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SUSTENANCE OF LANGUISHING TRADITIONAL CRAFTS THROUGH DESIGN AND PROCESSES INTERVENTIONS: LEATHER TOY CRAFT

Santosh Kumar Jha[1]

[1] Department of Leather Goods and Accessories Design, Footwear Design and Development Institute, Noida, India

Abstract: The Leather Toy Craft is spread in the geographical areas of Indore and Ujjain districts in Madhya Pradesh state in India. Once upon a time, this was a great source of income for thousands of skilled and semi-skilled artisans and their family members. But, the use of insect-edible raw-materials and lack of product-line diversification turned this craft into the category of languishing crafts. This craft is well known for its miniature as well as for life-size animal and other realistic creature forms. The sculpted muscular forms, followed by traditional leather molding techniques are the common-unique-craft-factor. After and study of production-bottom-of-pyramid involved in manufacturing-process, the author came to know that this craft can achieve the state-of-sustenance. Objective of this project was to establish a pool between traditionally acquired craft skills, easy-to-accept contemporary manufacturing process interventions- as required, design and development of product ranges according to the standing-requirements of the target-end-user(s). One-to-one survey and sample collection through personal interactions and exploration method was followed at grass-root level. To develop a proposed non-insect-edible form, the production-cost enhancement was approximately 05 INR per square feet. Later, this project was extended to check the actual-feasibility of interventions at functional level, which was found successful. For this purpose, initial design inspirations had been taken from the surrounding environments of Indore city life, as well from the nature. As all of the above suggested processes were done after need-studies, so was artisan friendly and recommended changes were accepted by them easily. Although, initial training was required, so artisan training program was organized by author.

Keywords: *Sustenance of languishing crafts, Leather Toy Craft of Indore, Design and manufacturing process, Conservation of languishing traditional crafts*

1. Introduction

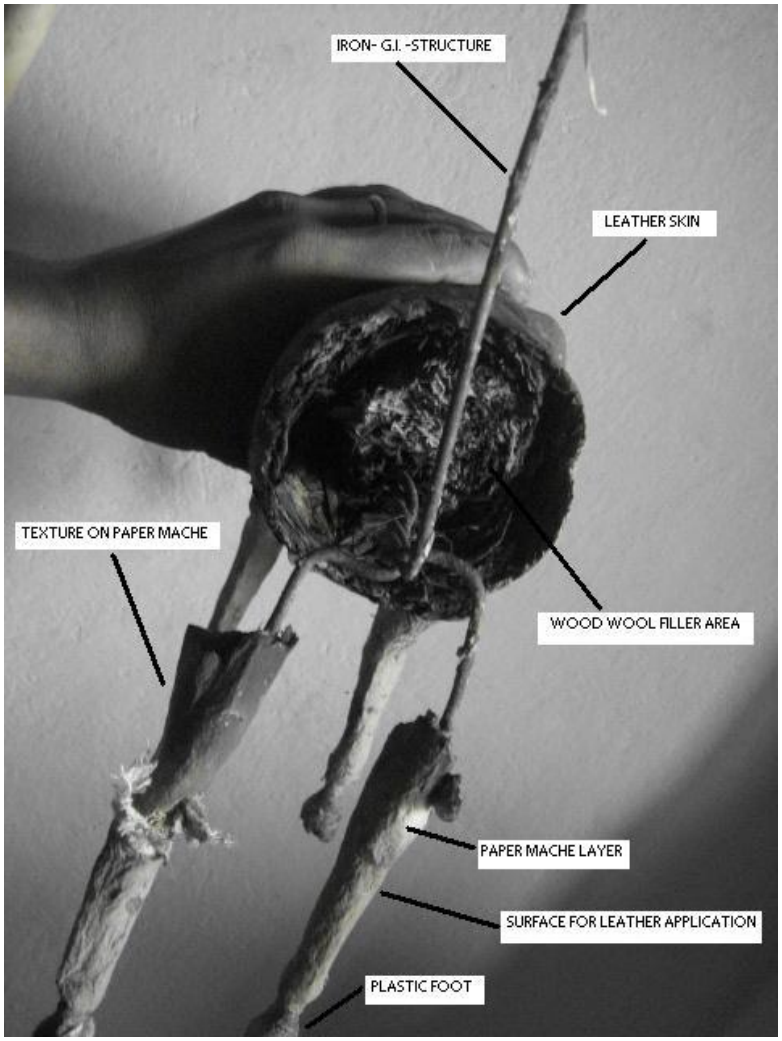
Indore! A district of Madhya Pradesh in India is known for its Leather Toy Craft identity, is the craft-production hub, with thousands of skilled and semi-skilled artisan work-forces. Most of the working artisans are ex-employees of different large cotton textile mills, which are now non operational, due to the government's changing textile policies. Because, these huge textiles mills were not able to pay their salaries and other labor-benefits in the era of their shutting-down, so, the employees of these mills start searching new livelihoods survival opportunities for their bread and butter. It was the birth-

cause of leather toy craft industry. Initially, it was a low investment and high productive venture for them, so, flourished all the way. But afterwards, due to similar product anges and uses of fast bio-degradable raw materials, the craftsmanship-market was unable to provide sustainable income sources for these artisans.

2. Research methodology followed

One-to-one interaction method at grass-root level was followed. Studied and learned different stages of craft-process under guidance of a master-craft person, onsite photography, collected existing product samples etc. As learning a craft is the first step towards remedy, so requested a master crafts person to provide this opportunity at his workshop and stayed there for a week to learn primary processes and studied the limitations with the eyes and hands as an artisan. It was really a great exposure, which lead me to understand various pros and cons of this craft.

3. Anatomy of an existing product



Parts of a leather-toy animal form

Pre-burn form

Post-burn front-view

Post-burn side-view

Figure 1. Anatomy study of a pre-existing product

The anatomical composition of an animal form is achieved through six different layers, as shown in figure-1. Usually all mammalian forms are practiced along with other animal forms in this handcraft:
3.1. Iron structure: Inner most structural component, achieved by bending of galvanized iron wires.
3.2. Wood wool: Used as the filler element and common form generating internal and massive body forms. Wood wool is the left out of fire-stick manufacturing industries and costs respectively cheaper.

It absorbers less water, due respect of other hard and soft wood-wools; usually pine, aspen and basswood-wools are used for this purpose.
3.3. Paper mache: This material is used for creating sculpting layer, i.e. texture and surface creation as per muscular formations of an animal[1]. *Multani mitti* or plaster of parish is being used as a binding and surface-smoothening agent, when mixed with paper mache solution with water, at room temperature.
3.4. End caps: These plastic caps are used to define legs and eye components of an animal form. It also helps to provide additional strength to the weaker ends an end-product, eg. leg ends.
3.5. Leather: The outer most layer of an animal form is created by moulding a thin leather layer. It provides the visual feel of a living animal. So, this craft is often called as, "Leather Toy Craft". Vegetable tanned goat & sheep leathers are used for this purpose.
3.6. Surface color: To achieve, a significant final appearance of an animal, shades of different water soluble on room temperature colors are being used.

4. Existing negative issues caused by the use of insect-edible raw materials

All of the used raw materials in a leather toy are insect-degradable; please see figure-2 below. Due to this issue, product-life goes shorter- as expected and causes different additional negative issues during pre-sales storage and logistics. One of the other, but, quite often issue is associated with obtaining 'Fumigation Certification' at shipping ports, before these products are being forwarded for export shipping purposes through sea-ways. It is being observed that even after taking care of all the basic precautions, majority of final products get dumped at the destination ports. As observed, these products are absorbing moisture while shipped through sea and so finally causes huge loss for these artisans.

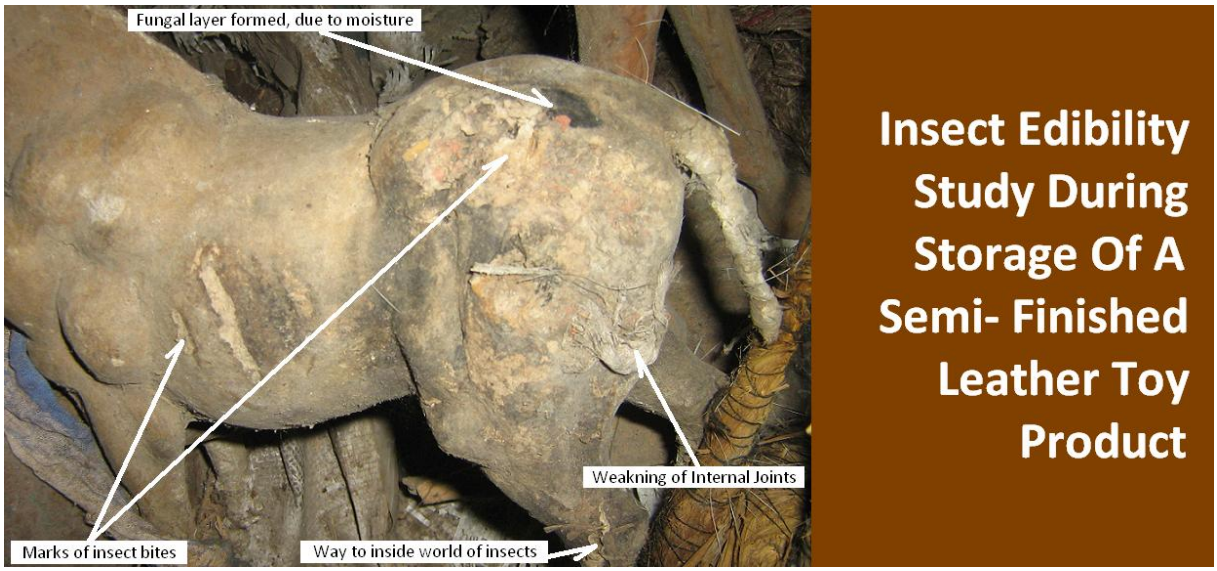


Figure 2. Negative issues caused by the use of fast Insect-edible raw materials

4.1. Effects of moisture absorbing tendency of raw materials, i.e. paper mache, wood wool and leather:
4.1.1. Due to moisture, fungal layers formed.
4.1.2. Development of insect colonies inside the animal forms. Usually it is hidden from outside view, so it requires tearing the outer-surface, so that an artisan is not able to rectify this issue every time before finishing. Later it causes uncontrolled damages. It also weakens the structural joints of inside-structure.
4.1.3. Due to above insect issues, the workshops are turned into smelly and unhygienic environments. Usually these workshops are attached with artisan's area of residence. This phenomena also negatively affecting artisan's overall family-health.

5. Leather toy craft's existing manufacturing process chain

Manufacturing process chain of toy craft starts with sourcing of raw materials by artisans and their subordinate family members, from local market. Glue making is the first stage of workshop process. *Terminus Indicus* seed-powder is used for this purpose. Water and *Potash Alum* are other ingredients used in this process. Paper mache making is the next process. By mixing paper-pulp's dry dust, water on room temperature and *Terminus Indicus* seed-glue are the major ingredients in this process. Wire frame making is the next phase. Usually Mild Steel and Galvanized Iron wires are being used for frame making for small structures of up to 12 inch height products. Developing wood wool or grass frame over wire structure is done by wrapping is the next phase. Application of pre-prepared paper mache paste layer through hand spreading method or through fiber-dye based. Now, paper mache applied body is put for drying in sun or shade drying. Shade drying is preferable for thick paper-mache layered forms. Usually sun-drying takes 3-5 days in summer, during rainy season, 'Dark or Heat Room' drying-process is followed. Usually after drying phase, paper mache applied surfaces are displaying 'drying crakes' over the well dried outer surfaces. So, repairing these cracks is done by using another fresh paper mache mixture and *putti*. Now, again leave the form for re-drying. Now, to make body surfaces smooth, burning and sand-paper rubbing process takes place. Leather molding is the next stage. For this purpose, *Terminus Indicus* glue is used. Surface texture generation process by using conical plastic tools takes place at this stage. Surface color is generated by low quality colors. Because of its week nature, comes out easily. Wax-polish is used for final surface finishing. Quality checking is the next stage. To protect the product, silica gel ball pouches are used. Next stage is polyethylene packaging. Products are forwarded for logistics, as the last stage of process.

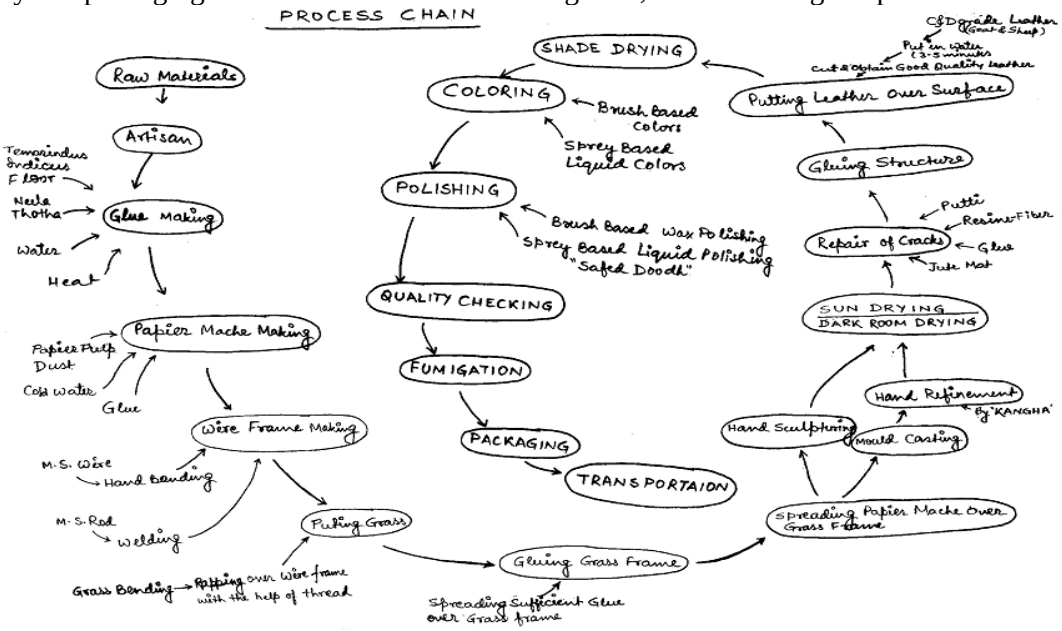


Figure 3. Existing manufacturing process chain

6. Intervention strategy formulation

6.1. Limitations of the craft which requires working out:

6.1.1. Moisture catching tendency of the craft

6.1.2. Raw material edibility by insects, fungus etc

6.1.3. Week metal structure

6.1.4. Paper mache uneven layer application results cracks during sun drying.

6.1.5. Color layer was coming-out after absorbing moisture. So, it required to find new sustainable color and polish option.

6.1.6. Tamarinds adhesive was not as strong as expected. So, it was required to replace it with some other suitable glue option.

6.2. Further implementation strategy:

6.2.1. Leather toys making skills can moderately transform into contemporary furniture and other products by using its sculpting qualities. It opened the doors for new design and development opportunities during this project.
6.2.2. Need to develop strong metal structure, joineries, assembling of parts were also observed.
6.2.3. Requirement of other chemical compositions antifungal, non-toxic color, polish and glue.
6.2.4. To control copying issue, I need to focus over assembling concepts and break the production phases-because artisans could also promote copying at their own level. So working over following plan found functional according to the existing craft-scenario, as displayed in the figure-4 below:

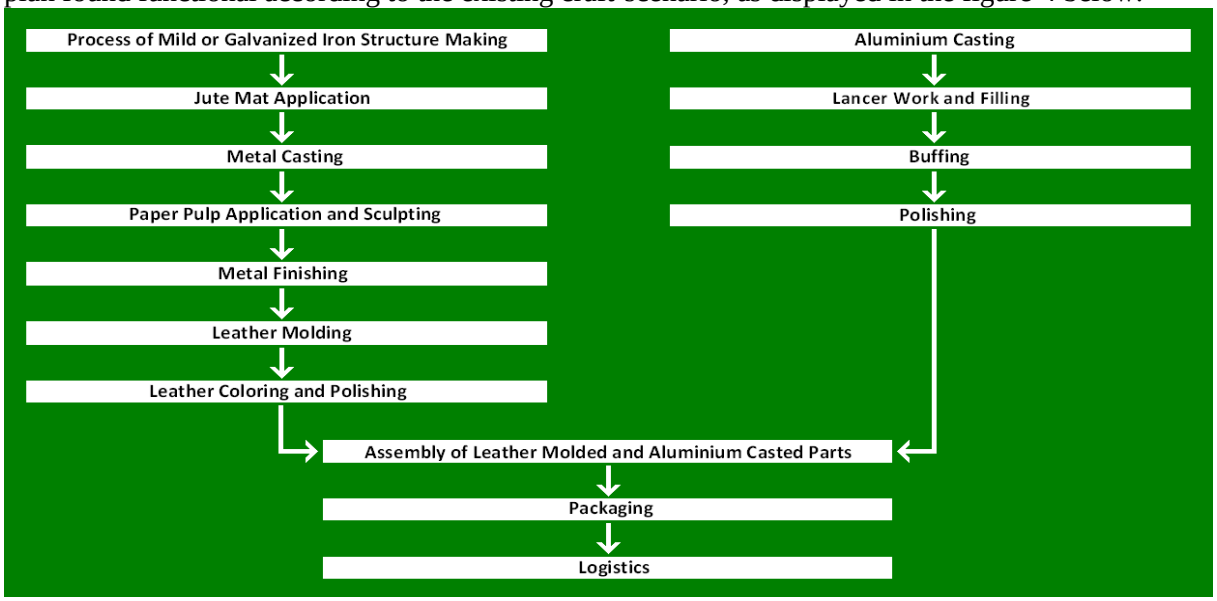
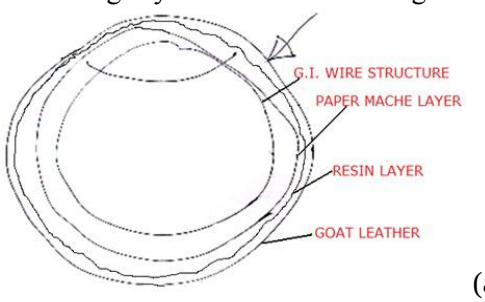


Figure 4. Implementation strategy flow chart

7. Technical exploration phases

7.1. Remedial approach towards traditionally used fast Insect-edible raw materials formed structure:
7.1.1. As it was important to maintain the overall visual features of this traditional craft. So, it was important to use a lamination material over the paper mache surface after properly drying it- as, it is an important layer for generating textures of muscular surfaces- through sculpting.
7.1.2. On the basis of market studies, resin solution of Hardner-S, Cobalt 6%, GP-N.10/2 was identified as a lamination material. It was applied and tested. It gave 100% success in moisture protection and inner-insect and fungal attacks to the paper mache-applied layer. It is able to form a waterproof and insect-locked layer over the toy form. As well, it also allowed leather to take shape, when moulded over it, without affecting its traditional visual appearance and so, able to maintain craft's traditional glory for an audience in figure-5 (a&b) below.



(a.)

(b.)

Figure 5. (a.) Remedial approach towards fast biodegradability issue (b.) Water Resistivity Test

7.2. Replacement of tamarind adhesive with developed new adhesive:
Traditionally, artisans were using *Tamarinds Indicus* seed's glue. This glue leaves unpleasant smell as it was edible for insects. So, it was reducing product life as well. It was also not suitable for moulding leather over newly developed resin surface, as leather joints forming cracks after few days- when

leather went stretched on drawing at room temperature. So, the new synthetic water soluble adhesive with similar nature- as tamarind adhesive had, was developed and introduced. The test results were quite satisfactory. It solved all the earlier issues related with the tamarinds glue.

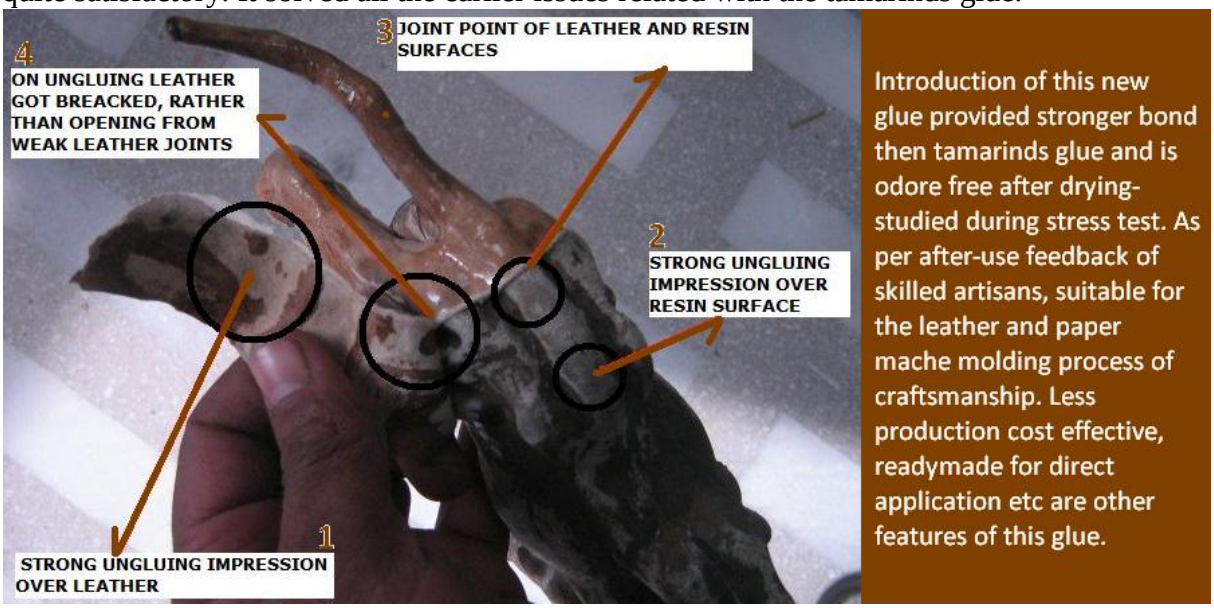


Figure 6. Improved glue application findings

7.3. Replacement of surface colors:

7.3.1. Traditionally used colors were of lower qualities and were coming out, while rubbing by water and cotton fabric and leaves stain over cloths. It was another basic issue with existing product line. So, product diversification of this craft into utility-products for living spaces was an issue.

7.3.2. To provide remedy in this direction, few leather coloring methods were explored and finally dry spray method worked out with *BROWN-GR8.Conc* and *AN-BLACK*, color solutions. It also comes in other color variations, please see figure-6 above.

8. Design development phases

8.1. Trend Forecast Study:

During this phase, to maintain relevance of existing animal forms of traditional craft, material forms of paper mache and the then trend forecast derived forms, together was helpful to develop products for living spaces- by maintaining the glory of traditional craft. During trend study, it was found that Blob Art[2], can help best help in achieving desired result, so, it was followed. Please see figure-7 below.

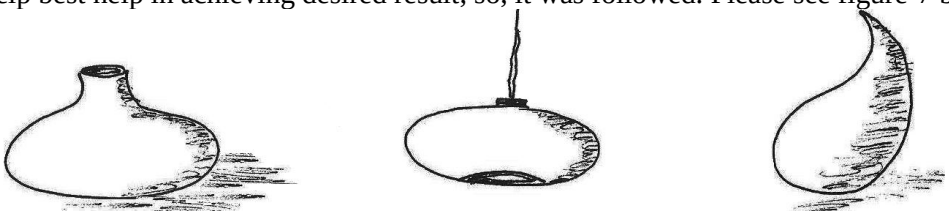


Figure 7. Blob Art Forms

8.2. Material forms Explorations:

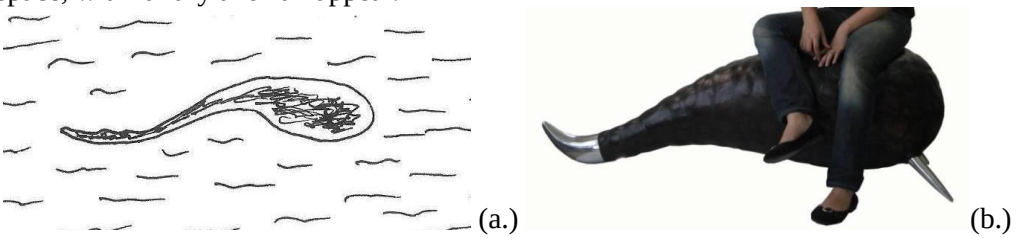
8.2.1. According to the trend forecasting reports for 2007-2008, the Blob Art[2] was expected to be in trend in coming years. As the animal forms of this crafts has close relevance with this art form, so it was focused to explore further for further form generation purposes.

8.2.2. Above outlines are explorations of raw material-forms, representing 'Blob'. These forms resemble with rounded forms, reminiscent of stone, bulky forms of flora & fauna kingdoms. These are few explorations, based over the blob-forms.

8.3. Product design and development phase:

8.3.1. The Tadpole:

"The Tadpole" is functional seating furniture, designed and developed for seating purpose in an interior space, with luxury and fun appeal.



(a.) (b.)

Figure 8. (a.) Inspiration: Tadpole- an aquatic creature, (b.) End Product: Tadpole seating

8.3.2. The Boiled Egg:

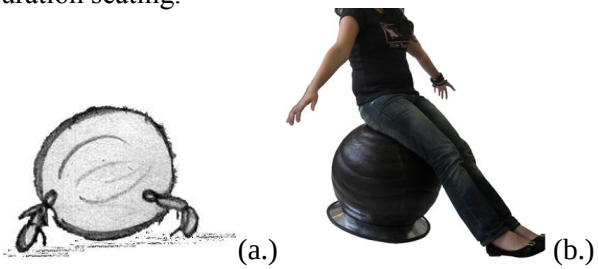
"The Boiled Egg" is functional seating furniture, designed and developed for sitting in an interior space with the appeal of elegancy. The form is inspired from boiled eggs with 'upper concave curve'.

(a.) (b.)

Figure 9. (a.) Inspiration: Boiled egg with curve and match sticks, (b.) End Product: Egg seating

8.3.3. Sweet Ball Rolling by Ants:

"Sweet Ball of Ants", is a rocker seating, designed and developed for an interior space with fun and playful appeal. The form is inspired from the process of rolling sweet-balls by an ant, in our surrounding nature. This seating is able to rock in 360^{O} angle on a 2-dimentional, on the floor with a ground-tilting option of 0" to ¾" all around the bottom flap. It provides rotational fun experience to the end-user. It's a short duration seating.

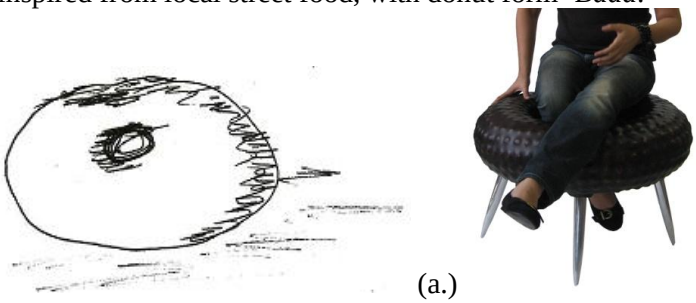


(a.) (b.)

Figure 10. (a.) Inspiration: Rolling process of a sweet-ball by ants, (b.) End Product: Ball seating

8.3.4. The Bada:

"The Bada", is functional seating, designed and developed for sitting in an interior space with fun appeal. The form is inspired from local street food, with donut form- *Bada*.



(a.) (b.)

Figure 11. (a.) Inspiration: An Indian street food '*Bada'*, (b.) End Product: Donut seating

10. Limitations Faced

10.1. Seasoning marks of leather. Due to smaller hide size of goat and sheep leather, it is difficult to achieve precise single hide moulding for furniture products. A calf hide is not suitable due to its stiffer nature.

10.2. There was a limitation with newly introduced glue. Its draying time is 10 to 15 minutes. But traditional leather sticking technique required about 20 minutes to 01 hour time for sticking and finishing. So, later, mixed tamarinds glue with this adhesive in proportion of 1:5. This solution solved all the earlier noticed issues and finally worked out.

10.3. During color and polish intervention process, observed that the use of a single hide or its pieces over the same product will helpful to overcome color difference issue over the different hide surfaces. Pre dying could be a nice option rather than spraying to overcome color rubbing-out issue. It will also help to obtain similar tone over entire surface of the product. Then need only to rub the surface once each, by using dry and wet cotton fabrics. It required one spray quote of color with same shade or darker over the hand-skiving marks on joints.

11. End Note

Handicrafts should be developed by keeping in mind about current lifestyle needs of consumers, so that they will easily accept ethnic crafts with modern features. However attention should be given to maintain originality of the products.[3] In current paradigm of changing socio-cultural consumer behaviours and end-user's psychology towards accepting traditional products are few common influencing agents, which pushes traditional handicrafts in to languishing. Preserving traditional handicrafts and techniques is highly important, as, traditional handicrafts are bearer of traditional creative-heritage and represents cultural richness through traditional tools, techniques, endless traditionally acquired knowledge and represents the richness of a socially grown cultural behaviours and beliefs. So, the need of remedial approaches, as per contemporary end-user's lifestyle-needs is essentially required to re-construct the existing craft-practice methods. The end-user's acceptance will automatically come up along with, as result and they will surely welcome products, which will found suitable in their contemporary lifestyle and will make their life comfortable and presentable in their habitat. The approaches, followed in this project were to achieve desired sustainability level for the Leather Toy Craft, worked out finally and ably provide sustainability to the craft and associated artisans. This development model may implement for providing sustenance to other languishing traditional crafts with 'craft-specific' remedial variations. At the end of project, all of the primarily set objectives were achieved. A total number of 11 completely functional products were developed in the first stage of design and development. Primarily two master-craftsmen were trained by the author. After a 2 month's skill up-gradation training cum design development sessions, these trained artisans returned back to their respective craft-community and further trained other artisans. This project opened the path of sustenance and increased the craft-life-cycle of the Leather Toy Craft.

12. Acknowledgement

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13. Bibliography

The Hamlyn Children's Animal World Encyclopedia. (1979). Hamlyn Publishing Group Limited, England.[1]

Lynn, Greg. (1998). *Folds, Bodies & Blobs: Collected Essays*. La Lettre volée.[2]

Jena, Pradeep Kumar. (2010). Indian handicrafts in globalization times: an analysis of global-local dynamics. Interdisciplinary Description of Coplex Systems 8(2), 119-137.[3]