

## WOVEN FURNITURE DESIGN: IN SEARCH OF FORM AND TEXTURE

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### **Abstract:**

*The paper researches wicker furniture design in an attempt to analyse the existing materials, techniques, tradition in basket-weaving and furniture-weaving. This leads us to research into the potential of wicker in form-building and provides an explanation of modern designers' interest of in this material and technique. The analysis is aiming at revealing the bi-fold role of the weaving technique both as a surface-covering and as a structural building material. In this way, the shift from the simple use of weaving as caning, to structural building of objects, is outlined. The authors attempt a morphologic analysis of woven furniture examples, structural classification according to types and kinds of materials used; this is done by case-studies of 20 examples, selected for their interest and archetypal view, as well as their noted authors. In this way, we can give an answer to the question: Is woven furniture strictly kept into the realm of outdoor and hotel use, or can it 'return' to our homes with the corresponding functional and aesthetic potential?*

**Key words:** woven furniture design; wicker; basketry techniques; rattan furniture; contemporary design.

### **INTRODUCTION**

#### **THE TERM WICKER**

As part of the theme of crafts and modern design, in this paper we shall attempt to see how the 'crafty' look of woven furniture is relating to serial production; and why it is so attractive to modern man. The Webster's Dictionary (1986) gives the following explanation of the word 'wicker': "a small pliant twig or osier: a rod for plaiting basketwork; 2a: wickerwork, b. something made of wicker (as a basket)". According to Miriam Plans (2004), "the word 'wicker' is believed to be of Scandinavian origin, coming from the words 'wika', which means 'to bend' in Swedish, and 'vikker' meaning 'willow'. Many people think that 'wicker' is an actual material. Rather, it is a class of furniture woven from a number of materials, including rattan, cane, bamboo, reed and willow". The materials, from which all kinds of woven products are made, are a great number. Here we can enumerate osiers, sea grass, sweet grass, palm leaves (to give some tropical examples), raffia; but also the twigs of all sorts of local plants, e.g. the vines of blackberry, etc; to which we can also add the needles of the American Southern Longleaf Pine.

#### **OBJECTIVE AND METHOD**

In this paper, the authors use a case study method. Selection of individual examples was done both for their originality and the specific type they represent. On their basis, selection, classification, visual identification and comparative morphologic analysis was used to bring out the connection between basketry and furniture caning and weaving. Tables were used to present graphic material in an orderly manner. Our paper uses research of material, classification of basket types and derivative sculpture objects, mat-weaving patterns; this section is aimed at discovering more sources of design inspiration. Case studies of modern wicker furniture design are researched, on the basis of which we outline features, morphology and, most of all, form-building potential of wicker. To bring clarity in a visual matter such as design cases, the authors have researched design trends developed in time. The paper is aimed at becoming a source helping designer research.

#### **EXPOSE**

##### **MATERIALS**

A great number of natural and man-made materials are used for making woven products, they provide strips weaving. A brief overview of some of these materials follows.

##### **NATURAL MATERIALS**

The most common natural material used for the production of woven furniture is **rattan**. Roughly 600 species of palms in the *Calamoideae subfamily* exist most of which are "climbers that use thorny stems and

leaves to hold on to the supporting structure of other plant species" (Meijaard et al. 2014). Rattans have slender stems, 2–7cm diameter and long internodes between the leaves. With a growth rate of 36 inches per day, it is an abundant and renewable material. Rattans are cultivated within forests and swidden land. "Rattans are ready for harvest 5–7 years after planting. In clustering species, the general harvesting cycle is 3–4 years, with each cluster of rattan stems yielding around 20–25kg" (Meijaard et al. 2014). Because of its flexibility and its long stems of great strength, rattan is primarily a building material. In its un-split form, it is used to provide structural parts in furniture and construction. "The outside skin of the rattan pole is usually peeled off, to be used as rattan weaving material. The skin is cut into strips used for the weaving process of seats and backs for chairs, and also to bind furniture joints together for reinforcing and decorating purposes" (Benhua et al. 2016).

Bamboo, a member of the grass family *Gramineae Poaceae*, includes over 70 genera and 1200 species. Most bamboo species are native to warm and moist tropical and warm temperate climates. "One of the fastest-growing plants in the world, it can increase to 10-30m in 40-60 days, and reach complete height and diameter within one season. Bamboo usually can reach optimum material properties for 4 years; its timber has special properties of split, easy preparation, high strength, moderate rigidity, and good toughness, much higher than that of general timber" (Benhua et al. 2016).

"The wood properties of bamboo mainly depend on the components and structure of the cell wall. (...) Like wood and agriculture residue, bamboo is mainly composed of cellulose, hemicelluloses, and lignin, even though the contents of these compositions are different" (Benhua et al. 2016). As an important biomass material, bamboo could be sustainable for utilization once planted. "Bambusa vulgaris is mostly cultivated by the rural community because of the high growing rate, thick culm wall, uniform internode size and the high yield of shoots produced. 2 year-old culms are used in handicraft and basketry industry; 4 year-old culms are normally used for panels, parquets, furniture and construction purposes" (Wahab et al. 2009).

Bamboo stems are processed by splitting into halves, quarters or eighths. Having high elasticity, the material can be bent after harvesting, and is dried bent (Бърдаров and Владимирова 2014). Like rattan, bamboo has a hard outer shell, which is peeled, in order to make a weave. It is also used for the structure of wicker furniture. Its natural durability of less than two years is due to high levels of starch. These turn untreated bamboo to material easily vulnerable to fungi, rot and attracting insects such as termites (Boran et al. 2013).

**Palm leaves** are used to make woven products such as bags, carpets and furniture. Abacá, also known as Manila hemp, is a species of banana (*Musa textilis*), native to the Philippines, grown as a commercial crop in the Philippines, Ecuador, and Costa Rica. The plant grows to 4.0–6.7m, and averages about 3.7m. The fibre, extracted from leaf stems, is classified as hard fibre, along with coir, henequen and sisal. The leaf sheaths contain the valuable fibre (Bailey 1947).

**The Raffia palms** (*Raphia*) are a genus of about twenty species of palms native to tropical regions of Africa, and especially Madagascar, with one species (*R. taedigera*) also occurring in Central and South America. They are remarkable for their compound pinnate leaves, the longest in the plant kingdom; leaves of *R. regalis* up to 25m long and 3m wide are known (Tucker et al. 2010).

**Cane** (the plant) is any of various tall, perennial grasses with flexible, woody stalks, and more specifically from the genus *Arundinaria* (Brako et al. 1995). Cane is used "... for weaving baskets, for hampers, chairs with the use of seagrass to beautify it, for beds of different sizes for children and adult, cupboards, tables of different shapes and sizes and can also be used for walking sticks. It can also be used for boats and roofs according to history" ([wikipedia.org](http://wikipedia.org)). Caning (furniture) is actually the weaving of chair backs and seats with the outer peeled rattan skin. Cane is also used in combination with structural rattan materials for surfacing furniture (Day 1917).

**Cattail** is the material used in genuine rush weaving and is the common marshland plant found almost everywhere in northern latitudes. These plants have many common names: bulrush, reedmace, cattail, punks, corn dog grass, etc. These are names of plants of the genus *Typha* – plants in the family *Typhaceae* (Stevens 2013). The leaves of the cattail are harvested, dried, pressed flat, twisted together two to five strands at a time to make various widths, and woven in some variation of the diagonal cross pattern. Cattail is woven onto frame that forms the seat and back of the chair. This material is very durable with beautifully variegated coloring, featuring hues of pale greens and ambers. With time cattail mellows into an equally attractive golden brown ([furniturerenewal.com](http://furniturerenewal.com)).

**Seagrass** is a flowering plant, belonging to four families, all in the order *Alismatales*, which grow in marine, fully saline environments (Waycott et al. 2014). It is used in baskets and furniture, and woven like rattan. This grass comes in varying strand sizes and can also vary in the tightness and uniformity of the twist.

**Hierochloe odorata** or **Anthoxanthum nitens**, also called Sweet Grass, Manna Grass, Mary's Grass, or Vanilla Grass, etc., depending on the geographic latitude. It is a plant which is common above 40 degrees north latitude in Asia, Europe, and North America. (Hope and Gray 2009). "The plant is harvested

by cutting grass in early to late summer at the desired length. Sweet grass is sun-dried and must be soaked in warm water until it becomes pliable. The pliable grass is typically braided into thick threads and then re-dried for use" (wikipedia.org).

Different tree species are also used in view of their unique qualities: wood flexibility and easy splitting. Such is the case of **black ash** (*Fraxinus nigra*) in the USA. Since it does not have fibers connecting the growth rings to each other, it can be easily turned into splints. Other species include the willow, osiers and hazel switches, birch bark, poplar, etc. Tree roots, e.g. the roots of spruce, fir, cedar are known to be flexible and of great length, and are gathered for weaving as well. **Willow** is a natural material from Europe and the United States and is a common weaving material that comes from willow trees and shrubs of the genus **Salix**, family *Salicaceae*, mostly native to north temperate areas and valued as a species grown for its decorative qualities, providing shade, erosion control, and timber.

Vines of various local landraces (bramble, or blackberry – *Rubus fruticosus*) are used for basket-making; corn leaves and straw are other materials.

**Pine needles** of *Pinus palustris*, commonly known as **longleaf pine** are used for a specific coiling technique used for baskets. This species is native to southeastern United States (Farjon 2013). The average length of the longleaf pine needles is 15 to 38 centimetres. The ancient craft of coiled basket making was conceived by Native Americans in Pre-Columbian times.

### MAN-MADE MATERIALS

Paper-wrapped high tensile wire is made from heavy kraft paper twisted to form uniform strands and formed into large coils. The weaving of paper-wrapped high tensile wire was invented in 1907 by the American Marshall B. Lloyd. This machine-woven fabric became known as Lloyd Loom and it revolutionised an area of the furniture industry. "In 1921 Lusty, a packing case manufacturer, acquired the rights to mass-produce furniture using the American method of weaving twisted paper fibre, patented under the name Lloyd Loom. The product, which could be woven in a variety of patterns, was attached over bentwood frames and often imitated popular furniture forms made in other materials" (Williams 1994).

### Synthetic materials

Synthetic wicker furniture is usually made of aluminum structural frames. Resin-wicker refers to synthetic material, usually **nylon**, **polyethylene**, **high-density polyethylene (HDPE)**, **vinyl** or **PVC**. Woven plastic strips cover furniture frames made of metal or wood, and are much more durable than traditional wicker ([patioproducts.com](http://patioproducts.com)). Modern synthetic materials used in furniture are UV resistant and weather-proof, non-toxic and non-pollutant; pleasant to the touch, **low-maintenance**, **lightweight** and long lasting.

### USES: BASKETRY AND OTHER OBJECTS

There is an obviously analogous manner of building baskets and furniture pieces. Basketry includes the creation of "receptacles made of interwoven, rather rigid material, but it may also include pliant sacks made of a mesh indistinguishable from netting – or garments or pieces of furniture made of the same materials and using the same processes as classical basket-making" (Balfet 2015). In this respect, the same author goes on to say, that this "handmade assemblage of vegetable fibers ... is relatively large and rigid, so as to make a continuous surface, usually (but not exclusively) a receptacle".

Hélène Balfet (2015) distinguishes two basic structural types of baskets: coiled and non-coiled constructions. The first predominate "in dry, subtropical savanna regions or roots and stalks found in cold temperate zones". Non-coiled are subdivided into three types: wattle construction, lattice construction and matting or plaited construction. Plaiting techniques are used in tropical zones that "have palms and large leaves that require plaiting techniques". This explains "sewed coiling that predominates in the African savannas and arid zones of southern Eurasia" or "coiled construction", as the author calls it, against "various forms of plaiting in hot regions" – or "wattle" and "lattice" constructions. The wattle construction represents "a single layer of rigid, passive, parallel standards held together by flexible threads in one or three ways, each representing a different type" (Balfet 2015). Matting construction of weave is different, because "standards and threads are indistinguishable in matting or plaited construction; they are either parallel/perpendicular to the edge (straight basketry) or oblique (diagonal basketry). Such basketry is closest to textile weaving" (Balfet 2015). Similarly, the British basket-maker Polly Pollock (1993) differentiates between four different basket-weaving techniques (Table 1): **coiling technique** ("stitching and wrapping ... bundles of grass, the basket spirals up"); **plaiting**, a technique using strips of materials either to form a bias weave (45°) or checker weave (90°). No distinction is made between warp and weft in this type. **Stake and strand** technique means that the baskets feature structural stakes, woven with a softer and flexible strand, or weaver. Cane and bamboo can be used for the structural stakes in Asia, while willow is the material used in Europe. Polly Pollock points out a fourth technique, namely **twining**, which is also using warp and weft elements.



Table 1

**Types of baskets**

















			
Coiled	Stake and Strand	Plaited	Twined

Table 2

**Types of basket weaves**

			
1. CHECKERED WEAVE	2. DIAGONAL TWILLED WEAVE	3. VIENNA CANE	4. TRIAXIAL WEAVE
			
5. TRI-AXIAL (MAD) WEAVE	6. BASKET WEAVE	7. TWILLED WEAVE	8. 'NON-WOVEN' TYPE
			
9. TWINED WEAVE	10. CHECKERED OPENWORK WEAVE	11. OPENWORK TWINED WEAVE	12. OPENWORK TWINED WEAVE

One of the most popular patterns is the “Vienna Straw Weave”, which combines perpendicular and diagonal weaves at the same time. Stuart Lawson (2013) refers to rattan weave as ‘structural textile’: “Woven textiles can be flexible or rigid and use thread, encapsulated wire or various organic fibres such as rattan for their construction. The more rigid the strands, the less need there is for tension or framing to support the weave. However, thin-stranded, open weaves such as a cane-woven seat, work very well under tension to provide elastic, comfortable cushioning with free air movement, using a minimum of materials. Nearly all structural textiles applied to furniture are industrially produced, pre-woven sheet products that, with varying degrees of handwork, are tension-fitted to frames. A smaller-sized craft industry weaves and applies single strands to furniture by hand” (Lee 2011).

Basket-weaving has been raised to the level of sculpture art by modern Japanese authors. “Japanese ikebana baskets still echoed the Chinese archetype, which maintained a vessel form that served to contain the flowers” (Lee 2011). The exhibits from the exposition “Japanese Baskets and Sculpture in the Cotsen Collection”, held at Asian Art Museum, San Francisco, in May 2007, show a remarkable richness of structural weaving methods. “The techniques of weaving bamboo in strips vary with each basket (...) Many of the baskets were originally made for the tea ceremony or for flower arranging, activities with profound artistic and philosophical meanings in Japanese culture. And many were created by artists who represent basket-making lineages and by others who have been designated in Japan as “Living National Treasures” in recognition of their mastery” (The Asian Art Museum 2007). The transition from a functional object (tea ceremony flower basket) to abstract sculpture is a proof that authors, aware of the form-building potential of

the weaving technique, naturally evolved to abstracts. This gives us the ground to find a potential to turn those structures into designed furniture pieces.

### **WOVEN STRUCTURES: SHORT HISTORY**

A great many number of household items are made by weaving fibres of different plants. Such objects have been found in Ancient Egyptian tombs, or have been depicted on Greek vases, on wall paintings, carved out on gravestones etc. Many objects were prepared by organic fibers: such as woven rush mats, baskets, sandals, trays, chests, wickerwork stands, conical hats in Asia, tea strainers in Japan, etc. In Ancient Rome, round wicker armchairs were produced, considered to be originally made by the Etruscans. Later (17<sup>th</sup> C), caning began to be used to substitute costly upholstery fabric. The 19<sup>th</sup> century was particularly abundant in exotic vogues, and caning was widely used for Thonet chairs, Victorian extravagantly decorative wicker chairs etc. The beginning of the 20<sup>th</sup> century saw the emergence of the Lloyd loom technology of Kraft paper used to machine-produced textile for garden chairs. The use of woven furniture for hotels, restaurants and gardens dates from this time. The second half of the 20<sup>th</sup> C saw the rise of interest in rattan furniture as decorative characteristic pieces in residential interiors.

### **WOVEN FURNITURE: CLASSIFICATION BY FUNCTION, STRUCTURE, MATERIAL AND FORM-BUILDING**

Woven furniture use today ranges from garden furniture, contract furniture for restaurants, resort hotels etc., to characteristic single residential furniture pieces, such as chaise longs, garden sofas, rocking chairs, swing/hanging chairs, children's chairs, coffee tables, book étagères, coat hangers, flower stands. The materials used differ widely: wicker furniture wholly made of rattan (structural poles and 'skin'); metal or wood structure plus caned parts; or structure of rattan or wood plus Lloyd Loom woven panels; metal or wood structure plus other types of mesh (woven tubular knit, leather strips, polyethylene strips, felt, laser-cut leather, etc.). The techniques are widely used for other home textiles, such as rugs, wall decoration, lighting fixtures etc.

Woven furniture follows basically the rules of basket weaving; therefore some of the shapes thus produced have a definite likeness to that of a basket, or receptacle; here we can quote Palla Chair, Primavera Armchair, E10 Rattan Chair, etc. A creative manufacturer, such as Paola Lenti, uses the African basket-weaving coil technique in some of its new models ("Afra"). Woven chairs are characterized by metal/rattan/wood structure, and a structural weave, usually tight, with some exceptions. The pieces are sculptural and generally consist of one single part or a small number of parts, involve exclusive hand work, and have a great visual effect. Here we have found the following morphologic typologies: 1. "Closed Spherical Type". This is closer to a container than a proper frame furniture structure, morphologically it forms closed volumes (Fig. 1, Table 7). Here belong other closed shapes, such as Moebius Strip, ovoid shapes etc. 2. "Open Basket Type" (Fig. 2, Table 3). 3. "Flower Basket Type" (Fig. 3). This is a conical type, typical for a basket container, with a very decorative effect and a clear narrowing under the seat and wide flaring backrest. 4. "Classical Roman Type" (Fig. 4, Table 4). Starting from a 'basket' type, these chairs feature characteristic half-round plan, ending in a round-shaped backrest with sloping armrests. This type was manufactured by Lloyd Loom in the USA and Britain. In its essence, this is a round chair with a woven surface and 'skirt' under the seat, and is typical for garden furniture use. 5. "Flying Carpet Type" (Fig. 5, Table 5). This type represents a woven metal frame bent in space so as to serve as a structure for both backrest, seat and legs. Classic example is a chaise-longue "809" by Mario Bonacina. Many chairs feature this concept of woven metal frames for their back-and-seat; here the form-building does not stem out from the weave or rattan pole shape; it is totally subjected to the metal structure. 6. "The Tubular Type" (Fig. 6, Table 3): This type is characterized by using hollow 'tube' shapes all along their length, in order to achieve the seating-cum-backrest surfaces. The 'tube' is also open in order to achieve a lighter look. An example is the Wicker Chair by Marc Newson. 7. „The Mesh Type". Examples, such as Nautica hanging chair, Doeloe lounge chair, feature structures made only of rattan poles. 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. This technique is used both in rattan material and in thin wooden parts.



**Fig. 1.**  
**Closed Spherical Type.**



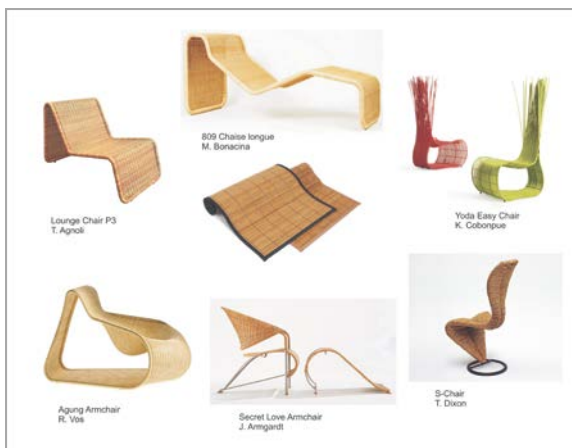
**Fig. 2.**  
**Open Basket Type.**



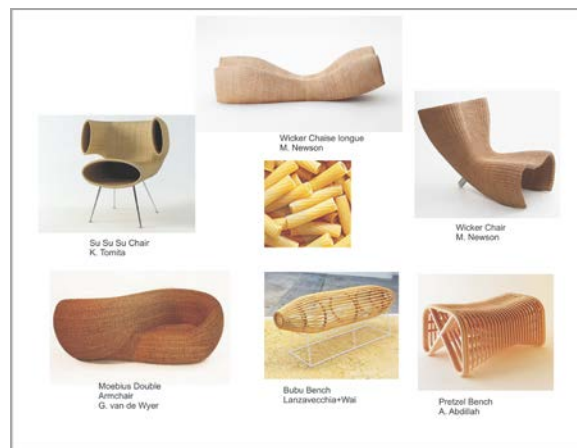
**Fig. 3.**  
**Flower Basket Type.**



**Fig. 4.**  
**Classical Roman Type.**



**Fig. 5.**  
**Flying Carpet Type.**



**Fig. 6.**  
**The Tubular Type.**





**WOVEN FURNITURE: CASE STUDIES**

The Case Studies performed for this paper are summarized in the following 5 tables. The findings are systemized and organized following the above archetypal images; the weave is followed where possible. A consistent interest towards wicker was established in the period of the 1950-s and 1990-s as well as the first decade of the 21<sup>st</sup> century. A clearly defined diversification of form-building, of texture experiments of new weaves and materials is established in the last decade, which tendency can be visually followed in the summarizing tables.



Table 3

**Types of rattan chairs according to morphology of design: Open Basket and Tubular type**

	Open Flower-Basket Type	Open Basket Type	Tubular Type	Tubular Type
Picture				
Product Name, Materials	Primavera Armchair Rattan	Hanging Egg Chair Wicker or Polycore in several colors	"Su su su" Chair Cane, wicker, rattan, with steel base	Wicker Chair (Idée Lounge Chair) Aluminum, steel, wicker
Year of Design	1967	1959	1966	1990
Author	Franco Albini and Franca Helg	Nanna & Jorgen Ditzel	Kazuhiko Tomita	Marc Newson
Manufacturer	Bonacina 1989, Italy	Sika-Design, Denmark	Bonacina 1989, Italy	Idée, Australia
Morphology of Design, Stylistic Features, Type of Weave, Construction and Details, Material or Material Mix, Analogues	The Primavera Armchair by Franco Albini and Franca Helg, looks exactly like a flower basket. Its nearest analogue is the E10 Rattan Chair by Egon Eiermann from 1949. The chair is definitely a highly decorative one, reminiscent of the Peacock Chair by Wegner and to other craft examples, because of the fan-shaped backrest. The Primavera's beautiful, airy look is achieved by its openwork diagonal structural mesh, resembling Japanese Ikebana Baskets. Structurally, the weft is being carried by two large rattan hoops, the crossing points are fixed by nails.	The Egg chair by Nanna & Jorgen Ditzel, 1959, follows the typology of hung chairs, such as the Bubble Chair by Eero Aarnio (1968); but this one has a woven surface. It is just one of the many rattan designs by the Danish designer. Morphologically, it is an 'open basket' plus one upholstered seat cushion. The sitter is enclosed, therefore reminding of seaside "Korb Sessel", keeping off the wind and sun. The model is available with structure for hanging; it could hang from the ceiling as well. An analogue is the Eureka Hanging Chair by Giovanni Travasa (from 1958) for Bonacina 1889, where the author exploits a structural mesh for building the rattan surface.	This chair's structure is of the open tubular type, ending in three large openings, containing thicker contour hoops of rattan. This chair reminds us of a piece of garment, since it has two 'sleeves' serving as armrests, although it seems the author meant to represent a smiling complexion. The 'tube' structure gives a soft, all-woven look, the weave is tight. Only the legs remain visible metal. The unusual thing about it is that all three tubular elements are open to the front. The tubular theme brings the visual idea of a springy surface, soft and receding under the weight of the sitter.	The structure is a metal one, woven with rattan on both sides. This is a one-piece organic sculptural furniture item (if we do not count the invisible metal leg behind), with a tight weave. The overall shape reminds one vaguely of a human torso, securing a great angle of the back for a comfortable rest. It is noteworthy that the original Feltchair (since the Wicker chair is a version) turned out to be for the rattan weave; this only confirms the versatility of the material. The structure meets the ground in three points, thus leaving the impression of a free-flowing object in space.

**DISCUSSION**

The case studies have revealed a wide range of opportunities for designers wishing to use rattan both as a structural material or surface weave. Form-building potential was disclosed to evolve according to the 'basket' type, both open and closed, which brings us to any bulbous shape or its varieties. Next, mixed principles brings metal/wood/rattan structure with caned surfaces, leaving us with all possible surface variations, the oldest of which we called "Classic Roman Type", consisting of an outside covering surface and a seat. Important versions are 'the tubular' type, the bird's nest type, the 'flying carpet' type etc. Finally, we come to the "structural mesh type" which lacks surface weaving altogether, and leaves us with the structural skeleton woven into a large mesh. De-constructivist approach brings us to the "unfinished" type, which brings pieces closer to natural-looking objects, without, of course, being able to beat the look of the 'bird's nest' type, which is clearly the best.

We can point out the following advantages: purely formally, the pieces are archetypal (the basket image being very strong), bringing characteristic texture and colour of the materials used (rattan, tubular knit, polyethylene, etc.), bringing 'natural' flavour and 'crafty', 'handmade' aroma to such an extent, that the pieces look exclusive. The disadvantage (especially having in mind the exclusivity) is clear: a very high price. Most of the pieces from our case study are exclusive both because they are 'signed' by famous designers, by long hours of expert handwork and the natural material, by the label of the manufacturer, by their exoticism. Being very aware of the price policy of different parts of the world, yet we should acknowledge that this ancient basket-weaving skill brings about some of the best examples of design for garden purposes, public use and for the home.

Table 4

**Types of rattan chairs according to morphology of design: “Roman Type” and its versions**





	Classical Roman Type	Classic Roman Type	Classic Roman Type	Classic Roman Type
Picture				
Product Name, Materials	Poplar Chair Paper-wrapped high tensile wire	Canasta Series Aluminum frames, interlacing: white or bronze polyethylene	Foglia Chair Metal structure, rattan-core weaving	Ami Chair Stainless steel, expanded PU, handwoven chain tubular knit
Year of Design	1922	2007	1968	2008
Author	Lusty Lloyd-loom design	Patricia Urquiola	Giovanni Travasa	Francesco Rota
Manufacturer	Lusty Lloyd-loom, Great Britain	B&B Italia, Italy	Vittorio Bonacina, Italy	Paola Lenti, Italy
Morphology of Design, Stylistic Features, Type of Weave, Construction and Details, Material or Material Mix, Analogues	The shape of this chair is reminiscent of the ancient Roman woven chairs as a type: it includes a round back, a horse-shoe-shaped seat, the weave surfacing on all sides and under the seat to form a 'skirt'. This chair shape gives rise to many stylized and simplified versions reduced to a curved structural surface plus one seat, in modern design.	"Patricia Urquiola approached the outdoors starting from the theme of woven patterns-reviving and personalizing the concept with a traditional look in mind but giving it a decisively contemporary look without using too much nostalgic influence Vienna straw." The chair was inspired by Asian baskets (bebitalia.com). The structure is metallic, the weave is "The Vienna Cane", but over-exaggerated by the use of polyethylene strip. In the different pieces, Urquiola follows different types: the "Roman" type for the garden armchairs, the spherical type for the outdoor sofa.	The chair has two parts: seat plus sculptural curved 'kimono' part with two short front legs. Contour and legs are in metal. The weave is structural and tight. The high back brings a different character of the chair, although structurally it belongs to the "Roman Type", it has the look of a fan-shaped high-backed traditional craft chair, giving the sitter 'protection' above his head.	Fully in the vogue of using tubular knit, this piece makes good use of the structural weave of the company's "Chain" knit tubular material. To soften the bumps, cushions are provided. This example proves that the woven pieces vary widely in materials. The knit material adds color and texture over the metal structure.

Table 5

**Types of rattan chairs according to morphology of design: “Flying Carpet Type” and its versions**





	3D Surface Following Structure	Flying Carpet Type	Flying Carpet Type	Flying Carpet Type
Picture				
Product Name, Materials	Manta Chair The frame is made from metal and rattan	809 Chaise longue Internal steel frame, woven rattan core	Lounge Chair, Model P3 Tubular lacquered steel frame, woven wicker	S Chair Metal structure, cord or rattan; other materials
Year of Design	1998	Ca. 1966	1960 to 1969	1991
Author	D'Urbino and Lomazzi	Mario Bonacina	Tito Agnoli	Tom Dixon
Manufacturer	Bonacina 1889, Italy	Bonacina 1889, Italy	Pierantonio Bonacina, Italy	Capellini, Italy
Morphology of Design, Stylistic Features, Type of Weave, Construction and Details, Material or Material Mix, Analogues	'3D CURVED surface'. Curved surfacing in one single part, metal structural parts: two legs and one backrest contour, covered in a tight polyethylene cord weave. A very important feature of the woven surface is exploited: the ability to cover all complex surfaces.	This Chaise Longue by Mario Bonacina is an obvious analogue of Tito Agnoli's Lounge Chair, with certain variations. The form building principle of using a basic metal structural frame for the sitting/lying support, covered with thick rattan weave, is clearly followed.	This model by Tito Agnoli exploits an idea of seating furniture as a single frame bent in space to provide backrest and seat, that originated in Bauhaus cantilever chairs. Typical for the 60-s and 70-s, this form gave many versions with more or less complex surface.	This chair has a metal structure, over which cord or rattan or other materials are used. The paper cord version is stuffed with grass. The chair has a one-piece morphology, with a metal circular base. The individual feature is the stuffing with straw inside the woven double walls of the chair. An iconic and minimalistic image.



Table 6

**Types of rattan chairs according to Characteristic Weaves**









	Unfinished Weave	African Basket Weave	Closed Shape, Open Weave	Openwork Mesh Type
Picture				
Product Name, Materials	Yoda Easy Chair Rattan, nylon, steel	Afra Chair Stainless steel structure, hand-woven upholstery with cord and Aquatech yarn	Balou, Loveseat and Sofa abaca, rattan, nylon, steel	Nautica, hanging chair Structure in peeled and tinted natural rattan 32 mm diameter
Year of Design	2008	2016	2014	2014
Author	Kenneth Cobonpue	Francesco Rota	Kenneth Cobonpue	Alberto Sánchez (Mut Design)
Manufacturer	Kenneth Cobonpue, Philippines	Paola Lenti, Italy	Kenneth Cobonpue, Philippines	EXPORMIM, Spain
Morphology of Design, Stylistic Features, Type of Weave, Construction and Details, Material or Material Mix, Analogues	The Yoda Easy chair has the 'unfinished' effect: it reminds us of deconstructed structural textile, where only the warp remains sticking out. The Yoda Easy Chair achieves a tall silhouette, thus giving a hierarchical meaning, a throne-like structure, that: a. acts really decorative; b. makes a screen-like performance, when we use several chairs together, thus separating the space in front from the rest of the room. The weave is open, bringing a basket quality to this piece.	The clean and minimalistic form of this armchair is totally dictated by the technique, used by African women to weave their baskets. This is in fact the 'coiled basket' technique where a thick cord or straw or seagrass is woven and sewn with yarn. The monolithic quality of the armchair does not distract the attention from the exotic weave.	In spite of the large size, this piece has a unique light quality due to the open weave and the fact that we can see through it. The piece is light and transparent, and is manufactured in two versions: indoor and outdoor, with different materials. All models by Cobonpue have the unmistakable visual quality of the different weaves used.	The open weave of this rattan chair relies totally on the decorative effect of the sinuous rattan poles. The swaying movement of the hanging chair finds its visual effect in the wavy line of the rattan poles. Although no weaving is present, the transparent poles also carry a 'trace' of knitted yarn in its meandering forms.

Table 7

**Types of rattan chairs according to morphology of design: "Closed Spherical Type" and its versions**

	Closed Spherical Type	Closed 3D Shape	Closed Spherical Type	A Compound Configuration of Several Closed Volumes
Picture				
Product Name, Materials	Palla Chair Rattan	Sushi Daybed Water-hyacinth (Eichhorniacrassipes)	The Spaghetti set Natural liana, rattan	Doeloe lounge chair
Year of Design	1960	2008		2010
Author	Giovanni Travasa	Bannavis Andrew Sribyatta	Bannavis Andrew Sribyatta	Abie Abdillah
Manufacturer	BONACINA 1889, Italy	PIE Studio Furniture (Project Import Export)	PIE Studio Furniture (Project Import Export)	
Morphology of Design, Stylistic Features, Type of Weave, Construction and Details, Material or Material Mix, Analogues	In Italian 'palla' means "ball". This type of closed containers resembles spherical shapes, although the sphere is distorted to receive a seat. The weave is really tight and structural, although it is very probable that the structure incorporates metal skeleton. Sculptural effect, many analogues, mostly shaped as an ovoid and serving as poufs, and also made of different materials (e.g. tubular knit).	Here, the type is a closed one with a structural tight weave, the material used is water-hyacinth (Eichhorniacrassipes), an aquatic floating plant known to cause great problems by being an invasive species outside its native range. The simple spherical volume acquires a more complex three-pointed topography, which receives the sitter in its recess.	This one, although clearly 'spherical' in type, has an overpowering 'knit', which could also be dubbed 'bird's nest', giving the natural and exotic look of this product. Analogue is "Noodles" by Kenneth Cobonpue.	Structural mesh type. "The design of 'Ople' from the 30s to the late 70s, a small car used in Jakarta for public transportation, was the starting point and form reference of 'Doeloe lounge chair'. The designer used curved rattan poles as a frame and backrest for the upholstered seating unit. Viewed from the front, the arm rests resemble the circular headlights of the traditional vehicle" (designboom.com) The weave consists of a structural mesh of rattan poles. An analogue is the Eureka Hanging Chair by Giovanni Travasa.

## CONCLUSION

Apart from the obvious variety of shape, texture and material, we are of the opinion that there are still unexplored areas of craftsmanship bringing more sculptural potential into the hands of modern design, with a strong ethnic flavour. Woven furniture remains partly on the verge of two separate economic zones: the one of the mass-produced serial objects and the one of exclusive handwork mastery. As usual the contacts achieved between the two bring unexpected creativity of design works, of which we expect to see more in future.

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