

RATTAN: THE TEMPTATION OF CONTEMPORARY DESIGN

Regina Raycheva

University of Forestry, Sofia, Bulgaria

e-mail: rexi@abv.bg

ABSTRACT

Rattan is an exclusively lightweight material with exotic character; it is a symbol of Asiatic countries; of gardens and resort hotels. 20th C designers are tempted by this material that combines well with metals and wood. Rattan itself is imitated with artificial materials, used to knit garden furniture; it is a preferable choice because it is indestructible by atmospheric conditions. Today, great designers are inspired by the formal potential of rattan both as a structural material and as a mesh or woven panels used for the wide surfaces of seating and lying furniture (seats and backrests). They are not limited only in the garden field of application; they use the potential of this material for the dwelling. In this paper, we are going to consider designer works of different periods of the 20th and 21st century, that are influenced by the qualities and specifics of the material rattan; by analyzing and classifying those features that make it so attractive to furniture designers.

Key words: Rattan, Design, Form-building, Structure.

1. INTRODUCTION

Rattan is an exceptionally lightweight and strong material with exotic character; it is a symbol of Southeast Asia; of gardens and resort hotels. Used both as a structural material for furniture as well as for caning, rattan is a good choice because of its good physical-chemical qualities and resistance to atmospheric conditions. Because of its quick growing, we can consider it as a sustainable material with a wide range of applications in furniture industry. In this paper, we are going to make an overview of rattan materials; a short historical survey; an attempt for classification; and analysis of designer examples.

2. EXPOSITION

2.1. BIOLOGY AND GROWING

Rattan is a climbing thorny palm that belongs to the Calamoidae family; it includes more than 600 species of palms, of which only 50 have a commercial use. Rattan is harvested in wild nature, and just one small part originates from cultivated plantations”

(Бърдаров, Владимирова, 2014). Rattan (from the Malay *rotan*) grows in the rainforests or plantations in India, Southeast Asia, Malaysia, Indonesia, the Philippines and China. “Most rattans differ from other palms in having slender stems, 2–5 cm diameter, with long internodes between the leaves; also, they are not trees but are vine-like lianas, scrambling through and over other vegetation. Rattans are also superficially similar to bamboo. Unlike bamboo, rattan stems ("Malacca") are solid, and most species need structural support and cannot stand on their own” (Rattan, Wikipedia). Rattan poles have pith; therefore rattan is one of the strongest natural materials. The outside part of the stem is exclusively hard and resistant, while the inside is pithy and softer and sometimes porous and is not hollow, as in bamboo. It does not break or split; is extremely resistant and is perfect for the production of furniture. “There is no harvesting season for rattan, because it grows all the year long. The Harvesting can be difficult because of topography

and inaccessibility of rainforests” (A Short History of Rattan).

2.2. PROCESSING OF RATTAN

“The harvested rattan is cut into 12-15 feet (3.60-4.50m) lengths and tied into large bundles to make the journey from the jungle to a processing area. There the workers remove the bark and cut the lengths into thin strips to be used in cane seats and chair backs”. The pithy interior is then cut into reed for use in wickerwork. Because rattan is extremely strong and can be fastened as securely as wood, the entire pole is used to make furniture. This looks like bamboo but is much stronger. “When heated with steam or a blowtorch, rattan becomes very pliable and can be bent into a variety of shapes without cracking”. (A Short History of Rattan). Having been fumigated at the factory, it is also virtually immune against rodents, unlike bamboo which deteriorates relatively quickly.

2.3. BAMBOO (Bambusoidae), from the Indian word ‘mambo’ or ‘bamboo’, is a various subfamily of the grass family (Gramineae Poaceae). „The term “bamboo” includes all tree-like or bush-like grasses with strong wooded or branched stem“ (Бърдаров, Владимирова, 2014). It is characterized by its great variety of growth and geographic distribution. It grows at sea level up to 3000 to 4000 m high in the mountains. Imported in Europe, it reaches up to 10 m in Northern Europe, and 20 m in Southern Europe, because of different climatic conditions. The stem is cylindrical and reaches 8–10 cm diameter, with wall thickness of 0.8 – 1.0 cm. Extremely fast growing species, it is considered to be the fastest growing plant on the Earth (Бърдаров, Владимирова, 2014).

2.4. PROCESSING OF BAMBOO

Bamboo poles are divided in separate chambers by means of nodes that affect the

mechanical strength of the stem. The species with long inter-nodal sections are a preferred choice for furniture-making. Compared to wood, bamboo contains more nutritious substances for insects and fungi. Harvesting is done to plants of up to 4–with higher mechanical strength. After harvesting, bamboo is air-dried for 4 to 6 months. Bamboo is fumigated in order to repel insects. Another treatment is soaking into floating or standing water so that starch sugar and other substances can be washed away. This material can be cut with a saw (in a raw condition it can be cut with machete). When dry, because of the silicified external wall, cutting instruments are dulled quickly. Bamboo stems are split into halves, quarters or eighths. Having a high elasticity, the material can be bent after harvesting, and is dried bent (Бърдаров, Владимирова, 2014).

2.5. COMPARISON BETWEEN RATTAN AND BAMBOO

A member of the grass family, bamboo has stalks reaching up to 30 m height. Same as rattan, it has a hard outside cover, which is peeled, in order to make a weave; sometimes it is used for the structure of wicker furniture. The poles are also used for the make of furniture. But since bamboo is hollow, it is not as strong as its solid cousin. Unlike rattan, the joints of the bamboo stalk are susceptible to moisture and need to be sealed. (A Short History of Rattan).

2.6. SHORT HISTORY OF WICKERWORK

There are indications that rattan has been used in Asia “since the early days of mankind for the production of furniture, though no exact historical data exists. It was originally exported from Indonesia, where it predominately grows, and eventually reached the shores of China. There, skilled craftsman built not only furniture but also baskets and

other household items” (A Short History of Rattan). The use of different plants for the weaving of and the making of baskets, trays, strains, sandals and other household items is an ancient practice in Europe and the Middle East. As we know, papyrus, that substituted paper in Antiquity, was also made of the stems of the plant *Papyrus Cyperus*. “The climate of Egypt did not encourage the Egyptians to clutter their rooms with furniture, but

beds, chairs (Fig. 1), and stools were to be found in well-equipped homes. Wickerwork stands (Fig. 3) were more usual than wooden tables, and chests and baskets took the place of cupboards and drawers. Mats of woven rushes covered the floors.” (Scott, 1973). Howard Carter, the discoverer of Tutankhamun’s Tomb, describes in his archives many objects made of wicker, such as baskets (Fig. 2), sandals, trays (Fig. 3), chests, etc.



Figure 1: A boxwood and ebony chair with a seat of linen cord. About 1490 B.C.



Figure 2: A basket and chest for linen, Ancient Egypt.



Figure 3: Ancient Egyptian wickerwork tray on a stand, a whisk, a strainer, a bowl used as a lamp, and a brazier



Figure 4: Stone relief showing a woman, seated on a wicker chair with high rounded back. Early 3rd century AD. Trier Museum



Figure 5: Germano-Roman limestone imitation of a wicker chair. Romisch-Germanisches Museum, Cologne



Figure 6: Chair, possibly manufactured in London, ca. 1705-1715. Victoria and Albert Museum, London



Figure 7: Heywood Brothers and Wakefield Company 1897-1910, Metropolitan Museum of Art



Figure 8: Pair of armchairs, caned backrest, ca. 1689-1702, The Metropolitan Museum of Art



Figure 9: Armchair, attributed to Duncan Phyfe, 1791-1818, New York, USA. Metropolitan Museum of Art



Figure 10: Perambulator, made in Germany, 1930-39, Wickerwork with hardboard. Victoria and Albert Museum

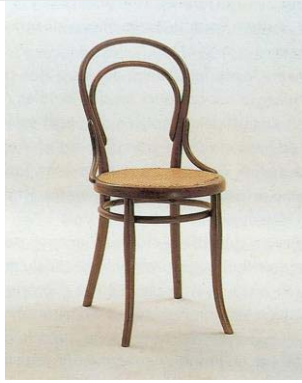


Figure 11: Michael Thonet, Chair No 14 (1859)



Figure 12: Michael Thonet, chaise long

In Ancient Rome, round wicker arm-chairs were produced (Fig. 4), considered to be originally made by the Etruscans. In the middle Ages and the Renaissance, the technique was very probably used for basket-weaving and other household items. During the Baroque age of the 17th century, caning began to be made for chair seats and backrests (originally, caning came from the Far East; furniture parts were caned in India and other colonies, to be later transferred as a separate craft – caning – in Europe). In the late 17th century caned chairs (Fig. 6) became extremely popular not only among the aristocracy and gentry, but also among merchants and tradesmen, as they were much cheaper than upholstered chairs. From the 1680s onwards enormous quantities were made in London, for export as well as for home consumption. But relatively few now survive. Most were probably discarded rather than repaired as soon as the frames or caning were damaged (Collections, Victoria and Albert Museum).

In the 19th century, the Victorian age demonstrated a new interest to rattan (Fig. 7). It grew out of the love for and collecting exotic plants, building greenhouses; out of travelling to exotic countries in connection with Britain's dominance over India; with opening of the Chinese ports and later Japan to the sea

trade in the 1850-s and 1860-s. Rattan furniture was used in greenhouses, together with Thonet rocking chairs and chaise longs (Fig. 12) and other light chair models. In this way the material remained firmly connected with the garden image. In the USA, Victorian tastes found their way also by the manufacturing of wicker furniture, including decorative designs, such as these by Wakefield. Cyrus Wakefield began his business by trading rattan to furniture makers, but later started manufacturing rattan furniture himself. Faux bamboo furniture became the vogue in England; perambulators (Fig. 10) all over Europe with rattan woven hoods all come into the joint trend of the use of exotic and natural materials. Michael Thonet, in his highly successful production of bentwood chair, turned to rattan weaving for the surface of his seats and backrests; caning was done by female workers in his manufacturing plants.

Since the techniques of weaving chairs turned out to be highly time and labor-consuming, a technological progress was made by the invention of the Lloyd Loom process, patented in the USA at the beginning of the 20th century. This process included the making of a strong machine-woven material made of Kraft paper, cut and tacked on to a bent beechwood frame. The Kraft paper was twisted and wound around metal wire; these

paper-wrapped wires were then woven on a special weaving loom resulting in a fine regular and solid paper weave. „Because furniture was low-cost and airy, it was typically used for garden purposes, as well as in the lounges of resort hotels. In the 1930s, Lloyd Loom furniture could be found in hotels, restaurants and tea rooms, as well as aboard Zeppelins, cruise ships and ocean-going liners” (Lloydloom Manufacturing).

20th century designers were always tempted by the potential of the rattan techniques. Their interest concerned texture and the sculptural quality of rattan, as well as the natural atmosphere, the ecologic aspect. The



Figure 13: Armchair - Model 464, 1930, W. Lusty & Sons, London. Victoria and Albert Museum, London



Figure 15: Marcel Breuer, Cesca chair, 1928. Manufacturer Gebrueder Thonet AG; chrome-plated tubular steel, varnished wood, bentwood, wicker

In the 1980-s, rattan was specially studied by designers, such as Borek Sipek, because of its high sculptural potential. His de-

rattan material is used in two basic trends: as a structural, form-building strong skeleton, allowing the soft organic look the plant itself is suggestive of. On the other hand, rattan is treated as a flexible ‘skin’ material giving a unique character to otherwise cold and geometric material, such as steel tubing or wood. Contemporary designers were always tempted by its airy, lightweight look, starting from the design classic of cantilever chairs by Breuer (Fig. 15) and Mies Van der Rohe (Fig. 16), and ending to the sculptural work by designers such as Tom Dixon with his famous S-Chair from 1987 (Fig. 14).



Figure 14: S Chair, Tom Dixon, 1987 (structure), 1993 (upholstery). Victoria and Albert Museum, London



Figure 16: Ludwig Mies van der Rohe, MR20 lounge chair designed for Berliner Metallgewerbe Josef Muller. Circa 1930

sign solutions include a structure of a different material, integrated with elements, made of rattan weave (Fig. 17, Fig. 18).



Figure 17: Borek Sipek, Liba chair for Driade, 1980–1989



Figure 18: Borek Sipek, Liba Lounge Chair for Driade; 1980–1989



Figure 19: Paolo Deganello, Documenta Chair, 1987

Manufacturer: Vitra, Material: Steel, basketwork, Leather



Figure 20: Borek Sipek, Helena Chair, 1991

2.7. CLASSIFICATION

Table 1: Form-Building of Rattan Furniture



A Closed “Spherical Type”: Armchair Palla, by Giovanni Travasa, manuf. Bonacina 1989



„Flower-Basket Type”: Primavera armchair by Franca Helg, 2001, manuf. Bonacina 1989



„Classical Roman Type”:
Poplar Chair, by Lloyd-loom, UK.



„Flying Carpet Type”: Tito Agnolli’s B35 Chaise Long for Bonacina is a single caned frame, bent in space



“Hose Type”: Rattan armchair SU SU SU by Kazuhiko Tomita, Bonacina 1989



“Mesh Type” rattan furniture: the structure is visible, the effect is light and airy



„Linear Structure Type” : the volume is delineated by series of contours close to each other; the structure is a ‘ribbed’ one



“Imitation Type”: Franco Poli, Armchair Arete, Metal tube structure, lazer cut leather

We can offer a general classification of wicker, by using the following criteria:

Function: Garden Furniture; Residential Furniture; Contract Furniture for restaurants, resort hotels etc.

Material: Wicker furniture made of rattan (structure and ‘skin’); of metal/wood structure plus rattan parts; of rattan or wood structure plus imitation cane (Lloyd Loom);

of metal/wood structure plus other types of mesh (laser-cut leather, felt, etc.).

Form-building:

- **Furniture** made in the “**Closed Spherical**” shape. It is closer to a container than a proper frame furniture structure, morphologically it forms closed volumes (Table 1);
- “**Open Flower-Basket Type**”. This type is conical in geometry and is a typical basket container. An example is the Primavera armchair by Franca Helg.
- “**Classical Roman Type**”. Starting from a ‘basket’ type, these chairs feature characteristic half-round plan, and end up with a round-shaped backrest with sloping armrests. This type was manufactured by Lloyd Loom in the USA and Britain.
- “**Flying Carpet Type**”. This type exploits the bending of a caned metal frame that serves as a structure. Classic example is a chaise-long by Tito Agnolli for Bonacina.
- “**The Hose Type**”: This type is characterized by using hollow tubes all along their length, in order to achieve the seating-cum-backrest surfaces. The ‘tube’ is also opened in order to achieve a lighter look. An example is the Wicker Chair by Marc Newson.
- „**The Mesh Type**” and „**The Linear Type**”. Furniture made only of rattan poles, woven and fixed. Surfaces are built by thinner stems that are fixed near to each other; or by a mesh made out of such stems. With these two types, the volume is delineated by separate contours.
- **Imitation** or variation of a mesh: substituting caning with plastic strips; with Kraft paper on metal wire (Lloyd Loom); other mesh-like material, such as leather or felt with regular cut pattern that become 3D flexible, meshes for bottle packaging. Examples: Lloyd Loom products – beg. of

the 20th; textile the leather examples. This structure could be dubbed ‘imitation mesh surface’ with other materials.

2.8. STRUCTURE

„With classical rattan furniture, cane poles are assembled with screws and nails, in order to make the piece of furniture stable and resistant. Bindings have the double function of reinforcing and covering the head of the nails. Occasionally bindings can also be a decoration of the furniture itself. The materials used for this purpose are leather, flat-oval rattan core threads and flat-oval rattan skin threads” (Materials, Bonacina 1889). The material is lightweight, flexible and strong: it is good for furniture that has to be moved easily.

As a structural material, the lianas are flexible in space and attach to the stems of trees. In furniture manufacturing, the material is heated and becomes flexible and easy to bend in all sorts of shapes.

As a caning material, caned frames (flat seats and backrests) made of another material, mostly wood, are woven or are covered with a ready woven panel. The pieces can be closed, ‘basket-like’ structures woven all over.

Caning is hand-woven through openings bored in a groove in the seat frame. Caning is then done by making first a weave with vertical and horizontal rattan threads, after which diagonals are interwoven to achieve the final effect. The groove is glued and is finally locked by a rattan thread that is driven in it. Caning is woven with wet material; after drying out, the mesh becomes tight. Caning can later be finished with lacquer. „The natural color of the rattan cane is very pale, and the lightness of this color is a guarantee of its quality: the more pale it is, the higher the quality. As time goes by, natural rattan will turn into a warm honey colour, which is

also a sign of a high quality material” (Materials, Bonacina 1889).

A seat can be woven with rattan threads, interwoven in 4 directions (Viennese weave) or can be knitted or woven (like a mat) with a twill or other weave. In this aspect, the material is close to textile weaving/knitting techniques.

2.9. DESIGNER EXAMPLES

The sculptural morphology of contemporary rattan furniture is due to the natural bends of rattan lianas. Rattan is a very light material; basket-weaving and mat-weaving have provided the patterns on the surfaces. This happened as far back as Ancient Egypt. The same weaves used for mats were applied for stool and chair seats (Fig. 1).

The basket-weaving techniques provided principles for the wicker chairs. The Victorian age in England, as well as in Europe, witnessed a vogue for wicker chairs for

the winter gardens with tropical plants (Fig. 7). The rattan mesh is woven directly on the frame of the seat and back. Lloyd Loom is a technology patented in the USA in 1917, of machine weaving the cane mesh, where rattan is substituted by Kraft paper rope on metal wire core (Fig. 13). The basis of the technique is the flexibility of the woven material allowing it to cover 3D complex surfaces. Similar effect is achieved today by leather, felt, plastic sheets, made flexible by laser cutting regular patterns.

Rattan is a classical natural material that offers texture and natural color, very much appreciated by designers. Scandinavian authors, such as Poul Kjaerholm (Fig. 21) and Hans Wegner (Fig. 22); Italian designers, such as Tito Agnoli (Fig. 24), Bauhaus designers, such as Marcel Breuer (Fig. 15) etc., all show interest and work with wicker made of rattan or other materials.



Figure 21: Poul Kjaerholm, PK24 Lounge Chair, Wicker



Figure 22: Hans J. Wegner: Folding Chair, 1949, Made by Johannes Hansen. Oak and cane



Figure 23: Marc Newson, Idée Lounge chair, Tubular steel, cane, woven rattan



Figure 24: Tito Agnoli, "BR 3" Chaise longue, wicker, circa 1962, Italy. Manuf. Pierantonio Bonacina



Figure 25: Egg, di Nanna Jørgen Ditzel, manuf. By Pierantonio Bonacina



Figure 26 : Contemporary rattan armchair SU SU SU by Kazuhiko Tomita

In fact, rattan (and the varieties of different plants used for wicker) started out as a complementary material, where lightweight or low-cost pieces of furniture were needed. In the 19th century, its exotic characteristics came to the fore: that is why they are associated with garden furniture, resort hotels. Yet today the household objects and furniture is another field of application, due to the individual and memorable furniture pieces created by using wicker (to bring rustic and craft connotations) or rattan (to bring airy, light, exotic feel) or other natural or artificial materials.

Another reason for designers to use this material is its highly sculptural potential. In fact, rattan weave has both the added value of natural color and interesting texture and the properties of an elastic mesh, which allow

this material to cover all complex 3D surfaces. Therefore, the logic is that it is used as a 'skin' over metal, wooden or rattan pole structures.

3. CONCLUSION

Wicker manufacturing is a very ancient technique; although rattan was used in Asia from ancient times, the last 300 years witnessed the introduction of rattan wicker in Europe and America. At the beginning it started as a complementary element to existing types of seating furniture, but later during the 19th century, the exoticism and natural look of rattan were more consciously exploited by furniture makers. The sculptural potential of the material lies in its predecessor – the basket, woven ever since Antiquity all over the world. Today designers make full

use both of caning (for seats and backrests) and of the sculptural properties of rattan stems. By using different form-building methods either by totally covering the product with rattan weave or by ‘exposing’ the bare rattan pole structure, woven into a mesh, designers make highly individual pieces that can be used both in households and public facilities.

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