvil - Dhar made from railway lines, is bought from kabadi walas, or scrap iron sellers. Usually this anvil lasts a lifetime.

All sheet metal is cut by hand using the cutter and weighed. All plates and wire to be used are heated first in the iron stove. This makes them pliable.

This square metal block has hemispheres of different sizes. The small circles are put on to a mould with hemispheres of different sizes and beaten into half spheres with a tool tip and hammer. These are then joined together to make balls.

Sheets are cut into circles to be beaten into the mould

The hammer and anvil are used to beat sheets into shape or to flatten wire. Beads are made by cutting wire into small lengths and beating the wire around a metal rod.

Larger beads are beaten in different angles to make facets. This is a very old design in beads originally made in gold and is called sorisiya or kanthi, khuddo sorisiya, biddho kanti (which have scored lines on them), nali or pipes.

Balls are called mudi ball, bottam (button) ball, ghunguroo ball. Springs are made by winding wire around a metal rod and are used as beads.

This wooden block is also used like an anvil for softer work, The square cut out in the middle is used to hold jobs



Here the craftsman is arranging half balls on a sheet of asbestos before welding. The placements are carefully done, though no jig is used and it is entirely visual.

After arranging, small strips of pure silver and a binder are placed on all the joints.

If the work is very fine, a bed of wet clay is made on the asbestos and the parts are placed with tweezers on the mud, to fix them properly.





A gas-fuelled welding gun machine with regulator is used for joining pieces of metal.

Welding is normally done using a mouth operated tube and kerosene lamp. A gas-fuelled welding machine is used for large numbers.



Grinding - an emery stone is used to finish the sharp edges of sheet metal parts.

All pieces, after finishing are cleaned with nitric acid, rheetha phal (soap nut) and lime. A coarse wire brush is used for this.

If the metal is to be given a black color, it is coated with a nitrogen compound and burnt it with the blow-torch.





Basic material for jewelry making - wire, sheet in copper, brass and white metal from Delhi and Kolkata, bought by weight, silver for welding, earring hooks, small beads.

Fashioning - Embroidery, crochet thread (cotton azzo free), glass beads, stone, terra-cotta beads, dhokra lockets and beads, hand beaten beads, different types and sizes of balls and leaves, pipes, machine made ready beads from Delhi

When fashioning jewelry, cotton thread is wound round the big toe of the foot and held stretched by the hand, to get the right length. On the side where the loop is formed, macramé is done to form one side of the fastening. After this, the necklace or bracelet is made. The other end is usually finished with a ball that will go inside the loop to fasten the piece. The joint is finished with the thread that is wound around it several times.





glass bead making
in varanasi

Varanasi, the sacred city of lord Shiva on the bank of river Ganga, is one of the oldest living cities of the world. It has always been a place of pilgrimage for Hindus, Buddhists and Jains as well as an important centre of learning, trade and commerce.

Archaeological discoveries in India reveal the existence of glass over 2000 years ago. Beads, tiles and conical flasks were unearthed from a site around Varanasi.

Glass bead making is practiced extensively in and around Varanasi, in many households. Very simple tools and equipment is used and usually, the whole family is involved. There has been a large export market for these beads for centuries.

Beads are sold by weight and there is an incredible variety in shape, color, size, quality and pattern.



The work area


Six nozzles to blow air into the flame, powered by foot operated bellows

Glass - comes from Ferozabad in transparent, semi-transparent and opaque rods

The flame has to be maintained at an even temperature and flow

Container with kerosene and six wicks for flame





*G*lass melts and coats the mild steel rod to form bead

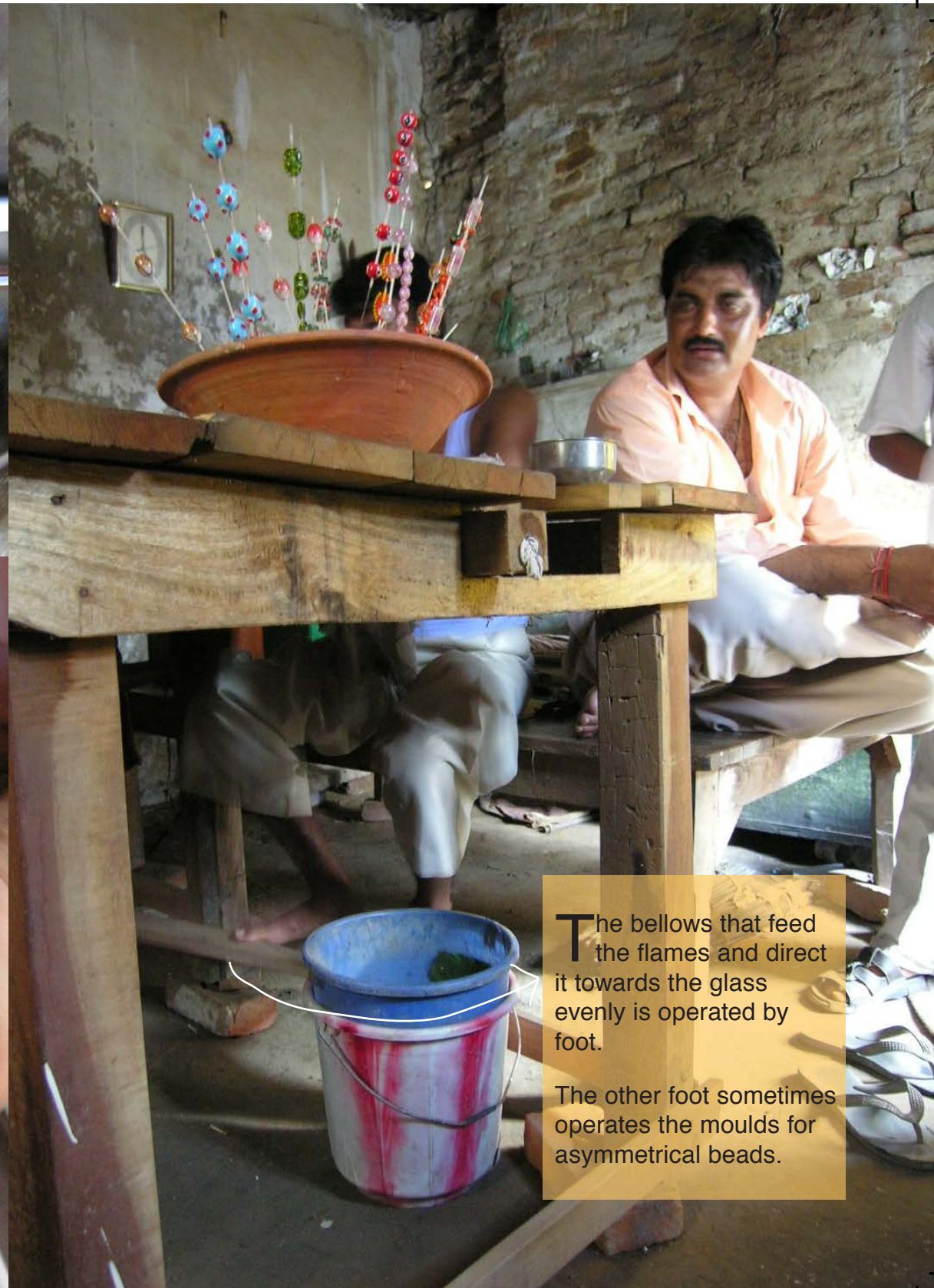
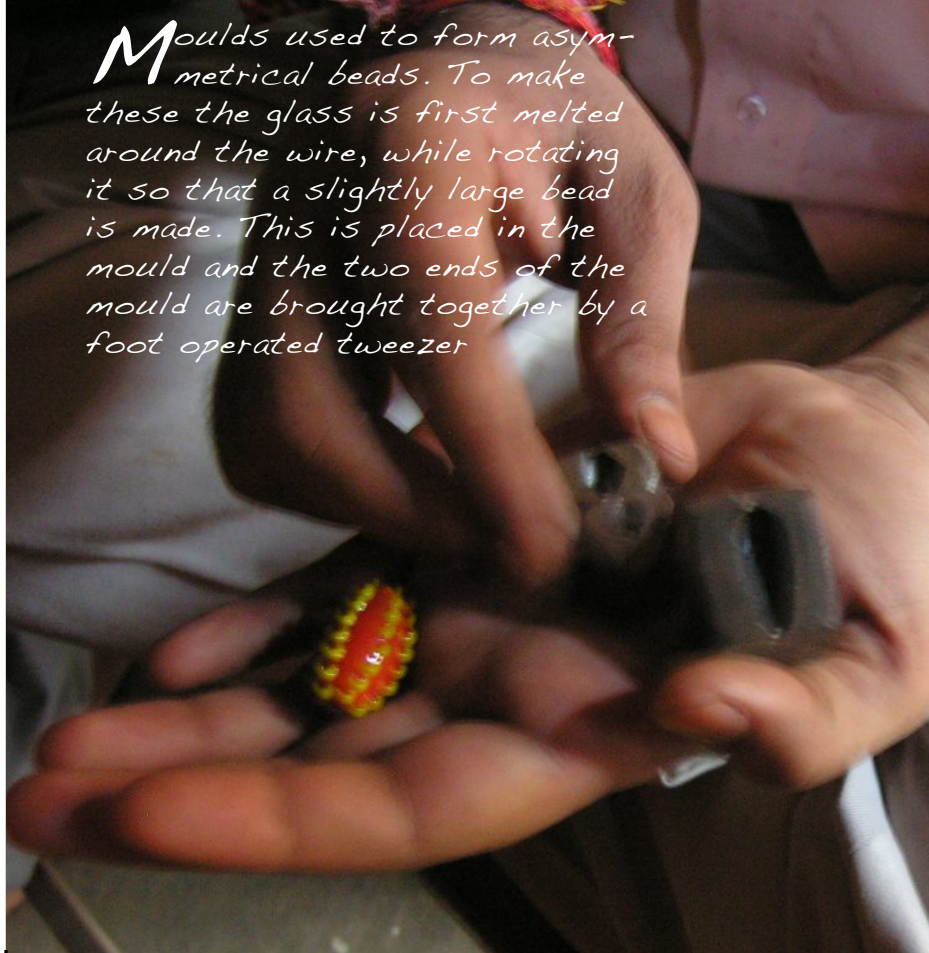
*T*he other hand holds a glass rod in the fire and as it melts, applies the melted glass to the rotating rod

*O*ne hand holds a mild steel rod and rotates it slowly in the fire

*D*ifferent colored glass is melted and applied over the bead for surface decoration




Moulds used to form asymmetrical beads. To make these the glass is first melted around the wire, while rotating it so that a slightly large bead is made. This is placed in the mould and the two ends of the mould are brought together by a foot operated tweezer



The bellows that feed the flames and direct it towards the glass evenly is operated by foot.

The other foot sometimes operates the moulds for asymmetrical beads.



*B*eads are made on mild steel rods and when each mild steel rod is filled with 5 - 10 beads, it is stuck in a bowl of sand to cool.

*B*eads are strung, mostly by women in villages all around Varanasi





sasha

contemporary living

sasha is a not-for-profit marketing organization for a network of over 150 producer groups involving about 7000 artisans and marginal producers - 80% of them women.

sasha deals with a wide cross-section of handcrafted products, gourmet spices & teas and body care products. Since its inception in 1978, sasha has worked towards developing craft communities so that their skills and creativity find expression, recognition and fulfilment.

There is a strong emphasis on design and sasha products combine traditional skills and material perfectly with contemporary living in India as well as globally.

sashaexport@vsnl.net

www.sashaworld.com