

Glass Art in India: Lost and Living Traditions

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Edited by Susanne Frantz

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For a nation whose dazzling array of artistic repertoire in a myriad media is well documented and dates to the early centuries, glass has always been perceived as a recent alien. And yet, the earliest Indian glass finds date to about 600 B.C. A well-known glass industry of medicine phials, seal stamps, and jewelry is believed to have existed at Taxila by the 3rd century B.C. Today, there are over two million artisans in various parts of the country who practice a wide range of crafts using glass, handed to them over generations. Yet, there are wide gaps in Indian glass history with scant research and progress in the field. Without timely intervention, many of these pockets of indigenous knowledge run the risk of disappearing into oblivion in the decades to come. For the past year, as consultant to an agency of the government of India, I have been working with several glass artisan communities on design and technical development projects aimed at social and economic empowerment through prolific craft practice. Concurrently, out of curiosity and a personal interest, I have been documenting lost and living traditions—histories and lifestyles, techniques and technologies, artistic vocabularies and design perception, production methodologies and trade relations. This year at the GAS conference, I thought it would be a good idea to share a *few* of my observations and topics of interest in Indian glass heritage.

The Beads of Purdilnagar

The tradition of making glass beads at a furnace in this town is known to be at least 350 years old. Purdilnagar's glass history is about a century older than that of the most well known glass industry in India, Ferozabad. Many of the original manufacturing and trade methods of Purdilnagar remain unchanged. The glass remelting furnace is set low, with a wood-firing fuel pit in the center (in rare cases, fueled by Liquid Petroleum Gas). The work ports extend radially from the center. As is typical to most craft forms in India (ranging from mat weaving to bronze casting), artisans work on the ground instead of a formal workbench.

The furnace is built by the artisans themselves using mixtures of a locally sourced clay, straw, and sand, in the form of 1"-thick sheets, bricks, and paste. Each furnace is custom built to suit the number of artisans in the group and the type of work that will be undertaken. The number of artisans working simultaneously at the furnace can easily reach 18 at a time, each working at an individual port within the radial configuration of the furnace. Clay crucibles within each port are shallow, and hold anywhere from

2.5 kg up to 12.5 kg of glass rods; they melt quite fast, thereby enabling the artisan to run multiple production cycles in a single day without turning the furnace off. What is unique at Purdilnagar's furnaces is that the artisan uses two rods at the same time. The first rod, ending in a hook, is used to "pick" the glass onto the second rod, around whose circumference a bead is constructed (making ambidexterity a common and underrated virtue). It is also most common to see the artisan hotwork multiple beads on a single rod simultaneously.

Glass in the furnace is of a cold honey consistency, about 1000 -1100°C. It is said that Purdilnagar used to make its own glass until about a century ago (as seen in now abandoned furnaces of Jalesar); today, they buy their glass in the form of rods from Ferozabad, and then remelt them. The glass composition and colors they have at their disposal are largely determined by the non-standardized glasses made in Ferozabad. Beadmakers know from experience which glasses not to "mix" in the work.

Due to trade pressures, the manufacturing process is fast-paced and artisans tend to focus on production time quantity, as opposed to design detail quality—a partial reason as to why Indian beads stand at a lower rung in the international bead trading industry. The artisan's link with the market is primarily through traders or agents (to foreign traders) who inhabit the town and place orders with various furnace owners / artisans. Each manufacturer operates a multi-port furnace with a group of artisans working under his supervision. In many cases, this group may be his extended family. When individual artisans procure an order, but do not have their own furnace, they simply rent one port of someone's furnace. Therefore, one sees a daily or contractual wage system and a rental system operating side-by-side in the town.

Glass Bangle Bracelets

Bangles, inflexible hoop bracelets, are important accessories in the traditional attires of India, and are considered an important part of the 16 essential ornaments of a woman. Used by almost all communities across the nation, bangles embody varying symbolism in different social groups and are made from a diverse set of materials ranging from the humble Conch shell to a grand diamond-encrusted, 24K gold design. In fact, it is the only tradition in personal adornment (as far as I know), that is common to both Hindu and Muslim women of South Asia. Glass bangles have always occupied a special place in this milieu of symbolism and have also emerged as an increasingly popular fashion accessory in recent times. The traditions and communities involved in bangle-making are more than the few outlined below.

Made in and around Purdilnagar, in the same furnaces used to manufacture beads, seamless bangles are said to be the oldest bangle-making technique indigenous to India as well as the oldest tradition of this town. What is notable about this style of bangle is that the circular band of glass worn around the wrist bears no joint marking the beginning and end of the glass ring. In order to accomplish this, glass is gathered around an iron rod and widened into a small ring by beating the back end of the iron rod with a heavy paddle. This action separates the hot glass from the rod it lays upon and facilitates the formation of a ring. A clay cone mounted at the end of a second iron rod is used as the bangle mandrel. The hot glass

ring is pushed up to the desired location around the continually rotating cone. It is this rig that determines the diameter of the bangle.

Glass Bangles with Joints

A second tradition: these glass bangles bear a joint in each glass band. Arguably more prominent and popular than its seamless counterpart (due to the flexibility and variegated patterning), this approach is based in Ferozabad, town with more than 375 glass factories, Ferozabad is the best-known center in the world for large-scale, mold-blown glassware and glass bangle-making.

The methodologies and processes that are outlined here, are no comparison to Purdilnagar's, and may be thought of instead as assembly-style cane drawing. In a furnace design larger than the bead furnaces of Purdilnagar, each port contains a single color in a crucible. To overcome uneven coloration of glass gathered from the furnace, artisans always "knead" the molten glass in order to get an even mix of color at the end of their rod. The artisan, seated on the ground at front of a port, works only with the specific color in that crucible in the very specific manner instructed to him for the product being produced. In other words, an artisan applying a flat bit of green glass to one area of the clear glass core on the rod, does exactly that, all day long until instructed otherwise. Once the artisans have laid a requisite series of hot bits on the solid glass core, and marvered it into a long conical or pyramidal shape, the piece is taken to the bangle-making mandrel.

These mandrels are perhaps the most unique component of the entire process of making bangles in Ferozabad. Essentially, they are long iron rods of varying diameter, with some threading and a hook at either end. Each mandrel is rotated in a fixed horizontal position by one artisan who is paid the highest wages in the bangle industry. The steady pace of rotation maintained by this artisan is what results in the even formation of the bangle around the iron core. The second most important artisan in the hierarchy performs while standing through out the process. He continuously manipulates the hot, bit-encrusted molten glass shape so it wraps around the iron core in even thickness and with the appropriate rope-like designs. A third artisan helps the two masters by gently nudging the glass coils closer to each other as they wrap around the mandrel. The result is an approximately one-meter long continuous spiral of glass cane that is of even thickness and with the same patterning throughout.

The coil is converted to individual bangles by a single score across its entire length using a diamond-tipped cutter, and then the individual open bangles are laid out on a table. An ingenious apparatus with small flames accurately heats and seals the two opposite ends without deforming any other part of the bangle's design. The apparently simple rings of glass may further decorated by cutting, enameling, or even gluing on sparkly drizzles.

"Composite" Bangles

A lesser-known tradition of bangle manufacture is that of frameworked designs, in which plain or optical bangles (broken bits or the whole ring) were sourced from Ferozabad's factories and reworked at a torch

in nearby villages. Multiple glass bangles would be fused together to create thicker bands with more complex and varied designs, often showing colorful trimmings around the edges. Included in the folds of this tradition is the genre of bangles inscribed with either names or Urdu poetry—engraved or applied using a hot glass thread—reminiscent of *Nawabi* culture etiquette in courtship, romance, and communication, forms now lost to the contemporary world.

In addition to these bangle-making traditions, Ferozabad supplies glass components to accommodate other genres of bangles. For example, rural women and men in Rajasthan inset glass mirrors shipped from this town into lac (natural resin) bangles. Irrespective of the type of glass bangle and where it is made, products find their way to wholesale markets, where bangle sellers from all over the nation buy their stocks. Apart from being a manufacturing center, Ferozabad is also home to the largest wholesale glass bangle market in India. It is interesting to note that most old timers who sell bangles consider themselves fortunate since they earn so much goodwill from the women they help adorn. Thus, the place of a bangle seller remains special in Indian markets for as long as his product retains its symbolism.

Mold-blown Glassware in Ferozabad

The earliest firms in this town were established during World War I, between 1918 -20. However, glass manufacture existed earlier in and around the area, although Lucknow was seen as the major center. Today, no significant glass industries exist at the old center Lucknow; instead, close to 400 units in Ferozabad execute mold-blown glass and various other hot and cold glass processes to cater to export markets. These products eventually find their way into huge distribution networks such as those of Wal-Mart, Pier1, Bombay Company and William-Sonoma. The focus is always on quantity, achieved at a frantic pace, rather than attention to detail. Post-production rejection rates are often over 40% from either breakage or unacceptable imperfections in product.

Work within the factories is in assembly-line-style. All products are blown into multiple-part iron dies, often lined with wet paper to add sheen to the glass piece. One person = one task= all day = a daily wage. The exception to the above rule is the artisan known as the "handworker." He is the person who works glass with "his hands", i.e. without a mold or die machine. He adds solid feet to vases, cuts and flares the lips of vessels, etc., at the requisite stages of production. However, not all products actually engage the handworker. Most are simply broken off of the pipe without puntying. The rims are then cut using an ingenious system incorporating a U-shaped heating element. Fire polishing is done by a flame that is aimed at a ring-like arrangement of just cut vessels rotating on a foot-powered wheel. Some factories have roller-type annealers. Heating and cooling schedule data is experiential and transferred orally.

Mirror Chip Mosaic Decoration

Glass, like most other traditional art and craft forms of India, did not survive in isolation. Since artistic virtue was always considered an integral part of social mainstream, many astounding creations in glass may be found within societal contexts, for example, in Indian architecture, interiors, furniture, lighting, and textiles. Part of a large fortress, the *Sheesh Mahal* in Jaipur, is embedded with silver mirror chips along its

walls and all over its Inner ceiling. Each mirror is slightly convex because it came from a spherical hand-blown glass vessel into which a molten lead-based mixture was poured and swirled before being broken and cut into small pieces. In fact, this traditional craft is still practiced in the interiors of the Kutch region (using safer mirroring solutions). It remains the predominant textile embellishment through out Gujarat, Madhya Pradesh and Rajsthan, supporting a vast cottage industry across the three states. This mirror industry also found home in Kutch *havelis*, whose walls were traditionally composed of clay murals embedded with glass mirrors. Nowadays, many prefer the industrial flat sheet glass mirrors, if not modern concrete homes. While the full impact of one's presence in such a completely mosaic-mirrored space in its original setting can only be imagined through films like the classic *Mughal-e-azam*, there exist many cherished examples of fine glasswork executed centuries ago in various buildings.

Flameworking at the Traditional Workbench: Glass "Gemstones", Beads, and Wire-held Components

Flame-working communities occupy a vast belt surrounding Purdilnagar in the state of Uttar Pradesh. Nagariyapatti is one such village occupied by artisan families who have traditionally manufactured artificial gemstones (called "n-uh-g", and thus the village's name) out of glass for jewelry. Each member of the family participates in the making of these glass stones, faceted or cabochons, in a wide range of shapes and sizes. Up to four members sit at a workbench that is powered by foot-operated air bellows. The five-nozzled torch is made of simple curved pipes that soak up the fuel (kerosene) using cotton rags and carry it to the flame end of each torch nozzle, which is made of conically shaped tin sheets. The artisan uses a fine glass stringer as a "seed" to wrap more hot glass around. When the required amount of glass is found at the end of the stringer, it is inserted into a manual die press. While one foot operates the bellows, the other foot leverages the press to clamp and release the tiny hot glass blob inserted into its depressions. Thus, the hands are free to work the glass—by rotating it as required, or to use second strands of glass for decoration, or to hold tweezers and slightly pull and push the glass around. The brass dies and tweezer-like presses are inexpensive and purchased from the local toolmaker.

Due to the carbon-based nature of the fuel, even the gentlest breeze creates smoke and deposits black particles in the melted glass rods. Therefore, artisans prefer to work in dark spaces behind closed doors and windows with little air supply. Unlike much of the furnace work, women are active counterparts in the flame working process. Children of artisans often begin to learn the craft early and spend considerable time each day practicing after they return from the local state-run village schools.

Glass Bead Curtains

A tradition related to glass beads is that of curtains and partition screens. The roots of this tradition probably lie in the use of small round pearls that were strung in rows to create divisions between interior and exterior (private and public) sections of a palace or *haveli*.

Known to have existed at least since the Mughal dynasty (also in the film *Mughal-e-Azam*, whose screenplay and set design were based on strong historical craft research), these curtains were one of the

earliest methods employed to keep flies, mosquitoes, and other insects away from the interior sections of a home. The state of constant vibration of each bead proved unnerving for the insect—therefore, bead curtains were in many ways precursors to pest repellents. Glass soon came into favor in this genre of products since it presented greater options in color, patterning, and cost. Very soon it became a decorative lifestyle statement as well as an integral part of Islamic purdah systems (demarcation of spaces), as evident in Indian cinema (the films *Umrao Jaan* and *Pakeezah*, for example) reflective of the post-Mughal and *Nawabi* estates. With imperialism and colonial trade, came four-post beds and the modern mosquito net. Slowly, the trend for glass bead curtains waned and today, even though some examples exist in private collections, the product is almost never seen in modern urban lifestyle.

Hopes for the Future

Over the past year, even as my role and input as a glass artist may have assumed a revivalist approach of the Gandhian vision of prolific and egalitarian family-run cottage-based industries, there has been a simultaneous percolation of Indian glassmaking into my own art making processes.

Unlike many nations whose glass histories follow a unified thread, India's has seen an incredible range of regional variations and twists, with influences coming from many different world cultures over the ages. One is fortunate to see all these "strains" of the art living simultaneously in our age. They present us with the opportunity to build a glass movement unique to a country whose traditional communities still exist in substantial numbers. For example, contemporary glass artists and traditional artisans can collaborate—learning respectively from indigenous (and simple) technology as well as modern principles of “efficiency.” Such research, exchange of information, and collaboration, may bridge gaps between diverse worlds and help evolve a new identity for Indian glass. My vision is to reconstruct a prolific glass movement in India by propelling it in the direction of contemporary Studio Glass practice and, in turn, development at the grass root level.

This text is a summary of the full lecture with video footage screened at the GAS 2005 conference. The entire text may be found on the GAS web site at: www.glassart.org. The lecture material with video is available as a menu-enabled 27-minute presentation for personal and educational viewing only. To request information and copies of the DVD or to add ideas, suggestions, and feedback, please contact anjali_vasan@yahoo.com.

Anjali Srinivasan graduated in 2002 with a BFA from Alfred University, NY, after studying accessories design at the National Institute of Fashion Technology, New Delhi, India. She returned to India in 2004 following work experience at Pukeberg Glasbruk in Sweden, the Pilchuck Glass School, and the Metropolitan Museum of Art, NY. Anjali lives in New Delhi where she is a consultant to the government of India on glass craft-related issues. She works on research initiatives, design projects, and technical upgrades aimed at the evolution of specific genres of Indian glass, as well as socio-economic advancement of glass artisans in the nation. Anjali began graduate work in the Glass department of the Rhode Island School of Design in the autumn of 2005.

Susanne K. Frantz is an art historian and curator who specializes in Studio Glass. She received an M.A. in art history from the University of Arizona in 1987 and served as curator of 20th-century glass at The Corning Museum of Glass in New York from 1985 to 1998. She received a Fulbright Senior Scholar grant in 1998 to study Czech glass in the Interwar Period, and she remained in Prague for several years. Frantz has written a number of exhibition catalogs and books, including *Contemporary Glass: A World Survey* (1989) and *Lino Tagliapietra in Retrospect: A Modern Renaissance in Italian Glass* (2008). While at the Corning Museum of Glass, she curated "Stanislav Libenský and Jaroslava Brychtová: A 40-Year Collaboration in Glass" (1994) and co-curated "The Glass Skin: Recent International Sculpture" (1998). Frantz is a past president of the Glass Art Society and was named an honorary lifetime member in 1997. She is also a former editor of the *Glass Art Society Journal*.