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## Designing A Contemporary Furniture (Book Shelf) With Sustainable Materials Cane And Bamboo

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### Abstract

The bamboo and cane-based products in the north-eastern States of India, are important part in the tribal culture of the region. India's North Eastern Region where Bamboo plants are abundant and generate some jobs and economic well-being for villagers while contributing to some rural development. This region is dominated by the ethnic tribals and the bamboo products are available in more or less every place. Tribals have the particular skills for preparing the products which they learned from their forefathers. Bamboo have the multipurpose uses that increases its significance. It is conserved as an important cash crop considering the income generation for the cultivators. Bamboo products has more future prospects, because bamboo crafts are eco-friendly, light weight, relatively cheap, and presentable. Bamboo-based crafts have occupied an important place in the handicraft industry in the north-eastern region of India. Also, today when sustainability is a major concern cane and bamboo products are the ultimate heroes. Despite being so efficient, the cane and bamboo sector remain underdeveloped. Lack of technological innovations along with inadequate policy support has resulted in the steady stagnation of this industry. The present study indicates that development of efficient marketing channels the problems of the handicraft industry. This paper will focus on designing and creating a full scaled model of contemporary book shelf with cane and bamboo.

Keywords: Tribals, bamboo, bookshelf, upliftment, cane, contemporary, sustainable materials

## Introduction

In North eastern states of India cane and bamboo craft, carried out traditionally in almost every household in the rural areas, and it plays an important role in the rural economy.

Bamboo and cane furniture's are made from bamboo evergreen perennial flowering plant. Cane and bamboo furniture are made from the technique known as wicker in which pliable plant materials are woven to make products. Nowadays, bamboo is used in almost all sorts of furniture, such as benches, cabinets, beds, stools, shoe racks, tables, sofas, bookshelves, sofas, and recliners. Bamboo's high availability, strength, abundant supply, firmness, and speedy maturity have made it a very popular choice for furniture making. It is being used in office, home, restaurants, and shops to give an aesthetic appeal to the room and give simple and elegant feel.

Bamboo based products are produced from thin strips of bamboo. The products may be primarily intended for agricultural use, such as baskets for vegetables or animals and winnowing trays for cereals, or they may be household products such as baskets, trays, jars, case, lampshades, fans and mats.

The production of bamboo-based products is a traditional technology that has been practiced for more than a thousand years and is widely distributed. Manufacturing bamboo-based products combines traditional weaving skills with modern technology. The majority of the bamboo-based industries are grouped as cottage and small-scale enterprise.

Cane and bamboo furniture though are natural in appearance yet offer a very trendy, sleek, and modern look to the entire décor. The longevity, low weight, convenience in handling, easy maintenance and environmental friendliness of this furniture add to its appeal.

But despite all this, the sector is functioning in an unorganized manner that has given rise to certain problems like price of raw materials, wages, employment, rise of intermediary, etc. which has deprived the artisans of actual economic benefits.



## Objective

The core objectives of the study are:

- ✓ To promote marketing of bamboo and cane based handicrafts.
- ✓ To analyse historical development and present status of handicrafts in North- East India.
- ✓ To study the bamboo and cane utilization in North-East India.
- ✓ To study the pattern of production of cane and bamboo units in the urban areas of North- East Asia.
- ✓ To examine the income of cane and bamboo units in the urban areas of North- East Asia.

**Shape Inspiration taken from:**  
Pointed Gourd Plant



## Aim of the Project

Aim of the project is to design a piece of furniture that can be crafted by the bamboo craftsmen for their own use. Furthermore, versions of which shall be sold. Intended design shall be achieved by enhancing the existing set of skills, techniques and available material.



### The Manufacturing Process

- ✓ Raw bamboo bought for making the shelf.
- ✓ Initially the outer skin and knots of bamboo is peeled out and cut into required lengths using knife. Bamboo after cutting into right shape and size using the tools mentioned below.

### Tools Used

The tools used are available in the local market. Craftsmen use modern/automated/semi-automatic tools to save time and improve productivity. Many tools are customized by the artisan to fulfil their requirement. Many tools are carried from the past and remain unaltered for generations. The raw material used in making the furniture is Rattan and cane. These materials are purchased from the local market of bolpur, west bengal.

The tools used to make bamboo crafts are:

**Big Knives:** It is used to peel the skin of the rattan.

**Hacksaw Blade:** It is used to cut the rattan stem into pieces according to required size.

**Hammer:** It is used to hammer the nails into furniture.

**Nails:** It is used to nail the joints of the furniture.

**Brushes:** It is used to apply varnish or paint on the furniture.

**Varnish:** After completion, furniture is polished with natural varnish to obtain glossy finish.

**Colours:** The finished products are painted with golden, black and brown colours/ paints.

**Blow Torch:** It is used for heating the rattan to bend it into required shape.

**Kalikatte:** A wooden tool used to bend the rattan stem.

**Pointed Chisel (Batali):** It helps in inserting the cane strips in narrow areas.

- ✓ The heating process is done to make the bamboo flexible to bend them.
- ✓ Initially a basic frame of the desired product is made and then the frame is filled with small length of bamboo sticks.
- ✓ Excess part of the stick is cut using a cutter.
- ✓ Nails are hammered to fix the bamboo pieces to the frame.
- ✓ The surface is smoothed using sand paper before polishing.
- ✓ The outer surface of the furniture is smoothed using sand paper before polishing.



## Rattan/ Bamboo mat

Rattan is a long stem of certain trailing or climbing palms. They are rated as minor forest products, in spite of the fact that they are probably the most important forest products, after timber. They belong principally to the palm family of the genus *Calamus*. The inter nodes vary in length and thickness in different species and even in different plants of the same species.

The core of the stem which are soft and spongy, are made up of coarse fibers. The first step is skinning the surface of the rattan. With the help of a sharp knife outer skin of the stem and the knots are peeled and removed. The cane is cut into desired length. The stem is then heated using a blow torch and bending tool to bend the material into required shape which has limitation. Artisan arranges them together to build the basic frame (structure) of the furniture after bending. Base of the furniture is built first by nailing in the required form. After the parts of the furniture are nailed together in the required manner; the frame is then filled by binding the cane strips or thin rattan stems over the frames. The nailed joints are then tightly bound by lengths of split cane strips which acts as cover, both to cover the visible nails and to give additional rigidity. The binding details sometimes have a decorative quality. Clear varnish, enamel paints are applied over the finished product. Generally the natural surface of the cane is retained without any surfaces application. Rattan accepts colors and it can be worked into many styles.

### Product in process

#### Methodology

In this study, industrial clusters are considered as geographically concentrated homes that produce cane and bamboo products. Cluster houses are the ultimate unit of observation. Using the semi-structured schedule, primary data are collected from the sample cluster's home. The information sought are about artisan's personal data, household data, standard of living and welfare, benefits received from Cluster Development Initiative (CDI), etc. This paper is also based on secondary data collected from various articles, journals, relevant books, census report, internet resources and previous research works etc.



### Analysis & Synthesis

Bamboo products has more future prospects, because bamboo crafts are eco-friendly, light weight, relatively cheap, and presentable. But it is unfortunate that demand of the bamboo products is less in international and national market, although there is no shortage of the raw materials, and skilled workers. Central Government executed the National Bamboo Mission for expansion of the bamboo cultivation. Cane and Bamboo Technology Centre is established under the mission for development of the bamboo industries. Bamboo was removed from the tree category after the amendment of the Indian

Forests Act 1927 in 2017. Therefore, any person can now cultivate bamboo without any licence from the government. The objectives of this paper are: (a) to study the importance of bamboo and cane products for tribals, and (b) to examine the production of bamboo and cane based products in the north-eastern states of India.

### Process

The production process comprises of the following different process:

1. **Selection of Cane & Bamboo:** There is not much problem in selecting the cane & bamboo for the work by the handicraft people. Bamboo is easily available in the market & in many forests in Assam. For making different furnishing & decorative items different types of bamboo are used. For making items like Japi, Saloni, Dala, Duli, Tukuri etc different bamboos are used. By using cane much furniture are made with the combination of bamboo.
2. **Cutting as per required size:** The bamboos are cut into different shapes & sizes as per required designs. The bamboo is first selected and then it is cut into sizes which are required by the workers to make different items from it. The workers normally cut the bamboo in various lengths as per requirement.
3. **Drying:** After the bamboo and canes are selected then it is first dried in the sun. As there is moisture present in the bamboo so, it is dried for a period and then the actual work is carried out. If the bamboo is not dried properly then some insects may damage it, so first this must be properly dried.
4. **Surface decoration:** Surface decoration is very important for bamboo products. After the product is completed, the surface is decorated which gives an attractive look to the product. The surface is decorated by various means like burning the sides of a bamboo item & colouring it to give a fascinating look. All these ways help to attract the eyes of the customers.
5. **Framing & binding as per design (shape):** To make a product it is very important to cut the bamboo & cane into required size & shapes as per the design of the product. The bamboo is cut into pieces required by the workers & then the different sizes of bamboos are joined or bind together by the means of nails or some adhesive.
6. **Application of polishing:** Polishing is an important application which is required to give to the finished goods. After polishing the product gives a bright look. When the product is prepared then it is sent for polishing, then it can be sent for marketing. After polishing the furniture or decorative items, they become smoother.



structure



Frame

## Addition of metal base



Final product/ Product in use

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