

Moving Lights as Moving Spaces: Reinterpreting Traditional Bamboo *Chik* Making



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Abstract The product is an innovative handwoven screen inspired from the craft of traditional *chik* making. Context played an important role; light and wind were crucial, owing to the orientation of the built mass. The product was designed to enhance the experience of the space through sensory associations. Experimentation with light culminated into the project idea: Moving Lights as Moving Spaces, where vertical screens were created to be used as a shading device with perforations to add playfulness to the space and make it usable for multipurpose activities. Technique and material turned out to be the most important factors. Hand weaving was explored employing the technique of hand leno. The use of six twisted warp threads worked the best for the scale. Combination of polythene bags, shrinkable films with bamboo sticks occurred to be the best combination owing to the feasibility, cost, context, sustainability, and social factor. And hence, the project ideology ‘Weave your Sin’ emerged, and the process furthered into creating explorations on small and actual scale prototypes. The product caters to small-scale industries and provides scope to empower our weavers through retained cultural practice.

Keywords Space · *Chik* making · Handloom · Plastic waste · Sustainability

1 Introduction

The grand semi-open space at SID, CEPT University, remained unusable during peak working hours of the day. The problem identified was the amount of light entering the space. The proposed design idea intended for managing the amount of light to provide shade, yet maintaining connect with surrounding nature. The design intends to cater to the aspect of light, in a way to extract maximum usability and possibility of the context with optimal use of the color, material and technique. The designed handwoven vertical screen is inspired by traditional bamboo *chik* making craft. It is purposed to be placed against light. It contains perforations in the form of geometrical

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patterns through which light penetrates and casts interesting shadow patterns based on the location of sun, still maintaining the structural stability of the created surface. The design is such that colors and pattern can be profoundly seen against light.

‘*Chik* making’ refers to the process of making bamboo *chiks* (screens). These screens are used to make beautiful vertical shades and blinds capable of providing respite from the scorching summer sun. *Chik* making is a traditional craft, simple yet elegant; *chiks* provide mesmerizing results.

1.1 History and Origin

Literature study of the *chik* making craft globally suggests about the craft drawing inspiration from various cultures and time zones for a variety of purposes. While *chik* making is the traditional craft of New Delhi, it is also practiced in Aligarh, Agra, and Gwalior. Highly ornamented screens may be inspired from the reed screens used in Kyrgyz yurts of Kyrgyzstan, silk-wrapped floral designs of bamboo screens used in the royal stable of Emperor Aurangzeb, with the change in technique.

- *Chik* making finds mention as the traditional craft of New Delhi as mentioned in the book, *Handmade in India*. *Chiks* are blinds or semi-rigid window panels created out of fine bamboo splits or rigid stems of *sarkanda* grass. It is held in place by a warp of cotton threads. The created *chik* can easily be rolled. It is edged with a woven tape called *nivar* and is sometimes lined with a fabric called *tirpal*, to make it opaque and waterproof. Bamboo *chiks* are usually given a waterproof backing as they are generally used in *verdahs*. The *chik* is an inexpensive, earthy window blind which succeeds in diffusing harsh light, while the geometrical patterns of the wrapped cotton threads contribute a certain elegance.¹
- Traditionally, nomadic herders called Kyrgyz lived in circular felt tents known as yurts. Yurts were made using willow wood, reed screens, felt. They carried all their possessions with them, possessions that were beautiful, portable, less breakable, and provided for variety of purposes, such as the reed screens (plain/patterned). The reed used is called *chiy*. It is slender and stiff. Plain reed screens were created with reeds bound together using strong woolen cords, while for patterned reed screens, all reeds were first wrapped in dyed wool as per the pattern retained in the memory of the artisan. A patterned screen was woven on a weaving frame. The frame contained strong woolen cords wound onto heavyweights. It took around two to three months to prepare one 9' long screen. Twinning process bounded the reeds together with the woolen cords. Each stem when placed in a sequence emerged as a pattern which is no less than a miracle. It can be compared with the tie-dyed and woven *ikat* textile traditions. Making a reed screen was a Kyrgyz women's art. It formed part of a Kyrgyz bride's dowry. Young girls learnt this traditional craft from their mothers and grandmothers. These reeds were used to furnish the yurt as a wall cover and as space dividers inside a yurt.

¹Handmade in India.

The long *kanat chiy* measuring approximately 20 ft was used to cover the wall. Placed between yurt's lattice frame and the outer felt covering, it helped to insulate against cold. During warmer weather, the outer felt cover was removed, and therefore, the patterned reeds allowed for visual aesthetics, ventilation, and privacy. The shorter *ashkana chiy* functioned as a space divider. Plain reed screens *ak chiy* were also used as insulation from cold when placed beneath felt carpets, provided structural base for creating felt carpets acted as surface for food drying, windscreens, or coverings for newly threshed wheat.

The designs of reed screens share similarities with patterns on flat woven *kilims*, felted rugs, and silk *ikat* fabrics. Geometric motifs were popularly seen on reed screens, such as octagon, rhombus, square, and rectangle. This might be attributed to the ease in working with geometrical patterns, whereas curvilinear forms required higher artisanal skills. Animal forms or written inscriptions are rare to find on Kyrgyz reed screens.

- Another mention suggests about silk-wrapped bamboo screens probably dated from the late seventeenth century to early eighteenth century. These screens were used in Emperor Aurangzeb's royal stables. These screens prevented flies from tormenting horses. These screens were created using bamboo splits woven with twisted silk. Each fine bamboo reed was individually wrapped, in the manner of *ikat*, with multiple colors of silk yarn, dark blue-green, red, yellow, and white, to create a floral lattice enclosed within floral borders; the silk-wrapped reeds were held in place by a twisted 2-ply cotton cord warp.²

2 Traditional *Chik* Making

The craft of traditional *chik* making was explored as a part of process to enhance the experience of the space through sensory associations. The tools needed for creating a *chik* comprise of a temporary portable bamboo stand, a knife to split bamboo, warp yarns (cotton/nylon) to bind bamboo splits, *newar* to cover up the edges, and *tirpal* to cover up the entire surface to resist moisture (Figs. 1 and 2).

The technique employed is an up and down movement of the long continuous yarns (secured with a weight at the end) in alteration along the width of the *chik*. This helps in the creation of a long surface. The above description of *chik* is suitable for the non-decorative *chiks*. But at National Institute of Design (NID) highly decorative technical *chiks* are created on loom by the technically brilliant weavers (Fig. 3).

Woven on a primitive frame handloom, multiple designs are produced only with the use of two shafts. Usually, though basic plain weave is employed; another specialty is the use of hand leno technique. Hand leno is a technique where yarns are hand-picked, twisted, and retained through the use of a thin bamboo stick (*salli*). Hand leno technique provides tiny perforations for the play of light and wind. The

²Durbar: Royal Textile of Jodhpur by Rahul Jain.

Fig. 1 Traditional *chik* making in Ahmedabad (Courtesy: Shubhra Singh, 2015, Ahmedabad)



Fig. 2 Process of cleaning split bamboo (Courtesy: Shubhra Singh, 2015, Ahmedabad)



materials used are bamboo sticks (*salli*) and cotton yarns (as warp and binding weft); both materials are employed in natural shades. The above decorative *chiks* are functional and usable for various contexts.



Fig. 3 Decorative woven *chiks* made on handloom at NID (Courtesy: NID Textile Department Archive, Ahmedabad)

3 Context

Designed for the grand semi-open space at SID, CEPT University, owing to the wide opening, the aspect of light and wind was considered to enhance the experience of space through sensory associations. Chiaroscuro formed the major opportunity area to design and innovate (Fig. 4).

4 Design Process

Brainstorming and explorations were carried out with material, color, form and technique, and significant insights were achieved for design intervention to get the desired results.



Fig. 4 Identified space at SID, CEPT University (Courtesy: Shubhra Singh, 2016, Ahmedabad)

4.1 Understanding and Learning the Technique

The technique of hand leno is practiced by handpicking four consecutive warp yarns and then twisting the two yarns on the extremes around the central yarns, and this twist in succession provides for the perforations to appear on the surface. In order to retain the twist, a long bamboo stick is inserted in continuation along the entire width with each twist (Figs. 5, 6 and 7).

4.2 Understanding the Space

Sun path and solar angle at various points of the day were analyzed through simulations carried out on software for the designated space (Figs. 8 and 9).

4.3 Opportunities for Design Intervention

Opportunities were derived on interaction with weavers at NID, through exploration and experimentation carried out with the variety of material on loom and learning hand leno technique from master weavers.

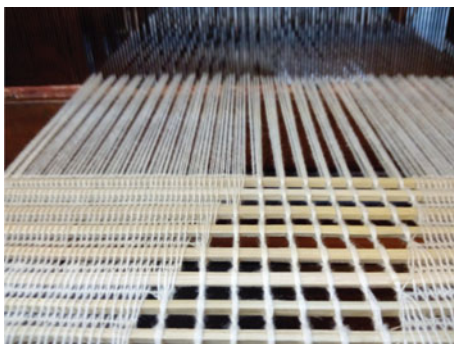
Fig. 5 Learning the technique of hand leno
(Courtesy: Dhanashri Hase,
2016, NID, Ahmedabad)



Fig. 6 Handpicking warp threads for twisting
(Courtesy: Dhanashri Hase,
2016, NID, Ahmedabad)



Fig. 7 Hand leno technique
(Courtesy: Shubhra Singh,
2016, NID, Ahmedabad)



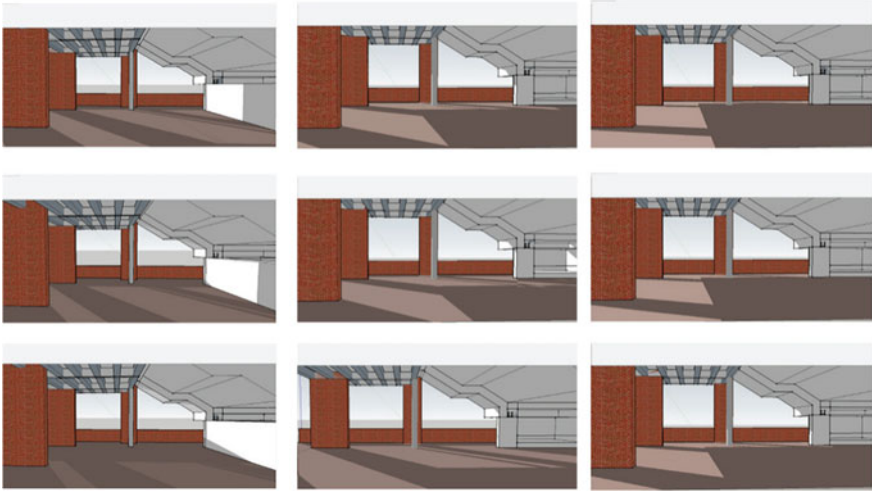


Fig. 8 Solar angle simulation in the space (Courtesy: 3D model made on SketchUp)

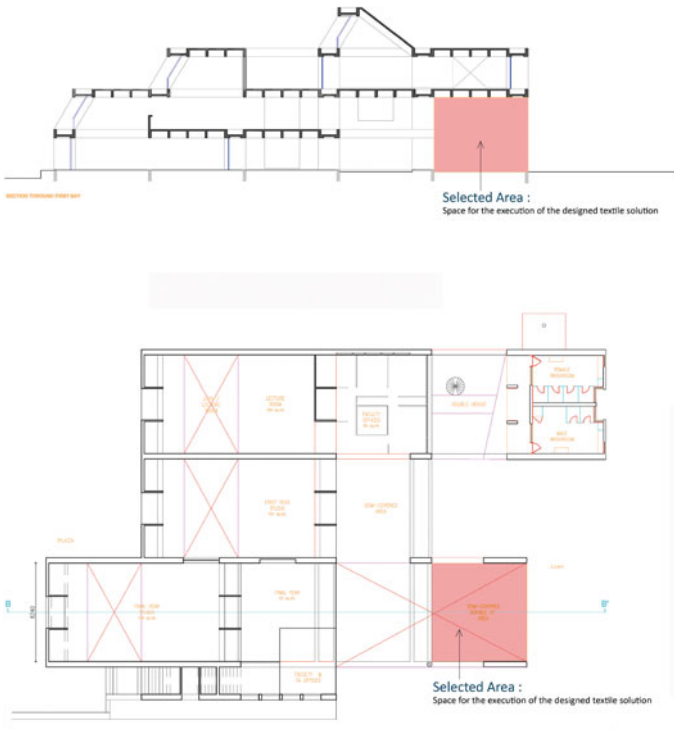


Fig. 9 Identified double-heighted volume for design intervention. Plan and section of SID, CEPT University (Courtesy: NID through SID, CEPT University)

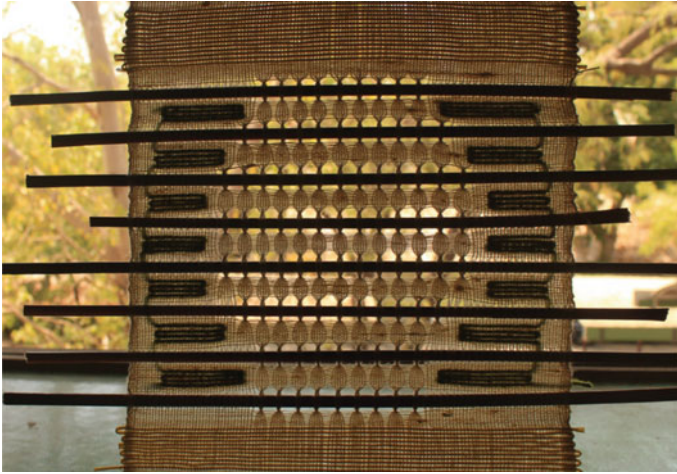


Fig. 10 Exploration made on tabletop (sample) loom combining hand leno, extra weft and balanced weave together (Courtesy: Shubhra Singh, 2016, NID, Ahmedabad)

While traditional *chik* is a single-layered surface, this product is a layered entity. Perforations are integrated through the use of hand leno technique (–1 layer), extra weft technique facilitates layering (+1 layer), and basket weave acts as the base layer (0 layer) binding the layers together. Application of extra weft technique facilitates the introduction of patterns and colors, providing a new identity to the old (Fig. 10).

4.4 Innovation

In order to reduce cost, add colors, and address water resistance, environmental concerns, and sustainability through the product, unconventional materials such as polythene bags and shrinkable films were employed, along with conventional materials such as cotton yarns and bamboo sticks (*salli or tilli*) as the structural framework.

In the traditional bamboo *chik* making, cotton and bamboo sticks are used in natural shades, employing plain weave and hand leno (four threads) techniques. While this product utilizes, wastes such as polythene bags and shrinkable films, along with cotton and bamboo, employing techniques such as hand leno (six threads), extra weft, and basket weave technique. This process magnified the scale of perforation, added color to the schema, and provided visibility to the colors against light respectively.

Innovation took place at various levels such as:

Theme: Layering

Achieved through the combined use of hand leno technique, basket weave, and extra weft technique on hand loom (Fig. 11).

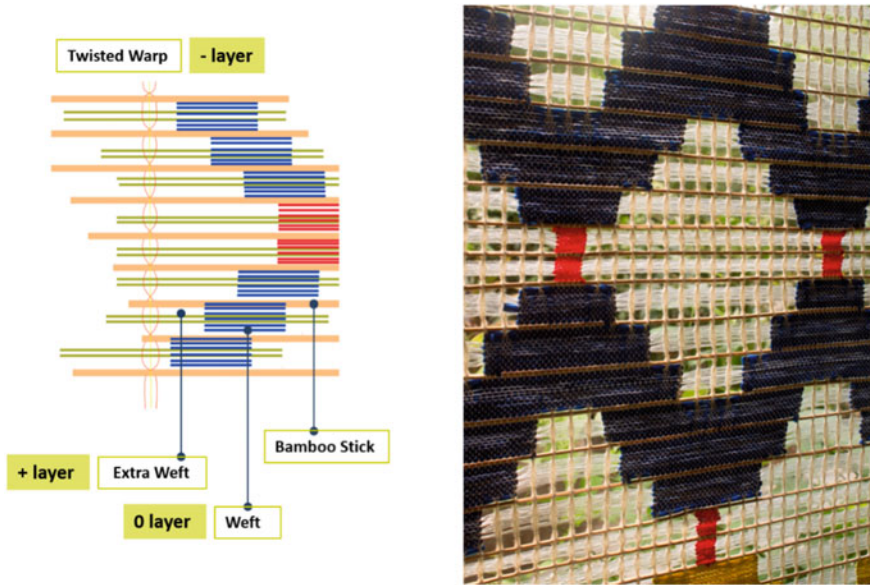


Fig. 11 Illustration showing the components of layering (left) and photograph (right) (Courtesy: Shubhra Singh and Ronak Parmar, 2016, NID, Ahmedabad, respectively)

Technique: Hand Weaving

Instead of twisting four warp threads, various other permutations and combinations were explored. The use of six twisted warp threads worked the best based on the scale for hand leno technique.

Extra weft facilitated the visibility of color and pattern against light, acting as the second skin to the existing layer. Pattern was generated by counting and handpicking warp threads and filling with color-coded extra weft strands (Fig. 12).

Material

A variety of materials were tried, namely aluminum, acrylic, cotton, polyester, jute, linen, MDF, bamboo, PVC pipes, plastic wires, polythene bags, shrinkable films, etc.

Combination of polythene bags (in assorted colors-cut into strips), shrinkable films along with bamboo sticks occurred to be the best combination owing to the feasibility, cost, context, sustainability, and social factor (Fig. 13).

Color, Form, and Composition

Constructed in red brick and concrete and surrounded by nature, the space comprised of earthy tones, gray and red. In order to break the monotony, colors were picked inspired from the color-coded bags (red, blue, yellow) used for waste segregation and disposal as derived through material exploration.

Stepped triangles were combined to be perceived as diamonds through the proximity of color and as waves individually. Patterns were worked out based on geometry

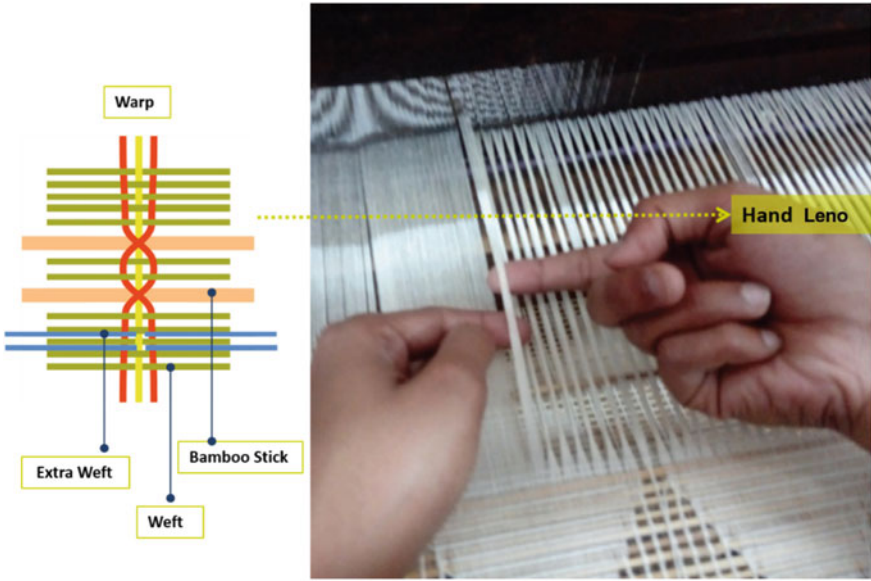
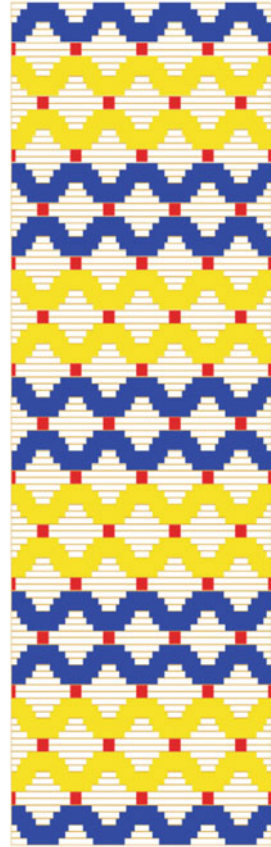


Fig. 12 Illustration (left) and photograph (right) showing the technique of hand leno (Courtesy: Shubhra Singh and Dhanashri Hase, 2016, NID, Ahmedabad, respectively)



Fig. 13 Materials used: cotton for warp; polythene bags, shrinkable films, and bamboo sticks for weft (Courtesy: Shubhra Singh, 2016, NID, Ahmedabad)

Fig. 14 Materials used: cotton warp, polythene bags, shrinkable films, and bamboo sticks (Courtesy: Shubhra Singh, 2016, NID, Ahmedabad)



to comply with the physical context, in a manner to reduce the number of bamboo sticks to optimize the cost (Fig. 14).

Processes

The process began with setting up the loom followed by preparing the weft, cutting waste polythene bags into strips. These strips were then wound to act as shuttle for extra weft. In a similar manner, shrinkable films were cut and wound around the shuttle to run continuously along the entire length of the *chik* in basket weave. Alongside, bamboo sticks were cleaned and smoothed to get rid of tiny fibers that may hurt the weaver or break the warp threads. With the preparation in place hand weaving began, the warp was managed with treadles controlled by feet and wefts were inserted and controlled by hands. At the end of the weaving process, the *chik* was removed from the loom and its edge was finished to convert it into a usable form (Fig. 15).

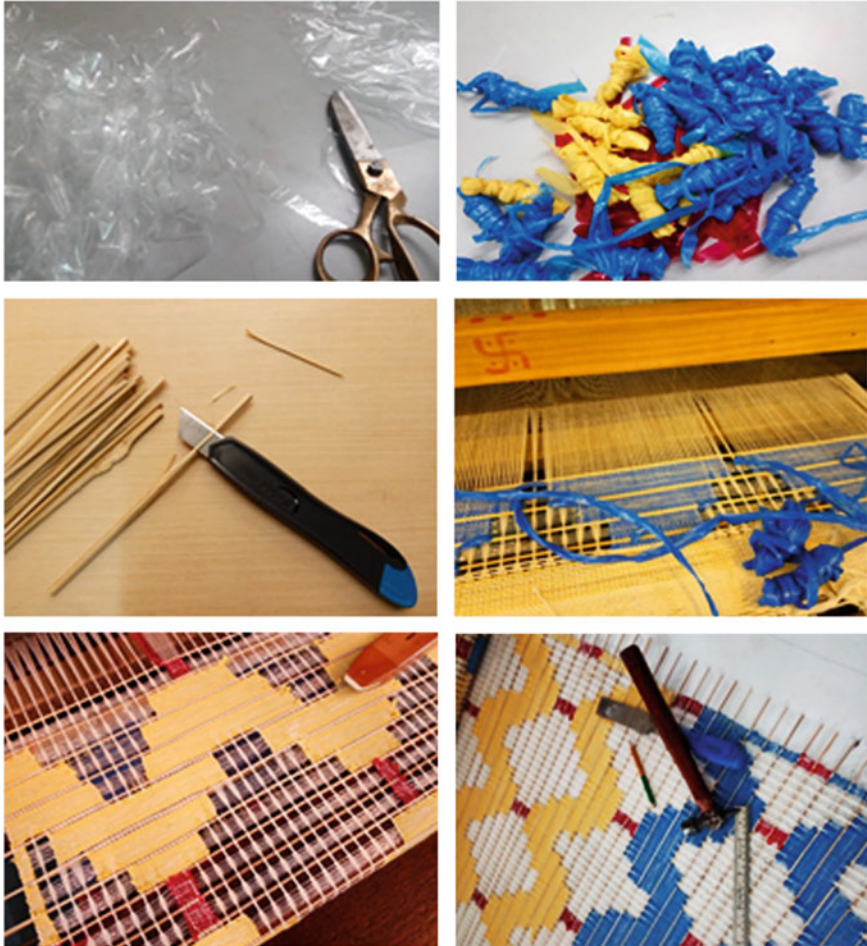


Fig. 15 Materials used: cotton warp, polythene bags, shrinkable films, and bamboo sticks (Courtesy: Shubhra Singh, 2016, NID, Ahmedabad)

5 Final Product

The product is a provocation with the design ideology ‘Weave your Sin,’ a reminder to use and throw lesser plastic into the environment and turn to natural substitutes (Fig. 16).

Suitable for use in the outdoors and indoors, the product can be used as space enhancers, space divider, canopy, etc. Against light, the appearance enhances and the shadows formed add playfulness to the space. This textile solution is quick to make, lightweight, easy to roll, pack, install, and transport. It is a sustainable and affordable textile design solution which utilizes handloom resource in an unconventional way.



Fig. 16 Display of product in space (Courtesy: Ronak Parmar, 2016, NID, Ahmedabad)

For safeguarding the *chik* from fire hazard, a fire retarding spray solution can be created by mixing equal amounts of ammonium phosphate and urea. The solution is sprayed over the surface thrice in succession as the previous coat dries up. This can provide with the required fireproofing.³

Alternatively, before creating the surface of *chik*, each individual ingredient could be treated for fireproofing separately. Fire retardant chemicals such as zinc borate, antimony trioxide, alumina trihydrate, and decabromo⁴ could be added while manufacturing.

This process will help the product with fire-related hazards and increase its usability and market viability (Fig. 17).

5.1 Potential and Ability

- Innovative use of material and technique;
- Structural stability;
- Customizable sizes to suit various contexts;
- Innumerable design and compositions;
- Sustainable and green product;
- Water resistant and suitable for both outdoor and indoor;
- Empowering weavers and generating livelihood opportunities.

³As shared by Mr. Ashish Karnani from Acuro Organics Limited.

⁴<http://www.acuro.in>.



Fig. 17 Photographs of the final product (Courtesy: Ronak Parmar, 2016, NID, Ahmedabad)

6 Suggestive Sustainability Model for Livelihood Generation for Artisans (*Chik* Makers and Weavers) Presently Engaged in the Craft

The artisans who are working in the segment have many roadblocks to grow and work in this sector. Due to the lack of demand, often skilled artisans are bound to work as daily wagers and construction labors and are attributed as unskilled. Therefore, creating opportunities for self-employment is the best way to tackle the problem. However, engaging in a self-employed setup comes with its own struggles, such as

- Lack of access to capital due to inadequate banking facilities;
- Excessive paperwork required for getting loans from microfinance institution and banks;
- Lack of access to community organizations to work with;
- Lack of design abilities and capacity to make cutting edge products suitable for the urban markets;
- Mismanagement of funds available under government-sponsored self-employment schemes.

Traditionally, crafts were carried out inside a close-knit community of artisans. Segregation of labor had been based on gender. Works in the pre-production and postproduction stages were carried out by the women of the family. While the main works were carried out by the men, women have been deprived of their true credits as creators.

Scaling up women cooperative credit societies or an SHG will provide true worth to the artisans and also will provide a platform for them to sell their products at market prices, directly to buyers across the world. It would provide income generation for both skilled and unskilled artisans at the various stages in the entire process of the product.

It will help in working on regular monetary savings by a group of individuals who then lend money back to its members. Such a system ensures greater transparency as there is community involvement. It also enhances the access to capital required for self-employment. Further, the chances of loan defaults are reduced due to the role of peer pressure in such cooperatives. These activities can be funded under many government schemes for self-employment such as National Rural Livelihood Mission and many other state-sponsored schemes. The provision of funds is also available through KVIB, Mudra schemes, and PMEGP. These schemes may facilitate the artisans with finance, infrastructure, and equipment for producing *chiks* and come up with products suitable for the global demands. These cooperatives would help artisans to earn approximately 15–30% more than what they would normally get through their existing channels.⁵

By linking designers with the artisans through government-funded schemes like DDUGKY, BADP, Skill Development Mission, and many other state-sponsored

⁵Literature study on GoCoop.

schemes, a process-driven approach can be implemented focusing on the needs of urban clients, trends, and forecasts. The problem of design diversification, standardization, skill, and capacity building can be taken care of. During this process, designers will work on behalf of government to facilitate the artisans. It will help in marketing initiatives, design and technical innovation, and quality improvements. Also, techniques which are no more in practice can be revived under the supervision of the designer. An online application (app) can be created as a marketplace for artisans, where artisanal goods and services can be provided at ease. The designer will be instrumental with helping in photographing, cataloging, and compiling product-related information, etc.

After building the financial capacity and design ability, the forward linkages could be established to market the products through various online and offline channels (B2C and B2B models). This will help them to develop a sustainable and independent model to grow exponentially and provide livelihood opportunities. State government emporiums, crafts councils, revival trusts, museums, etc., might also help in marketing and spreading awareness about the craft. The cooperative with its elected heads can help market the products made by its members and distribute profits equally among them.

7 Conclusion

The product deals with the acute environmental concerns of non-biodegradable waste usage and decomposition. It addresses a way for the revival of traditional practices in the contemporary context. It also aims at providing livelihood opportunities to *chik* makers and handloom weavers.

With 44 lakh handloom weavers across the nation, immense magnitude and variety of patterns could be created, requiring lesser time and material to create the surface, adding the pop of color through the use of non-biodegradable waste solving environmental concerns by addressing the alarming condition of waste disposal for a better sustainable future.

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