

## ALTERNATIVE MATERIALS IN THE ART OF FURNITURE

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**Abstract.** The article analyzes the alternative wood materials used to make furniture, such as: stone, metal, cardboard, papier-mâché, paper, plastic and glass. The material is considered as the basis of an artistic image. From the standpoint of material artistic potential disclosure, the samples from antiquity to the present time are analyzed. The steel furniture by the masters of England and Russia of the 18th and 19th centuries is of artistic interest. New features of metal in furniture were disclosed in the twentieth century. In the twentieth century, metal and plastic furniture was widely used in industrial design. In the 1970-ies, metal furniture for industrial purposes came to home and office interiors in a high-tech style. A new surge to the expressive possibilities of metal in furniture appears in postmodernism within the works of "creative recycling" trend representatives. In the 18th century, the production of parts and furniture made of papier-mâché was developed in Europe, and it was distributed widely in the 19th century. The twentieth century reveals that the pieces of furniture can be made from paper and the material derived from it - cardboard and papier-mâché. The interest in cardboard appears during the 1960-ies under the influence of "fragility culture" ideas. Since the end of the 1940-ies, an active understanding of plastic possibilities in industrial design began, and since the 1960-ies plastic acquired new forms. In the twentieth century, the glass turns into a molding material from the accompanying one. At the turn of the centuries, the furniture appears with an unconventional use of old materials and new technologies, the extrapolation of technological methods for the conversion of one material to another. The erasing of the boundaries between design and art is traced.

**Keywords:** furniture style, non-traditional furniture materials, furniture design, frameless furniture.

**INTRODUCTION.** Wood is the traditional material in the art of furniture. Rather, wood is a raw material, which, after the obligatory, multi-stage processing, turns into wood. The latter becomes a piece of furniture, after further transformations. The styles, their designs, their purpose changed, but the essence remained the same - a piece of furniture was made of wood and its artistry was determined by the success of material understanding. Solid wood was used for a long time. The technologies transformed it into new composite materials with different artistic properties [1]. The twentieth century is the century of a widespread use of a wide variety of materials; these are not only the derivatives from wood - plywood and particle board, but also metal, glass, plastic, cardboard, textiles, rubber, and even paper. The capabilities of some of the listed materials were tested in the past.

**METHODS.** Let's apply stylistic analysis in order to reveal the artistic potential of some material. It allows you to trace the characteristics of material use in different historical conditions. The comparison of works of different masters within one style allows to reveal the diversity of approaches to identify the texture of the material and its design possibilities. The purpose of this study is to consider the material as the basis of a piece of furniture artistic image.

**RESULTS AND DISCUSSION.** The use of stone in furniture was cultivated in the era of antiquity. Then its use was determined not so much by utilitarian considerations as by reverence of stone as the material of eternity. The color and texture diversity of stone provided the creators of the subject with the possibility of monumental ambition provision to these products. An object made of stone is an attribute of a palace, a temple, a square, a theater or thermae - in other words, public places [2]. In recent past, such designer as Gae Aulenti (1927-2012), using stone, turned the coffee table into an "object of small monumental shape." Thus, it revealed the decorative nature of the material in "Jumbo coffee table" effectively for Knoll International (circa 1965). Marc Newson (b. 1963) using a computer 3D design turns an array of Carrara marble into a tracery, biomorphic structure, as in "Voronoi" shelving. Metal had been used since ancient times. His plastically decorative qualities could not be unnoticed by the masters of furniture. Perhaps it was the high cost of the material that gave metallic furniture a special social sounding. This raised such utensils to the samples of antique ambitious plastics located in the border zone between sculpture and decorative art. The original examples of metal furniture are the items made of steel and produced in England and Russia in the XVIII – XIX centuries. The products with a "diamond face" are of particular artistic interest. In the literal sense the "steel strength" of the material made it possible to give such elegance to them that was impossible to achieve using wood. Steel was covered with the relief imitating precious stones, the carpet of "diamond crystals". Being polished each of them acquired a cold glow close to the brilliance of a precious stone due to the hardness of the metal. The decor of these objects was complemented by individual part gilding and bluing. Despite the fact that the pieces of furniture made of metal from the XVIII - XIX centuries can hardly make anyone indifferent, the use of this material for the production of furniture is more nonsense than regularity. Modern considers itself to be the secession, that is, the trend opposing the general practicality of the era to the carriers of this trend [3].



Dressing table. XVIII c. Tula, Russia. Steel, bronze, gilding, notching with red gold; diamond face.

Quite a different attitude to metal was developed in the twentieth century. It can be assumed that everything began with the desire to obtain even more flexibility and complexity of forms than it was possible by Michael Thonet (1796-1871) in his curved beech furniture. The chrome-plated hollow metal tube provided great opportunities in respect of plastic effects and turned out to be simpler furniture part manufacture technology. Metal is stronger and more hygienic than wood. Such pioneers of modernism as Marcel Lajos Breuer (1902–1981), Ludwig Mies van der Rohe (1886–1969), Le Corbusier (1887–1965), Charlotte Perriand (1903–1999), Pierre Andre Jeanneret (1896-1967) were more successful in metal work. During the post-war period designers used metal from melted military aircraft to produce furniture, such as Ernest Race (1913-1964) and others in countries where there was the shortage of wood, such as in England [4]. In the era of postmodernism, metal attracts the designer attention once again. The armchair Ron Arad, (b. 1951) with the indicative name "Well Tempered Chair" (1986) like the "Well-Tempered Clavier" by Bach can be considered as the program one for the 80-ies of the twentieth century [5]. The imagery of this object allows us to recall the concepts of minimalism, captured in the works by Donald Judd (1928–1994) and Richard Serra (b.1939). It is characteristic that the aesthetic possibilities of the rolled metal have something in common with the plastic of rolled plywood. The only difference is that rolled plywood gives the impression of soft comfortable wood, and the same roll of metal creates the feeling of a good shock absorber springiness. Ron Arad owns the armchair "After spring and before summer". By the laconicism of an elastic line, by the masterful game with various thickness of sheet, he creates the sculpture, erasing the boundaries between design and art. Arad experiments with a variety of materials, even with secondary raw materials, as was customary in such design trend as "creative recycling." The syncretic relation between art and design is represented in the works of already mentioned Marc Newson (b. 1963). The polished aluminum in "Lockheed Lounge" model (1986) is likened to a large drop of mercury, magically holding onto its legs. The fluid fluidity of this form is associated with the names of modern sculptors such as Jean Arp (1886-1966) and Karl Hartung (1908-1967).

Starting from the XVIIIth century, the glass was included in the furniture to glaze the casement of windows and make them transparent. The showcases changed the Renaissance cabinets for dishes - dressoir [6]. Glass wings made it possible to see valuable objects made of ceramics, glass or silver in a window. Glass traditionally complements other materials. The fragile, cleavable nature of the glass did not allow to use it as the bearing elements of furniture. The technological transformations provided an increased strength to glass, and they began to use it as a carried horizontal element — a shelf inside a cabinet. Modern designers connected it not with a traditional tree, but with a chrome-plated metal frame, like the table E1027 (1927) by Eileen Gray. Then they freed the glass from any frame and used it as a carried plane — a tabletop, for example, in the model LC6 (1929) Le Corbusier (1887–1965), Pierre Andre Jeanneret (1896–1967) and Charlotte Perriand (1903–) 1999) [7]. Glass is used in postmodernism most radically by the Italian designer Gae Aulenti. In the model "The Crystal table" (1982) for Fontana Arte, she puts the glass tabletop on the glass legs (supports), turning the glass into vertical supporting elements. In 1993, Gae Aulenti, shocking the viewer, hoisted the glass tabletop on bicycle wheels in "Tavolo Tour Table" model (1993), providing the product with the emotional tension of material and function inconsistency, as in Merret Oppenheim's "Fur Breakfast" (1936).

Paper is even more distant from furniture. It appeared in China and all the main options for its use were invented there. "Chewed paper" - "papier - mashe" was used to imitate carved wooden parts, embossed bronze overlays, and even architectural elements due to plasticity, cheapness and strength [8]. Not only individual pieces of furniture on the frame were made from papier-mache, but also the objects as a whole. Such furniture was especially popular in the XIXth century, during the era of Napoleon III. The objects made of papier-mâché were peculiar decorations that descended from the stage into real life [9]. But in the twentieth century



Canape of papier - mache on a wooden frame. Lacquer, mother of pearl, gilding. The end of XIXth c.

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paper will not be considered as imitation material. Since the time of M. Tonet, the issue of a cheap thing aesthetic significance has been on the agenda [10]. The next appearance of paper as the material for furniture occurs in the 60-ies - the time of "fragility culture" and the heyday of pop design. Peter Murdoch (b. 1940) used corrugated cardboard, having developed the cut of an object folding from one sheet. The main interest in his works is the combination of plastic with the geometric stiffness of a folded sheet. He managed not to mask paper for other materials, but to reveal the aesthetic possibilities of the folded paper. He offered several options of pieces of furniture drawing from a flat sheet of cardboard - this is the "Spotty" chair (1964) and the "Those things" set (1968). Further development of cardboard possibilities in the art of furniture is associated with the name Frank Owen Gehry (born 1929) and the "Wiggle" chair (1972). The "Easy Edges" collection of items from multi-layered corrugated cardboard included armchairs, a chair, tables and a bed. The layers of cardboard are glued so that the ends of sheets form the front surface of an object. When this occurs, the texture resembling suede or corduroy appears. Thus, the nature of the material is not only not hidden, but is the main aesthetic element. Along with the face stiffness, Frank Gehry develops soft plastic of cardboard flowing like textile. The illusion of form sliding resembles the work "Fall" (1963) of the optical art representative Bridget Louise Riley (b. 1931). The corrugated material enthralled Frank Gehry so much that in his further work he turned to corrugated metal, where the metal resembled cardboard. The opportunities for multi-layer cardboard are being actively developed at the present time when environmental problems require the use of easily recyclable materials. The Hungarian designer János Terbe designs not only the most diverse furniture from multi-layer cardboard, but also lighting devices and other interior elements. Studio Job experimented with sheet paper successfully. This is the "Paper Collection" (2005) by the designer Joba Smits and Ninke Tunagel for "Moooi" company. At "Milan Design Week" held in 2014, they presented papier-mâché furniture by Austrian designer Philipp Aduatz.

In the 1960-ies there was the popular period for thermoplastics and new synthetic materials, such as ABC plastic or polypropylene. Although the development of plastic in furniture began during the postwar years. These materials made it possible to create the images in the spirit of cosmic Odyssey, the hippie commune, and pop design. Bright and light, frameless objects were intended primarily for pleasure and free time. The plasticity of synthetic materials has opened new forms and possibilities in furniture, as in the anthropomorphic, playful "Donna" armchair by Gaetano Pesce. Plastic met the requirements of successfully developing ergonomics and allowed to create the aesthetics of convenience. This was manifested in the "descendant" of the mattress - the armchair "Sacco" from three designers - Franco Teodoro (1939–2005), Cesare Paolini (1937–1983) and Piero Gatti (born 1940) for Zanotta. Its free form is filled with polypropylene balls that easily take the shape of a human body. In 1967, these designers developed an inflatable armchair "Blow". At the same time Nguyen Manh Cagnes developed the collection of inflatable armchairs, lounge chairs, poufs, and PVC tables.

Plastic mass, freezing in forms, did not require a complicated finishing work: the coatings with polishes, varnishes, intarsia, inlay, etc. Plastics made it possible to achieve an unusual production speed and almost unlimited replication of a product. The result of all these features was a uniquely low price of a piece of furniture. However, all these advantages of new material determined that the product from it should have been beyond the artistry limits. From time immemorial the indicators of an object high significance and the belonging to true art were its ambition, expensive materials, lush decor, uniqueness and high cost. Plastic products were made of cheap materials, their production was mass one, but they, as a rule, did not have any decor at all. However, the development of plastic furniture has shown in many cases that it can provide the samples of an artistically significant level. An example of it are the attonic, durable plastic armchairs - "Ribbon Chair", Model No. 582 by Pierre Paulin for "Artifort" and the s-shaped fiberglass-reinforced Panton chair (1959-1960) by Verner Panton for Vitra, as well as the round, transparent, hanging armchair "Bubble" (1968) by Eero Aarnio (b. 1932). In 2007, modern plastics and 3D design system allowed Ross Lovegrove (1960) to transfer the complex shape of the ginkgo plant into the table of the same name.

The development of furniture undergoes unexpected turns sometimes. Frameless furniture comes into use, the prototype of which are hair stuffed pillows from the dwellings of nomadic peoples. Thanks to the keen observation by Tejo Remy, a pile of clothes can turn into an avant-garde piece of furniture. The model "Rag Chair 159" (1991) consists of old clothes arranged in dense layers, connected by steel cables. The furniture for seating by Fernando & Humberto Campana (b. 1961 and 1953), Vermelha armchair (1993) made of rope loops or of individual colored "Sushi" fragments (2002), looks no less radical. As in architecture, the deconstruction - splitting of the material into its component parts: ropes, patches, chips, etc. is the main artistic method of working with material. The designer Umberto Campana expresses his attitude towards the material: "... the materials tell us the extent to which they can and want to be transformed" [11].

**CONCLUSIONS.** This article discussed the historical parallels concerning plastic, functional and artistic capabilities of several types of materials in furniture. In the XX-XXI centuries, with the rapid development of furniture style, an ever stronger relationship between design and visual art is revealed [12]. The main acquisition in the art of furniture of the twentieth century is that a replicated, inexpensive object can have an artistic significance and is the expression of its time taste. As an artistic technique, we observe the extrapolation of technological methods for the conversion of one material to another [13]. Due to this, the disclosure of new expressive possibilities of material takes place.

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**SUMMARY.** Any object used by a man is born from some material. An object use will be successful as far as the material corresponds to the purpose of the object [14]. Any manufactured item, along with its utilitarian function, also carries an aesthetic one, which also naturally grows from the material nature [15]. Thus, the material is the basis of an artistic image, an object of arts and crafts.

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