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## AN EVALUATION ON THE HISTORY OF FURNITURE AFTER THE INDUSTRIAL REVOLUTION

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### Abstract

Since prehistoric times, people have built shelters to survive and live in a sheltered place. In the built shelters, raised areas according to the needs, protrusions or hollows formed on the walls, softened and ovalized parts of natural materials; although we have not reached the present and do not see a precise example, it can be thought that it includes the first approaches that reveal the concept of furniture.

Furniture, which was originally produced to provide the needs to facilitate the living conditions, has become reflective of the socio-economic, socio-political, and socio-cultural situation of the period and its purpose produced by these furniture shows in connection with concepts such as showing status, power, wealth, divinity. With the development of tools and machines, furniture styles and models have changed with the increasing needs, and the artisans started to reflect their style on the furniture by being influenced by the environment and the period they live in.

After the industrial revolution, the use of furniture has become widespread, not only its handmade production but also with its ability to produce in factories and with providing cost less; diversified in form, function and material.

In this work, the movements emerging as reflections of changing thought systems with the development of furniture in history and the beginning of the industrial revolution and furniture styles and types that will change with the movements were examined.

As a result of the works, we see that the change the materials, design and usage areas by time. Movements have a major role in the development of the material by enabling the use of materials in different ways with the returns of the period they were adopted. As the period progresses, thanks to these materials whose usage areas have increased, a furniture specific to each period has been produced.

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# AN EVALUATION ON THE HISTORY OF FURNITURE AFTER THE INDUSTRIAL REVOLUTION

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## 1. Introduction

The concept of furniture, which first emerged by processing materials that exist in nature in order to provide the needs, has taken on the purpose of showing social status and gaining prestige as well as providing the needs since ancient times. The unique social order, social, cultural, technological developments, and architectural styles of each period have affected the furniture design. Furniture manufacturers, on the other hand, showed their unique aesthetic, skill, and thinking concepts in furniture. People see designs of chair legs that are likened to the feet of animals in antiquity. Thrones were used to emphasize the greatness, wealth, or power of kings. In the middle ages, the beliefs of the societies were effective in designs. Although there is a great interest in the ancient period that came with the Renaissance, each country has developed different styles according to its regional characteristics. With new and improved hand tools, it became easier to shape furniture. A veneer-cutting machine was found and new furniture examples were produced.

For this study, a literature review on the history of furniture was made. The purpose of this study is to contribute to the literature.

## 2. Materials and Methods

For the research, articles, theses, and books on furniture history were searched. The furniture produced in the period from the first age to the present and the sociological, cultural, and economic events of the periods, as well as the new usage and production methods and new materials in each period, were examined. Thus, with the data obtained from this research, it was investigated how the furniture produced in the past affected the furniture produced in the next period.

Theses, articles, and books have been accessed online. Besides, antique furniture pages were searched on the internet, and details such as furniture belonging to the past periods and the dimensions of these furniture, construction techniques, and years of construction were found on these pages.

## 3. Industrial Revolution and Aftermath

The "Industrial Age" began in 1765 when James Watt discovered the steam engine. As a result of this invention of Watts, mechanization has created great changes in subjects such as iron, steel processing, and coal extraction. With these changes, many new design studies have emerged. The cities, which grow with railways, hotels, canals, steel high-rise buildings, have led to the emergence of new architectural designs. (Kucukerman, 1996) The Industrial Revolution, which first emerged in England at the end of the 18th century and the beginning of the 19th century, spread to the other European countries, including Netherlands and France, and affected the whole world, along with the development of technology, industrial production, and transportation facilities, brought about radical changes in every field. Another issue that affects the design is the changes that occur in the social structure along with industrialization. With the mechanization that developed in parallel with industrialization, not only the production methods but also the products themselves have changed. The 19th century has been the age of engineers. The Pacific Railway in 1869, the first electric car in 1874, the lamp and microphone in 1875, the sewing machine in 1851, and the telephone in 1876 were invented. In the same period, swivel chairs, adjustable chairs, and other patented furniture started to be used in offices of doctors, hairdressers in Europe. In England, the homeland of the industrial revolution, foldable chairs were produced to save space. (Erdem,2007) For many years, furniture has been used to show people's status in society. Although the approach was the same in this period, the approach of designing to bring practical solutions to the daily problems of the middle class was developed. Therefore, furniture manufacturers, which were expected to satisfy large masses of consumers, had to think about the economic factors. Fine workmanship has been replaced by cheaper technologies. Imitations of valuable materials have appeared. And comfort, durability, and functionality are among the required features. The concern for the furniture to adapt to its

environment and to appreciate its design visually continues. The transition from handicrafts to industrialization has led to the emergence of new trends shown in Figure 1.

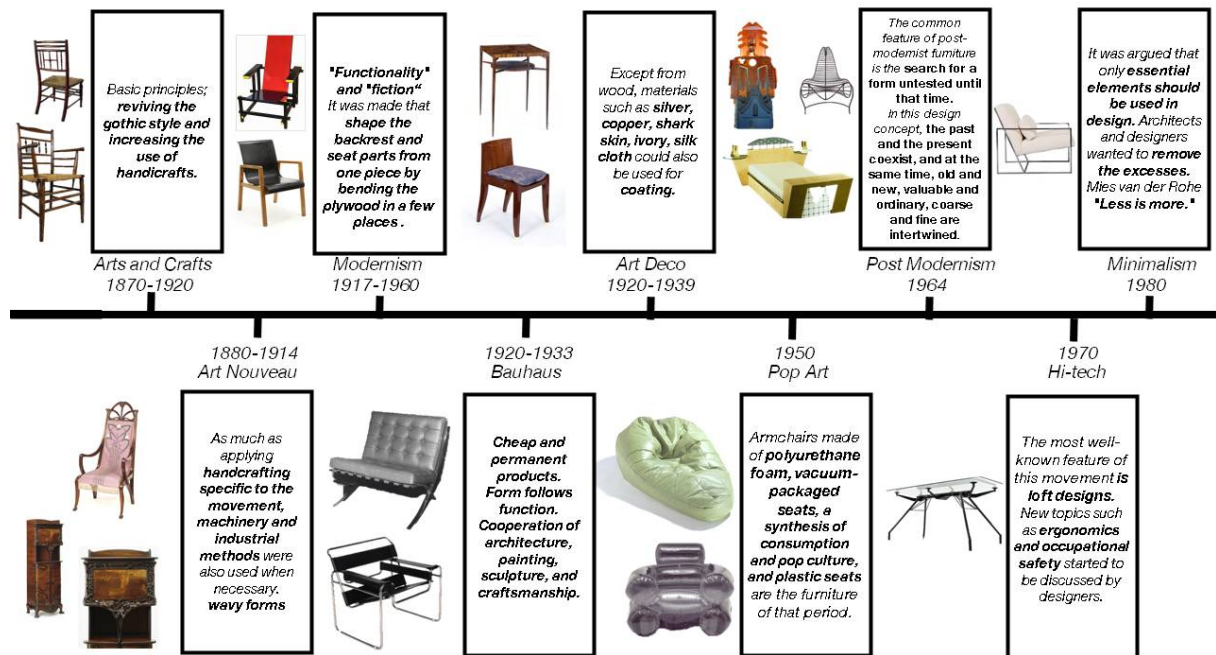


Figure 1: Furnitures and movements after the industrial revolution

### 3.1. Arts and Crafts

It was common between 1870 and 1920. The name spread with the ideas of *John Ruskin*. William Morris and his friends started practicing. Basic principles were reviving the gothic style and increasing the use of handicrafts.

A system of thinking that aimed to create "original works" free from imitation by working on objects of daily use existed at the basis of the formation. Graphics, fabric, pattern, wallpaper, ceramics, and furniture design constituted an important part of their fields of interest. Mostly solid wood - especially oak was used. Matte varnishes that highlight the grain of the tree were preferred. Furniture was reminiscent of village furniture by type. Japanese design influences could also be seen in many examples. Furniture was created from flat, plain-surfaced tables. The framed system was used mostly in the construction of the tables. Flat rectangular railings or cages were placed in the appropriate areas (seat edges, sides of cabinets, etc.). Small cute patterns made with a small number of carving or inlay methods could decorate surfaces. These patterns were usually composed of stylized natural organisms. Sometimes the entire surface would be covered with a texture. Gothic decorative items were used a lot. Embossed or enameled metal plates placed on surfaces were produced with extremely good workmanship. At the same time, molding techniques were competently used in complementary items such as handles and hinges, which were seen as decorative elements (Boyla, 2012).



Figure 2: William Morris design arts and crafts chair example (Web-1)

The chair in Figure 2 is an original example of an English antique Sussex chair. It is made of alder and beech wood. The seating area is woven from the original sea meadow. Designed by William Morris, this chair has survived from 1870-5. Its height is 91 cm (35.83 '), its width is 54 cm (21.26'), its depth is 45 cm (17.72 inches) and its seat height is 45 cm.



Figure 3: William Morris design arts and crafts chair example (Web-2).

In Figure 3, an example of an arts and crafts movement chair: 67 cm high, 35 cm wide, 30 cm deep. It is dated to 1895.

### 3.2. Art Nouveau

The Art Nouveau was a movement that objected to the imitative understanding of the art of the period and aimed to try new methods and forms. This movement, which started to appear at the end of the 1880s, was again created by arts and crafts movement designers. It has been called by different names in countries: Art Nouveau emphasizing innovation in French, "Liberty Style and Stile Liberte" emphasizing freedom in English and Italian, "Modernista" meaning modernism in Spanish, and "Jugend Style" meaning youth in German. Products on daily use items and building designs were produced. Like Arts and Crafts designs, as much as applying specific handcrafting to the movement, machinery, and industrial methods were also used when it is necessary.



Figure 4: Art Nouveau furniture example (Date: 1900s) (Designer: Majorelle, Louis) (Web-3),  
Art Nouveau chair example (Date: 1899-1900) (Web-4).

The designer of this chair example shown in Figure 4 is Majorelle, Louis. It is made of walnut wood. Its technique is carving. The back and seat of the chair are embroidered. The fabric is satin and it has fringes. Cabinet maker Louis Majorelle was one of the most influential designers of the Art Nouveau movement. He studied as a painter. At first, he continued to make furniture in the popular Rococo Revival style, but in the 1890s he came under the influence of the Nancy School, created by Emile Gallé, an Art Nouveau glass artist and furniture designer. He began to design furniture pieces - like this armchair - decorated with carving and intarsia, using natural floral motifs and forms. He used plant forms as inspiration but interpreted them as semi-abstract motifs. The silk upholstery on this chair he produced shows how he uses nature as inspiration, not as a direct model.

The main features of this movement are that interest in Japanese art and medieval life, there were designs inspired by nature, organic forms, symbolic approaches, the basic line is the wavy forms. Usually, pastel shades are used.

The designs are inspired by the curves of the branches, the shapes of the leaves, the shapes of the flowers (especially tulips, lilies, water lilies), and peacock figures. By bringing different textures side by side, a colourful effect is created in the space. And one of the important features of this movement is that the furniture is designed in a way that includes integrity with space. A texture found in the furniture can also be used on the ceiling or wall. Not only in furniture, but also in furniture and space, there is an understanding of creating a unity of language and creating a team. Sometimes, furniture can be used as a space divider to separate the space into parts.



Figure 5: An example of art nouveau furniture used as a separator (Web-5).

Figure 5 shows an example that is a part of the panel from the music room. This type furniture which was made of walnut wood, and various woods were applied to the panel by inlay method on this panel. At the top, 'Sainte Odile, patronne de l'Alsace' was written, and there are human figures and nature figures. It was built around the early 1900s. Its designer was Carl Spindler. Used trees are walnut, pear tree, maple, plane tree and, oak. It is 189.1 cm high, 146.8 cm wide and, 67.3 cm deep.



Figure 6: Art Nouveau furniture design (Web-6).

Furniture can have various uses as a function. For example, in the example we saw here, we come across both a seating element and a decorative shelf. These features show that the movement gives importance to both functionality and spatial integrity.

In wooden furniture, the Thonet technique is used, which allows the beech wood to be softened and bent with water vapor to obtain legs in different forms and curved skeletons without using nails. Apart from this technique, folds could be achieved by adding short pieces of wood together. In many cases, design studies could be made for forms that did not fit the properties of the wood. And some designers were able to use metal pipes to get these forms. Water waves, plants, animals, and human figures can be found on the furniture, which is the art of carving made with the natural colors of the trees without using paint by cutting and placing wooden coatings in different colors with handcrafting tools. At the same time, meaningful words and verses can take their place on these surfaces. Relief is obtained by carving solid wooden surfaces. As seen in Rococo, wood and metal can be used together.

### 3.3. Modernism

The intellectuals and designers met around the magazine "De Stijl" published in Rotterdam, the Netherlands in 1917, close to the end of the First World War, demand that the advancing technology be used to create an egalitarian new world. Meanwhile, people have become impoverished and the countries have been destroyed. De Stijl group progressed based on the principles of science, rationality, and social equality and argued that these principles could be effective in all areas of art and design. The modernist movement began to emerge slowly in the middle of the 19th century. This understanding, which attaches importance to functionality and simplicity, aims to make accessible designs. The importance they attach to simplicity can be understood from Adolf Loos' saying "Ornament is crime"

"In the De Stijl movement, which aims to get rid of individual consciousness and bring it to social consciousness, basic geometric shapes such as round, square, rectangular and yellow, blue, red were preferred. Doesburg "Get rid of nature from external appearances, the main structure will remain." He said. "De Stijl" artists believed that an art that is not based on the public cannot come into existence. Doesburg, in an article he wrote in De Stijl magazine, said, "We should understand that art and life are not separate fields." (Ipsiroglu, 1993).



Figure 7: Gerrit Rietveld, red and blue, 1918 (Charlotte and Fiell, 2012) and red and blue table (Web-7).

As shown in Figure 7, the chair produced in 1918 was made of plywood and solid wood pieces. The structural system was painted black, the parts were joined at right angles and highlighted with cross-connections. The seat is blue and the back is red. The ends of the pieces are yellow. Each piece was highlighted in this way. It was reflected that each piece was accepted separately and formed the whole. Connections between parts are made with screws and bolts. Simplicity, basic colors, and universality were important for De Stijl artists.

The 'Red and Blue Table' is a parallel work with Rietveld's earlier red-blue chair. Horizontal and vertical surfaces painted in red, blue, black, white, and yellow are seen. Rietveld used De Stijl forms also at this table. The table designed for the Schroder House has the asymmetrical style of the house. This style is distinct from the modernist architecture of the 1920s (Duncan, Alashair, 1998).



Figure 8: Modernism chair example (Web-8).

In the 1930s, it is seen that the hard lines of modernist furniture started to soften. Designers like Alvar Aalto were experimenting with plywood or laminated wood. In the United States, Charles Eames and Eero Saarinen, who were lecturers, tried to design furniture which compatible with the human body with plywood between 1937-1939. These two designers were able to shape the backrest and seat parts from one piece by bending the plywood in a few places, and they also influenced the designers who came after them. Designers working on designs that are more compatible with the human body emphasized the necessity of stylization in design, taking into account the spiritual nature of the person. "Functionality" and "fiction" were prioritized as the basic elements in shaping the design and its content was enriched.

### 3.3.1. Bauhaus

In the same period, the Bauhaus school, which will continue its activity from 1919 to 1933, was opened in Germany. The Bauhaus was started by architect Walter Gropius. This school, which gives examples of modern furniture, has created new trends in the fields of architecture, design, and art by influencing 20th-century design. It brought together the architects and artists of the period in which it was founded, and it is seen that it is not only an educational institution but also a production center and a place where all these are discussed. In 1925, it moved to its new campus in Dessau and tried to be more involved with industrial institutions. During this period, former students have been assigned to teaching positions, and new architects and designer students are trying innovative design practices together. Marcel Breuer started to produce furniture with metal pipes in this period.

The main features of this movement are that a new architectural era started, functionality, cheap and permanent products, the cooperation of architecture, painting, sculpture, and craftsmanship, form follows function, new materials, and techniques, a bond between materials, colors, form, and technology. And Walter Gropius defined the artist as the supreme of the craftsman.

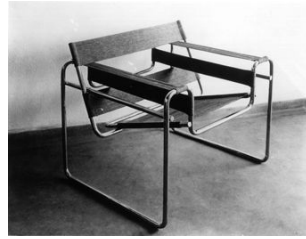


Figure 9: Marcel Bruer - "Wassily chair" (Web-9).

"The Wassily chair, which was inspired by the handlebar of the bicycle, was made of canvas, the seat; backrest and armrest parts were connected to a system consisting of bent pipes. In addition to this 1925 chair, Breuer had designed another chair with tubular legs that supported the seat from the front and turned back on the floor. The first of the chairs with similar legs was conceived by the Dutchman Mart Stam (1899-1986) and inspired one of the Bauhaus teachers, Ludvig Mies van der Rohe (1886-1969). Thus, these three console chairs, which have a similar appearance with small differences, have become a symbol of the period. Among the furniture, which could be made with plumbing pipes first, the ones belonging to Stam and Breuer were later manufactured by the Thonet company. In these years, Breuer used the pipe structural system, such as table, cabinet, etc. he designed other furniture." (Boyla, 2012).



Figure 10: Barcelona chair (Web-10).

Another important Bauhaus furniture is the Barcelona chair designed by van der Rohe in 1929. He designed this chair for the Spanish King, who visited the German pavilion design of him at the Barcelona Fair that he attended that year. This chair was a more ergonomic design that was more compatible with the human body than previous modernist designs. The feet were steel llama, the seat and backrest were leather- covered.



Figure 11: Erich Dieckmann chair - Date: 1926 (Web-10).

Bauhaus was not the only design school exploring these radical ideas, but the most famous. Erich Dieckmann, who designed the chair in Figure 11, was a student at the Bauhaus between 1921 and 1925, and Marcel Breuer can be seen at the intersection of the lines and parts on the chair. In 1925 the Bauhaus moved from Weimar to Dessau, but Dieckmann remained in Weimar and headed the furniture workshop in the renamed Bauhochschule. And the chair in Figure 11 was designed during this period.

### 3.4. Art Deco

The Decoration Artists Association, founded in Paris at the beginning of the 20th century, was striving for France to regain its former influence in the field of interior architecture and furniture. While there were ideas to exhibit new designs in Paris in 1915, the exhibition was held in 1925 under the effect of the war that broke out. The source of the name Art Deco is "International Decorative Arts and Contemporary Industry Exhibition". Formally, Art Deco can be examined in two different periods. In the

period until the 1929 depression, furniture made of precious materials with careful workmanship and a decorative aspect stood out. Traces of various palace styles could be seen on the furniture.

In the 1930s, the effects of the modernist view prevailed and the furniture was simplified again. The center of the Art Deco movement has shifted from France to America. The designers who adopted this trend were applying the traditional techniques used by the old palace furniture designers in their designs. One of the important things in their design is the textures of the trees. The decoration of the surfaces with the marquetry technique became common again. Coverings were made with roots, knotty branches, or sections obtained from the trunk where the patterns are evident. Especially before the 1930s, they were working with tropical trees such as mahogany, rosewood, African olive, and ebony. The colors of the trees were used to create contrast. Except for wood, materials such as silver, copper, shark skin, ivory, silk cloth could also be used for coating (Boyla,2012).



Figure 12: Spider Table and Art Deco furniture examples, design by Ruhlmann, Emile Jacques (Web-10).

Spider Table was created in 1929 by Ruhlmann, Emile Jacques as shown in Figure 12. It is made of ebony wood and has an ivory inlay placed in a circle in the center of the square table. Feet are silver plated and have brass connections. The tabletop is square, the bottom shelf is circular. Height: 80.7 cm, Width: 60 cm top, Depth: 60 cm top, Diameter: 19 cm.

### 3.5. Pop Art

Pop art movement developed in post-war America. Andy Warhol is the best-known representative of this movement. The issues dealt with by this movement; industrial classical objects used in daily life, popular events experienced, people of public interest. It was intended to show the topics as they are, without adding comments. Warhol, a graphic designer, was making his paintings to copy them. This meant that he created industrial products more than works of art. With this movement reflected in furniture design, the use of plastic materials in design has become widespread. New designs were made without considering the modernist principles. In the 1950s, pop art aimed to reflect the value judgments of the people in a realistic way. In the 1960s, colorful, fun, toy-like types of furniture were designed and items reminiscent of popular events of the period were used for design purposes.



Figure 13: Sacco chair and blow (Web-10).

In the 1950s, designers were designing furniture for important Italian companies such as Zanotta, Cassino, Capellini, Molteni. Armchairs made of polyurethane foam, vacuum-packaged seats, a synthesis of consumption and pop culture, and plastic seats were the furniture of that period. In addition, furniture made of colored and patterned cardboard that can be folded and carried like a box was also being tried. Furniture with features such as portability or puffing could be found. At that time, the rivalry between America and the Soviets, space travels, young people's search for a new life, the use of atomic energy were movement issues, and accordingly, the furniture designed with the influence of the imagination and space films were in fashion.



### 3.6. Hi-Tech

Towards the end of the 1970s, new life values emerged with the acceptance of technology as reliable. New topics such as ergonomics and occupational safety started to be discussed by designers. Designs were for especially the elderly, disabled people, and children. The most well-known feature of this movement is loft designs. The designs, which emerged in a more refined form compared to the first examples made in the 1970s, started to be produced by the most important representatives of the movement such as Rodney Kinsman, Michael Hopkins, and Richard Rogers. Among the furniture designs of the period dominated by engineering, Norman Foster's table with a glass top, which was designed in 1988, represented an advanced fictional understanding. Despite the flamboyant emergence of postmodernism, some designers continued to work close to Hi-Tech in the 1980s.

### 3.7. Post Modernism

The post-modernism was first introduced in the 1960s by the critic Nicolaus Pevsner, who believed that "architecture moved away from modernism and assumed a more emotional, formalist, symbolist and illogical identity." The first strong protests against Modernism in America came from architect Robert Venturi (1925-) with the books of

"Complexities and Contradictions in Modern Architecture" (1966) and

"Learning from Las Vegas" (1971).

In the first book, the author argued that concessions should be made on the rational principles accepted in architecture, and the necessity of some distortions, ambiguities, and hybrid styles. In his second book, the importance of the likes of the man in the street was emphasized. Robert Venturi was already practicing his thoughts in the house he had built for his mother in 1962. One of the young architects of the period, Michael Graves' Portland Building in Oregon caught attention in 1980. The AT&T building of Philip Johnson, who worked with Mies van der Rohe for a long time and was a successful practitioner of the modernist view, was built between 1978 and 1982 in New York, with its triangular pediments, proving that Postmodernism has now settled in architecture. The buildings were no less functional than before, but they also contained decorative elements (Boyla, 2012).

Architects of this period were also furniture designers. The common feature of post-modernist furniture was the search for a form of untested until that time. There were designers who both worked with the latest technology and materials, preferred handcrafts, and used both at the same time.

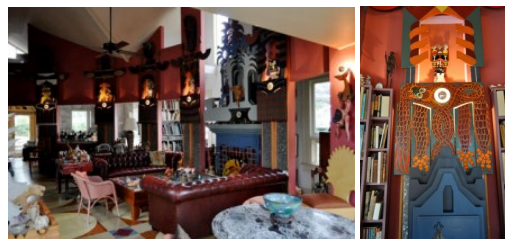


Figure 14: Charles Moore house (Rayn, 2012).

For example, Charles Moore's furniture contained very complex spaces with toy-like figures and structures in layers that developed from the surface to the inside shown in Figure 14. These places could remind you of ancient cities or a modern village. Handwork was inevitable in such a design. The material used was "Formica Colorcore", a synthetic product of the advanced technology of the 1980s. In this design concept, the past and the present coexist, and at the same time, old and new, valuable and ordinary, coarse and fine are intertwined.



Figure 15: Spine Chair (Web-10) and Michael Graves designs; Stanhope (Web-11), Plaza (Web-12).

Another feature of the furniture was its monumental appearance. Michael Graves' "Plaza" dressing table and "Stanhope" bed, Hans Hollein's "Marilyn" sofa were examples of this type in Figure 15. Portuguese designer Tomas Taveira, on the other hand, designed furniture that was deformed and made meaninglessly decorated to disturb the user. Symbolist approaches are observed in the exaggerations in shaping the furniture and in the ornaments.

### 3.8. Minimalism

A much simpler design concept emerged in the late 1980s. In the first half of the 20th century, it was argued that only essential elements should be used in the design. Architects and designers who followed the modernist movement in the 1960s also wanted to remove the excesses. Mies van der Rohe "Less is more.", Buckminster Fuller "Doing more with less" and Braun company designer Dieter Rams "Less, but better", said. In the minimalism movement, Japanese architecture, De Stijl movement, and Bauhaus and Ulm schools have great influences.

Besides, with industrialization, people now wanted to move away from poorer quality, more experimental, and flashy furniture. Instead of all these, plain, cheap, and useful ones were preferred. Environmental problems that emerged in the 1990s were too important to ignore. And the understanding of minimalism enabled designers to benefit from natural resources efficiently and without waste by keeping the materials and production works to a minimum.

## 4. Discussion

Movements in a distinct line that continued for a while in designs were followed by searches and movements in opposite characters. The economic, cultural and political events affected the art and production fields of the period and constantly created new movements. Along with the developing technology with industrialization, products produced with new techniques have emerged. It can be mass-produced and the furniture that can be cost less has become both diversified and accessible to all public. After the Arts and Crafts movement, which aimed to revive the disappearing handicrafts, Art Nouveau emerged, which included machines and industrial methods when necessary, as well as applying handicrafts specific to the Arts and Crafts movement. After the war, modernism, which attaches importance to simplicity, developed and schools such as Bauhaus were opened. Art deco movement, which wanted to continue the traditional techniques used by the old palace furniture makers in their designs, was seen at that time, and then the search for a new life for young people living in the 1950s, comic books and space films, the competition between America and the Soviet, the designs inspired by the news emerged and pop art movement emerged. In this movement, the aim is to convey what is meant without comment. The emergence of concepts such as ergonomics and occupational safety in the 1970s and the technology to prove itself led to the hi-tech movement. And with the search for untested forms, post-modernism emerged, and then the value is given to simplicity and the natural environment increased and the understanding of avoiding pretension. And the minimalism movement was dominated by the understanding of "less is more" developed. All these successive movements also influenced each other.

It can be said that the Bauhaus school forms the basis of today's furniture. In this period, for the first time, standardization for furniture production, ease of assembly and using new technologies started to produce higher quality furniture. It can be said that it includes similar approaches in terms of simplicity, linearity, logic of producing designs with low cost, and suitability for mass production.

Today, the use of wooden materials has become more widespread thanks to new technologies. In addition, plastic materials and industrial materials such as carbon fiber, fiberglass, polyurethane, polyethylene, and polypropylene are used. With geometric forms, designs in amorphous forms can also be produced. In today's furniture designs, as in Bauhaus designs, the simple design concept has been adopted, and the use of thinner steel profiles, which emphasize lightness, has been replaced by the use of thinner section steel profiles today.

Today, the concept of design has been adopted for everyone in the field of design and the designs have started to gain universal quality. Universal design, which emerged with the development of barrier-free and accessible concepts, was first mentioned in 1970. The aim is for the maximum number of users to benefit from designs, to be able to provide to the needs of each user. As an example of this design approach, today's furniture-related applications are as follows: Designing furniture to be used at different heights for children, elderly, disabled and all other users, removable shelves, an adjustable work surface for the desk at the desired height, allowing you to work standing and sitting, avoiding unnecessary complexity in furniture, giving priority to simple and comfortable use. Ensuring that it is easy to understand how to use it with the symbols placed on the moving furniture.

In the light of all these data, we see that the change in materials, design and usage areas by time by. Movements have a major role in the development of the material by enabling the use of them in different ways with the returns of the period they were adopted (Table 1).

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