

3-2 Improvement on the best use of raw materials

3-2-1 Design and technical recommendations for baskets, mats, and dyed fabrics

1) Recommendations for baskets

Stems of vetiver grass and others that are used for Bolga baskets have excellent properties such as the strength and ability to restore to the original form (plasticity). When copies of Bolga baskets were produced in Vietnam, the baskets produced in Ghana were stronger, winning the competition over the copied products. Acquisition of superior materials is advantageous in the basket market.

Reversibility is also useful for product development. Stems of vetiver grass and others can be woven into complex shapes due to its high flexibility. For instance, the three-dimensional samples such as shapes of animals and dolls that are shown in photograph 3-2-1 were produced by the Ghana Export Promotion Council using the same material as the Bolga basket (photograph 3-2-1). The material can be restored to the original shape by wetting it with water even if it is deformed. This characteristic is useful for exporting the products to remote areas as the products can be restored to the original condition easily even if they are deformed during a long period of transportation.



Photograph 3-2-1: Samples presented by the Ghana Export Promotion Council - Photographed by the author.

The major feature of the basket is that it stands by itself due to the material strength. It has been recommended that this feature be taken advantage of by using it as a material for producing interior goods and storage vessels for harvested crops. The most conventional Bolga baskets are a large round shape of 40 cm in diameter and are not suitable to the compact houses in Japan. A basket having a flat base and oval shape is suitable for houses in Japan. A combination of brown material that is dyed with natural dye and the natural stem color also matches the taste of sundry goods made of natural materials. For instance, the products that are shown in photograph 3-2-2 were made by the Nyarega Craft Society and the author finds them easy to use at home in terms of the color and shape. Thus, it is necessary to produce baskets of the design and shape suitable for the market and due to its strength and reversibility, the material can be comparatively easily handled so as to meet a variety of design requirements.



Photograph 3-2-2: The oval shape and flat base are suitable for Japanese houses - photographed by the author.

For shoulder bags, creative design is required as its tough material may damage the shoulder section of the fabric of the garment when it is worn over the shoulder. Some of the handles made of goatskin have an odor or become moldy due to inadequate tanning. It is therefore necessary to improve the tanning technique.

A sustainable acquisition method of basket materials must also be examined. When expanding goods for production, the producer must examine a method for ensuring material acquisition more stably and cheaply.

There is a substantial merit for producers who are engaged in basket production to belong to the producer association. Many producers are women who engage in such work as a side job during the agricultural off-season. For producers to gain adequate profits through basket production, it is necessary to recognize the design of the baskets to be made, which means that products must comply with the market demand. However, it is difficult for producers living in rural villages to handle marketing. If producers sell their products directly to traders at the basket market held in Bolgatanga, the traders drive hard bargains to get the price down. Placement of orders of products through the producers' association organized under the leadership of local volunteers such as the Nyarega Craft Society is not only useful for producers to obtain an appropriate income but is also useful for the sustainable industry development of rural areas.

2) Recommendations for mats

Throughout all of Ghana, mats produced using natural fibers have been used for various purposes such as blinds and rugs. In Ghana which is situated in the tropical rainforest climate and tropical savannah climate, mats made of natural materials are household items suitable for the climate. Therefore, the potential of mat production can be driven by domestic demand.

On the outskirts of Accra, mats are used as blinds, which are made of thick fibers and woven tightly, blocking the airflow. The author recommends a structure that allows for some airflow. The mats made of the Typhaceae plants and Cyperaceae plants that are produced in the Volta area are woven using the technique where warps are set up using a wooden frame and the stems are threaded weft-wise. A pattern is created by dyeing some stems that are used as woofs. Products of a variety of designs can be developed by elaborating on the patterns.

3) Recommendations for textiles

The demand for the fabrics for all of Kente, Adinkra, and smocks, which are textile products, is accelerating in Ghana.

Fabrics for Kente and smocks can be used as the materials for increasing design variations of basket products. Fabrics for Kente and smocks, both of which are narrow textiles of a little more than 10 cm, can be used by stitching together to a required size (photograph 3-2-3). The opening of the basket is so large that it exposes the inside contents. For hiding the contents and for crime prevention purposes, the author recommends a fabric be stitched at the opening of the basket. The fabrics contribute to the products specific to Ghana and printed fabrics are also produced. It is also possible to combine a printed fabric with a basket.



Photograph 3-2-3: Fabric for smocks. Narrow fabrics are rolled and are sold in the market. Photographed by the author at the Tamale market.

4) Others

It is possible to create a tourism industry in rural areas by combining handicraft production and tourism. Such attempts have already been made and one of the attempts is Sirigu Women Organization for Pottery and Art that was established by the local women in Sirigu, in the northeast area of Ghana. This women's association was established as a place for women to learn handicrafts and the traditions of the region and is provided with a gallery, accommodation facilities, and a restaurant. In the gallery, it is possible to observe the actual production of pottery, baskets, and paintings by the women. The same attempt can be made for Rattan baskets and Rattan vegetated areas. Rattan vegetation is rapidly decreasing and the necessity for cultivation is becoming urgent in Ghana also. The author recommends the development of a combination of eco-tourism for learning cultivation and vegetation of Rattan and hands-on experience of basket production using Rattan.

In this research project, handicraft products were also examined by visiting the Craft Village and souvenir shops in Accra and Bolgatanga. The research revealed that many Kenyan products are also sold in the shops as well as Ghanian products. Substantial improvements are necessary for Ghanian products in terms of both quality and design.

3-2-2 Design and technical recommendations for handicrafts

1) Products using raffia palm

(1) Effective use of rachises for furniture



Photograph 3-2-4

The rachises of raffia, which are extremely strong, are used for outdoor benches and wall materials. Raffia can be comparatively obtained with ease near residential areas. While acquisition of rattan is now becoming difficult, raffia can be used as a natural material for furniture. Designs utilizing the cross sectional shape of a rachis was proposed by Global Bamboo Industries (photograph 3-2-4). The suggestion of the design that has been made by taking advantage of the thickness of the material and the proportion are shown in the following figure (Figure 3-2-1).

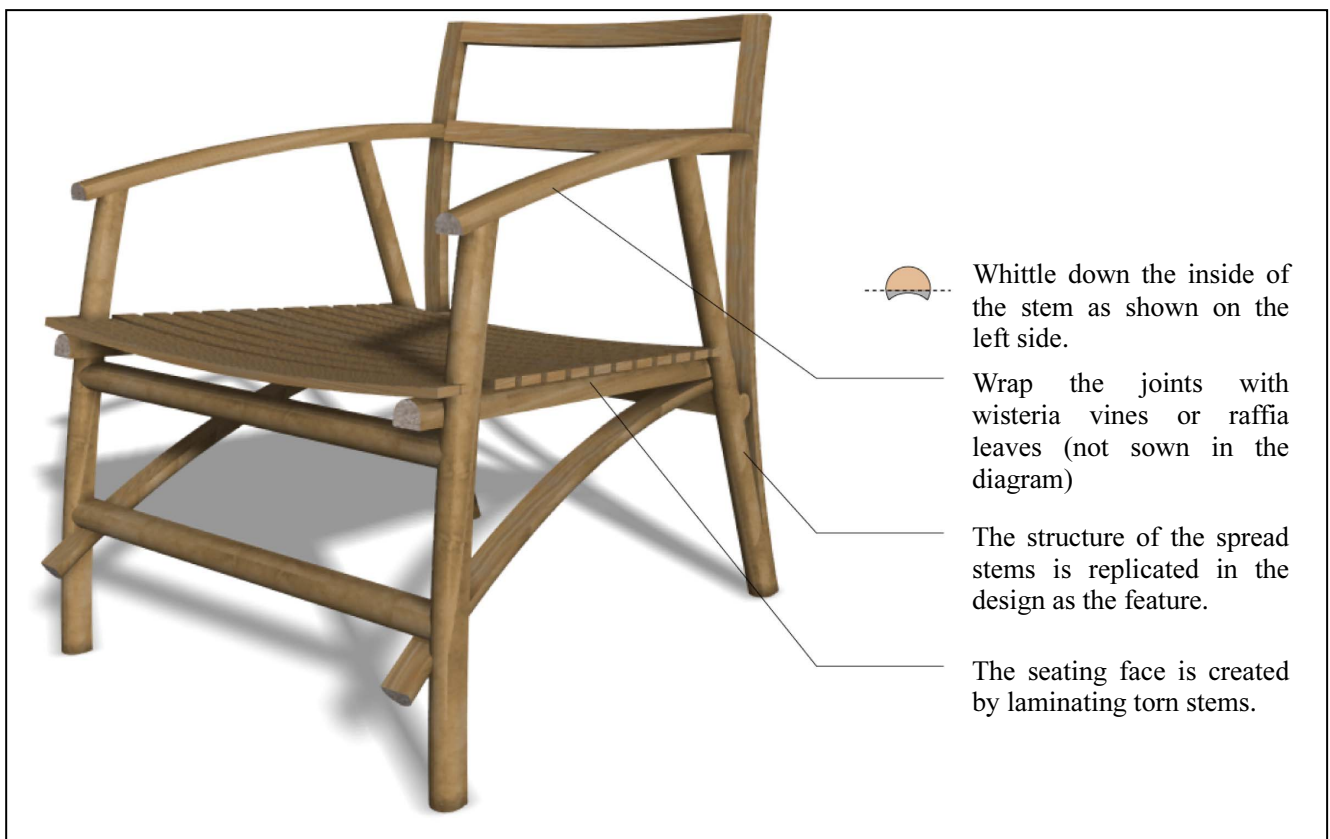


Figure 3-2-1 Small lounge chair, Shinichi Ito W560 D615 H700

(2) Application to blinds

Rachises that are torn into pieces are locally processed to produce line fishing gear and mats. In South Africa, one company is manufacturing blinds. Originally, torn raffia rachises were found to be suitable for blinds due to their excellent strength and straightness. Reference website <http://www.aluvert.co.za/raffia.htm>

2) Products made of jointed flatsedge

(1) Application to souvenirs made using the traditional weaving method

Baskets that are produced in the Volta Region have attractive fine meshes. The woven products include baskets whose upper diameter is slightly smaller than the lower diameter and also flag-shaped fans.

This basket is functionally useful (used for carrying foods and money) as an everyday living tool in Ghana; however, the vertical to horizontal ratio and the shapes of the top and bottom are an obstacle to indoor use in Japan, Europe, and America. The author recommends a "box with a lid," a "fruit basket," and a "lamp shade." These products can be produced by changing the proportion without any special new technique.

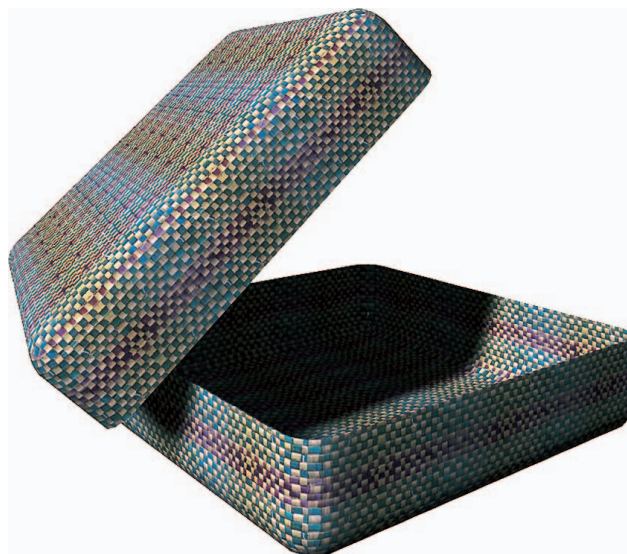


Figure 3-2-2 Box with a lid made of bulrush, Shinichi Ito

3) Products made of oil palm

(1) Application to products similar to bamboo weaving

Rachises of oil palm are extremely strong and durable as demonstrated by baskets that are seen in the markets. The author recommends the production of seating sections of chairs and lamp shapes using these features in the same way as bamboo weaving. Although the strongest part is the surface skin extracted by tearing a rachis, the surface is often dirty as it is exposed to the weather. To transform the item to a high-value added product, treatment such as selection, coloring, and dyeing are necessary after tearing the rachis.

4) Products made of rattan



Figure 3-2-5 On-the-road workshop in Takoradi

(1) Quality control

South East Asian countries hold a large share of the market for this material and also lead the world markets in terms of designs. In Ghana also, products of a universal design as shown in the photograph on the left side are produced as a "no-name design." This indicates that sales targets of this product include export markets, hotels, and restaurants. Although the market covers a wide range, there is a substantial difference from the products manufactured by South East Asian countries in terms of quality.

By combining with textiles, a feature specific to Ghana can be demonstrated and the product can be linked with the tourism industry. Therefore, it is important to produce high-quality products of a universal design. To achieve this objective, the following three improvements are urgently required. At the same time, examples of Yamakawa Rattan International, an Indonesian manufacturer that produces designer products for Japan, Denmark, and America, are introduced.

- ① Raw material management: Most importantly, raw materials must be stored in a place protected from the rain. At the same time, it is important to store materials by classifying them by thickness and quality. A machine for sorting by thickness is desirable.



Photograph 3-2-6 Stockyard

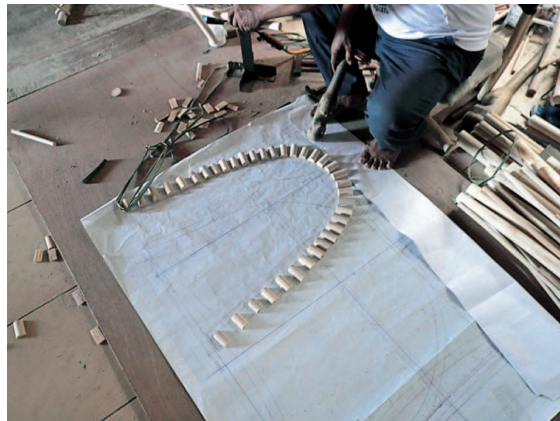


Photograph 3-2-7 Sander

- ② Use of a formwork: To bend rattan with an identical curvature as a component of furniture, a formwork comprising plywood and wooden pieces is necessary as shown below. Rattan is bent along with the formwork and the curvature is fixed using steam.



Photograph 3-2-8 Formwork



Photograph 3-2-9 Formwork production process

- ③ Correction of flexure after setting up rattan: Although some errors may be unavoidable due to the nature of the natural material, it is important to manufacture products in accurate sizes and angles according to the drawings as required for export products.



Photograph 3-2-10 Adjustment process

5) Products made of bamboo

(1) Using bamboo originating from Ghana

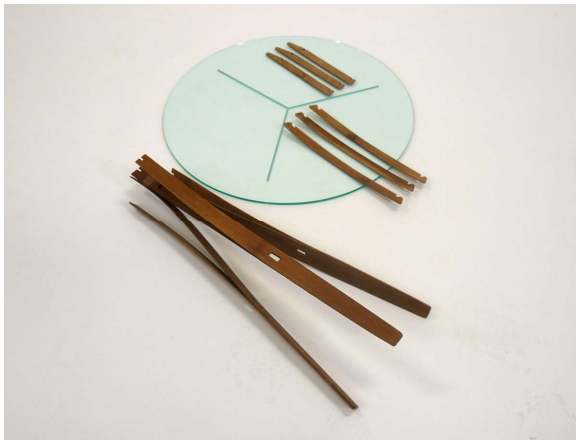
As bamboos that originated from Ghana are bent at every joint, it is difficult to use them as seen in Japan and Asia where a long stem is torn into thin pieces or woven and is used as molded plywood. Designs that take advantage of the joint curvature or products that are produced by laminating short pieces are recommended.



Photograph 3-2-11 Railing of Green School in Bali. Such a design as this that utilizes the cross section (torn vertically) brings out the feature of curved bamboo.

(2) Use of bamboo originating from China

If a plantation that is currently under experimental operation in Ghana turns out to be successful, various commercial possibilities will arise including delicate bamboo crafts to furniture using laminated plywood. In this case, as products intended for the export industry rather than for the domestic market can be considered, it is recommended to design furniture with a knockdown structure (assembling/disassembling).



Photograph 3-2-12 Bamboo Knockdown Table

6) Products made of African date palms

The small leaves are used to produce various products. In this section, the use of the palms as the furniture material for seating sections of chairs is recommended.

As the material varies in thickness, the material tends to end up with a rough finish if it is combined with an uneven frame such as bamboo or rattan. To take advantage of the softness and roughness of the material, it is advisable to use timber or metal for the frame.

3-3 Living in Africa in a cool environment using everyday natural materials

- Cool Africa

Global warming is having an impact upon Africa as well as the rest of the world, and many cases of flooding in dry lands and a dramatic reduction in corn harvest due to drought have been reported. In this environment of an accelerated global warming phenomenon, the author believes that the conventional knowledge of cooling effects that have been passed down through generations in the tropical rainforest regions in Africa should be introduced into the regions that are affected by the accelerating global warming trends to widely promote the lifestyle indigenous to Africa, rather than pursuing a high energy-consumption oriented lifestyle. Sales of household instruments that are produced in the regions by the people who have the knowledge and resources for creating a cool environment bring economical merits to the producers and also provide a method for coping with a hot climate comfortably to the purchasers of the products. The author recommends the production and promotion of the products of "cool Africa" that are produced taking advantage of the "knowledge and resources of Africa."

This section introduces the devices used by the people in the coastal region of Ghana to spend their daily lives staying as cool as possible as witnessed by the author.

Firstly, mats are often used. A mat that is made by weaving the stems of cattail or jointed bulrush in a single layer can be easily rolled up and carried to a shaded location under a tree to perform handiwork or to rest. The mat is far more comfortable than a vinyl mat due to its excellent elasticity and water absorbability. A thick mat of 2 m in length or more can also be made by tying about 10 bulrush pieces with strings. This type of mat is used for bedding. Unlike sponge mats, the mat, which has excellent porosity, does not accumulate heat as it is, insulates against the heat from the ground, and enables the user to spend hot nights more comfortably. By promoting the use of these mats, the living environment can be improved in terms of sanitation also.

Although mats made of natural materials are less durable than vinyl mats, they are environmentally friendly as they decompose into the soil after disposal. The author observed several types of mats that are made effectively using locally available materials.

Let us consider the reed screen, which is one of the traditional general products. A reed screen is produced by weaving stems of reeds that grow on the waterfront. The author witnessed a fish-weir (device for catching fish) in the swamp colony of the Volta Region. By weaving more densely, a product similar to the Japanese reed screen can be created. As the technique is already available, the



Akachi District, Volta Region



Single-layer mat made of the stems of cattail and giant bulrush



Thick mat made of giant bulrush

application is not difficult. The tools can also be produced by anyone easily and cheaply. The making of such a product can be easily introduced as a side job during the agricultural off-season or as a means to earn small income for old people.

As a reed screen is placed at an angle under the eaves, the shade that is created by the reed screen creates a small upward current, thereby creating a slight breeze. The screen is also useful for preventing the accumulation of heat on a wall or floor by covering the entire wall or floor.

Iseki advocates the "Cool Africa" movement that enables African people to live in a cool environment using readily available plants including reed and cattail. In Africa where propagation of information is still undeveloped, good products are not effectively introduced to other areas. By improving materials and production methods through effective communication, incomes can be increased by expanding the scope of use from personal use as well as by producing products that contribute to the improvement of the people's livelihood.

<Measures for promoting Cool Africa>

- * Collect materials and products that contribute to a cool environment, exchange opinions among the producers, and improve the quality and designs.
- * Explain the merits of such products and hold sales promotion meetings in high-class shopping malls in major cities.
- * Advertise the merits of the products on TV and radio commercial spots and posters.
- * Promote the use of the products at schools and government offices.
- * Establish a Cool Africa accreditation mark.