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CONTEMPORARY INTERPRETATION OF THE FORM OF CLASSIC
FURNITURE TOGETHER WITH STRING ART

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**CONTEMPORARY INTERPRETATION OF THE
FORM OF CLASSIC FURNITURE TOGETHER
WITH STRING ART**

**A THESIS SUBMITTED TO THE INSTITUTE OF
GRADUATE STUDIES
OF
NEAR EAST UNIVERSITY**

**By
HABIBA HUSEYNOVA**

**In Partial Fulfillment of the Requirements for
The Degree of master of Science
In
Architecture**

NICOSIA, 2021
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Approval of Director of the Institute of Graduate Studies

Prof.Dr. K. Hüsnü Can Başer

**We certify this thesis is satisfactory for the award of the degree of Masters of Science
in
Architecture ((Msc. Arch.)**

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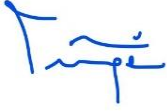


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A handwritten signature in blue ink, appearing to read 'Habiba Huseynova', written in a cursive style.

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ABSTRACT

String Art (English wire, thread, and art) is visual designs using threads stretched over nails placed in a plane. There are various application areas of the String Art technique. Architecture, interior architecture, furniture and architectural accessories are among these areas. The purpose of these applications is to ensure that the designs are aesthetic, robust and functional. In the thesis, it is aimed to show that unused, dilapidated classical furniture can become useful and sustainable with string art by pointing to these applications.

Three-dimensional yarn graphics, often referred to as String Art, are used in the design of restaurant, dance and concert halls or theater decorations (hooks or patterns are used instead of cloves and fabrics are used instead of ropes, strings, ropes, ribbons, ribbons).

In this thesis, String art and furniture are studied. How String art can be applied to antique classical furniture has been researched and examples have been studied.

The aim of the thesis is that it is possible to restore the functional feature of antique furniture with String Art, and the study has contributed to the design field. The thesis includes examples of how different furniture can be animated with this method.

The subject of the thesis is the adaptation of String Art art to classical furniture to the present day.

Keywords: string art, philography, furniture, interior, architecture, rope institutions, string institutions, classical furniture, modern furniture

ÖZET

String Art (İngilizce tel, iplik ve sanat), bir düzleme yerleştirilen çivilerin üzerine gerilmiş iplikler kullanılarak görsel tasarımlar yapılmasıdır. String Art tekniğinin çeşitli uygulama alanları söz konusudur. Mimarlık, iç mimarlık, mobilya ve mimari aksesuar bu alanlardandır. Bu uygulamaların amacı, tasarımların estetik, sağlam ve işlevsel olmasını sağlamaktır. Tezde bu uygulamaları işaret ederek kullanılmayan, harap klasik mobilyanın string art ile kullanışlı ve sürdürülebilir duruma gelebileceğini göstermek amaçlanmıştır.

Genellikle String Art olarak adlandırılan üç boyutlu iplik grafikleri, restoran, dans ve konser salonları veya tiyatro dekorasyonlarının tasarımında kullanılır (karanfil yerine kanca veya desen kullanılır ve ipler, teller, ipler, kurdeleler, şeritler yerine) kumaş kullanılır).

Bu tezde String art sanatı ve mobilya incelenmiştir. Antika klasik mobilyaya String art uygulanarak günümüze nasıl uyarlanabileceği araştırılmış, örnekler üzerine çalışılmıştır.

Tezin amacı, Antika mobilyanın String Artla işlevsel özelliğini geri kazandırmanın mümkün olduğunu, yapılan çalışma ile de tasarım alanına katkı koyulmuştur. Tez, bu yöntemle farklı mobilyaların nasıl canlandırılabilirliğine dair örnekler içermektedir

Tez konusu, String Art sanatının klasik mobilyaya uygulanarak günümüze uyarlanması.

Anahtar Kelimeler: string art, filografi, mobilya, iç mekan, mimarlık, ip kurumları, dize kurumları, klasik mobilya, modern mobilya

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LIST OF ABBREVIATIONS

PS	Problem Statement
SS	Stick-Sticker

CHAPTER 1

INTRODUCTION

1.1. Problem Statement

Furniture is not only necessary but also a way to create comfort and convenience. It is sometimes quite difficult to buy a new headset, as it gets used to its appearance and color. However, most of them refer to furniture of inferior quality to old furniture, so they are not in a hurry to work with regular furniture. Many people know that there are many effective ways to eliminate the shortcomings of old furniture and repair damaged surfaces. In addition, its restoration will not only help preserve the normal appearance of the interior, but also significantly save the savings in the family.

Each antique piece of furniture is individually crafted to make it unique. Mostly antiques are works of art made from expensive wood that have served for several generations. However, today only a few objects have survived, most of them destroyed by people and time. Such a process as independent restoration of antique furniture allows you to restore it and return it to our daily life.

The restoration of furniture from wood, its conduct and technical features will depend on the characteristics of the wood and the protective and decorative cover. Despite the drudgery of restoring work with polished furniture, it is quite possible to update it in your home environment. Start the recovery from degreasing and moisturizing. For this purpose, use a non-concentrated soap solution and gentle cleaning agents - for example, gels for washing dishes. After the cleaned surface has finished, it is necessary to select the appropriate color and texture of the materials for marking the defects. A simple and reliable way is the elimination of deficiencies in the pharmaceutical market. Rejuvenating markers in use and stays correct even deeper damages, and are released in different shades, which will make the color fill up. How to update a polished furniture with your own hands with the help of a powder - the question is not easy, one can become a jar or a bottle of iodine. Sufficiently dispense iodine or gutaline with water until the right tint and apply to the damaged area - the solution will reduce the deficiencies. When it is necessary to remove the stain, and not to smear the existing flaw, try to use acetone or benzine. The liquid is applied to a soft cloth and the place of contamination is repeatedly treated - until

the stain is removed. At the end of processing, polish the surface with a velor cloth or special polishing agents for furniture.

From the above, it is clear that today we can recreate a lot of furniture in a different design. Many methods, models and styles play a role in reviving furniture. One of them is string art.

String art (sinking) is a type of art in which various images, simple or complex, created from threads and nails. Pictures consist only of straight lines, but despite this, volumetric drawings are obtained. At first glance, it seems that the main feature of the string art technique is the usual intersection of threads stretched over nails. In fact, to get beautiful patterns you need to be careful. This is painstaking work that requires preliminary calculations.

The history of this needlework began about 4 centuries ago (Бартлетт, 2007). It was invented by English weavers, who in a certain sequence pulled the threads on the carnations driven into the boards. As a result of the work, panels for decorating the rooms were obtained. At the end of the 19th century, Mary Bull, a mathematician and researcher, became interested in technology, improved it and used it for teaching kids, depicting a variety of geometric patterns.

Modern string art has gained popularity thanks to a designer from America - John Ehinger. The mandalas made by him amaze the imagination with grace of lines and unique optical illusions. At the moment, the popularity of unusual paintings made by the method of string art is only growing.

There are many techniques of string art that allow to create original paintings from threads and nails. The most popular methods include:

1. Letter design. Well-known trend developed in the West. Various words look interesting in the interior. Despite the use of sharp nails, pictures made using the string art technique may look tender. Such decorations are relevant for use in the hallway or living room.

2. Animalism. Often masters make silhouettes of various animals and birds. This trend of string art today is more relevant than ever. Popular images of graceful deer, noble horses, showy zebras, majestic elephants.

3. Portraits. People who engage in the art of string art professionally create stunning large canvases in which facial features, such as celebrities, are easily discerned.

4. For children. It is useful to engage in the art of string art with your child. Kids will be able to cultivate perseverance, attention to detail, develop fine motor skills. In this case, foam is used as the basis. Popular children's patterns in the art of string art: cats, fish, dolphins, hearts and others.

5. Additional decor. When creating compositions, various types of jewelry are used: different colors, the same picture with a contrasting shade of nails, rhinestones, beads, rivets.

Three-dimensional thread graphics, often also called StringArt - in French: broderiesurpapier, is used in the design of restaurant, dance and concert halls or scenery in the theater (instead of carnations, hooks or designs are used, and instead of threads, wires, ropes, ribbons, strips are used tissues). Many of the drawings for laser shows are based on templates for thread graphics. In this technique, it is possible to create three-dimensional figures, build scenery.

String art, Stick-Sticker, is also known as the Sony-Sticker chord stitch. In English-speaking countries, the phrase “embroideryonpaper” is also used - embroidery on paper, less often Form-A-Lines - forms from lines. In German-speaking countries, the term “pickpoints” (bitmap) is used. You can also find such names of technology as PapierPrikken, Simegrafija, SprekendeWenskaarten, Kerstbordurenopkaarten. Almost all of them are translated in the meaning of piercing (holeing, splitting) the base.

Interest in thread graphics either appeared or disappeared. One of the peaks of popularity was in the late nineteenth century. Books on needlework were published, which described an unusual way of embroidery on paper, simple and easy, accessible to children. The peculiarity is that cloves are replaced with holes. It is used perforated cards (ready-made patterns) and the method of filling the corner, stitches “cross”, “stalked” (for embroidering

curves). Using a minimum of funds, any person (and most importantly children) could make fancy souvenirs for the holidays.

The most famous author of the western direction is Erica Fortgens. Actually, she patented everything related to this technique, right down to tools and types of paper. It has its own brand and produces a full range of materials and tools for embroidery on paper: a lining mat, three types (in thickness) of puncture dots, photocopies of drawings, copper reusable patterns of patterns and various paper. In her work, Erica Fortgens additionally uses applique, origami elements, beads and the “wet stamping” method on paper, offering ideas for making postcards, bookmarks and photo frames.

This shows that string art can bring innovation in many fields and should be used for different purposes.

1.2. Aim of Thesis

The aim of the thesis is to consider the redesign of the classical furniture that has become useless with String Art, to suggest the application in this direction and thus to make the furniture solid, aesthetic and useful. Most of the time, users do not want to throw away these classic and worn furniture. However, they have difficulties in how to make them useful, aesthetic and solid. With this study, it is aimed to emphasize the importance of String Art in the reuse of classical furniture.

In addition, in the study, it is aimed to point out that classical furniture can become useful by using different art areas. The aim of the thesis is to ensure that historical classical furniture becomes sustainable.

1.3. Important of Thesis

The importance of the thesis is that the materials used in the thesis can be used as information in the field of applied art. The results of the research can also be used by people in the design of classic or modern furniture. Thus, classic furniture could be useful and sustainable in contemporary.

1.4. Limitation of Study

The limitation of the study is that electronic data on the history and development of string art techniques are so limited.

The limitations of the thesis are that it was not possible to obtain real information, books and materials due to Covid-19. At the same time, for this reason, the models prepared in the thesis could not be prepared in real life. It was tried to solve to this problem by creating virtual models using a computer.

One of the limitations of the thesis is that it could not be use the questionnaire method in the thesis because of the pandemic. After using String Art to classical furniture, the usefulness of it could be measured better.

In general, the thesis was limited to the stages of research and preparation due to the pandemic, and could not go beyond the framework.

1.5. Scope of the Research

It is possible to find many methods for the restoration and reuse of classical furniture. In the study, it has been investigated to handle classical furniture, which has become almost idle, with String Art in order to ensure its reuse and to be sustainable. This was chosen because the researcher has a broad knowledge of String Art and has applications in this art field.

1.6. Methodology

The thesis is a qualitative research. Research methods include literature reviews, analysis, and historical methods.

The methodology of thesis is a literature review study for the determination of concepts of the feature and historical developments of furniture, String Art. Data was collected from various sources (books, articles, magazines, websites, interviews), categorize the periods of Furniture and types of String Art.

Analysis method was used to understand the results of Contemporary Interpretation of Classic Furniture Form with String Art. For this, both applied examples were found and virtual models were practiced using computers. After that, the function, aesthetic and strangeness of these examples were analyzed.

The thesis examines the works of many authors as research material. One of them is Lois Kreischer's Symmography (1971). He noted that String Art, String Craft, Symmography,

Geometric Stitchery, Nail and Thread, Pin and Thread, Geometric Picture Patterns are all one craft, which is now an Honour. Symmography, often referred to as String Art, is very similar in linear design and delicacy of appearance to earlier works of wire sculpture, mobiles and stabiles. The word symmography is a combination of the word "symmetry" and the suffix "graphy" and the same basic designs used for this art are to be found in other art and craft forms throughout the world. The execution of a design is very simple. The curves in the design are formed between two lines of pins. Their shape varies with the angle at which the lines are set in relation to one another, and with the shape of the lines of pins.

Robert Sharpton in *Designing in String* (1972) described the design of images with a string art model. This work shows the sequence of designing images in different figures and shapes.

Doctor of Chemical Sciences G. Branitskiy calls the paintings made in the technique of thread design alive. Their distinctive feature is that they are not painted by an artist's brush, but made (precisely made) of decorative nails intertwined with bright colored silk threads. When carefully examining such paintings at different times of the day, under different lighting conditions and from different distances, they are visually perceived differently due to the changing conditions of light reflection from the heads of nails and threads. And every time in a new way they attract attention with a unique color scheme. I would like to come closer to the paintings, touch them with my hand, keep this feeling in memory.

Tatiana Ivanovskaya in the book "Magic Isothread" expresses that, in addition to simplicity and aesthetic appeal, isothread has another important advantage - low cost. Many types of handicrafts require serious financial costs. You need to buy special materials, pick up tools. You have to look for everything you need in specialized stores and websites, carve out funds from the family budget for their purchase. If the work does not work out as intended, expensive material is wasted. It is especially difficult for beginners, because due to the lack of experience in marriage, they have much more than the craftswomen of needlewomen. But the most costly is, of course, children's applied art. Inexperienced children's hands can ruin work where even a beginner adult will not make a mistake. Let's not be honest:

parents often feel sorry for money and try to interest their baby in a less expensive type of needlework.

In book of Vivien Bowler «Pictures with pins» here are 40 easy-to-follow patterns for some really exciting designs. You will be surprised how easy they are to make and how effective. With just basic materials and an eye for colour and texture you can create beautiful decorations for your home, as well as gifts for friends and family.

Christel Vogelsang's book "De mooiste kaarten zelf borduren: met nieuwe patronen" shows how to design string art on cardboard.

Lilia Burundukova in her book "Magic Isothread" says that isothreading is a technique for creating pictures from threads. It is also called "cardboard embroidery". However, these items are different from ordinary embroidery. The special interweaving of threads gives the effect of three-dimensional image. At the same time, the technique is simple, both an adult and a child can easily master it. The tools and materials necessary for the work are quite affordable: the main ones are ordinary bobbin threads and cardboard. All this makes it a very "convenient" kind of creativity, allowing you to create unusually beautiful products with minimal investment of time and money.

CHAPTER 2

HISTORY AND DEVELOPMENT OF FURNITURE

The history of the creation and improvement of furniture is inextricably linked with the history of mankind. Just like tools, archaeologists find the remains of furniture in ancient burials. The word "furniture" means property that can be moved and comes from the Indo-European root of the Neolithic era.

The Paleolithic era ends with the fact that a person united in a community is engaged in agriculture and cattle breeding. He leads a sedentary lifestyle, lives in caves and has primitive tools. Sleeping on the rocks is clearly cold and dry grass and skins are used for warming, which gives rise to the creation of furniture. These natural crevices are protected from wind, cold and rain and insulated with improvised materials.

In the Mesolithic and Neolithic era, a person gradually improves tools, first builds a hut, then a hut and finally a house. Together with spinning, weaving, pottery, stone and wood processing develops. The number of household items increases sharply. In addition to tools for hunting, fishing, cattle breeding and agriculture, household items appear: hollowed out from tree trunks stools, troughs, dishes, the treated surface of the stone is the first countertops.

It is unlikely that we will ever know the answer to the mystery of the appearance of furniture. She probably appeared at the moment when the woman began to take care of creating coziness and comfort in her home, forcing her husband who returned from a tiring hunt to make primitive, but much-needed pieces of furniture (Geng, Xiaojie, 2009).

The word "furniture" comes from the French - meuble. For several thousand years, as furniture accompanies a person. There is hardly a person who would not be interested in, say, issues related to housing, furniture, beautiful and practical household items.

The oldest furniture samples known to us were found in Egypt in the royal burials of the 3rd century BC. These are fragments of ebony caskets inlaid with ivory, malachite and turquoise. The first stools in the history of mankind were found there, one of which was even folding. These stools were made of wood, and the legs in the form of animal hooves were carved from whole elephant fangs. The ancient Egyptians are also the "authors" of beds and chairs.

The first furniture created by man was tough and very functional. Only Egyptian pharaohs could afford to sit in an armchair decorated with gold lining and intricate carvings.

Great, but unpretentious in everyday life, the Greeks came up with chests - a kind of chests that served simultaneously as sunbeds and benches.

At this time, the tradition of creating furniture includes a cult of the use of natural motifs. More precisely, the legs of all the ancient stools were made in the form of animal hooves, the throne armrests were made in the shape of walking lions. In the decoration of thrones for the richest persons, they did not skimp on gold, colored enamel, carving, mother of pearl, colored glass. They mainly used warm colors: yellow, red, green, black, brown, as well as blue and white. During excavations, when examining the chair of the pharaoh Tutankhamun, it was found that the upper back is decorated with a metal plate depicting a golden winged sun - a sign of the god Ra (Dutton, Edward, 2009).

It is noteworthy that it was the Egyptians who had to invent many innovations in the development of furniture ensembles: chairs, armchairs, benches, stools, tables, beds, chests and chests - it was their invention. It should be noted that ordinary people stored food, clothes and other utensils mainly in baskets, caskets and clay vessels. We slept on mats, wicker mats, spread right on the floor. They sat, depending on their well-being, on bundles of reed, straw or on simple stools.

2.1. Furniture and its Features

Furniture, objects that decorate living quarters and equip them for various purposes. When it comes to furniture, the first thing that comes to mind is wooden furniture. In particular, wood materials are used in housing equipment such as desks, chairs, armchairs, wardrobes, bed frames, dressers, bookshelves, various office equipment, school desks and desks. Although other materials such as steel, aluminum, glass and plastic have begun to be used in furniture today, wood-based materials are still excellent in this regard.

The furniture comes from the Latin word “mobilius” and is called “mobilia” in Italian, “mobilier” and “meuble” in French, “möble” in German and “möbler” in Swedish. It is claimed to translate to Turkish from Italian (www.tdk.gov.tr).

2.2. History of Furniture

2.2.1. Antique Age

Many contemporaries believe that furniture, and any, whether it be wardrobes, chairs or upholstered furniture, has the property to tell people about the time or era when it was created. So, for example, many representatives of upholstered furniture, standing at our house or in a museum, can tell not only about the achievements of furniture production, but also about the lifestyle of people living in those distant times. For example, today many models of sofas and armchairs are equipped with plump cute pillows, and in ancient Egypt, women ate and slept on soft bedding, and instead of pillows they laid a wooden stand under their heads. Thanks to such a stand, the beautiful Egyptians retained magnificent hairstyles (Chen, Jiang, 2006).

It is unlikely that we will ever know the key to the mystery of the appearance of furniture - it probably appeared at the moment when the woman began to take care of creating coziness and comfort in her home, forcing her husband, who returned from a tiring hunt, to make primitive, but much needed furniture. Archaeologists still suggest that furniture, as an independent and necessary piece of furniture, appeared precisely in Ancient Egypt. This is evidenced by the fragments of ancient furniture masterpieces found during excavations. They are made of black Ethiopian wood, ivory, reed, papyrus, skin and tendons of animals.

2.2.1.1. Egyptian.

The furniture of Ancient Egypt is much better documented than the furniture of other ancient civilizations, and it was clearly treated with great attention in those days. Excavations in Mesopotamia and elsewhere showed the presence of furnishings of Egyptian origin, that is, the Egyptian furniture was exported or its samples were received as a gift by foreign nobles.

The religious system of the ancient Egyptians included a complex set of beliefs related to the afterlife. It was believed that one of the components of the immortal soul, “Ka,” was a double of the physical body; at the time of death, she was released, but was able in some cases to return to a dead body. To continue its existence, this part of the soul demanded “maintaining conditions”, which is why the burial chambers of the representatives of the Egyptian nobility were filled not only with food, but also with ceremonial and home furniture, which was the highest achievement of Egyptian artisans. Wooden structures did not always withstand a long stay underground, however, fragments of gold plating and ivory plates found in the tombs, used to inlay furniture, allowed Egyptologists to recreate the appearance of ancient furniture.

Reconstruction of objects found in the tomb of Queen Hetepheres gave an idea of a carefully executed canopy bed, portable chair and other samples, including numerous boxes. The tomb of Tutankhamun, born about 1340 BC, a thousand years after Hetepheres, contained objects made specifically for the funeral rite; the funerary bed, for example, is carved in the shape of Ammit, who was considered a devourer of the dead, a god with the head of a crocodile, the body of a leopard and the back quarter of a hippo. Tutankhamun ruled less than ten years, and many speculations appear around the fact of his death (Андреева, 2007).

When Howard Carter discovered the tomb of Tutankhamun in 1922, his discovery received an immediate response in the field of decorative art. In particular, the art deco furniture has undergone significant influence from the ancient Egyptian forms and decorative motifs, just like the furniture of the French Empire imprinted Napoleon's triumphal Egyptian campaign of 1798 (Архе, 2007).

The image of everyday objects of the most influential members of society is preserved in the samples of painting and carving. The most frequent documentary evidence of everyday life of that time is a chair: about three and four legs, with varying degrees of decor.

A folding stool, constructed from a pair of wooden frames and a hanging leather seat, appeared in the Middle Kingdom and became the basis for the decoration of the antique interior from Aqua Sulis to Constantinople. Tables low on straight legs were used to place vessels with water or earthenware vases, very much appreciated by the Egyptians. Stands designed specifically for vases were made of wooden poles ending in a cuff for holding the vessel.

The beds were usually made of wood, although metal and ivory were also used. A braided rope was held between the two sides of the frame, supporting the mattress. There was no single height: many beds were high, while some barely rose above the floor, looking like a low step.

The wood available to the ancient Egyptians included local species: ancient sycamore, acacia and pollock, solid wood, known as the "crown of thorns of Christ". Wood was also imported from areas of the Middle East through trade routes: it was a breed of cypress and Lebanese cedar, which went to the construction of ships.

An important component was surface decor, the most sophisticated furniture was covered with silver or gold foil. Ornaments, carved and overhead could be executed extremely skillfully. The legs of a folding stool often had completion in the form of duck heads or lion paws. Upholstery was usually limited to pieces of flax or other fabrics folded in several layers. Furniture, as a rule, was painted. The "frontal" image method, when the torsos of the figures are deployed frontally, and the heads are given in profile, was a defining feature of ancient Egyptian culture.

The Egyptians were also the first to introduce the form of a bed raised from the floor - the prototypes of all subsequent sofas and beds. Slaves and free artisans, later furniture masters, were engaged in the carpentry. They made various types of furniture: chests, chests, cabinets, beds, stools, chairs, chairs, tables, headrests instead of pillows. The furniture of the palaces differed from the furniture of the dwelling of the common people

not so much in construction as in the value of materials, the richness and sophistication of the decorations. In furniture decoration, the Egyptians liked to use bright, clean paints - red, yellow, sulfur, blue, green and white.

The ornament that decorated the furniture consisted of elements (sun disk, scarab, snake, kite, lotus, palm, papyrus), which had symbolic meaning. For example, the throne of Tutankhamun - a wooden armchair - is trimmed with gold leaf, against which inlaid sparkling from earthenware, stained glass and stones sparkle. The armrests are openwork and made in the form of winged snakes supporting the emblem of the pharaoh. The front legs end with lion heads in hammered gold.

In the manufacture of furniture, the Egyptians widely used wood (cedar, sycamore, yew, olive, ebony), importing it from neighboring countries - Lebanon, Phoenicia and Nubia. They owned a large set of tools - axes, saws, adzes, drills, but they were not familiar with a planer, so the surface was leveled with a knife and pumice stone (Барт, 2008).

The ancient custom of sitting on the ground was also common in Egypt (sculptures depicting people in this position are known). And all the same, it can be argued that real furniture for seating first appeared in Egypt. Initially, the Egyptians only had low benches and chairs indicating that the Egyptians, like the Eastern peoples, loved to squat. On the wall murals you can also see images of people working squatting. The privileges of the wealthy Egyptians were ceremonial chairs. For the first time in Egypt, a chair with a back appears, here its form receives a logical justification, it acquires a constructive form, which has become the basis for all subsequent forms of chairs.

Egyptian furniture art attests to healthy vibrant realism. The design of the furniture is logical and understandable, tectonic forms take into account the natural properties of wood. The instinctive inventiveness of the Egyptian masters, with whom they many thousands of years ago, having no predecessors, used the laws of developed tectonic design, causes boundless surprise and deep recognition. Europe owes Egypt the creation of basic forms of furniture, tools and wood processing technology. However, Egyptian furniture has a certain uniformity. A limited number of types, forms that have not changed over centuries, and a lack of desire for new solutions indicate that the Egyptians did not yet have a need to diversify forms. Another disadvantage is that the symbolic and nature-borrowed forms

were not tectonically arranged. Forms borrowed from nature (for example, legs in the shape of animal legs) did not always undergo conscious stylization, did not always turn into expressive elements of furniture. Often there was a lack of balance of proportions and an organic connection between structural and decorative elements.

2.2.1.2. Greek

A further stage in the development of furniture was the stage of development of the great Ancient Greece. Modern Western civilization is still undoubtedly influenced by the culture of Hellas. Architecture, drama and literature, mythology and the Olympic Games are all facts of modern life that are familiar to us, which have their roots in a small European country. Also, few people pay attention to the fact that furniture in its modern style, which is close to us, also originated in Greece.

Furniture, of the archaic period of Ancient Greece, could not survive to this day, for the simple reason - almost all items of ancient Greek furniture were mainly made of wood. It is known today mainly in sculpture and in images on murals, vases and murals (Бобыкин, 1988).

Ancient Greek furniture was not very different in its design from the Egyptian-style furniture, but it was characterized by the appearance of new items - chairs with bent legs and chairs for ceremonies, a bed with a curved wall at the head, low tables. Traditionally, materials for the manufacture of furniture in Greece were wood and bronze. In the archaic period, when decorating furniture, one feels closeness to Egyptian motifs, with characteristic animal motifs and features of excessive decorative sophistication (Kirby, David, 2006). However, already in the later "classical" period, Greek furniture is notable for its simple decor. Ornamental motifs, characterized by nobility and restraint, predominate. It was the furniture of the classical period of Greece that served as a good example for the development and formation of Roman furniture of the period of the republic.

According to most studies, in the period from VII to IV century BC. e. there were five main types of furniture present in everyday life - stools, tables and couches, chests and armchairs. I repeat - it is believed that all this furniture bore the imprint of an even earlier, ancient Egyptian culture. Egyptian furniture was rude in execution and inconvenience - the

ancient Egyptians did not pursue comfort (Charmaz, Kathy, 2009). However, the Greeks, perceiving the past, already in the IV-V century BC. e. form their own style, the influence of which is clearly felt, and to this day. Furniture takes on new characteristics and becomes smoother, more comfortable and more beautiful. So, it will analyzed all five types of Greek furniture in order.

There are two main directions in the manufacture of stools. The first type - almost completely coincides with the stool on which we are still sitting. He easily moved from place to place, he was not assigned a certain place in the house, and he also weighed a little. Over time, the legs of such a stool began to grind in the form of "lion paws" - this trend is also alive today. For the greatest comfort, it was customary to lay pillows on such stools. The second type of stool is most suitable for the definition of today's small table. It was used for the same purposes as the first type, but it was less mobile, usually stood in one place and used not only as a seat, but also as a table. Gradually, over time, on such stools, little tables, various ornaments and scenes from the life of the ancient Greeks began to be cut out. In special cases, such stools were also made of stone, and as a result of which they have survived to the present day. There was also a third type, although it is hardly possible to completely attribute it to stools. It also survived to our time, by the way, under its ancient name - the throne. The throne was intended exclusively for a person vested with power. He was always very richly decorated, not only with carvings, but also with precious stones.

Unlike us modern people, the ancient Greeks used tables only for eating. It was not customary for them to work, to put books, valuable objects or trinkets on them, as we do now. Tables, therefore, the Greeks most often were light, and easily moved from place to place, and they were significantly lower than the average table today. Wealthy sections of the population had separate tables for taking food and drinks, the latter were often higher and had three legs - almost like in modern cafes. The ancient Greeks clearly preferred 3 legs to 4 legs, this can be seen along the entire path of development of their civilization. Tables were made, most often of wood, but also of bronze and marble.

Ancient Greek beds in the modern world would be called a free combination of the actual bed and sofa. The couches were intended not only for sleeping, but also for eating. The

thing is that the Greeks preferred to dine, not sitting at the table, but reclining on the bed. Presumably, such "Oblomovism" originated in the V century, when Greek civilization was at the peak of its highest prosperity (Chen, Baoliang, 2004). Greek beds - couches were significantly different from Egyptian ones. First of all, they significantly rose above the ground, and secondly, they were present, something like a pillow. So our tradition of sleeping on a pillow also comes from the ancient Greeks, who liked it more and it was more convenient to absorb their dishes.

Initially, as well as other items of Greek furniture, initially the chests were copied from Egyptian designs. And only much later, over time, they have their own style. The chest was used to store clothes and fruits, mainly quinces. The dishes were mainly stored on shelves. Sometimes jewelry also fell into the chest - to be safe from robbers. The chest was considered one of the most valuable furniture, in the Hellenistic period, it could well be part of the dowry of the bride.

The tradition of creating chairs in Greece came not from Egypt, but from Ancient Persia. By the 6th century, Greece was dominated by the shape of armchairs with armrests and a hard back. On the found, preserved frescoes, according to the pained expression of the people sitting on them, it can be seen and it can be concluded that these chairs were extremely uncomfortable. Until the V century, it simply did not occur to anyone that a chair can and should be comfortable. It was at this time that a completely new period began in the development of Greek culture, and the invention of pillows dates back to this period. The chair becomes luxurious and so comfortable that practically without transformations exist until the Middle Ages. Such a model survives until the beginning of the 19th century, when technological progress and industrial development made possible further advancement in the field of comfort. The soft back and armrests, invented precisely in Greece, are in use to this day, and they are unlikely to go out of style. These parts of the chairs were made of fabric and leather. As it develops, the chair becomes heavier, and it was no longer supposed to be carried from place to place. If we imagine that we will move the ancient Greek armchair made 2500 years ago to today, then it will not look too strange for us (Goldhagen, Sarah Williams, 2007).

It would be wrong to say that the five main types of ancient Greek furniture were completely unknown to other peoples of the past. But it was the Greeks who made them the way we know them. And this is one of the phenomena of Greek civilization.

2.2.1.3. Roman

Let's go further in history. So, the era of Roman civilization has come: "Life is good if you live slowly!" - the ancients knew how to live beautifully (Chen, Jiang, 2006). For example, the ancient Romans. Among all the other know-how borrowed from the conquered Greeks - gods and philosophy, music and theater, architecture, finally, there was also a sweet habit to their heart - to eat food while lying down. The Romans didn't add much to the design of the beds. The turned and openwork legs of the Roman bed, like the legs of the Greek one, often had the form of animal paws. The semicircular headboards were crowned with bronze heads of horses and lions. Transferred to Roman soil, Greek wooden beds (with one headboard at the head) were complemented by a longitudinal headboard, similar to a modern sofa. The Romans pulled a leather belt binding onto the bed frame, then put a mattress stuffed with wool, and then put a mattress with a goose feather or down. They perhaps began to decorate their home richer, including sleeping places.

During the Roman Empire, for decoration of furniture, sculptural decor with floral and animal ornaments, an application of precious metals and stones, bronze is abundantly used.

In the era of the Roman Empire, there is a characteristic, only Ancient Rome, special, so-called "honorary" furniture of various types - "curl chair" (from the Latin. "Curulis" - "honorary, privileged") with crossed legs in the form of horns - a chair for consuls and praetors in public places, the "solium" is a throne-shaped seat for relaxing honorable citizens in temples and bathhouses (Chen, Wangheng, 2007). For the ancient Romans, as well as for the Egyptians, a chair (chair) was an indicator of a person's success, an assessment of how close a person is to power and wealth. Therefore, it was customary to carry your own chair. The officials had folding chairs decorated with ivory carvings, which their slaves carried behind them. On a richly decorated seat was allowed to sit only the most respected citizens of society. And the head of a wealthy family was seated on a home throne, arranged according to the imperial type, and made of marble.

If in Ancient Egypt, the favorite plot for reliefs and murals was swimming on the Nile, then in Ancient Greece the theme of plants and animals was cultivated. The Romans, adopting traditional Greek motifs (palmettes, meanders, acanthus leaves), supplemented them with specific laurel wreaths; in architectural and decorative details, lotus leaves were especially popular. Often depicted playing cupids and psyche. Furniture was made from different types of wood. The headboards (beds) were richly decorated with patterned lining of silver and ivory, bronze. In addition to the bed in the bedrooms, there were also small bronze or wooden tables, on three relief supports, for installing lamps. Dining tables were made of marble, they were low, usually quadrangular. On three sides they were surrounded by benches made of chiseled wood, decorated with gold or silver, ivory. On benches usually lay a variety of soft skins and pillows. Usually from the benches we watched concerts of ancient Roman involuntary activities. A very popular item in the Roman house was an elegant little table made of lemon wood and standing on one leg, made of ivory - something like a modern coffee table (Carlson, Allen, 2000).

Ancient Roman civilization left its bright mark in the history of the development of world culture, including the history of furniture design progress.

2.2.2. Medieval Age

The furniture art of medieval Europe in the early period was extremely simple. Chests and stools were stumps of tree trunks, and the tables were made in the form of boards resting on a gantry, but were quite high off the floor, which gave rise to the custom of sitting on a stool during a meal or writing.

2.2.2.1 Byzantine

After the division of the Roman Empire (395) in its eastern part (Balkans, Western Asia, Syria and Egypt), the Byzantine Empire (Byzantium) was formed with the capital Constantinople.

Byzantine art, which developed over a millennium (from the 4th to the 15th centuries), left numerous architectural monuments, works of applied art (fabrics, enamels, miniatures), but genuine Byzantine furniture did not essentially survive. Byzantine furniture can be judged by its images on ivory and in church books and chronicles decorated with miniatures (Cai, Yi'an, 2001).

Some Byzantine furniture is preserved. in Italy in the ancient churches of Teramo, Bari Monte Sant'Angelo and Canossa in the form of pulpits and thrones for the highest ranks of the clergy. They are massive marble chairs with inlaid gold and colored stones. The side parts of the chairs are decorated with images of fantastic animals and birds.

About what Byzantine furniture looked like, we can mainly judge by illustrations to books, by miniatures. One such example is the so-called st. Petra (Fig. 2.1). It is dominated by the architectural interpretation of forms. For example, the back is solved as the facade of the building: it is completed with a pediment, includes an arcade. Typical of Byzantine thrones and chairs is a deaf chest-shaped bottom.

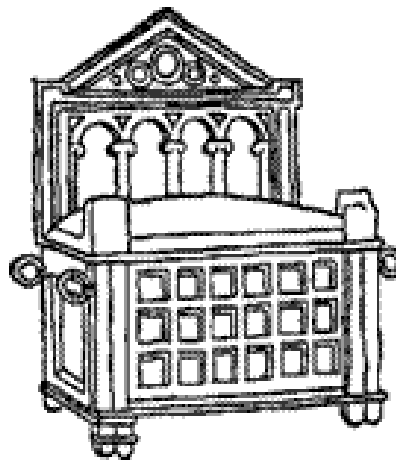


Figure 2.1: The chair of St. Peter, VI century (olymp.in)

The furniture was made of wood. Turned supports and backs were common. The forms of Byzantine furniture compared to Greco-Roman are greatly simplified. The artistic effect was achieved by abundant decoration of products with colored painting, gilding, carving, ivory inserts, inlaid from smalt, precious metals and stones.

In solving the interior and furnishing of palaces and dwellings, the Byzantines maintained and continued Roman traditions, but the influence of oriental luxury increased: they used magnificent silk fabrics with a rich pattern, from which they made curtains, tablecloths, bedspreads and soft pillows for sitting on chairs, armchairs and benches; low and soft ottomans and sofas.

Christian motifs were widely used in the ornament: the monogram of Christ, the image of a dove, fish, lamb, peacock, grape brush, ears of wheat, a laurel wreath, olive branch and palm leaf. Acanthus leaf and palmette were borrowed from Greek art.

Despite the fact that the Byzantine style did not introduce anything fundamentally new in the development of the art of furniture, it had a strong influence on the styles of the Middle Ages, especially on the Romanesque style due to its ornamentation and form stability.

In modern historical science, the Middle Ages call the era of feudalism, which replaced the slave system. In Europe, it lasted several centuries - from the fall of the Roman Empire (end of the 5th century) to the bourgeois revolutions of the 17th and 18th centuries. In the history of art, the period of the Middle Ages is considered completed on the verge of the XIV-XV centuries, when the Renaissance culture arose. On the one hand, the church influenced medieval art, and on the other hand, folk art (Chen, Baoliang, 2004).

2.2.2.2. Romanesque

Early Roman period. This is the name of the period of formation of the feudal system. It is rather difficult to establish specific features of its development, since during the fierce wars characteristic of this period, many documents were destroyed. Materials preserved mainly in temples and cemeteries allow us to establish the enormous influence of ancient art on the architecture of this period. The art of the Iberian (Iberian) peninsula in these times was greatly influenced by the culture of the Arabs, which was manifested by the penetration of geometric and linear details into the architecture, which later played a large role in the decoration of the premises (Anttonen, Pertti, 2005). Along with the well-known items of upholstered furniture in this period appeared armchairs with steps and stove benches. This furniture was gently laid and upholstered with furs or carpets. However, only wealthy people could use it, the poor were content with rigid lodges and trestle beds covered with straw.

Furniture of this period reflects the features of society. She was strong, but very heavy and outwardly little effective. Ease of use played a secondary role here.

This furniture was made using carpentry, which certainly affected its appearance. During this period, beds appeared, covered with pillows and furs, hanged with canopies and drapes (Fig. 2.2).



Figure 2.2: Romanesque furniture (works.doklad.ru)

Furniture designed for seating - benches, chairs, and stools - has lost its ease and convenience compared to Roman; it was heavy and uncomfortable with rude elements. The upholstery was almost completely abandoned.

2.2.2.3. Gothic

The art and architecture of this period are exclusively churchly.

During the Gothic period there was a rapid development of technology. This, apparently, had a great influence on the direction of development of internal architecture. Architecture during this period in different countries was different.

Furniture produced during the Gothic period was heavy and uncomfortable. However, it differs from Romanesque furniture in more skillful manufacture, decoration and rich carvings. This was a consequence of the fact that an independent workshop of joiners stood out from the workshop of artisans involved in wood processing, among which there were many artists.

The high craftsmanship of the carpentry was also the result of the fact that the artisans of this period had a large variety of tools. Particularly noticeable progress in this area has taken place with regard to carving tools, many of which were not previously known.

Furniture was made from solid wood (coniferous and deciduous) and sometimes from stone. Most often made benches, sofas, chests of drawers, beds, tables, chairs and armchairs. The backs of chairs and armchairs were made very high and straight. The chairs had deaf armrests and were equipped with steps. Already at this time appeared folding chairs and armchairs. Most of the furniture was attached to the floor or to the walls. The beds had canopies, as well as side and front drawers, which served as steps, the front drawer was used for seating. During this period there were still a few luxurious upholstered furniture - armchairs, beds (Pic. 2.3:) and chairs; it was only with rich people. Ordinary people were satisfied with primitive tables, benches, stools and trestle beds (Dietsch, Deborah, 2005).

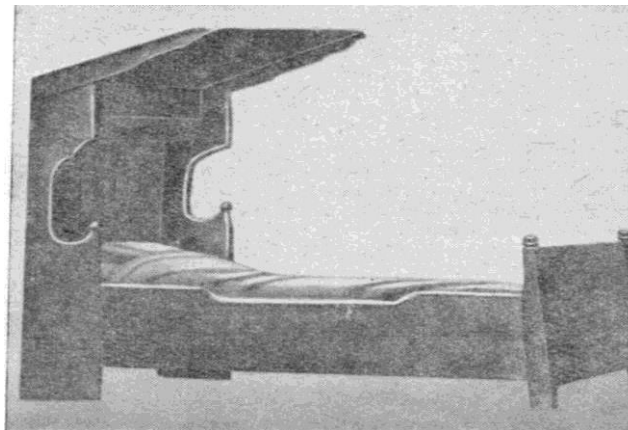


Figure 2.3: Gothic bed (works.doklad.ru)

Gothic style - the dominant aesthetics of the Middle Ages - was understood as the antithesis of the civilized classical world. It was a Norman innovation in which Carolingian and Burgundian artistic traditions fused with the Islamic elements of Saracenic Sicily (CSIL, 2008). The greatest achievement of Gothic art was the cathedrals of Trans-Alpine Europe, and elements of this church architecture formed the basis for the design of Gothic furniture.

The main element of the Gothic style was the lancet arch, replacing the semicircular Roman arch. This innovation was of an engineering property: churches could now be wider, since the weight of the floors can be distributed over a number of free-standing pillars and connecting their ribs, instead of making massive, thick walls. This architectural structure was also reflected in the openwork masonry of large window openings of cathedrals and churches, and its typical motifs of trifolium and quadrifolium were also well suited to decorating benches and tables. To store priestly robes, an upright cabinet was increasingly used.

Another innovation of the Gothic period was the buffet, the name of which (cupboard) comes from its original function: in rich houses, it was intended to show valuable silver dishes (cups). For English and Flemish masters, regional style options included a preference for paneled finishes.

2.3. Muslim Furniture

Muslim homes contained very little furniture, since it was almost never used. Arabs sat on carpets and pillows, they also did not have wooden beds, because they preferred to sleep on the Ottomans, which were covered with carpets and silk fabrics. There were no Muslims and cupboards. They were replaced by wall niches with doors. The doors were made in the traditional Arabic style and consisted of a set of grilles with typical wooden shelves.

In the Arab homes, one could find low and small tables. As correctly, they were made in the form of a circle or a regular polygon and were decorated with various carvings. As a tabletop, chased copper or intarsia wood was usually used. Of the furniture in the Arab homes, one could still find whatnots, chests, screens.

The influence of architecture was noticeable in the manufacture of furniture. As a decorative decoration, some elements of buildings and structures are quite often found, such as arcades from horseshoe-shaped arches, columns, stalactite arches. During intarsia, mother of pearl was used as a material. In the future, this technique became widespread in Spain and Italy. Furniture decorated with inlay began to be very popular.

Cordoban leather with embossed and gilded, which was previously used only for book bindings, has often been used for upholstery of furniture, mainly chests and chairs. Leather upholstery was additionally decorated with openwork metal lining (Dietsch, Deborah, 2005).

But the biggest factor that influenced all European art is the unique Arabic ornament. It combines elements such as mathematical thinking and the indefatigable flight of fantasy, it coexists with strength, courage and grace.

On the whole, the Arab-Moorish style brought new elements to European culture. European medieval art received a new and unfamiliar world of forms, which not only influenced its further development, but also enriched it with previously unknown delightful decorative elements.

2.4. New Age

In the 19th century, great economic and political changes took place in Europe, which were based on the industrial revolution. A large number of inventions made during this period were the direct reason for the rapid development of large enterprises.

Serious changes have occurred in the furniture industry. The most important of them are the creation of many machines known today for the mechanical processing of wood, the invention in 1825 of springs for upholstered furniture, Michel Tonet's use of steel forms and strips for bending wood, the use of glued plywood, screws and screws for joining furniture parts and etc. For furniture stuffing along with springs, herbs were used, the output of various wallpaper materials was increased (Chen, Jiang, 2006).

This all caused great changes in furniture production, especially in the second half of the 19th century, and had a decisive influence on the direction and development of its designs. At the same time, this contributed to the emergence of numerous furniture factories, which primarily include the Tonetovsky bent furniture factories, Wiener Werkstätt, Deutsche Werkstätt in Hallerau and others.

The development of industrial mass production caused the impoverishment of forms and a decrease in the quality of furniture produced. This phenomenon was especially pronounced

in the second half of the 19th century after periods of classical and Empire (Chen, Baoliang, 2004).

2.4.1. Renaissance

A characteristic feature of Renaissance art is the imitation of ancient culture, expressed in national form.

The early, middle and late renaissance are distinguished. In different countries, the signs of the Renaissance vary greatly. The most typical are: the Italian Renaissance - the earliest, then French, German, English and Dutch.

Furniture produced during the Renaissance, was no longer attached to the floor or walls, and this was a characteristic feature that distinguishes it from Gothic furniture. Another feature is the symmetry of the jewelry. The furniture was richly decorated with carvings. Furniture designs were based on old models: legs, for example, had the shape of columns forming an arch, etc. Mythological and allegorical motifs typical of the ancient period were used in carvings (Fang, Hai & Jing, Nan, 2012).

In the Renaissance, the technique of processing and finishing wood was further improved. The luster of the furniture surface was given not only by coloring, but also by waxing.

For the manufacture of furniture, exclusively deciduous trees were used: poplar, chestnut, elm, and during the full renaissance, light walnut. The range of furniture produced was very wide. Of the upholstered furniture, to which full citizenship rights have been returned, chairs, chairs and beds deserve special attention.

Silk fabrics, often woven with gold threads, as well as ordinary and embossed leathers, were used as materials for upholstering furniture and mattresses. The seats were often braided with reeds and leather straps; the upholstery was decorated with tassels, cords and straps.

The shapes of chairs, tables and armchairs were varied. Foldable furniture appeared. In Germany, soft chairs began to be made, called “Lutra” chairs.

In the initial period of the Renaissance, in many countries, especially in France, forms of various styles were combined: for example, the Gothic frame was decorated with renaissance-style ornaments. In a later period, the furniture frames were adapted to the ornament, while the craftsmen combined convenience with the beauty of the form. During the late Renaissance, the form takes precedence over convenience and then the furniture is overloaded with carvings and drawings.

Only German furniture, and partly Dutch, was still designed in terms of its usefulness, aesthetic value faded into the background.

In France, as well as in Germany and Holland, one can notice a significant difference between the development of the renaissance in the south and north of the country. In the northern regions, the forms of furniture were mostly straight, and it was durable and massive. In Holland, in addition, a desire appeared to show the material itself, the art of selecting wood and using intarsia began to develop, while carving was avoided here.

In France, especially under King Louis XIII, MeOel still wore renaissance features, but it already had Baroque decorative details (Fang, Hai, 2003).

The legs of the chairs and armchairs were chiseled, the backs and seats were wicker. Cartouches were used to decorate furniture, on which inscriptions and emblems were placed.

During the Renaissance, creativity ceased to be anonymous. Craftsmen stood out - artists and architects who worked exclusively as designers. Jean Gugeon (1520-1563), a carver, creator of Renaissance motifs, came to the fore among talented joiners-artists and architects. Hugo Samben - an outstanding representative of the French carpentry of the XVI century; Hans Vredeman de Vries - Dutch painter-architect; Ingo Jones is an outstanding English architect and many others.

2.4.2. Baroque

The Renaissance in the field of art was replaced by the Baroque period, which became widespread throughout the world. In Europe, it lasted from the end of the XVI century until the middle of the 18th century In the early Baroque period, as well as during the

Renaissance, ancient forms were used, often spectacularly reinforced and overloaded. Instead of peace, movement became the essence of the composition, contrast replaced the monotony.

The early Baroque period coincides with the beginning of the formation of a new socio-economic formation - capitalism (Edensor, Tim, 2002).

In Italy, England, and the Netherlands at this time, manufactories developed as the initial forms of capitalist industry. Manufactories also covered furniture production. Their appearance made production more massive, led to a simplification of forms and well-known standardization, but did not yet cause the liquidation of the craft. It was at this time in France that the ebenist joiners stood out from the joiner's workshop - artists of their craft, whose furniture was the best expression of the Baroque character (<http://www.legprom.ru/articles.php?read=21>).

During the late Renaissance in Italy, France and Germany, art acquired a manner and its forms were ossified. Baroque, in contrast, at first differed in simple forms and ornaments, but soon this simplicity gave way to fantastic forms of furniture, its ornament and carving.

During the early Baroque period, Italy was the most advanced country in the field of architecture. However, France soon took its place and remained a major center of art for quite some time. French furniture since Louis XIV was remarkable for its monumentality and impressiveness. She was richly decorated and decorated (Geng, Xiaojie, 2009). Over time, under the influence of the Netherlands, the texture and color of wood began to be appreciated. Widely used black (ebony) wood or imitations under it. Other species of exotic trees are also very widespread. Ivory, silver, turtle, mother of pearl, tin, bronze and copper were used as jewelry, and amber was also used in Germany. Wooden furniture began to be trimmed with other materials, mainly metals.

The assortment of furniture during this period was replenished with a desk, sofa and chest of drawers. Furniture used for sitting and sleeping was usually upholstered. Initially, armchairs and chairs had high backs, and legs, like backs, were made straight. In a later period, direct elements were replaced by curved ones. This evolution has undergone a sofa, which when it appeared was a combination of two chairs.

The seats and backs of chairs, armchairs and sofas were upholstered. Along with upholstered furniture, pillows were made in the form of mattresses, which were lining for sitting on the floor. One of the main pieces of furniture at that time was a bed draped in a canopy, a curtain, and a richly embroidered headboard.

Upholstered furniture was upholstered in brocade, specially woven and decorated with rich hand embroidery, fabric and embossed leather. In addition, she was decorated with a braid, tassels, braid, cord and various kinds of decorative nails.

During the reign of Louis XIV, artisans stood out making chairs.

The leading ebonist of this period was Andre Charles Bull (1642-1732), he used carvings, carved gilt bronze, knew how to finely furnish furniture.

2.4.3. Rococo

The name Rococo received the style of the regency and reign of Louis XV. The furniture of this period had forms reminiscent of baroque, but was much finer and more elegant. The jewelry used was often borrowed from oriental motifs, which was the result of close ties with the East.

During the regency, that is, between the death of Louis XIV and the coming to power of Louis XV, the direction dominated in architecture, which was the bridge between the Baroque and the light, distinguished by curved lines, Rococo.

The furniture of this period possessed some features of monumentality, was still quite heavy and rounded. However, the forms and some design features (for example, the absence of prodigies) make it already look like rococo. This furniture, unlike baroque furniture, had legs curved in the form of the Latin letter S, was more mobile and not related to the surrounding composition. Furniture, especially designed for seating, had various forms and corresponded to everyday life and clothes of that time (Charmaz, Kathy, 2009).

At this time, a new type of room came into fashion - a boudoir (room for a woman), which required special furniture.

Along with the listed features, the furniture of the Rococo period was also distinguished by other specific features. During this period, for example, veneered and lacquered furniture became very popular. Baroque-ebony tree is forgotten. Inlay is widely used. Furniture is decorated with bronze carvings. Motifs of jewelry: shells, acanthus leaves, flowers, grapes, as well as oriental peacocks, monkeys, flowers, palm trees. Often used accessories, mainly bronze in the form of handles, locks, pads, frames, rings.

For the manufacture of frame furniture used beech and walnut, and for veneered - rosewood, rosewood, tulip tree, thuja, pear, mahogany. Due to the great demand, the production of plywood began. This industry at that time reached a high level of development. The preparation of wood itself and its processing were carried out very carefully and diligently.

The furniture finishing technique, which at that time also reached a high level, required very careful preparation of the wood. Varnishing technology and varnish itself were transferred from China. Lacquered furniture had a golden, red or black background. On this background, various figures and ornaments were brought in for oriental motifs.

Upholstered furniture was produced everywhere. Most of it was intended for sitting - chairs, stools, sofas, and for lying - couches, armchairs with attachments, and also for sleep - beds and armchairs, sofas, couches adapted for this purpose. A novelty was the headset for the salon. It consisted of chairs, armchairs, a sofa and a table.

The upholstery technique at that time was high. Belts were used as a base for upholstery, and clean hair was taken for stuffing.

The weaving industry also achieved great perfection. Some of the materials created by prominent artists were genuine examples of art.

For furniture upholstery, brocade, velvet, plush silk, woolen, embossed and smooth, taffeta were used. They also used materials with embroidered or tapestry stitching. Fabrics abounded with drawings of flowers, birds, vases and drawings on oriental motifs. Beds were made in a large assortment.

Ebenists and architects Jean Francois Ebony (died in 1763), the royal ebenist Henri Risser (died in 1806), the famous ebenist Charles Cressan (died in 1763) - the carpenter and carver of the court of Philip of Orleans became widely known varnish brothers Marten and many others (Cai, Yi'an, 2001).

2.4.4. Neo Classicism

The return to classicism, on which the creations of art of this period were based, was influenced by intensive research and discoveries resulting from excavations that made it possible to better get acquainted with the achievements of ancient culture.

Initially, a new direction in art manifested itself in the form of the penetration of new, classic details into the Rococo style. However, soon the Rococo style with its characteristic round and soft lines was replaced by a neoclassical style with sharp corners and pleasant antique profiles (Dutton, Edward, 2009).

Despite the strict forms in appearance, the furniture of neoclassicism was light and sophisticated. She was straight, with chiseled legs and elaborate ornaments. The seats had a square, round, oval or trapezoidal shape. The backs were rounded, the legs became slightly bent over time and lost decoration.

Neoclassical furniture designs were completely different from those encountered before. Separate elements - legs, seats, backs - no longer merged among themselves organically, as before; they turned into independent, interconnected parts.

At the furniture for seating, the armrests were shifted to the backs, which was caused by the peculiarities of women's clothing of that time.

The beds were similar to modern ones, but with canopies; initially both backs were the same height, only later did one of them become taller. Mattresses were placed on the bed, and the backs were often upholstered with fabric.

Headsets consisting of chairs, armchairs, sofas, benches, couches and footboards were in fashion.

Furniture for sitting, lying and sleeping was mostly upholstered, sometimes braided with reed or straw. The seats and backs were upholstered, pads were placed on the armrests.

The springs were not yet known; belts and hair were used as spring means. For cladding, fabrics were used, most often silk, similar to fabrics of the Rococo era.

In the production of upholstered furniture, they began to use a stitch, but initially it did not play a big role.

For the manufacture of furniture used mahogany, rosewood, rosewood, ebony, beech, walnut and other exotic species of trees. Upholstered furniture frames were made mainly from walnut and beech. Along with wooden furniture, various, mainly small, pieces of bronze furniture (stools, etc.) were also produced according to Roman models.

During this period, in addition to the above-mentioned Eben and Risseur, the French carpenter artist Georges Jacob (died in 1914), the German carpenter painter David Roentgen and others create (Fang, Hai, 2003a).

2.5. Transformation to Modernism

Classicism is suitable for solid and conservative people. This style is characterized by elements of ancient architecture, solidity and even some heaviness. In a modern interior, the classic style can be combined with other styles, forming new wonderful options. Psychologists believe that such a style, as a rule, is preferred by people demanding of themselves and others. Such people are surely restrained, serious, slightly conservative, they love accuracy and order (and, most importantly, they not only love, but also observe it themselves!) (Hu, Jingchu, Fang, Hai & Peng, Liang, 2008). Distinctive features of this style are symmetry and accuracy, therefore, in a modern classic interior, for example, small engravings or paintings of the same size, symmetrically hung on the walls, will look good. The color scheme for such a home must be selected carefully, avoiding sharp, bold, flashy colors. Suitable are calm, neutral, but warm tones: all shades of brown, sand, olive. Wallpapers and carpets are preferred plain or with a discreet pattern, so as not to violate the integrity of the space. For a classic interior, choose elegant, simple furniture without frivolous curls. The main thing in the design of light is the classic form of the lamps. It is better to curtain the windows with curtains, since the blinds violate the style harmony of

the interior. A well-known way to drape a window will be good for everyone: light day curtains (tulle), and on top thick night curtains, for example, from velvet.

2.5.1 Empire

The style is the opposite of the classic. It will appeal to a person with an original taste and innovative thinking, who prefers freedom and independence in everything. The main role in the interior is played by color: you can mix, combine, combine any colors you want, the main thing is not to cross the line between catchiness, brightness and vulgarity. Wallpaper is rarely used. Arm yourself with brushes, paints and paint. For example, a black wall opposite a white one. Accordingly - a black armchair near a white wall and a lamp with a light shade against a black wall. Or all four walls of the room in different colors: yellow, orange, red and cherry. Remember: the avant-garde is created in contrasts (Rong, Shukun, 2010). Choose dark furniture against these bright walls, and you will enjoy the new look of your apartment. Furniture sets such as “sofa plus two armchairs” are hardly suitable for such a room. Every detail must be original. The vanguard is a bold experiment in which, despite the seemingly general chaos, everything is in place.

2.5.2. Biedermeier

The ideological prerequisites of this style lie in the unstable political situation in Germany and Austria of the time when the political reaction and the crisis of large art forms dominated. Anxiety and melancholy caused chamber, detached from the harsh reality of the mood. A typical way out of this state is immersion in the aesthetics of a closed world of family, the circle of relatives and friends, raising children, and searching for the subject of creativity in ordinary life's joys.

Biedermeier is an offshoot of romanticism that has replaced the empire, which is why it is sometimes called the “mixture of empire with romanticism”. In Biedermeier, the ideas of the burgher environment were reflected, the Empire style forms were transformed in the spirit of intimacy and homeliness (Kurtoğlu, A. 2006).

Biedermeier is characterized by a subtle, thorough image of the interior, nature and household details. The main feature of Biedermeier is idealism.

Gradually, the concept of "Biedermeier" spread to fashion in clothes, arts and crafts, graphics, interior decoration and furniture. By 1900, this word began to be used figuratively: in the meaning of "good old days." In 1927, in German literary criticism, this term was also applied to German literature of 1815-1840.

Biedermeier was the last original, original style of England, which logically flowed from the development of furniture art of the XIX century. Then begins the period of historicism and eclecticism, an unsystematic imitation of the traditions of previous styles. If you look carefully even at Empire and Biedermeier, they can also be attributed to eclecticism, since they reflected the features of artificially revived earlier styles. The rule of Biedermeier dates back to the middle of 1810 and continues right up to 1848. Biedermeier was a style that combined both modest earthliness and light sentimentality. This style got its name later. The poet Airdort mockingly called him "Biedermeier," which stands for "Merry Mr. Meyer," which symbolized philistinism. After the complete defeat of Napoleon in 1815, furniture makers revised traditions, focusing on the desire of the bourgeoisie to lead a measured, calm and orderly life. Biedermeier was concise and correctly built, it remains from the Empire (Андреева, 2007). But, unlike the latter, Biedermeier was an interior style, not architectural at all. Biedermeier answered all the demands of the bourgeois class. All Biedermeier furniture was practical.

The more durable, benign, comfortable the furniture was, the more useful it was considered. In the Biedermeier era, bourgeois traditions in furniture even penetrate the palaces of the rulers and the aristocracy. In the first third of the XIX century, the formation of the Biedermeier style was influenced not only by weakening classicism and strengthening English rationalism, but also by the romanticism that was emerging at that time. Experts see in Biedermeier distant features of the Empire, but the Biedermeier cannot be called a simple derivative of the Empire. There is an opinion that it was the democratic line of the Empire, which was not fully developed in it, that found its peak in Biedermeier. English furniture of that period was of high quality, practical and inexpensive. Gradually, it begins to penetrate France, where, along with empire traditions, the traditions of English furniture of the time of the Regency and the reign of George IV begin to be cultivated. In its essence, Biedermeier was the furniture style of the bourgeoisie, so the cold pathos and arrogant wealth did not resonate in it. He clearly indicates the needs for the culture of the

bourgeois class of the early 19th century (Архангельская, 1996). This is an instructive style. On his example, one can understand how in a certain era the problem of living space is qualitatively solved by relatively meager means, how the traditions of the old time are interpreted in accordance with the new tastes and needs of the population. Biedermeier furniture is already close to modern, devoid of unnecessary decor and architectural forms.

All the furniture of this era met its main criteria: the perfection of carpentry and the convenience of forms. The Biedermeier-style interiors look holistic. The walls of light and airy rooms are divided by articulated divisions into smooth and calm fields. Usually in one of the corners of the room in the niche is a neat white stove. Interior decoration is simplified. Romanticism makes the interior more intimate. The Biedermeier room is a peculiar example of a cozy, cheerful housing. The ceilings in the rooms are usually vaulted, the window openings are deep, and the walls are glued with snow-white or with a floral / striped pattern in bright colors, wallpaper.

The furniture was simple in form, but very upholstered, the interior was also complemented by bright curtains and small details of the interior. In the Biedermeier era, the concept of "clean room" arose, symbolizing the frugality of the representatives of the bourgeoisie. Such rooms were usually furnished with special care and were intended to receive guests; these were "demonstrative" interiors in their essence.

In terms of quality, practicality and convenience, Biedermeier furniture was hardly inferior to its predecessors. As expressive means, obelisk furnaces and lyre-shaped supports are still used. Countless sentimental and romantic souvenirs are stored in the living quarters. The appearance and decoration of the rooms breathed romance.

The coldness and grandeur of the classics is gradually replaced by naturalness. Biedermeier craftsmen, like their predecessors, found the construction of multifunctional furniture an exciting pastime. Many varieties of sliding tables, tables with folding, retractable countertops, chairs, transforming tables, which could easily turn into a ladder for the library, are being constructed. Secretaries and tables with many hidden drawers. Biedermeier furniture is a person's friend, not an item of interior decoration or luxury.

Masters of this era made extensive use of the veneering technique. The front surfaces of furniture, doors, platbands were covered on one side with thin (2-4mm) layers of plywood, hand-planed. It's hard to imagine such a work these days, as the furniture quickly begins to warp. Biedermeier masters used plywood of such high quality that even with unilateral veneering, objects retained their original appearance for many decades.

Biedermeier laid the foundation for the production of purely carpentry furniture, which used only the beauty of wood. Mostly light wood species are used: poplar, cherry, maple, pear, ash. It is the beauty of the forms, together with impeccable carpentry work, emphasized by the nobleness of the materials that creates the special Biedermeier charm.

Wardrobes and chests of drawers have the same popularity in the Biedermeier era as before. The forms of furniture are simple, the lines are smooth, the surfaces of objects are almost devoid of decor, the doors and side walls usually do not divide, sometimes a frame finish is used. But the framework in such cases was carried out very conditionally, the battens of the frames are not profiled, usually of the trapezoidal section. The architectural approach to decorating furniture survived, but not too fast, and the Biedermeier furniture still bore its imprint. Pilasters, columns, massive (albeit already not very) supports, schematically executed cornices still continue to be found in Biedermeier style furniture.

Furniture for seating in this era varies in its directions. Armchairs and chairs, made during the time of Biedermeier, were in some cases comfortable, light and elegant, and in others - reflecting the spirit of philistinism and its idea of comfort. The legs were slightly bent, as were the backs, wicker and mostly openwork. The seats were soft or wicker. Furniture for seating, like all other home furnishings, reflected the care of those who would use it.

The Biedermeier style has many admirers at present. Since items of this style were produced not so long ago, many of them came to us in good condition. Its occurrence was due to fatigue from gloss. And he firmly occupied his niche in the hearts of people.

2.5.3. Art Nouveau

Art Nouveau was born at the turn of the XIX-XX centuries, somewhere in the 80s, but its formation was cut short with the outbreak of World War I. In each of the European countries, this new style has its own characteristics and nuances, as well as its own names.

For example, in England and Russia the French name stuck - modernism, in France itself - art nouveau, which means (new art). Both terms came from France, which gives reason to believe that the trendsetter was on top this time too (Архангельская, 1996).

Art Nouveau (in the lane with the French - modern) was born in the fifth republic and from here began to march around the world. He came to Germany as a Jugendstil. In Switzerland, Art Nouveau received a rather curious name for the spruce style, possibly due to the abundance of spruce in this country. The new style embraced all spheres of spiritual life: literature, art, architecture, and, accordingly, design. It could not ignore the furniture.

This direction was characterized by natural, natural lines, rounded corners. The naturalness of the lines and their smooth transition make the furniture light and elegant. And the fashionable decoupage at that time with floral motifs, which decorated the furniture, colorized and enlivened the entire interior. For people living in that era, he really was a step forward from the era of historicism and eclecticism.

And although the style itself ended its era under the pressure of impending progress, its echoes have survived to our time. The Austrian Secessionstil left us bent Viennese chairs, which were produced back in the 70s of the last century; chiffoniers and cupboards made by Russia until the 60s and having smooth and rounded lines. Then, with the advent of chipboard and fully mechanized labor, all roundness will be aligned, and the furniture will be finally simplified.

Original Art Nouveau remained in the first half of the last century. And hardly anyone has preserved furniture that belonged to a modern style for that era. But modern designers and furniture manufacturers once again turned their eyes to the past in order to take the best from them and “fuse” it with the present of today. Therefore, today we can only talk about neo-modernism.

Modern furniture is divided into two areas: structural and decorative. And if in the second the French succeeded more, for centuries accumulating rich experience in creating the graceful, then the constructive direction still prevails in Russia, more than anywhere prone to simplicity and practicality.

2.5.4. Arts and Crafts

The furniture designed in the workshops of "Arts and Crafts" was notable for its rationality, laconic form, and simplicity of silhouettes, which brought it closer to samples of Georgian and "Old English" styles. The minimal decor was provided by structural elements: dowels, frames of panels. The set of furniture was reduced to the most necessary: a desk, built-in bed, chairs, stools, chest of drawers, wardrobe, round dining table, sometimes a dressing table with a mirror and a cupboard. Massive bookcases were replaced by lighter and more mobile bookshelves. Samples of furniture from William Morris workshops are exhibited in a special room that recreates the setting of the Iremel Art at the Victoria and Albert Museum in London.

The ideas of the Arts and Crafts Movement became widespread in America in the first quarter of the 20th century. For the first time, Americans learned about this trend at an exhibition in Boston in 1897; At the same time, the first societies of fans of the new direction were founded. The style of the Movement quickly became popular, first in large cities - New York, Chicago, Los Angeles, and then spread throughout the country (Аронов, 1989).

Gustav Stickley from Syracuse, New York was the first to combine the design of the Movement and the traditions of American strong oak furniture, creating a missionary style, so named because it was based on the furniture of California Christian missions.

Roycroft, New York, also produced missionary-style furniture. Products could be ordered by mail.

Another famous designer was Charles Limbert of Grand Rapids, Michigan. He was greatly influenced by Charles Rennie Mackintosh furniture and the Glasgow School. Limbert created chairs of geometric shapes, decorated with carved squares and hearts.

The most popular designer of the era was the architect Frankl Lloyd Wright. He developed building designs in which furniture was an integral part of the design; it was often built-in and was made of the same materials as the basic structure of the house.

On the West Coast, Green architects worked in a similar style, carrying out projects such as Gamble's house, for which they designed furniture, fabrics, and lighting.

These architects also loved oriental motifs, their designs fit well into the landscape, and the furniture was often decorated with vertical and horizontal details and geometric ornaments.

In their desire to make handmade furniture more affordable, American craftsmen faced the same problems as their British counterparts.

But unlike the British, the Americans were not opposed to technological advances, they used machine production to reduce the cost of furniture - and this is the main difference between the American style and English.

To create beautiful, simple and cheap furniture for the middle class, the master Gustav Stickley used steam or electric machines to produce blanks, which were then processed manually.

Frank Lloyd Wright also preferred more technological methods. In a 1901 speech in the Chicago society entitled "The Art of Machine Production", he particularly emphasized the benefits of using technology in the manufacture of cheap furniture (Антуганова, 2002).

2.6. Modern Tendencies

Trends in modern furniture design are the most daring and diverse, but the main direction is that the functional purpose of furniture is now viewed more voluminously than before. For example, the familiar form of an object can change and contain many functional tasks. So, the shape of the sofa can turn into a seemingly completely shapeless mass. However, a closer examination of the subject, we can make sure that all the forms of the sofa are already enclosed in the form: you can lie on it, and sit on it, and use it as a deck chair.

Furniture becomes more multifunctional and modular, for example, in one furniture item there can be an armchair, a table, and a place for storing papers.

Another interesting direction in modern furniture design is the tendency to the lack of furniture as such. For example, shelves for books can be woven into the very architecture

of the room, in the form of continuous continuous ribbons of acrylic stone, creating a play of lines and shadows on the walls (Goldhagen, Sarah Williams, 2007).

The trend of minimalism in furniture design remains popular, which reveals to the consumer the essence of the thing, without too much farce and decor. A table is just a table that embodies all the principles of a minimalist idea of beauty: not pretentiousness and a certain asceticism, proximity to nature, functionality, slight understatement, then Small, in which you can read the whole philosophy of the owner of space.

Forms of modern furniture can be both natural and technical, geometric directions. And the color scheme is not only a beautiful color combination, but also its own philosophy, sometimes subordinate, and sometimes completely independent of the piece of furniture. Each element of furniture design in one subject works not only on a common task, but also expresses its own philosophy.

Another important trend of modern furniture design is natural wood and stone, pleasant and rough to the touch textures, combined with glossy man-made surfaces of countertops and facades. The unity of Ecodesign, Loft and manufacturability, natural and man-made textures, as well as the ability to create "living", harmoniously combining several functions of space at once.

Today, designers look at furniture as a combination of several, sometimes even incompatible, seemingly, functions. For example, a kitchen set is no longer just a concentration of kitchen appliances and a working kitchen space, it is already a combination of functions of a kitchen, an office, and a library, and a kitchen set becomes almost an architectural object of a room around which the entire space of an apartment or room is organized.

In a modern living space, at times, everything is connected: the kitchen, the dining room, the workplace, and the living room. Now there are practically no boundaries between functional zones, they are separated only by light and the purpose itself. They are seamlessly woven into each other, creating a single stylistic living space. There are no boundaries - do what you want, and, most importantly, how you want!

CHAPTER 3

HISTORY AND DEVELOPMENT OF STRING ART

3.1. History and Development (Textiles, Embroidery)

What did such kind of creativity as string art begin with?

String Art firstly appeared in England. According to one version, it was invented by the famous mathematician Mary Everest Bull. She found an original way to demonstrate geometric shapes to her students. For classes, she used a small board with nailed nails, on

which various figures were modeled using a rope. This greatly facilitated the process of studying this complex science.

According to another version, this art arose among English weavers of the 17th century. They created delicate home decorations with the help of planks, threads and nails (Симакова, Уварова, 1995).

The beginnings of the teacher of geometry and algebra were continued by the American designer John Eichenger. He became interested in interesting techniques and began to create his original paintings. In his work, John turned to the oriental art of the mandala (a sacred symbolic and schematic representation of Buddhists), noting that the lines of threads stretched over nails can form symbolic patterns. The mandalas created by Eichenger since 1972 were distinguished by the elegance of the constructed schemes, unique optical illusions and strict geometric figures built according to mathematical principles.

In the art of string art, all create both simple and complex drawings. Overlaying threads in several layers, you can achieve the effect of volume, and by changing their number - play with the depth of the shadow. Contemporary art has three directions:

- weaving of abstract patterns and geometric shapes;
- creation of asymmetric images - portraits, landscapes, still lifes, inscriptions, drawings of animals and so on;
- volumetric drawing with a thread.

Compositions are created from plain or multi-colored threads. By combining several shades in one area, you can achieve a smooth transition effect. For beginners, it is better to choose simple patterns from threads of the same color.

This kind of hand-made art consists in drawing with threads - pulled by carnations on the board, the threads form a picture. "String" from English is translated as "string" or "rope", this unusual kind of needlework is also called "isothony": from "image" + "thread".

There is no consensus on how this art form appeared. According to one version, it was invented by English weavers in the 17th century. They created delicate home decorations with the help of planks, threads and nails (Бобыкин А., 1988).

The first person to write his name in the history of string art as a hand-made art was American John Eichenger, chief designer of Open Door Company (Los Gatos, California). Having examined the "pictorial" potential in the "geometric" technique, Einher began to create paintings on the boards with the help of threads and nails. In his work, the designer turned to the oriental art of the mandala (a sacred symbolic and schematic image of Buddhists), noting that the lines of threads stretched over nails can form similar patterns. The mandalas created by Eichenger since 1972 were distinguished by grace, unique optical illusions and compliance with the laws of mathematics - among other things, they were very beautiful. The designer appeared followers - in practice it turned out that in the technique of string art you can "draw" not only symmetrical, but generally any pictures (Архе, 2007).

In 1937, inspired by British artist Henry Moore, he began producing a collection of string sculptures based on mathematical models at the Museum of Science in London. He said: "It was not a scientific study of the models, but an opportunity to see the ropes like a bird and to see a shape that excited me." Artists Naum Gabo and Barbara Hepworth continued to explore the art of wire in mathematical sculpture, expanding the art form to new levels.

The first example of a custom string installation for a site was demonstrated in 1942 in New York by Marcel Duchamp. Inspired by mathematical surface models, Duchamp's structure used sixteen miles of lines to create works that transcended the boundaries of art. the basics of sim art we know today.

Another contribution to the beginning of the string art phenomenon was Paul de Casteljaou, a French mathematician and physicist working in Citroën. In 1959, the French inventor, mathematician, and engineer Pierre Bezier developed an algorithm to evaluate the calculations of curves that were adapted and popularized in the 1960s. Bézier used the formula to design the curves of the bodies of Renault cars, because the curve system allowed him to describe any type of secondary curve with only four points. These are the same mathematical bases used in string art (Архе, 2007).

When the Bézier curve was made public in 1962, it was primarily intended as a serious mathematical application to assist designers and engineers in construction. However, John Eichinger, an ingenious designer working for the Open Doors Company in Los Gatos, California, said that the art created by this calculation has a lot of potential for entertainment. As a child, Eichinger enjoyed drawing geometric figures and used these skills as a basis for creating intricate string mandalas. Using his knowledge of string art and the basics of the Beziér curve, he began to create string art sets that would be sold as teaching methods and hobby crafts.

Soon, string art was hung on the walls of houses around the world. From "Do-it-Yourself" hobby sets popularized by John Eichinger to miraculous art installations created by special string artists, the art form has made a name for itself on a global scale and has shown no signs of slowing down. Artist Fred Sandback produced the first string sculpture in 1967 and was considered a leader in his field. In the early 1970s, Japanese artist Kazuko Miyamoto began creating string-based devices that continued to influence string artists such as Ines Esnal and Thomas Saraceno (Архе, 2007).

As string art continues to evolve and evolve with each artist, it is fair to say that the possibilities of this art form are endless.

3.2. Scope of Application

String Art is used in many fields for various purposes, such as architecture, interior architecture, landscape, furniture, architectural accessories.

String Art is used if instead of holes in the cardboard, bumps at the edges of the cardboard are used to tension the threads.

Three-dimensional thread graphics, often also called String Art, are used in the design of restaurant, dance and concert halls or theater decorations (instead of carnations, hooks or designs are used, and instead of threads, wires, ropes, ribbons, strips of fabric are used).

3.2.1. In Architecture

In the 70–80 years XX century Kazuko Miyamoto picks up the story. She translates string art objects into installation forms, laying conceptual ideas in them. For Miyamoto,

sculpture combines with an architecture without a skeleton, which has both an airy and dense structure, which is characterized by strength and ephemerality, strength and vulnerability, rigidity and delicacy. The surrounding light and the soft shadows cast by him become part of the work. Japanese artist Chiharu Shiota continues the line of thread sculpture today. Her works go beyond the scope of a separate object, finally turning into an installation-meditation, being at the same time an example of process art (art of action) (Björklund, Susanna, 2007).

In the last few decades, string crafts and structures made using cables and cords have become very fashionable in both art and architecture. The admiration we have for such structures is easy to understand when we consider the hypnotic patterns they create while giving the illusion of lightness.

In architecture, we have examples of Santiago Calatrava's harp-like light bridges, consisting of several cables connected centrally across the back to support the structure.

His son, Gabriel Calatrava, was also inspired by the ropes for the montage for the 92Y Music Festival in New York - inspired by J.S. See Fugue Art, Secrets of Musical Instruments and Children's Game Cat's Cradle - created a structure with jumps and stretching strings.

At the Japanese Pavilion at the Venice Biennale of Art, blood-red lines were used to create Chiharu Shiota's "Key in the Hand" amazing structure.

The artist repeated this idea for the Gucci 4 Room art event, which is currently underway at the Gucci Ginza boutique in Tokyo. Shiota's "Gucci Herbarium Room" is actually a spider-like web that tightly ties the furniture and accessories scattered around this room.

To find the starting points for these experiments and devices, we may have to go back to the 1800s: between 1839 and 1853, the French mathematician Theodor Olivier, a student of the French mathematician Gaspard Monge (1746-1818), the inventor of descriptive geometry, taught and demonstrated this order three-dimensional string model (Chen, Baoliang, 2004).

Designed as teaching aids, models made of frames and portable components are especially useful for showing surface intersections. Based on these structures, Fabre de Lagrange developed another model in 1872 as a hyperboloid and asymptotic cone.

However, mathematics and art have a long history: mathematicians created them in the form of cosmic art as a result of their geometric research, and artists used them in their search for perfection.

Mathematical models inspired Man Ray, who visited the Henri Poincaré Institute in Paris in 1934 and took pictures from a collection of three-dimensional models. Naum Gabo was also directly inspired by the shapes and forms of models for some works of art. The discovery of mathematical models in Oxford led Barbara Hepworth to create sculptures using stones and ropes. In parallel with Hepworth's work, Henry Moore used plaster and rope to create beautiful shapes (Collins, Fontana. Barth, Fredrik, 2002).

Claiming to admire the models at the London Science Museum, the artist said: "One model had a square with 20 holes on each side ... The rings were wrapped around these holes and carried in the same number of circles. A plane passing through the middle between a square and a circle shows a shape that is half ... It wasn't a scientific study of the models, it was an opportunity to see and see the ropes like in a bird cage. Another form that excites me (https://www.irenebrination.com/irenebrination_notes_on_a/2016/10/stringssystem.html).

3.2.1.1 In Interior

Many artists have created various works of art with string art design. For those who work in the field of architecture, we can mention the names of Aili Schmeltz, Gabriel Dawe.

Aili Schmeltz is a Los Angeles-based artist who received her MFA from the University of Arizona, holds a BFA from the Kansas City Art Institute, and has exhibited internationally in cities such as Berlin, London, Zurich, New York, Los Angeles, and Chicago. Miami. Recent career highlights include the California Community Foundation Fellowship, a solo exhibition at the Museum of Contemporary Art in Tucson, Arizona, and the Pollock Krasner Foundation Grant. Among other awards in recent years The Creative Capacity fundgrant, The Durfee Foundation Grant and the Foundation for Contemporary Arts Grant place alyor.schmeltz, Bemis Center for Contemporary Arts, Sculpture Space, Babayan Culture House (Cappadocia, Turkey) and taktkunstprojektra (Berlin, Germany).

Let look at string art designs of Aili Schmeltz in architecture.



Figure 3.1: Aili Schmeltz design in architecture (ailischmeltz.com)

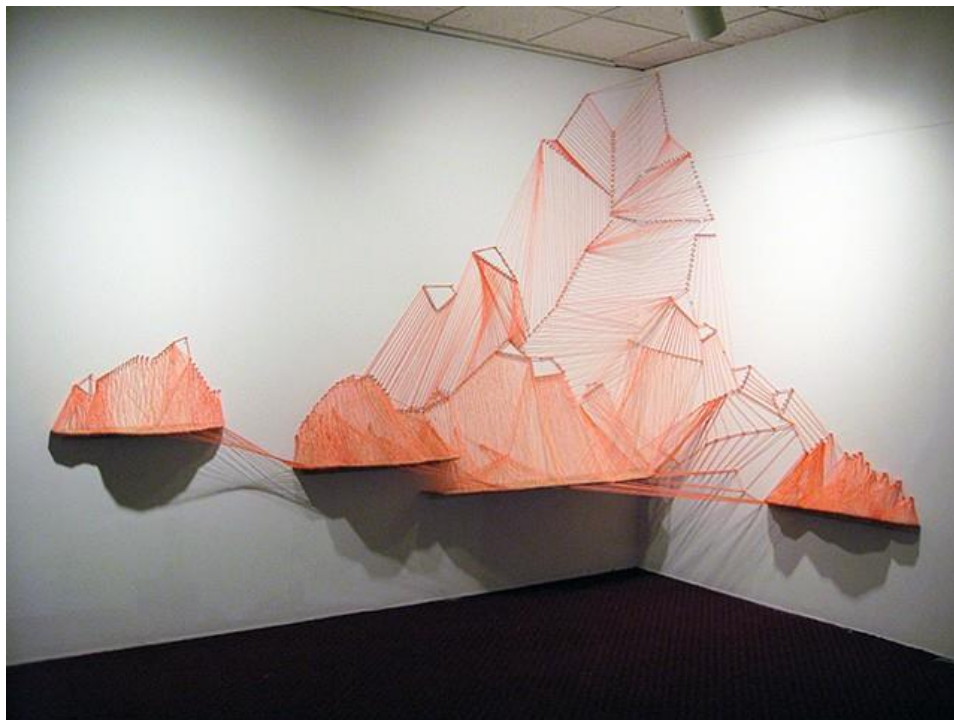


Figure 3.2: Aili Schmeltz design in architecture (ailischmeltz.com)

Gabriel Dawe (1973) is a Mexican artist based in Dallas, Texas whose work is based on studies of the visible spectrum of light. He is best known for his large-scale series of

installations of Plexus sewing thread, although he also creates works on paper as well as other media. His work has been exhibited in the USA, Canada, Belgium, Denmark and the UK (ailismeltz.com).

He then left Mexico City to reach America at the end of this challenging journey and pursue a PhD at the University of Dallas. Gabriel Dawe's success reflects participation in numerous exhibitions, multiple awards, but best of all, of course, the work itself.

This Mexican artist-installer creates very specific objects that consist entirely of sewing thread. But the volume of these masterpieces is amazing: they occupy about two rooms of a modern panel house. The purpose of these works of art is to explore the nature of light, its hidden structure with material and tactile sensations.

In the physical sense, the luminous flux creates a certain environment that exists on the borderline between the material and non-material world. This effect is able to play with our perception, as if ordering the chaos that has existed since the birth of the world and is inherent in most natural phenomena. Like them, Gabriel Dawe gathered his threads and made them, for example, reflect such a simple and at the same time complex miracle of nature, like a sunbeam.

These magical installations weren't just born. It all started in Mexico City with children's textile research and ended after moving to Montreal. What we perceive today as light installations was born as a reflection of the connection between ideas and people. Who would have thought that colored threads would be able to simplify this idea so much. Or to complicate things - the attitude, as always, depends on the perception of the world.

Let look string art designs in architecture of Gabriel Dawe.



Figure 3.3: String art design of Gabriel Dawe in architecture (designboom.com)

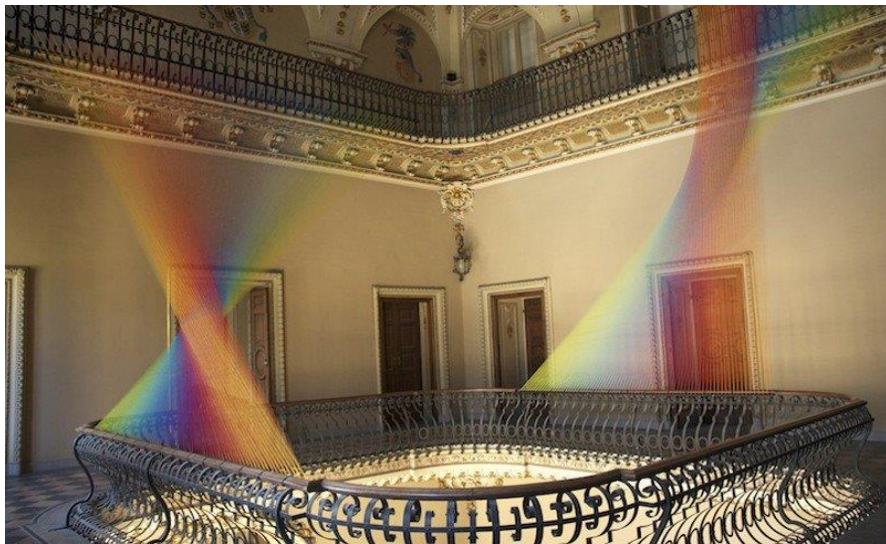


Figure 3.4: String art design of Gabriel Dawe in architecture (designboom.com)



Figure 3.5: String art design of Gabriel Dawe in architecture architecture
(designboom.com)

There are examples of spring art developed by the researcher in the field of architecture (Fig. 3.6:, 3.7:, 3.8:).



Figure 3.6: String art design by Habiba Huseynova in architecture (by the author: Habiba Huseynova)

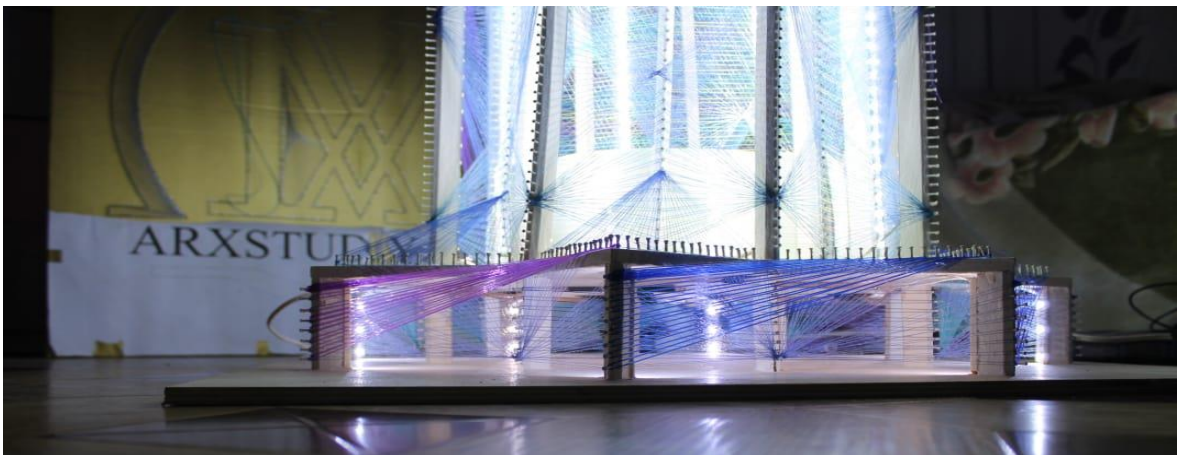


Figure 3.7: String art design by Habiba Huseynova in architecture (by the author: Habiba Huseynova)

Prism brings vibrant color and optical illusion to the lobby of a new residential building at 205 Water Street, Dumbo, NY.

Made of triangular surfaces of elastic colored rope, the installation provides a powerful contrast to the concrete walls of the industrial-style lobby. Simple, curving geometries intersect, creating volumes of lit space. As the visitor walks the lobby ramp, transversal views combine the sculpture's three modules into dynamic alternate perspectives.

The artist, also an architect, was in charge of designing the building's lobby, constructed entirely of concrete. The installation, positioned along the wall's joint lines, acts as a filter of color to emphasize the concrete material. The zenithal light becomes rays of color like an optical prism.

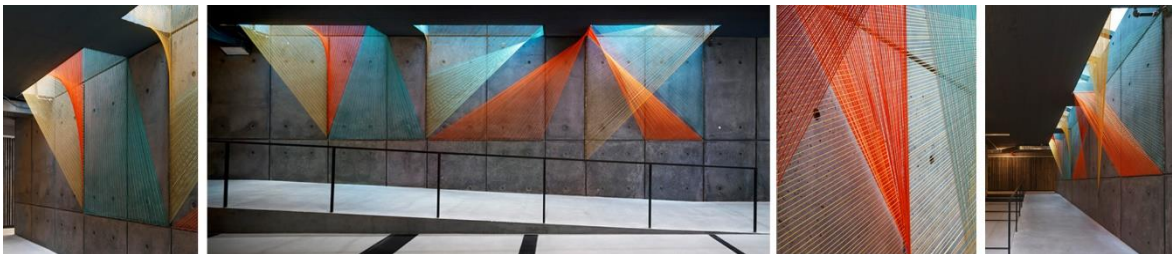


Figure 3.8: String art design of Ines Esnal in architecture (archdaily.com)

3.2.1.2. *In Landscape*

Thin blue strings are stretched between arch-shaped frames to create tunnels across the cloister garden of a French cathedral.

Paris studio Atelier YokYok created the Les Voûtes Filantes – or The Shooting Vaults – installation within the 16th-century Gothic-style cloister at St Stephen's Cathedral in Cahors, south-west France.

The designers used taut strings to form enclosed passages along the existing pathways of the garden, which run diagonally from the corners to a central circle.

The strings are stretched between thin metal frames shaped like arches from different architectural styles.

"Arcs of all origins are linked to one another by a colourful woven structure that performs with light and mystery, revealing a light, dematerialised architecture," said Atelier Yokyok.

The shapes include a quadrant and a semicircular arch, as well as an ogee arch and a lancet arch - both typical of Gothic architecture. The latter echoes the pointed arches that

surround the garden (<https://www.dezeen.com/2015/06/10/atelier-yokyok-vaulted-blue-string-tunnels-installations-gothic-cloister-garden-french-cathedral-les-voutes-filantes/>).



Figure 3.9: String art design of Yokyok in landscape (dezeen.com)

Artist Sebastien Preschoux creates impressive string art sculptures as well as intricate geometric drawings. The detail and complexity in such pieces is truly astonishing. Preschoux describes his methods in design as being slightly spontaneous, as he starts with a center point, and let's the art work happen for itself as it goes. He uses various colors and venue for his string installations which span vast spaces in the process. His drawings are meticulous and delicately constructed with a methodical approach, much like his string sculptures. This comprises the second collection of works we've featured by this artist, don't miss the first series of string art by Sebastien Preschoux (<https://www.thecoolist.com/string-art-and-geometric-drawings-by-sebastien-preschoux/>).



Figure 3.10: String art design of Sebastien Preschoux in landscape (thecoolist.com)

3.2.1.3 In Exterior

Windshape was an ephemeral structure commissioned by the Savannah College of Art & Design (SCAD) as a venue and gathering space near their Provence campus in Lacoste, France. Built by nARCHITECTS and a team of SCAD students over a period of five weeks, Windshape became the small town's main public meeting space, and hosted concerts, exhibitions, and ceremonies throughout the summer of 2006.

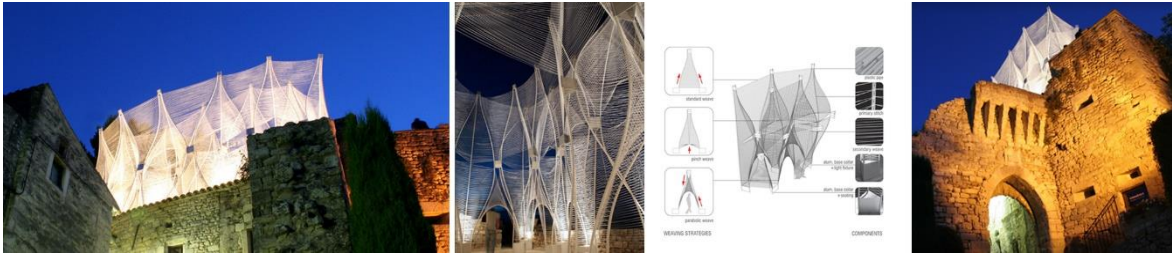


Figure 3.11: String art design of Savannah College of Art & Design (SCAD) in Exterior (archdaily.com)

3.2.2. In Decoration

String Art is a fairly popular and unusual art that allows you to combine seemingly incompatible things: soft threads and hard nails. As a matter of fact, it is called so - the art of creating paintings from nails and threads.

String art can be made on cardboard, but more often a denser material is used.

If a background is needed for the drawing, paint, varnish or wood stain is used.

After the background has dried out, the outline of the drawing is applied to the base and nails are driven into them as a basis for pulling.

The most high-quality and durable basis for a panel - a wooden board

Adhere to a certain sequence only when complex geometry is reproduced, in any other case, chaos in the interweaving is only welcome. The more layers of threads overlap, the more pronounced the 3D effect will be.

Letter design. Letter design is a well-known interior trend for a long time; it was introduced by Western designers. Letters, words, phrases - all these elements are quite appropriate in the decor, and in combination with threads and nails, they turn into stylish volumetric decorations for the home. Well-known trend developed in the West. Various words look interesting in the interior. Despite the use of sharp nails, pictures made using the string art technique may look tender. Such decorations are relevant for use in the hallway or living room. Absolutely any letters on the wall will revive the interior! And if they add up to a word, for example, into a meaningful "OK" - that's even better)

There are also examples of spring art made by the researcher made in the field of decoration (Fig. 3.12).



Figure 3.12: String art design by Habiba Huseynova in decoration (by the author: Habiba Huseynova)



Figure 3.13: String art design by Habiba Huseynova in decoration (by the author: Habiba Huseynova)





Figure 3.14: String art design by Habiba Huseynova in decoration (by the author: Habiba Huseynova)



Figure 3.15: String art design by Habiba Huseynova in decoration (by the author: Habiba Huseynova)

3.2.3. In the Statues

Textile sculpture today is presented in all forms: from relief to round volumetric plastics; in all genres: from portrait to animalistic and domestic. In addition, new types of sculptures arose: "string art" - string or thread, "fiber art" - fiber sculpture. In the field of monumental plastic, textiles reveal new meanings and reach the level of sculptural and architectural solutions and large-scale spatial installations.

Until now, the conversation has been about the usual forms of round sculpture. An interesting story worthy of a separate narrative is demonstrated by a new plastic branch called "string art" (string or string art). The foundation was laid in the first decades of the 20th century. Naum Gabo. As a theorist of art, in 1920 he appeared with the "Realistic Manifesto," in which he identifies the five immutable principles of creativity. "We reject mass in sculpture as a sculptural element we return to the sculpture the line stolen from her by centuries of prejudice as a direction. This way we affirm in it the DEPTH as the only form of space We affirm in art a new element - KINETIC RHYTHMS as the main forms of our real-time sensations". Naum Gabo preferred the "poetry of openings and voids", transparent and "light" structures, using a wide range of materials, including nylon thread (Anttonen, Pertti, 2005).

Following Gabo, Lenor Toney became interested in the art of thread. She turned string art into a "high art of sculpture." A classic of the genre was her 1976 work "Clouds" (or "Cloud Maze"), in which hundreds of falling linen threads were likened to rain, and in the 1990s. a series of abstract works "Drawings in the Air" appeared, implemented on the basis of her graphics of the 1960s - 1970s (Антуганова, 2000).

The style of the art of string art is very diverse: from the abundance of entangling threads by Chiharu Shiota to the extreme minimalism of Fred Sandback. Its deceptively simple concise forms of threads turn into complex and exciting figures when we begin to examine them in the space of the exhibition hall. Unsurprisingly, Sandback's work is often referred to as "mind sculpture." In the modern sky of string art, "smart", restrained objects of Sandback are side by side with a bright decorative string art sculpture of Mexican artist Gabriel Dow, for whom color is important. Through it, Dow conveys ideas of gender equality.

In the field of sculpture, there are also examples of string art by many artists. One of them is Barbara Hepworth.

British sculpture Barbara Hepworth is one of the greatest sculptors of the twentieth century and arguably the most significant female artist of the time. Together with her contemporaries Ben Nicholson (1894-1982), Naum Gabo (1890-1977) and Henry Moore (1898-1986), Hepworth had a tremendous influence on the development of contemporary art in general and abstract sculpture in particular, especially biomorphic abstraction. In her famous 1931 work, *Permeated Form*, she presented a "hole" in contemporary British sculpture (1930-70). Member of the Parisian group *Abstraction-Creation* and the *London Circle* group, its reputation spread throughout the world after World War II. Among her most significant sculptural works are the *Sole Form of the Dag Hammerskjold Memorial* (1963, USA, New York), *Pelagos* (1946, Tate London), *Hollow Form with a White Interior* (1963, Gimpel Fils, London) and *A Conversation with Magic Stones*. (1973, National Gallery of Scotland). Having created DBE (Dame of the British Empire) in 1965, Hepworth also produced a number of drawings and sets for the London Opera (Fig. 18).



Figure 3.16: String art design by Barbara Hepworth in statues (newsatesman.com)



Figure 3.17: String art design by Barbara Hepworth in statues (artfund.org)



Figure 3.18: String art design by Barbara Hepworth in statues (bbc.com)

CHAPTER 4

INTERPRETATION AND DESIGN OF THE FORMS OF CLASSIC FURNITURE

This research followed a qualitative approach, that relied on intensive research from the literature of string art and furniture, that is extracted from books, multiple internet and journal articles sources. This analysis was used when trying to understand the effects of string art on classical furniture. In this chapter, made by different people and have created by author, cases were examined at string art.

In order to ensure the reuse of deteriorating classical furniture, they were renewed using String Art. For this purpose, both sample studies were found and applications were made in computer environment by the researcher.

String art furniture designs are durable, aesthetically pleasing and healthy, as can be seen from the models made to date. Today, string art design gives new life to old furniture.

String art, thread design, thread graphics, embroidery on cardboard - all these are the names of a special technique of decorative applied art that came to us from England in the 17th century. In the language of their homeland, the isothread technique is called Form a Lines, which means "forms from lines". English weavers invented a special technique of weaving threads. They took wooden planks and hammered nails into them in a certain order, and this order was based on geometric calculations. Then threads were pulled between the nails. This was done again in a certain geometric sequence. When crossed, the threads formed intricate patterns similar to lace. They were used to decorate interiors.

The advantage of String art is its simplicity and artistic appeal. Even children of primary school age can master this technique. It is no coincidence that the heads of art studios, handicraft circles and labor teachers like to include string art into the program of their studies. Embroidery on cardboard develops an eye and fine motor skills. In the future, a child who has mastered string art is given geometry more easily, because this technique is precisely based on working with geometric shapes.

And, as you yourself understand, the less invested in the work, the less the return will be. Crafts made of dull colored paper, like a poorly colored newspaper page, are unlikely to seriously captivate a child.

String art in this respect is the ideal value for money of the final result. No special tools and materials are needed for embroidery on cardboard. Needles, threads, thick paper, glue - all this can be found in every home. The financial investment is minimal: the most you have to do is buy simple and cheap stationery, cardboard and colorful spools of thread. All these tools and materials cost a penny, but they are enough for a long time. For example, from one spool of thread, several dozen crafts are obtained.

4.1. Tables

Many types of tables can be prepared used string art. So string art is used to design tables. Sometimes desktop numbers are prepared in this form.

4.1.1. Dining Tables

Products made using the string art technique look unusual and can give the celebration a unique flavor. And making table numbers using such a technique may seem to you so fascinating that it will become hobby.

Different tables can be designed with String art. One of them is dining tables. Dining tables can be of different design (Figure 4.1:, 4.2:).

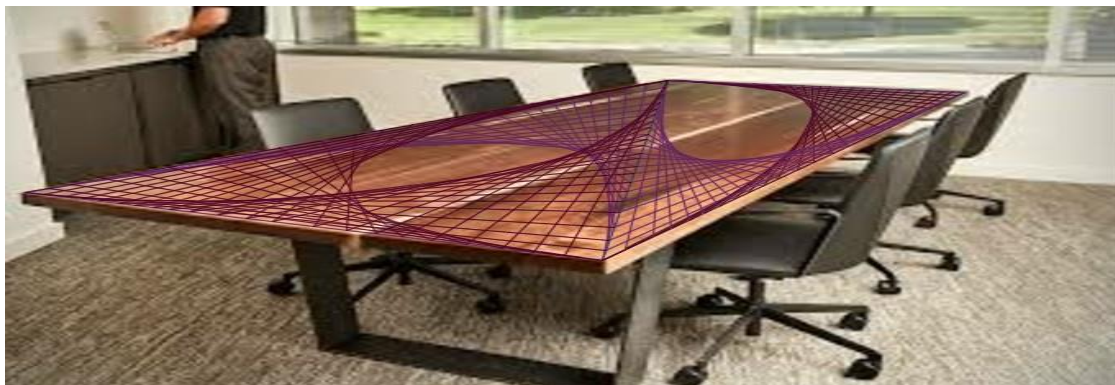


Figure 4.1: Design of dining tables with string art (by the author: Habiba Huseynova)



Figure 4.2: Design of dining tables with string art (by the author: Habiba Huseynova)

4.1.2. Working Tables

The technique of performing string art is simple and accessible to a person of any age. For its development it is enough to know two basic techniques: - filling in the corner; - filling the circle. To work, you must have the following tools: - pencil - sharpened sharpened, TM (colored pencils are useful for sketches); - ruler - straight, smooth, at least 30-40 cm long, with clearly marked divisions (it is good to use a transparent ruler, but with bright black markings), the markings should be in centimeters, not inches; compasses - you need to study the principle of filling the circle, it is better for children to immediately learn to use a good tool, since compasses will be useful for future work (using the "children's" version of the goat leg compass discourages children from using this tool at all); templates (at the first stage are made by the teacher or parents) and stencils (ready-made images of various geometric shapes: polygons, circles, ovals / ellipses, etc.); needles with a large eye (the number of needles depends on the thickness of the cardboard and threads, as well as the distance between the points: the smaller the distance between the points and the finer the work, the thinner the needle); an awl (it will leave large holes, I did not use it) or a pin with a head on the end for piercing dots; lining made of thick material so as not to spoil the surface of the table during the piercing (you can pierce it by weight, slightly lifting the cardboard and measuring the piercing power); scissors; protractor.



Figure 4.3: Design of working table in String art (by the author: Habiba Huseynova)



Figure 4.4: Design of working table in String art (by the author: Habiba Huseynova)



Figure 4.5: Design of working table in String art (by the author: Habiba Huseynova)

Such tables are seen in the works of various masters of art such as Robby Cuthbert (Figure 4.6:).



Figure 4.6: Some working tables were designed by researcher (robbycuthbert.com)



Figure 4.7: Habiba Huseynova's Working table design in String art (by the author: Habiba Huseynova)

4.1.3. Toilet Table

The following products are used to design toilet table in string backs (fig. 4.7).

1) Use a ready-made template of different geometric shapes, with markings on the edges (the number of marks on all sides of the polyhedra should be the same). For the manufacture of templates using thick cardboard. A template is placed in the right place on the wrong side of the colored cardboard, it is circled, the markup is transferred, the necessary sides are numbered and so repeated as many times as necessary so that the composition is ready.

2) Use various stencils of geometric shapes: polyhedrons, circles, ovals, curved patterns (for spirals, arcs, curls) and stencils of arbitrary shapes. On the wrong side, figures and their combinations are transferred through the stencil in the right place, the points are marked, observing the rule: on both sides of the corners there should be the same number of points.

3) The drawing is made on a separate sheet. Under it lay a universal template. They do it like that. A circle with a radius of about 8-10 cm is drawn with a compass in the center of a sheet of thick white paper. Then, using a protractor, it is divided into parts at $P10^\circ$, $P45^\circ$, $P90^\circ$, and $P30^\circ$ and the axis are additionally distinguished. Through the center and points on the circle, lines (No. 1-36) are drawn, in blue, $P45^\circ$ and $P90^\circ$ (A, B, C, D, K, L, M, N) stand out, $P30^\circ$ ($P60^\circ$, $P120^\circ$ stands out in red $^\circ$). From the center, in increments of 0.5 cm, draw to the end of the circle, dividing the lines into equal segments. At the intersection of

lines and circles, we put points. As a result, we can divide the circle into equal 2 parts (we sew the semicircle as an angle), 3, 4, 6, 8, 9, 12, 18, 36 sectors (we sew as the angle of a certain type: obtuse, straight, sharp; as a combination of angles: "tower", "flashlight", various types of "stars" and "snowflakes", etc.; such as circles of different diameters, arcs and their combinations) (Антуганова, 2002). We transfer the necessary points to the drawing (the copy paper needs to be thinner so that the template shines through it, and the template should be bright enough to be convenient to use). We fix the pattern with dots using paper clips on the front side of the color cardboard and puncture the pattern and cardboard at the same time on the points. We leave the drawing in front of us for control, and begin to embroider it on cardboard. It is also possible to make the first calculations for training on paper in a box, to work out the first schemes on it and pierce through it the best ideas on cardboard.

4) All calculations and drawings are performed using tools immediately on the wrong side of the sheet. This method allows you to get by with a minimum of devices, make points at any distance as necessary (filling a versatile angle), implies greater freedom of choice when constructing a composition with arbitrary sizes and on a sheet of any format. This method more stimulates the development of creative abilities.





Figure 4.8: Habiba Huseynova's Working table design in String art (by the author: Habiba Huseynova)

Let's take a look at some of the toilet tables designed with String Art (fig.4.8:, 4.9).



Figure 4.9: Design of toilet table with string art (by the author: Habiba Huseynova)

4.1.4. Tables Designed for Different Purposes

Sometimes tables are created for different purposes to keep things on top. Examples include television, dvd, vases, books, etc. names. Consider some examples (fig.4.10; 4.11; 4.12; 4.13; 4.14).



Figure 4.10: Design of tables designed for different purposes with string art (by the author: Habiba Huseynova)



Figure 4.11: Design of tables designed for different purposes with string art (by the author: Habiba Huseynova)



Figure 4.12: Design of tables designed for different purposes with string art (by the author: Habiba Huseynova)



Figure 4.13: Design of tables designed for different purposes with string art (by the author: Habiba Huseynova)



Figure 4.14: Design of tables designed for different purposes with string art art (by the author: Habiba Huseynova)



Figure 4.15: Design of tables designed for different purposes with string art (by the author: Habiba Huseynova)

4.1.5. Chair

To design chair using the string art technique, it is necessary to prepare tools and materials. First of all, the basis is selected. It can be a small plank of plywood, fiberboard or cork. Such substrates are optimal for working using the string art method, since it is convenient to cover their surface with tinting, coloring compounds, varnish or film.

The number of nails should be sufficient to create a picture using the string art method. It is worth giving preference to furniture, decorative and carpentry varieties. Their main advantage is the small size of the products and hats themselves. As for the threads, knitting are ideal for working in the art of string art: floss, twisted, delicate iris. Silk yarn constantly slips, so it causes inconvenience when weaving.

After preparing the materials, you can begin to work. In order to apply the selected pattern to the base, proceed according to the instructions:

1. Create own template or print ready.
2. The circuit is applied to the prepared substrate.
3. If the base is soft, the contours are marked with a needle, if solid, cloves are driven in.
4. The sample is removed, it will no longer be needed.

If necessary, you can fix the template with masking tape. Then, with further work, he will not move out. This is especially convenient when practicing string art with children.

Carnations are driven in at a distance of 1 cm. Leave a length that will be convenient for winding threads. The more voluminous and multi-layered the template, the higher the driven nails should stick out.

The same sketches in the art of string art can look different. After placing the nails with threads, the pattern is directly filled or the surrounding space, background. This is done as follows:

1. The first thread is attached to the carnation, the creative process begins.
2. When it is necessary to change the color, a knot is tied to fix the pattern.
3. At the end of the work, all excess tips are cut off.

If the thread breaks, you need to carefully bind it and continue to create. When creating complex multi-layer compositions using the string art technique, it is important to adhere to a certain sequence, due to which a three-dimensional effect is achieved. In other cases, randomness is welcome.

Let's look at a few examples of chairs designed with String Art (picture 4.15:, 4.16:, 4.17: 4.18).



Figure 4.16: Design stool with string art (by the author: Habiba Huseynova)



Figure 4.17: Design chair with string art (by the author: Habiba Huseynova)



Figure 4.18: Design chair with string art (by the author: Habiba Huseynova)

4.1.6. Coffee Table

An integral part of the interior has long been a coffee table. In addition to practical applications, the coffee table has a great aesthetic function. Without it, the living room, even with elegant and stylish decor, looks unfinished. This seemingly small thing brings coziness and comfort to the interior of the room. That is why coffee tables in the living room interior are so widespread.

Those who want to bring a zest and element of surprise to the interior of their home, as well as creative people, have the opportunity to order an exclusive table model or try to make it yourself with the help of household items. This can be seen in the examples below (fig. 4.19: 4.20: 4.21: 4.22).



Figure 4.19: Design of coffee table with string art (by the author: Habiba Huseynova)



Figure 4.20: Design of coffee table with string art (by the author: Habiba Huseynova)

Now let's get acquainted with the models we have developed. (fig. 4.21: 4.22)



Figure 4.21: Table before string art (by the author: Habiba Huseynova)



Figure 4.22: Table after string art (by the author: Habiba Huseynova)

Let look another design. (fig. 4.23: 4.24: 4.25: 4.26)



Figure 4.23: Table before string art (by the author: Habiba Huseynova)



Figure 4.24: Table after string art



Figure 4.25: Table before string art art (by the author: Habiba Huseynova)



Figure 4.26: Table after string art (by the author: Habiba Huseynova)

We can see my coffee table examples which were created in String art design. Let's look at them. (fig. 4.27)



Figure 4.27: Design of coffee table with string art by Habiba Huseynova (by the author: Habiba Huseynova)

We have also added aesthetic beauty to the dining table with string art design. The initial appearance of the table is as follows (fig. 4.28: 4.29)



Figure 4.28: Dining table before string art (by the author: Habiba Huseynova)



Figure 4.29: Dining table after string art (by the author: Habiba Huseynova)

4.2. Architectural Accessories

4.2.1. Chandelier

To start embroidering with embroidery, you will need to purchase a piece of plywood or thick cardboard, a couple of small cloves of small cloves, any strong colored thread (floss, iris, knitting, sewing), a hammer, an awl, and pliers. The latter will come in handy if the carnations are driven in the wrong direction. For marking, you will need a pencil to beautifully build complex figures, use a square, compasses, various patterns, rulers with circles, rhombuses, numbers, etc. In order to make an additional emphasis on a particular part of the image, use paint - acrylic, gouache, any other. It is also advisable to find or come up with a suitable picture in advance. Many craftswomen use a thin hollow tube, a handle without a rod through which the thread is passed, to conveniently wind the thread on the carnations. Separate needlework stores sell entire sets of materials, tools for String Art.

In the art of string art, watches, key holders, mirrors, the spaces around the lamps, drawers and other elements are made. First of all, you need to determine what shape the lamp will be made: ball, lampshade, cylinder. A lampshade will be required for the lampshade, more complicated than just two rings of different diameters connected to each other. The presence of additional stiffening ribs will allow you to create the correct shape - a truncated cone. Other tools, materials:

- balloons or a plastic bottle (for a lamp in the shape of a cylinder);
- threads of the desired color and not too large thickness, it is advisable to choose from the assortment of Iris;
- oily hand cream;
- clerical glue, when PVA is used, a ball of light threads often turns yellow;
- cartridge, piece of wire;
- a can with a polyethylene cover.

All these tools and materials are almost always at hand for most users, so the cost of the lamp will be small. This is one of its advantages.

Step-by-step instruction for the implementation of a lamp from threads:

1. The base is being prepared: a balloon is inflated or a plastic bottle is cut off. The material is selected based on what shape the device needs.

2. The balloon is inflated to the desired size. In the area of the nodule, it is necessary to draw a circle with a diameter of 7 cm.

3. The surface is covered with hand cream. This will greatly simplify the task of removing the ball from the filament skeleton.

4. A separate workshop should be held on the preparation of threads. A tin can with a PVC lid is taken, where the adhesive is poured (one share of water, three parts of glue). A hole is made in plastic with a needle, into which a thread is previously inserted. As a result, the spool of thread will be inside the can of glue. The bobbin is impregnated with an adhesive, and when the thread moves through the lid, the excess will be removed.

5. You can start winding the thread. To make a more transparent ball, less thread will be required. A drawing is determined by one's own imagination; a master class is not needed for this. Only for the strength of the ceiling, it is better if the thread is directed in different directions: vertically, horizontally, at an angle.

6. The finished ball of thread is repeatedly impregnated with glue and left to dry for half a day. The minimum period for which the thread dries completely is 8 hours.

7. Then it remains only to remove the balloon from the ceiling. This can be done by piercing it with a needle.

Step-by-step instruction of making a chandelier with string art. Consider some examples of chandeliers (Figure 4.30: 4.31: 4.32).



Figure 4.30: Design of the chandelier with string art art (by the author: Habiba Huseynova)



Figure 4.31: There is chandelier design created by (by the author: Habiba Huseynova)

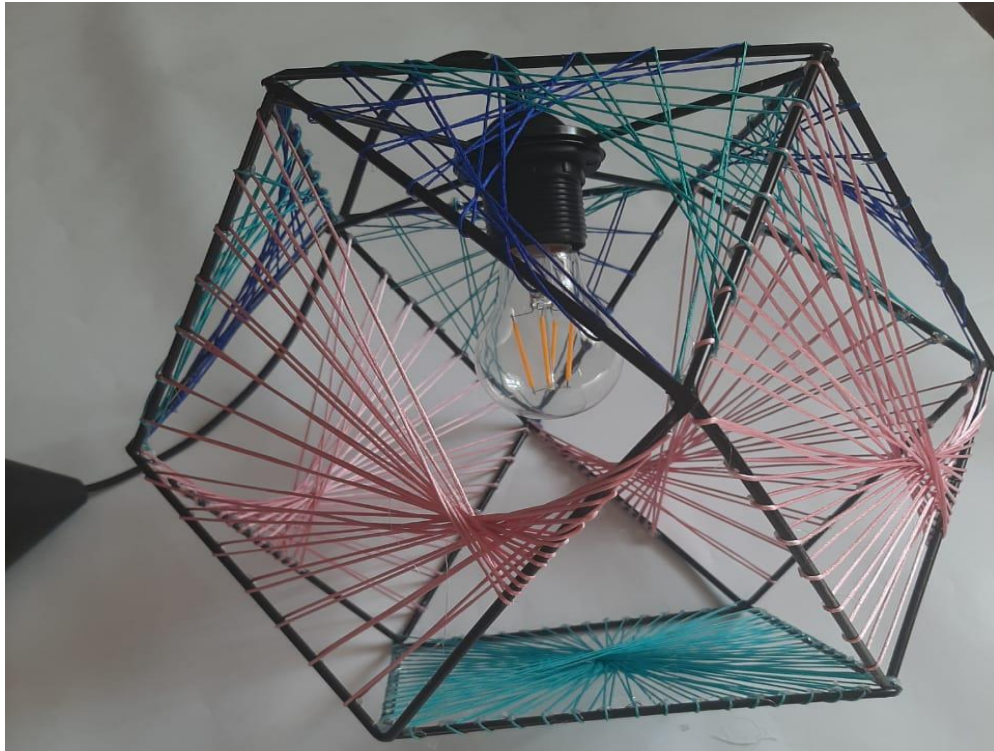


Figure 4.32: Design of the chandelier with string art Habiba Huseynova (by the author: Habiba Huseynova)

4.2.3. Clock

The traditions of decorating the walls of their homes for many years. And as a picture, pictures of nails and threads may be suitable. This is because the pattern of carnations, and the interweaving of threads, and the pattern itself is something magical. Such paintings are admirable; they amaze and fascinate with their simplicity and at the same time complexity. Although straight lines are used in String Art paintings, the image seems voluminous due to the fact that the threads are layered on each other and woven into bizarre patterns. From different angles of view, the picture unfolds in a new way, exposing one of the many facets of its beauty.

So that during work nothing distracts from the process of creating a manual masterpiece, all the necessary materials and devices should be prepared in advance. In work you may need the following:

- The basis. For work in the style of string art, it is best to choose a wooden base. The board should be with processed edges and a flat surface. Dense foam sheets can also

be used as a substrate. But then, instead of nails, you should take thin pins with small ears (bead heads).

- Threads. It is most convenient to use threads for knitting. But in addition to yarn for pulling, you can take floss, thin iris, as well as twisted twine. It is better not to use silk threads in work, as they glide too much and do not hold their shape.

- Tools: scissors, a hammer, pliers (in case you need to pull out a carnation that is not nailed to the right place), a simple pencil or a thin marker for applying a bitmap to the base.

- Pattern drawing on paper (stencil).

- Small cloves or buttons.

- Base paint or adhesive paper.

A phased description of the execution of the work.

1. Prepare the foundation for the future watch: paint with the desired color or stain. You can glue the surface with oilcloth using any colored paper.

2. While the base is drying, cut out the shape of the desired size from the paper. The dimensions of the main work surface should be considered: it should be slightly larger than the cut out template.

3. When the base is completely dry, attach a template to it and draw with a simple pencil along the contour. To further facilitate the work on the outlines drawn at an equal distance, apply the points at which in the future you need to drive in the cloves.

4. At the marked points, drive in small cloves (to the middle)

5. When all the nails are driven along the outline of the pattern, the base can be coated with colorless varnish.

6. Take prepared threads. Fasten the end of the ball to one of the studs and begin to stretch the thread from the nail to the nail located on the opposite side. Make sure that the

thread is constantly tightened, otherwise the work will sag and lose its attractive appearance. After the middle is filled, you can braid the contours of the clock.

7. At the end of the work, fasten the end of the thread.

To hang the finished work on the wall, you can attach a loop at the back. An unusual addition can be beads and sparkles sewn (glued) over stretched threads.

Work performed in the art of string art, look very impressive and can decorate absolutely any interior. It should also be noted the budgeting of this technique: the costs that need to be made for materials are minimal, and as a result an original picture is obtained that pleases the eye.

Consider some examples (4.33, 4.34, 4.35).

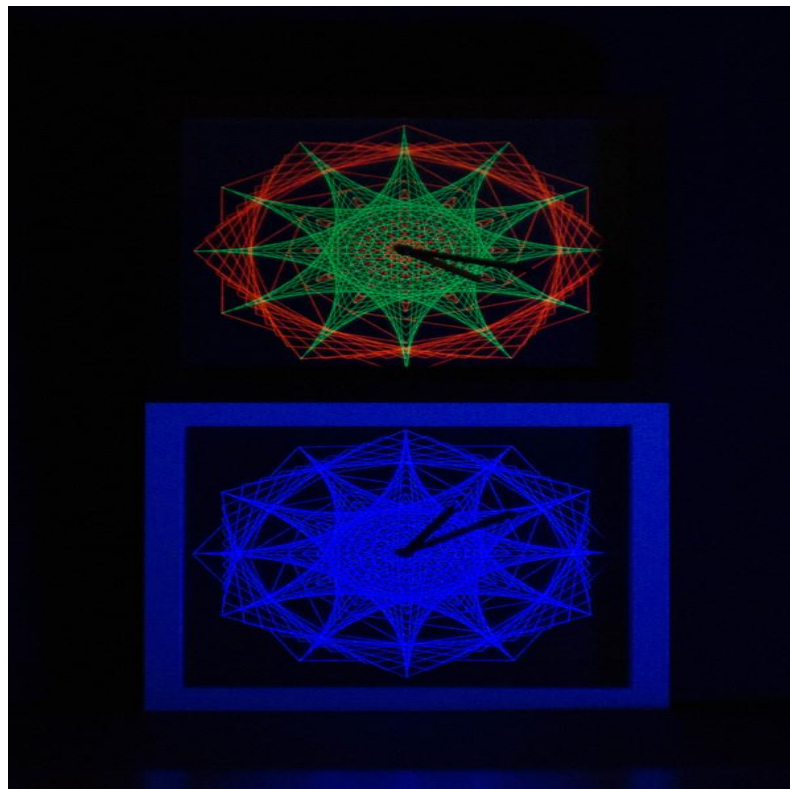


Figure 4.33: Design of clock with String art (pikabu.ru)

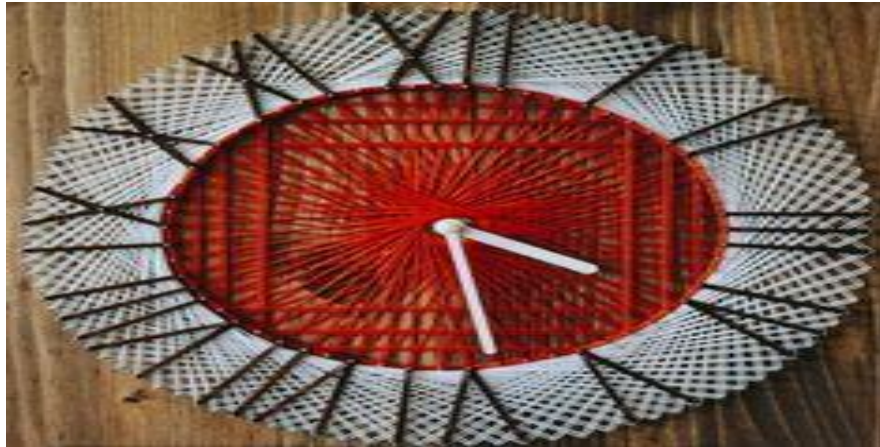


Figure 4.34: Design of clock with String art (pinterest.com)

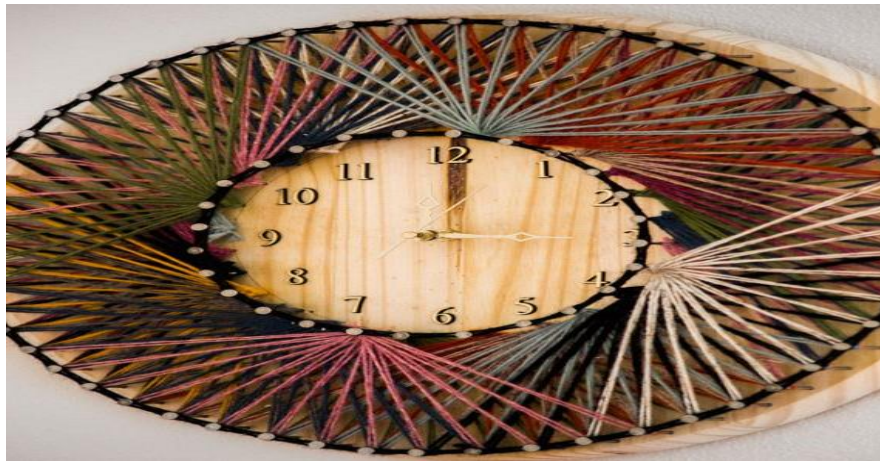


Figure 4.35: Design of clock with String art (by the author: Habiba Huseynova)

4.2.4. Mirror

Decorative mirrors are a multifunctional element of the decor. They will decorate an empty wall, visually expand the boundaries of the room, and also increase sunlight. But they can be transformed with your own hands.

To create a mirror using the String art technique, you will need the following materials:

- Substrate. It can be a wooden board, a piece of plywood or fiberboard, polystyrene or cork.
- Nails of small diameter (furniture, carpentry or decorative).

- Threads. It is better to use knitting because they are denser and stronger. But you can also take floss or twisted threads for work.

- Hammer

- Pliers. It will be required if you accidentally drive the carnations in the wrong place.

- Paint for woodwork (in case you want to change the color of the substrate)

- scissors

- Auxiliary tools. For example, beads, felt-tip pens or paints

- Double-sided tape

Now that you have everything you need, you can safely get to work.

For the first works, it is better to choose simple drawings, for example, geometric shapes (circle, triangle), and after you manage to complete these tasks, go to a higher level of complexity.

If the wooden board is not processed, it should be treated with sandpaper. Particular attention should be paid to the corners, so as not to get hurt during the creation of the picture.

For those who do not draw very well, and those who want to save time, it will be easier to use a ready-made template. You can select your favorite picture on the Internet and print it. And some masters prefer to draw the selected pattern on the board themselves. Which way to choose is up to you.

In order to work more conveniently and so that the mirror does not strive every now and then to move out of the workplace, it is better to fix it. To do this, you can use double-sided tape - one side of the tape is attached to the template, and the other to the surface on which the work is carried out. Now you need to circle the outline of the template along the line of the mirror without going to the paper:

The closer the nails are to each other, the larger and richer the picture will be. If any nail gets crooked or bent, it is better not to be too lazy and pull it out. After all, the smoother the nails, the better your picture will look.

First you need to fix the thread. It is necessary to tie it with a strong knot on the first nail, then, pulling it a bit, you need to stretch the thread, hooking it under the hat of the opposite nail.

After the opposite are intertwined, you can randomly guide the thread between several nails in a row, carefully watching that there are no holes between the hats.

But not always the central composition stands out with threads. Often with their help, a background is created that frames the empty space.

Let's look at some mirror examples (Figure 3.36:, 3.37, 3.38:).



Figure 4.36: Design of mirror with String art (i.pinimg.com)



Figure 4.37: Design of mirror with String art (by the author: Habiba Huseynova)



Figure 4.38: Design of mirror with String art (cyberspaceandtime.com)

4.3. Storage Elements

The furniture is labeled in color or tinted. The name, address, furniture name, furniture design index, release date, price, GOST number and so on are indicated in the label.

information is displayed. The labeling is carried out in areas away from the surface to allow easy reading and at the same time not to deteriorate the appearance of the product. Furniture moving within the same residential area is not mixed. In this case, a specialized, specially equipped vehicle for the operation is used. The furniture here is transported in a steep, velvet-covered state. Furniture that can be moved from one residential area to another is packed into cage doors with kraft paper or wrapping. Soft arches should be placed on the cabinets or boxes that touch the cord. Furnishings (mirrors, glass) on the door packed furniture should be marked with the words "Be careful", "Glass" and the frame. All the furniture is painted on the surface of the container.

Railway, trolley, and motor vehicles are used to transport furniture. The choice of transportation depends on the length of the stack. It is advisable to use in-city transport by moving to close distances. A number of precautions should be taken when loading, transporting and unloading furniture. As such, packing furniture must be placed in a soft gadget where it can touch the adjacent products, the car seat, and the winding rope. Furniture that is loaded on machines to protect against atmospheric effects and dust is deposited on non-adhesive cloths. The best way to place furniture in covered, well-arranged body types, ie containers.

Intercity portable furniture is usually packed by rail and placed on railroad cars. Furniture products are very sensitive to changes in humidity and temperature. Therefore, the building where it is stored should be dry and equipped with heating and ventilation equipment. Furniture items should be placed 15-20 cm from the wall and 65-100 cm from the heater. In the room where the furniture is stored, the sun's rays should fall, and the building must comply with safety regulations. The floor should be flat and smooth, with temperatures below 100C and humidity 60-65%. A psychrometer and a psychrometric table are used to monitor temperature and humidity. In case of high humidity, the building must be changed or CaC2 should be used. When the humidity is relatively low, the floor should be sprayed with water or filled with water. Cleanliness should be observed in the warehouse, and insecticides should be mixed.

There is one storage examples created by me in string art design. It may be used for keeping museum elements (Figure 4.39).



Figure 4.39: Storage example for keeping museum elements designed in String art by Habiba Huseynova (by the author: Habiba Huseynova)

When storing furniture, it is necessary to clean it regularly from dust and dirt. For this purpose special substances ("Pomerol", Blesk, etc.) are used. Soft parts should be covered with cables or paper. When examining the packaging, transportation and storage features of furniture included in the furniture company, I came to the following conclusion: The purchase of local furniture is in transit. That is, furniture is transported directly from the manufacturing enterprises to the stores. In this case, long-term machines are used. The furniture packaging is loaded into the machines and shipped to the store.

Now, let's evaluate the design sample we have prepared from the functional, aesthetic and health point of view. Let's make a table for this (Table 4.1).

Table 1. Evaluating design examples created by researcher

Examples	Aesthetics	Durability	Functional
Figure 3.6	+	-	-

Figure 3.12	+	-	-
Figure 3.13	+	-	-
Figure 3.14	+	-	-
Figure 3.15	+	-	-
Figure 4.7	+	+	+
Figure 4.8	+	+	+
Figure 4.11	+	+	+
Figure 4.22	+	+	+
Figure 4.24	+	-	+
Figure 4.28	+	-	+
Figure 4.29.	+	+	+
Figure 4.32	+	+	+
Figure 4.39	+	-	+

Figure 4.7, 4.8, 4.9, 4.28, 4.29 and Picture 4.31 meets all requirements. Picture 4.24 it is not durability because it is made of thin material. Picture 4.27, 4.28 while aesthetic and functional. But it is not durability because the surface is made of glass. Figure 4.29., 4.32, 4.39

CHAPTER 5

CONCLUSION

This study, which aims to analyze the Contemporary Interpretation of Classic Furniture from with String Art, has followed a qualitative approach and structured the background of the subject by applying an intense literature review on furniture and string art. Then, string art was tried to be applied on selected historical furniture and its effects on furniture were discussed.

To make the original key holder, it is enough to take a small plate, attach several hooks to it and perform decor using the string art technique. The composition will be decorated with a key or a tree, various inscriptions.

Creativity string art, like other forms of decorative art has a close relationship with human life, with everyday life.

It is believed that the first string art graphics appeared in XVII in England, when the English weaver masters came up with a special way to interweave the threads to get lace lacework for decorating their homes.

It can be used to create art panels, paintings. The interior, decorated in this way, will gain a unique personality, because such work is done manually, and two identical ones simply cannot be found.

To decorate the living room or bedroom, you can also use the work in the string art technique: light, thin web-like patterns perfectly complement the interior design of such rooms. In the kitchen, of course, it is better to place the string art paintings on the gastronomic theme.

Depending on the complexity of the picture, which it can be choose for embroidering with string art, they may look just like real picturesque paintings, or they may look like graphic works as if purposely done with rough strokes.

The string art technique can be used not only to create paintings from threads on cardboard, fabric or CDs, from threads and nails on plywood, but also directly on the walls of the room.

In the research the following tasks are successfully solved:

- found out the history of the origin of String Art technique in the research section. String art technique is a young technique of manufacturing products that came to us from English weavers.

- met with the types of products in this technique. In this technique, you can make a panel, a picture, a portrait, a postcard.

- met with a range of products. The range is extremely large, but I tried to choose the most optimal.

- got acquainted with the assortment of threads. For products using the String Art technique, the assortment of threads is huge. But each product has its own type of thread.

- familiarized herself with the tools needed to complete the work.

- manufactured the product, while describing the manufacturing process in detail.

- Materials that will not damage historical furniture have been selected and applied.

According to the method chosen for the purpose of the thesis, it has been observed that both durability, aesthetics and functionality have increased in six of the fourteen furniture renewed with string art. Again, it was understood that aesthetics and functionality increased in three samples, while only aesthetic appearance was more pleasant in the other five samples.

In conclusion, in the thesis, it has analyzed that furniture made with string art is aesthetic, healthy and functional, and has become durable. However, since durability is not long-lasting, it can be said that such furniture can maintain its aesthetics and health for a long time.

Historical furniture are important values of cultural heritage. They need to be protected, used and sustainable values. Unfortunately, these art works are seen as insignificant objects that are thrown aside as they lose their strength over time and become unusable. For this reason, it is very important for the world heritage to renew them and make them sustainable with methods that can be used like string art.

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- <https://www.archdaily.com/4608/windshape-narchitects>

APPENDICES

Appendix 1

Ethical Approval Later



ETHICAL APPROVAL DOCUMENT


Date: 26/02/2021

To the **Graduate School of Applied Sciences**

The research project titled "CONTEMPORARY INTERPRETATION OF THE FORM OF CLASSIC FURNITURE TOGETHER WITH STRING ART" has been evaluated. Since the researcher(s) will not collect primary data from humans, animals, plants or earth, this project does not need to go through the ethics committee.

Title: Assist.Prof.Dr.

Name Surname: Havva Arslangazi Uzunahmet

Signature: 

Role in the Research Project: Supervisor

Appendix 2

Originality Report

Bu sizin ödev kutunuzdur. Bir yazılı ödevi görüntülemek için yazılı ödevin başlığını seçin. Bir Benzerlik Raporunu görüntülemek için yazılı ödevin benzerlik sütunundaki Benzerlik Raporu ikonunu seçin. Tıklanabilir durumda olmayan bir ikon Benzerlik Raporunun henüz oluşturulmadığını gösterir.

HABIBA HUSEYNOVA

GELEN KUTUSU | GÖRÜNTÜLENİYOR: YENİ ÖDEVLER ▾

Dosyayı Gönder

Çevrimiçi Derecelendirme Raporu | Ödev ayarlarını düzenle | E-posta bildirmeyenler

<input type="checkbox"/>	YAZAR	BAŞLIK	BENZERLİK	PUANLA	CEVAP	DOĞRU	ÖDEV NUMARASI	TARİH
<input type="checkbox"/>	Habiba Huseynova	ABSTRACT	%0 	--	--		1703941711	16-Kas-2021
<input type="checkbox"/>	Habiba Huseynova	CHAPTER 4	%0 	--	--		1703963419	16-Kas-2021
<input type="checkbox"/>	Habiba Huseynova	CONCLUSION	%0 	--	--		1703990331	16-Kas-2021
<input type="checkbox"/>	Habiba Huseynova	ÖZET	%0 	--	--		1703942149	16-Kas-2021
<input type="checkbox"/>	Habiba Huseynova	CHAPTER 1	%2 	--	--		1703942675	16-Kas-2021
<input type="checkbox"/>	Habiba Huseynova	ALL THESIS	%4 	--	--		1703992883	16-Kas-2021
<input type="checkbox"/>	Habiba Huseynova	CHAPTER 2	%4 	--	--		1703953741	16-Kas-2021
<input type="checkbox"/>	Habiba Huseynova	CHAPTER 3	%11 	--	--		1703957864	16-Kas-2021