

Architectural History Thesis

Modern architects and their furniture

Case studies of Alvar and Aino Aalto, Charlotte Perriand and Le Corbusier,
Charles and Ray Eames, and their furniture designs



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Cover images:

Alvar and Aino Aalto (1920)

From: Alvar Aalto Foundation

Charlotte Perriand and Le Corbusier (1928)

From: Judit Pinach Martí, "El Ojo En Abanico (The Fan Shaped Eye)" (Universitat Politècnica de València, 2017).

Charles and Ray Eames (1956)

From: <https://www.iconbydesign.com.au/blog/icons-of-design-charles-ray-eames/>

Abstract

This thesis contains case studies of architect-duo's Alvar and Aino Aalto, Charlotte Perriand and Le Corbusier, and Charles and Ray Eames, that will be used to find out why they designed furniture as architects. This will give more explanation on why an architect would or should design furniture. The thesis shows that the architects have approached the choice of designing furniture each in a different way. Alvar and Aino Aalto designed furniture as an inseparable part of their architecture, each piece specifically for a project, creating a *Gesamtkunstwerk*. Le Corbusier worked together with Charlotte Perriand to design furniture to fit his newest modern architecture to also get to a *Gesamtkunstwerk*. While Le Corbusier remained more focused on architecture throughout the rest of his career, Charlotte Perriand kept designing furniture as well as architecture. For Charles and Ray Eames architecture soon in their careers became secondary to designing furniture. They produced pieces of furniture unrelated to their few architecture projects. However all of them having different thoughts behind designing furniture, they all do share furniture design as an important and career defining interest.

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I. Introduction

Why is it so interesting for architects to design furniture? According to Page, for furniture that is chairs, “there are many reasons ranging from the egotistical to the philanthropic, from a wish to unify the arts to a desire to counteract the effects of industrialization.”¹ Peter Blake suggests that the reason modern architects like Le Corbusier and Alvar Aalto devoted so much time to designing furniture was because “the inside and outside of a modern structure are regarded as one, thanks to the technological development of building with large sheets of glass, and the aesthetic development of sensing objects simultaneously from many vantage points.”² And as Zeev Aram stated in an interview, “architects want an outlet for their talent, as well as to make an impression on the market.”³ Montjoy complements this by saying that “there are also those people who are not fulfilled by a traditional job and thus find greater success in designing chairs”.⁴

Whatever the reason behind it may be, the fact is that many architects did design great pieces of furniture. This paper will focus on the work of Alvar and Aino Aalto (1898-1979), Charlotte Perriand (1903-1996) and Le Corbusier (1887-1965), and Charles and Ray Eames (1907-1988).

The reason for the combination of these three architect-duo’s is that they all lived during and contributed to the period of the modern movement. This shift in architecture led to new insights into what architecture should look like. However, during this time each couple had a different approach and reason for designing their furniture, but all with the same background as architects and designers. This brings some good comparisons and ways of how to look at furniture designed by architects.

The main goal of this thesis is to dig into the lives of the architects named above and find out their reasons for designing furniture. What did the designing of furniture bring to the lives of the architects? How and when did it start? What were their reasons for designing furniture? And how was the furniture meant to be interpreted or used? Another thing to gather from this thesis is the relationship between certain furniture pieces and the project they were specially designed for. Via these questions, a better understanding can be obtained of why those architects designed furniture as well as architecture.

The architects will be studied one by one in separate chapters using literature studies. First Alvar and Aino Aalto, then Le Corbusier and Charlotte Perriand, and finally Charles and Ray Eames. The literature used are biographies combined with catalogues about the complete works of the architects, such as *The Work of Charles and Ray Eames: A Legacy of Invention* by Albrecht, *Alvar Aalto: The Complete Catalogue of Architecture, Design & Art* by Schildt, and *Charlotte Perriand: The Modern Life* by McGuirk. Details about their careers and reasons for furniture design are distilled from the detailed biographies and catalogues and then connected. This shows how and when with certain events or career choices, a shift from architecture to furniture took place.

Doing the studies about three different architect-duo’s and then comparing them, will show how different architects deal with designing. It shows how important furniture design can be for architecture projects. Looking at not only one architect, but at three duo’s and comparing them, adds

¹ Marian Page, *Furniture Designed by Architects* (Whitney Library of Design, 1980), 7.

² Peter Blake, *Master Builders: Le Corbusier, Mies van Der Rohe, and Frank Lloyd Wright* (WW Norton, 1996).

³ Agata Toromanoff, *Chairs by Architects* (WW Norton, 2016), 132.

⁴ Valeria Montjoy, “15 Contemporary Architects Who Design Chairs,” n.d., <https://www.archdaily.com/976388/15-contemporary-architects-who-design-chairs#:~:text=With%20this%20in%20mind%2C%20there,of%20proximity%20to%20the%20user.>

value to the way of looking at furniture design in architecture. It empowers the existing research about furniture in architecture and studies about the architects.

II. Alvar and Aino Aalto

Introduction

Alvar Aalto (1898-1976) finished his architecture studies at the Helsinki Institute of Technology in 1921 and set up his first architecture practice in Jyväskylä. The work he did in his early years followed the teachings of Nordic Classicism, which was the style that was common at that time.

Aino Marsio (1894-1949) also studied architecture at the Helsinki Institute of Technology, where she graduated as an architect in 1920. After graduating, she went to work for several different architects, when in 1924 she joined the office of Alvar Aalto whom she had already met during her studies. In 1925 Aino and Alvar got married. The couple (figure 1) started working together and in 1927 they moved their office to Turku.

In the late 1920s and early 1930s, they made a few journeys to Europe on which they became familiar with the latest trends in Modernism. After working in Turku for a few years, Alvar and Aino moved their office to Helsinki in 1933.



Figure 1: Alvar and Aino Aalto (1920)

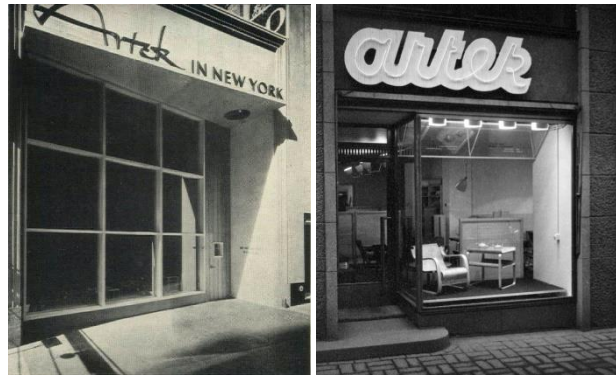


Figure 2: Artek stores in Helsinki (1939) and New York (1940)

Perspective on furniture

Alvar and Aino Aalto created a great variety of designs in different categories. They created architecture and interiors for religious, physical health, cultural, office, industrial and commercial buildings, and for housing. But they did not only design architecture. They always designed each building as a complete work of art – in every detail, such as the furniture and light fittings. In 1935, 14 years after Alvar Aalto started his architecture firm, Alvar and Aino Aalto founded the design firm Artek to promote the growing production and sales of the furniture they made (figure 2). Aino began at Artek as chief designer and later became general director. The furniture at Artek was a joined process by Alvar and Aino, but for the buildings, mostly Aino would design the interiors, whereas Alvar focused on the bigger picture. With Artek, they focused on design and art, such as furniture, lighting, and glass objects (figure 3).



Figure 3: Bølgeblik series (1932), Alvar Aalto

The design of their furniture combined practicality and aesthetics with series production, following the main Artek idea of encouraging a more beautiful everyday life in the home. It was one of their greatest achievements, which let them to create their architectural ideas. The reason was that through furniture, the Aalto's came into direct contact with a natural material – living wood – “which offered them the sensor resistance and concrete results that the abstractions they dealt with on their desks could not provide.”⁵ Referring to his bentwood furniture, Alvar Aalto spoke of wishing to learn ‘the language of wood fibres’. This wish of Alvar Aalto is visible in the way he always implemented wood in his architecture and furniture.

The existence of Artek shows how important the relationship with furniture is in the designs of Alvar and Aino Aalto. The way that they integrate their furniture into their designs is remarkable. They were aware of the way they used furniture in architecture projects. In 1954 Alvar Aalto wrote about this: “My furniture rarely, if ever, arises as the result of professional design. Almost without exception, I have designed it in conjunction with architectural projects, a mixed bag of public buildings, aristocratic residences, and workers’ huts. It’s great fun to design furniture this way.”⁶

Knowing that from the beginning of their careers as architects, Alvar and Aino Aalto integrated their interior and furniture designs into their architectural projects, it is interesting to take a closer look at the design projects and see how and where the interior and furniture designs made or supported the total design.

Furniture in specific projects

The Aalto's designed several architectural projects where they were also able to design the interior and the furniture as well. This led to projects that were worked out in detail. For example, when Alvar and Aino designed the Seurahuone café in Jyväskylä and the Hämäläis-Osakunta student club in 1924, they came up with a series of unique pieces of chairs, tables, and cupboards. They were specially made for their design, and placed according to plan in the designed interior.⁷

The work of Alvar and Aino Aalto went through a functionalist phase for several years. That enabled them to make an international breakthrough, mostly because of the design for the Paimio Sanatorium (1929-1933) (figure 4), which was an important Functionalist breakthrough. The Aalto's

⁵ Göran Schildt, *Alvar Aalto: The Complete Catalogue of Architecture, Design & Art*, 1st ed. (Wiley, 1994), 255.

⁶ Sandra Dachs et al., *Alvar Aalto: Objects and Furniture Design By Architects* (Ediciones Polígrafa, 2007), 10-11.

⁷ Göran Schildt, *Alvar Aalto: The Complete Catalogue of Architecture, Design & Art*, 1st ed. (Wiley, 1994), 246.

had embraced “the principals of user-friendly, functional design in their architecture.”⁸ The Paimio Sanatorium was the primary project where Alvar Aalto with the help of Aino could design both the building, the interiors, and the furnishings. The building was designed for people suffering from tuberculosis, which Aalto took as the perfect opportunity to create an all-embracing design that would give him the chance to “create a unique atmosphere”.⁹ He also described the main purpose of the building to “function like a medical instrument; one of the basic requirements for healing is to provide total peace.”¹⁰



Figure 4: Paimio Sanatorium (1933), Alvar and Aino Aalto



Figure 5: Chair 41/Paimio Chair (1931), Artek

With the tuberculosis patients’ needs in mind, Alvar and Aino Aalto designed the *Chair 41* (figure 5) specifically for this project. They designed the seatback at such an angle to ease breathing. Other important aspects of the form of this chair were lightness, the ease to maintain, and most importantly, comfort. As stated in the book *Chairs by Architects*, the chair “demonstrates two important features in Aalto’s designs: the use of natural materials and organic forms.”¹¹ Two other chairs specially designed for the waiting area of the sanatorium, are the *Chair 51/403* (figure 6) and the *Chair 42* (figure 7), both also made from bent plywood.

For the interior of the Paimio Sanatorium, the Aalto’s also designed the rooms “determined by the state of weakness of the patient lying in bed.”¹² They chose the colour of the ceiling to give a feeling of peace and silence, the light sources were placed so that they would not be in the patient’s field of vision, and the water taps next to the beds would make no sound, so they would not disturb the other patients in the room. They also designed the beds, bedside tables, cupboards, examination tables, recliners, and at least six other chairs.

⁸ “Alvar Aalto,” Alvar Aalto Foundation, February 8, 2021, <https://www.alvaraalto.fi/en/information/alvar-aalto/>.

⁹ Sandra Dachs et al., *Alvar Aalto: Objects and Furniture Design By Architects* (Ediciones Polígrafa, 2007), 32.

¹⁰ Sandra Dachs et al., *Alvar Aalto: Objects and Furniture Design By Architects* (Ediciones Polígrafa, 2007), 32.

¹¹ Agata Toromanoff, *Chairs by Architects* (WW Norton, 2016), 45.

¹² Sandra Dachs et al., *Alvar Aalto: Objects and Furniture Design By Architects* (Ediciones Polígrafa, 2007), 32.



Figure 6: Chair 51/403 (1932), Artek



Figure 7: Chair 42 (1932), Artek

Another example of a project where the furniture was specifically designed for, was the Villa Mairea (figure 8), a private house designed for the Aalto's friends Harry and Maire Gullichsen in 1938-1939. The house was innovative for its lighting. Shadows were as important as light, and atmosphere as important as utility.¹³ In an article written by Artek is a quote about the Villa Mairea that says: "the inventive shapes and varied illumination of the Aalto's' fittings – compelling sculptural objects in their own right – moved away from the geometric forms and even light of their Bauhaus equivalents."¹⁴ The interior and lighting of Villa Mairea created a place of intimacy, homeliness, and ease, which fits the ideal of the Aalto's to create "a more humane built environment".¹⁵ Alvar and Aino Aalto applied several electric lamps, including a pendant lamp that Aino had designed (figure 9), to create that intimacy, homeliness, and ease.

They also designed a table, chair, and a recliner for the garden furniture. Here Alvar and Aino Aalto wanted to "extol the elastic possibilities of curving wood, whereas the back of the chair (figure 10), matches the form of the pressure applied by a person sitting in it."¹⁶ This chair shows the fun that Alvar and Aino had in making furniture for their architecture, as they were experimenting and trying out new ways of using wood.



Figure 8: Villa Mairea (1939), Alvar and Aino Aalto



Figure 9: Pendant lamp in Villa Mairea (1939), Aino Aalto

¹³ Artek, "Artek - The Aaltos at Villa Mairea: A More Human Light," Artek, n.d., <https://www.artek.fi/en/stories/the-aaltos-at-villa-mairea-a-more-human-light>.

¹⁴ Artek, "Artek - The Aaltos at Villa Mairea: A More Human Light," Artek, n.d., <https://www.artek.fi/en/stories/the-aaltos-at-villa-mairea-a-more-human-light>.

¹⁵ Artek, "Artek - The Aaltos at Villa Mairea: A More Human Light," Artek, n.d., <https://www.artek.fi/en/stories/the-aaltos-at-villa-mairea-a-more-human-light>.

¹⁶ Sandra Dachs et al., *Alvar Aalto: Objects and Furniture Design By Architects* (Ediciones Polígrafa, 2007), 76.



Figure 10: Sunflower garden table and chair (1939), Artek



Figure 11: Interior of Villa Mairea (1939); Alvar and Aino Aalto

The Viipuri Library from 1935 (figure 12) is another project by the Aalto's where Alvar wanted to design every single detail of the furnishings. This led to a design with important and interesting fixtures, like bookcases, counters, wall panelling, free-standing screens, physiologically adjusted lamps, and the undulating ceiling of the auditorium.¹⁷ But not only new furniture was being designed for this building, also already existing pieces were put into the different spaces in the building (figure 13).

A final project to look at, is the Aalto House at Riihitie in Munkkiniemi, Helsinki, built between 1934 and 1936 (figure 14). The house integrates the office of Alvar and Aino with the living area. The private spaces are upstairs, such as the bedrooms, bathroom, and children's room.¹⁸ The house is severe and closed off to the street side, but is very open and light towards the garden, and is finished with white paint in combination with wood. However Alvar and Aino did not design furniture specifically for this house, the house did create a perfect interior for implementing and playing with their own Artek furniture (figure 15).



Figure 12: The Viipuri Library (1935), Alvar and Aino Aalto



Figure 13: The Viipuri Library lecture hall (1935), Alvar and Aino Aalto

¹⁷ Göran Schildt, *Alvar Aalto: The Complete Catalogue of Architecture, Design & Art*, 1st ed. (Wiley, 1994), 250.

¹⁸ Göran Schildt, *Alvar Aalto: The Complete Catalogue of Architecture, Design & Art*, 1st ed. (Wiley, 1994), 250.



Figure 14: Entrance of the Aalto House (1936),
Alvar and Aino Aalto.



Figure 15: Interior of the Aalto House (1936), Alvar and Aino Aalto

Furniture not linked to a project

Although the industrially produced furniture that Alvar and Aino developed from 1928 was considered originally for specific buildings, such as the Paimio Sanatorium and the Viipuri Library, as mentioned above, Alvar and Aino assumed from the start that they would also be used later to furnish completely different interiors. “From then on”, as described in *Alvar Aalto: The Complete Catalogue of Architecture, Design & Art*, “their furniture design was based on the deliberate application of the principle of flexible standardization, with standard models which could be combined to furnish a variety of interiors.”¹⁹ Alvar and Aino Aalto clearly designed their furniture to be used in all of their other projects.

With their furniture firm Artek, Alvar and Aino Aalto also designed a wide range of different furniture that did not belong specifically to an architectural design project. However, you can still see the resemblance of their furniture to their architecture, and the way they designed every detail in their projects. Alvar Aalto described his beliefs for this way of designing in a lecture he gave on November 15, 1957, at the ‘Schöner Wohnen’ design forum in Munich:

“Human life is a combination of tragedy and comedy; the shapes and designs which surround us are the accompanying music. Furniture, fabrics, colour schemes, and structures can be earnestly and happily made so that they produce no contrast to the tragedy and comedy of human life. In this, they correspond to decent dress and decent living. All exaggerated designs make a mockery of us and even worse. I believe that if more moral aspects are taken into account, industry, with its vast range of potentialities, can avoid comic exaggerations and help man in many ways to live more harmoniously. If in these ways town planning, the home, the apartment, and interior fittings can be improved, we shall have the satisfaction that we, too, are able to let a little sunshine into the soul of unhappy mankind.”²⁰

As Alvar and Aino Aalto used a lot of their already existing furniture in new building projects, the following furniture pieces do not connect to an architectural design specifically. However, they do show the relation to the Aalto’s architecture itself and also the way they thought about designing.

¹⁹ Göran Schildt, *Alvar Aalto: The Complete Catalogue of Architecture, Design & Art*, 1st ed. (Wiley, 1994), 246.

²⁰ Göran Schildt, *Alvar Aalto: The Complete Catalogue of Architecture, Design & Art*, 1st ed. (Wiley, 1994), 246.



Figure 16: The Silla 11/Chair 611 (1929), Alvar and Aino Aalto



Figure 17: Stool 60 and Chair 65 (1933), Artek

The *Silla 11/Chair 611* from 1929 (figure 16) is one of the first chairs designed by the Aalto's, originally made from birch for the frame and bent plywood for the seat and back. The chair could be stacked and was used for the first time in the Civil Guard building in Jyväskylä.²¹

A few years later, from 1932 to 1933, Alvar and Aino created the *Stool 60* and *Chair 65* (figure 17). The legs of these items are made of a solid piece of birch wood, bent into a simple curve.²² Two years after the design in 1935, these stools and chairs were applied in the Viipuri Library (figure 13).

In 1936 Alvar and Aino Aalto designed the *Tea Trolley 98/901* (figure 18), after an earlier version of a side table submitted to the Thonet Mundu furniture design competition in 1929. The trolleys are made out of a beech laminated frame, lacquered white wheels, and a top from plywood with a layer of beech, lino, or laminated plastic.²³ A few years later in 1939, Alvar and Aino Aalto chose to use the tea trolleys in the design and interior for the Villa Mairea as well (figure 11).

As far as design was concerned, Alvar Aalto was driven by an interest in glass since it provided an opportunity to handle the material in a new kind of way using free forms.²⁴ In 1932 he produced the *Bølgeblik series* (figure 3), and when he won a competition organised by the Karhula glassworks in 1936, he started to experiment more with glass. This led to the creation of the *Savoy Series*, including vases, bowls, and trays in free-form (figure 19), also to be used for furnishing their other designs.



Figure 18: Tea Trolley 98 (1936); Artek



Figure 19: Savoy Vase from the Savoy series (1936); Alvar Aalto

²¹ Sandra Dachs et al., *Alvar Aalto: Objects and Furniture Design By Architects* (Ediciones Polígrafa, 2007), 22.

²² Sandra Dachs et al., *Alvar Aalto: Objects and Furniture Design By Architects* (Ediciones Polígrafa, 2007), 56.

²³ Sandra Dachs et al., *Alvar Aalto: Objects and Furniture Design By Architects* (Ediciones Polígrafa, 2007), 66.

²⁴ "Alvar Aalto," Alvar Aalto Foundation, February 8, 2021, <https://www.alvaraalto.fi/en/information/alvar-aalto/>.

Even though Alvar and Aino Aalto had already created a wide range of different furniture pieces by now, they kept determined to create more and better designs. The *Armchair 45* (figure 20), made between 1946 and 1947, was the first in a series of light-weighted wooden chairs.²⁵ The legs and armrests are constructed with a stiff structure, and the seat and back of the chair are a one-piece closed curve, that forms a single stretch of fabric. Later on, they evolved the structure of the chair towards a lower, more comfortable design.²⁶

In the line of willing to create more and better designs, in 1954 Alvar and Aino Aalto started the third phase in the evolution of leg design, by introducing the curve in the form of a fan.²⁷ This new kind of legs was applied in the *Stool X601* and the *Table X800* (figure 21) and, just like other chairs they designed, there were a lot of other different versions of the stool. The legs create a strong joint between the horizontal and vertical structure.

These improvements and new and better designs again show, just like with the sunflower garden chair, how much joy Alvar and Aino Aalto had in designing furniture.



Figure 20: *Armchair 45* (1947), Artek



Figure 21: *Legs for the Stool X601 and Table X800* (1954), Artek

Relation between furniture and architecture

As was visible in the previous projects, the designs of the architecture, interiors, and furniture have always been intertwined in the work of Alvar and Aino Aalto. This makes it hard to break down the work of Alvar and Aino into categories such as 'buildings', 'interior design', 'furniture', 'lighting', 'textiles', etc.²⁸ Alvar and Aino's implicit ambition was "to design complete environments in which the unique building is complemented by equally unique interiors consisting of specially designed furniture and other accessories."²⁹ This way of designing and producing an integrated artistic whole is also known as a *Gesamtkunstwerk*, and that is what Alvar and Aino Aalto did for every project they designed.

From a more analytical perspective, you can see the resemblances between the architecture, interiors, and furniture that were almost always being used by the Aalto's. These are, for example, flowing space, the modern combined with the archaic, natural light and light fittings,

²⁵ Sandra Dachs et al., *Alvar Aalto: Objects and Furniture Design By Architects* (Ediciones Polígrafa, 2007), 88.

²⁶ Sandra Dachs et al., *Alvar Aalto: Objects and Furniture Design By Architects* (Ediciones Polígrafa, 2007), 88.

²⁷ Sandra Dachs et al., *Alvar Aalto: Objects and Furniture Design By Architects* (Ediciones Polígrafa, 2007), 92.

²⁸ Göran Schildt, *Alvar Aalto: The Complete Catalogue of Architecture, Design & Art*, 1st ed. (Wiley, 1994), 246.

²⁹ Göran Schildt, *Alvar Aalto: The Complete Catalogue of Architecture, Design & Art*, 1st ed. (Wiley, 1994), 246.

experimentation, the use of wood, and many others.³⁰

Alvar and Aino Aalto found a specific way in their designs to get to these solutions and features. The use of wood is always visible in either the exterior or interior and always in the furniture. All places are very delicately, specific, and in perfect harmony. The furniture of Alvar and Aino, with their warm colours and easy way of being, fit their buildings well. The organic shapes and free form of the furniture sit easily in the mostly orthogonal-shaped buildings, creating a calming whole. At the same time the furniture strengthens the specific organic elements that they sometimes use in their buildings, such as the curved ceiling of the Viipuri Library. A great strength of Alvar and Aino Aalto.

Also, to reinforce these terms like the *Gesamtkunstwerk* or a perfect harmony, as the text above has described it, it could be said that Alvar and Aino Aalto did even more than making a *Gesamtkunstwerk* and a perfect combination of all the used features. They took a step further by making their furniture not only for their current designs but also to be implemented in later designs and to be designed for mass production as well, albeit in comparatively small quantities.³¹ This way, their furniture would be able to be used by others, always. They saw the quality of good furniture design and wanted the rest of the world to experience this as well.

³⁰ Sandra Dachs et al., *Alvar Aalto: Objects and Furniture Design By Architects* (Ediciones Polígrafa, 2007), 15.

³¹ Marian Page, *Furniture Designed by Architects* (Whitney Library of Design, 1980), 8.

III. Le Corbusier and Charlotte Perriand

Introduction

Charles-Edouard Jeanneret (in 1923 he adopted the name Le Corbusier) (figure 22) was born in 1887 at La Chaux-de-Fonds in Switzerland. His father was a craftsman in enamel and his mother was a musician and at the age of 13 he attended the local art school in La Chaux-de-Fonds. In 1908 he started working as an architect in the atelier of Auguste Perret in Paris where he stayed for 15 months. He then entered the studio of Peter Behrens where he met Mies van der Rohe and Walter Gropius. He also worked briefly with Josef Hoffmann in Vienna. Interestingly, all three architects that Le Corbusier had worked with, also designed furniture.

In 1911 Le Corbusier returned to the art school in La Chaux-de-Fonds to form a new department that would cover every aspect of design; from doorknobs and flatware to furniture and architecture. The furniture Le Corbusier was designing during this period was surprisingly revolutionary, because as Charles Jencks has pointed out, “he was specifying “Louis XIII” and “Directoire” furniture in his buildings.”³² In 1917 Le Corbusier returned to Paris where he made his first paintings. Then in 1918, he had his first exhibition with Amédée Ozenfant, a French painter and theoretician, who cofounded the 20th-century art movement *Purism*. In 1920 Le Corbusier founded an avant-garde magazine with Ozenfant, *L'Esprit Nouveau*, that covered not only architecture but all the arts and sciences.³³ In 1921 he opened his own atelier with his cousin Pierre Jeanneret and from then on committed his life partly to painting and partly to architecture.



Figure 22: Le Corbusier (1929).



Figure 23: Charlotte Perriand (1955).

In 1927 Charlotte Perriand joined the atelier of Le Corbusier and Pierre Jeanneret. Charlotte Perriand (figure 23), who was born in 1903, lived a very modern life. Page wrote that “in her attitudes to furniture, domestic space, mass housing, the kitchen, and leisure, her work pursued modernist ambitions, and embodied modernist compromises and contradictions.”³⁴ She graduated from the École de l’Union Centrale des Arts Décoratifs in Paris in 1925. During the 18 months of her graduation, she became more and more known in the world of Art Deco. She exhibited her cabinet for silverware (figure 24) in May 1927 at the Salon des Artistes Décorateurs. In two following exhibitions in October 1927 and 1928, she exhibited two rooms from the studio apartment at 74 rue Bonaparte in which she lived at that time, where she showed her furniture.

³² Marian Page, *Furniture Designed by Architects* (Whitney Library of Design, 1980), 184.

³³ Marian Page, *Furniture Designed by Architects* (Whitney Library of Design, 1980), 184.

³⁴ McGuirk, *Charlotte Perriand: The Modern Life* (the Design Museum, 2021), 7.

Charlotte Perriand could have had a great career as an Art Deco designer, however, that plan changed completely when she read Le Corbusier's *Vers une architecture* and, especially, *L'art décoratif d'aujourd'hui*. The latter was a radical attack on the principles and techniques of Art Deco, in which Charlotte had been educated.³⁵ Le Corbusier had designed furniture before, and designed interiors for his wealthy Swiss clients in the 1920s, where he had followed the advice of the Austrian writer and designer Adolf Loos who said: "Modern man needs no 'modern design' and, above all, no decoration. Leave this to the craftsmen. Furnish your interiors with the best of what is available."³⁶

After this, Perriand decided that she should work with Le Corbusier, and he hired her as a furniture designer. She spent the 1920s and 1930s in the studio of Le Corbusier and Pierre Jeanneret. She would become close friends working with the two, which would give shape to the rest of her career which she would spend apart from Le Corbusier.

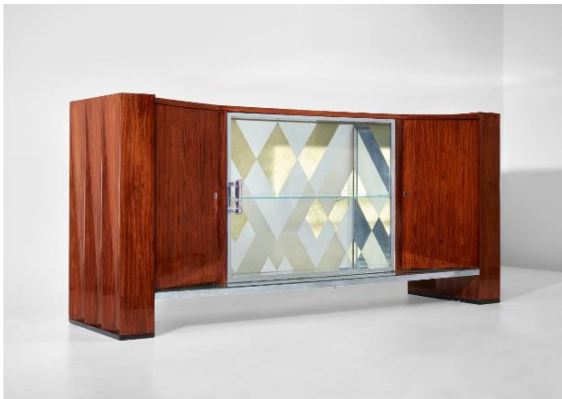


Figure 24: Cabinet for silverware (1927), Charlotte Perriand.

Perspective on furniture

For the interiors of the buildings he designed, Le Corbusier originally chose chairs and other objects that he thought were so 'mass-produced' as to be "virtually anonymous".³⁷ But later he, Charlotte Perriand, and Pierre Jeanneret, began to design furniture themselves for their designs. In 1925 Le Corbusier wrote: "All I ask is that we build modern mass-produced furniture and not affectations of royal styles." However, the chairs of Le Corbusier, as he summarized, "were also designed for a particular space and never intended to be mass-produced."³⁸

One of the principles that Perriand carried with her from the time she worked with Pierre Jeanneret and Le Corbusier, was the idea that furniture was 'equipment' and that most furniture should be built in by the mason, leaving only tables and chairs to be added.³⁹ The basis of this new equipment was the standard unit (*casier standard*) (figure 28), which are "cupboards composed of sections of equal sizes which were fitted together."⁴⁰ The *casier standard* could be built into the wall, act as a partition between two rooms, or stand against the wall. This way, a maximum amount of space was left for beds, tables, and various types of chairs. The practical notion of equipping a space as part of

³⁵ McGuirk, *Charlotte Perriand: The Modern Life* (the Design Museum, 2021), 21.

³⁶ McGuirk, *Charlotte Perriand: The Modern Life* (the Design Museum, 2021), 21.

³⁷ Clement Meadmore, *The Modern Chair: Classic Designs by Thonet, Breuer, Le Corbusier, Eames and Others* (Dover Publications, 2012), 60.

³⁸ Marian Page, *Furniture Designed by Architects* (Whitney Library of Design, 1980), 8.

³⁹ McGuirk, *Charlotte Perriand: The Modern Life* (the Design Museum, 2021), 9.

⁴⁰ Renato de Fusco, *Le Corbusier, Designer: Furniture, 1929*, First Edition (Barron's, 1977), 18.

an integrated spatial plan, as opposed to decorating it, stood central in the thinking of Le Corbusier and Charlotte Perriand.⁴¹

Also, Le Corbusier questioned furniture made out of wood and instead wished to see steel, aluminium, and synthetic fibres in furniture. Metal furniture already existed in offices, but was now brought into use in the home as cupboards, seats, and tables.

The furniture Charlotte Perriand already designed for her own home in 1925 and showed at the Salon des Artistes Décorateurs, secured her entry into the studio of Le Corbusier. Even if the principles were Le Corbusier's, it was Perriand who was the driving force behind, for example, the furniture the studio showed at the Salon d'Automne in 1929. The *Chaise longue basculante*, the *Fauteuil grand confort*, and the *Siège à dossier Basculant* quickly entered the canon of early modernist furniture⁴², showing furniture as equipment, and the use of tubular steel.

Furniture in architecture 1925-1928

As mentioned above, the first furniture pieces that were designed by Charlotte Perriand at the atelier of Le Corbusier were done in 1928. These chairs, tables, and cabinets made their first appearance in Ville d'Avray (figure 30).

The *Siège Tournant* (1928) (figure 25) was the first chair Charlotte Perriand designed for her own appartement, which was used for the Salon des Artistes Décorateurs in 1928. The chair was a more dynamic and multifunction piece of furniture, because of the steel frame that incorporated ball bearings allowing the chair to rotate.⁴³ Although completely designed by Charlotte Perriand, the chair would later be included in the catalogue of furniture provided by Le Corbusier.

The *Siège à Dossier Basculant* (figure 26) was one of the furniture pieces Charlotte Perriand designed for Le Corbusier for the Salon d'Automne in 1929. It was also one of the first furniture pieces Le Corbusier used for his own interiors. The chair has a frame of chromium-nickel-plated tubular steel, with a leather seat and back, and leather straps as armrests. The way that the flexible elements are supported by a simple strong frame in this way, is contrasting a bit with Le Corbusier's earlier ideas, as it has a comparatively complicated construction and uses extravagant materials. Seen from the side, the chair enhances the impression that the chair is hung between the supporting legs. The chair looks sturdy but flexible and, despite the chair's small scale, has a very spacious structure.⁴⁴

Another example of a chair by Le Corbusier and Charlotte Perriand that became famous was the *Fauteuil Grand Confort* (figure 27), an overstuffed chair composed of four large loose cushions fitting within a frame of, just like the previous chairs, chromium-nickel-plated tubular steel.⁴⁵ The chair gives the user a feeling of being held, as the sitting area is quite small. The external structure means that the upholstered elements are no more than they appear to be, and they are designed in a way that they do not need to be fixed in position. The metal frame elements vary in thickness. A thinner bar is

⁴¹ McGuirk, *Charlotte Perriand: The Modern Life* (the Design Museum, 2021), 9.

⁴² McGuirk, *Charlotte Perriand: The Modern Life* (the Design Museum, 2021), 7.

⁴³ The Design Museum, *Charlotte Perriand The Modern Life: Large Print Guide* (The Design Museum, n.d.), 6.

⁴⁴ Clement Meadmore, *The Modern Chair: Classic Designs by Thonet, Breuer, Le Corbusier, Eames and Others* (Dover Publications, 2012), 60.

⁴⁵ Clement Meadmore, *The Modern Chair: Classic Designs by Thonet, Breuer, Le Corbusier, Eames and Others* (Dover Publications, 2012), 68.

running around the cushions halfway up the frame working as a tension member, whereas a heavier top bar functions as a part of the structure connecting the legs.⁴⁶



Figure 25: *Siège Tournant* (1928), Charlotte Perriand, Le Corbusier, Pierre Jeanneret



Figure 26: *The Siège à dossier Basculant* (1929), Charlotte Perriand, Le Corbusier, Pierre Jeanneret



Figure 27: *The Fauteuil Grand Confort* (1928), Le Corbusier, Charlotte Perriand, Pierre Jeanneret



Figure 28: *The Casier Standard* (1925); Le Corbusier, Pierre Jeanneret

The first chair that Charlotte Perriand made especially for an architecture project was the *Chaise Longue Basculante* (figure 29). The chair was used in the furnishing of Le Corbusier's *Ville d'Avray* (figure 30), a private residence built between 1927 and 1929 that he and Pierre Jeanneret remodelled. The building revolutionized the image of houses at the end of the 1920s. The modernist white walls with clean lines and a cubic shape asked for furniture that fitted this modernist image. The *Chaise Longue Basculante* was the first chaise to be made adjustable by simply moving the whole seat element within its quite separate support frame.⁴⁷ This chair is also made with chromium-plated tubular steel and leather for the seat. The seat is shaped in three parts, that follow the line of a flexed body and legs, lapping over the frame at either end. Rubber covering on lateral bars allows the

⁴⁶ Clement Meadmore, *The Modern Chair: Classic Designs by Thonet, Breuer, Le Corbusier, Eames and Others* (Dover Publications, 2012), 68.

⁴⁷ Clement Meadmore, *The Modern Chair: Classic Designs by Thonet, Breuer, Le Corbusier, Eames and Others* (Dover Publications, 2012), 64.

seat to be placed at any angle on the two bars, from flat to almost upright, without slipping when you used the chair in a certain position.⁴⁸



Figure 29: *The Chaise Longue Basculante* (1928), Le Corbusier and Charlotte Perriand



Figure 30: *Ville d'Avray* (1927), Le Corbusier and Charlotte Perriand

Furniture in architecture from 1928

After the success of the group of chairs, tables, and cabinets from 1925 to 1928, Le Corbusier and Charlotte Perriand designed almost no new furniture for their designs. Only an occasional table, storage unit for a particular project, or an alteration on a previous chair or table was designed after that. Le Corbusier found that the perfect furniture pieces to be used in every other project, were the ones from their early years in 1928. Charlotte Perriand and Le Corbusier parted ways in the late 1930s when Perriand left to create a successful career of her own.

Le Corbusier from here on, if he wanted specific seating in a specific place, “sculpted” the furniture by building it in a fixed place. For example in Villa Savoye, he implemented a concrete slab that functions as a table on the terrace (figure 31), a sculptured basin, and a cast *chaise longue* in the bathroom (figure 32).⁴⁹ To fill the rest of his interiors, he used his earlier furniture from 1925 to 1928. For the Unité d’Habitation in Marseille (1945) Le Corbusier designed fitted furniture for the rooftop garden of the building, the same way as with the Villa Savoye, by creating fixed benches from concrete (figure 33). And for the Maison de l’Homme in Zurich (1963), pressed-steel curved seating is added in the same fixed way (figure 34).⁵⁰

⁴⁸ Clement Meadmore, *The Modern Chair: Classic Designs by Thonet, Breuer, Le Corbusier, Eames and Others* (Dover Publications, 2012), 64.

⁴⁹ Marian Page, *Furniture Designed by Architects* (Whitney Library of Design, 1980), 190.

⁵⁰ Marian Page, *Furniture Designed by Architects* (Whitney Library of Design, 1980), 190.



Figure 31: The concrete slab table at Ville Savoye (1928),
Le Corbusier



Figure 32: Cast Chaise Longue in Ville Savoye (1928); Le
Corbusier



Figure 33: Concrete benches at the Unité d'Habitation (1945),
Le Corbusier



Figure 34: Pressed-steel seating in the Maison de l'Homme
(1963), Le Corbusier

Charlotte Perriand however, kept designing furniture after she left the atelier of Le Corbusier. In 1940 She moved to Japan where she encountered different craftspeople as she travelled the country. During this time, she tried to work out how to use bamboo, which was a new material for her⁵¹ and she also began to study natural and free forms.

One of the first designs Charlotte Perriand made in Japan in 1940 was an alteration of the *Chaise Longue* in wood and bamboo (figure 35). She used woven rice-straw to upholster the chair that was held up by a cross-shaped frame of wood. Later on, in 1954 Perriand designed a number of chairs and tables using plywood (figure 36), and in 1956 free-form wooden furniture like the *Free-form Table* (figure 37). However, neither of those furniture pieces was made for specific interiors or projects.

⁵¹ McGuirk, *Charlotte Perriand: The Modern Life* (the Design Museum, 2021), 69.



Figure 35: *The Chaise Longue in bamboo and wood (1940), Charlotte Perriand*



Figure 36: *Ombre stacking chair (1954), Charlotte Perriand*



Figure 37: *Free-form Table (1956); Charlotte Perriand*

Relation between the furniture and architecture

Le Corbusier and Perriand always designed furniture with style, even though they saw a chair, for example, as a tool. Everything Le Corbusier did, had style, as all of his work was one – architecture, painting, sculpting, chairmaking, and writing⁵², alle coming together in a *Gesamtkunstwerk*.

Le Corbusier and Charlotte Perriand had quite the same starting point, being modern architects and wanting to also design furniture for their architecture. However, Perriand further developed this and Le Corbusier did not. It seems that the reason for this is that Charlotte Perriand always was the driving force behind “Le Corbusier’s” furniture. After going separate ways, he did not have the skills of furniture designer Charlotte Perriand by his side anymore to design for him, and therefore did not come up with new furniture anymore. This is even more clear when looking at Charlotte Perriand’s drive to keep on exploring new materials and ways to use them. As a result of this, Le Corbusier from a certain point focused more on architecture and not so much the complete design of his interiors in the form of furniture. It is obvious that Charlotte Perriand had fun in designing furniture apart from architecture, and that Le Corbusier saw it as more of something that is part of it.

⁵² Marian Page, *Furniture Designed by Architects* (Whitney Library of Design, 1980), 191.

IV. Charles and Ray Eames

Introduction

Designers Charles and Ray Eames (figure 38) met at the Cranbrook Academy of Art in 1940. Charles Eames (Charles Ormond Eames, 1907) born in Saint Louis in the United States was offered an engineering and an architecture scholarship in 1924 and began working at his first architecture firm *Trueblood and Graf Architects* in 1925. Together with Charles M. Gray and Walter E. Pauley, he opened his own architectural office *Gray, Eames, and Pauley* in 1930, designing houses. In 1935 he opened a new architectural firm with Robert T. Walsh *Eames and Walsh*, designing small residences and churches. In 1936 Eames and Walsh designed a house for John Philip and Alice Meyer in Huntleigh Village. The project included designs for furniture, stained glass, rug and fixture design, ceramics, sculpture, and Loja Saarinen tapestries⁵³. For the design of the house, Charles Eames consulted with Eliel Saarinen, who in 1938 offered Charles a fellowship to study architecture and design at the Cranbrook Academy of Art. He became the head of the Department of Industrial Design in 1940 and took on a job in the *Saarinen Architectural Office*. With Eero Saarinen, he joined and won the “Organic Design in Home Furnishings” competition organised by the Museum of Modern Art, where among others Alvar Aalto was a member of the jury. Samples of the furniture were handmade for the Museum of Modern Art exhibition. These organic shaped furniture pieces were the start of Charles’s work in moulded plywood furniture.

Ray Eames (Ray Bernice Alexandra Kaiser, 1912), born in Sacramento in the United States, started her studies in painting in 1933, led by Hans Hofmann in the first year that his school in New York opened. In 1936 she became a founding member of the American Abstract Artist. She continued to paint with Hans Hofmann, until in 1939 a fellow Hofmann student encouraged her to study at the Cranbrook Academy of Art.⁵⁴ Here she started weaving classes, and in 1940 she met Charles Eames. The two married in June 1941, moved to Los Angeles, and from then on started their work for the Eames Office (figure 39). With the Eames Office, they designed a wide range of projects, like furniture, toys, buildings, films, exhibitions, and books.



Figure 38: Charles and Ray Eames (1960).



Figure 39: The Eames Office (1959).

⁵³ John Neuhart, Marilyn Neuhart, and Estate of Ray Eames, *Eames Design* (Harry N. Abrams, 1989), 23.

⁵⁴ John Neuhart, Marilyn Neuhart, and Estate of Ray Eames, *Eames Design* (Harry N. Abrams, 1989), 25.

Furniture designs

Charles and Ray Eames began experimenting with moulded, compound-curved plywood chair seats in their own apartment in Los Angeles. They continued the work that Charles had started with Eero Saarinen at the Organic Design in Home Furnishings competition. They created the basic technique of moulding plywood into compound curves, which became the core of all further developments in the plywood moulding process. To manufacture all these moulded plywood products, they formed a company and development laboratory *Plyformed Wood Company*, in cooperation with among others John Entenza, who will be mentioned later. Experiments with these new techniques of moulding plywood ultimately led to the design and manufacture of a long line of chairs, tables, and cabinets.⁵⁵ Later on, they would also create a new technique of using fiberglass as a material for mass-produced furniture and add the use of steel for their furniture.

The first furniture pieces that Charles and Ray produced in 1945 are the moulded-plywood Dining Chair Wood (DCW) (figure 40) and the Lounge Chair Wood (LCW) (figure 41). Another version of these chairs was the Dining Chair Metal (DCM) with a plywood seat (figure 42). The aim for these chairs was “to produce an inexpensive, high-quality chair using industrial technologies developed during the war.”⁵⁶ Charles and Ray looked at the best way to mass produce these chairs and found that chairs made out of separate components worked best for that. The production of separate elements was easier and more economical; parts could be joined in more combinations, and if a seat or back cracked or was broken, the loss was not as dramatic as the loss of an entire chair.⁵⁷ The best wood used for the chairs was birch, ash, walnut, or rosewood, even though more expensive types of wood were tried.⁵⁸ The process of moulding the wood for the chairs was essentially a refinement of the experiments Charles and Ray did in their apartment in Los Angeles. The best way to do it appeared to be thin sheets of wood, roughly cut to shape, and then coated with a plastic binder and placed on top of one another. The wood grain of each of the successive layers ran counter to the one above it to increase the strength of the plywood “sandwich”, which was then positioned over an inflatable neoprene and canvas air bag and beneath a metal mould filled with synthetic heating oil.⁵⁹



Figure 40: Dining Chair Wood (DCW), Charles and Ray Eames (1945)



Figure 41: Lounge Chair Wood (LCW), Charles and Ray Eames (1945)



Figure 42: Dining Chair Metal (DCM), Charles and Ray Eames (1945)

⁵⁵ Donald Albrecht, *The Work of Charles and Ray Eames: A Legacy of Invention* (Harry N. Abrams, 1997), 15.

⁵⁶ John Neuhart, Marilyn Neuhart, and Estate of Ray Eames, *Eames Design* (Harry N. Abrams, 1989), 59.

⁵⁷ John Neuhart, Marilyn Neuhart, and Estate of Ray Eames, *Eames Design* (Harry N. Abrams, 1989), 59.

⁵⁸ John Neuhart, Marilyn Neuhart, and Estate of Ray Eames, *Eames Design* (Harry N. Abrams, 1989), 61.

⁵⁹ John Neuhart, Marilyn Neuhart, and Estate of Ray Eames, *Eames Design* (Harry N. Abrams, 1989), 60.

In addition to chairs, Charles and Ray Eames also designed the Eames Storage Units (ESU) in 1950 (figure 43), which is a system of lightweight modular storage cabinets constructed of plastic-coated plywood, lacquered masonite, and chrome-plated steel framing.⁶⁰ They fitted the idea of designing and producing economical household furniture, because of the use of industrial production techniques. The parts of the ESU are interchangeable and can be used as room dividers or as a storage solution in bedrooms, living rooms, and dining rooms. Later the ESU was being reinvented for the Eames Desk Units (EDU) (figure 44).



Figure 43: The Eames Storage Unit (ESU) (1950), Charles and Ray Eames



Figure 44: The Eames Desk Unit (EDU) (1951), Charles and Ray Eames

For the first chair made with fiberglass in 1950, Charles and Ray Eames chose to develop the Plastic Armchair (figure 45) first over the Plastic Side Chair (figure 45), because converting the Plastic Armchair to mass production first presented the greatest tooling challenge.⁶¹ These chairs were the first one-piece chairs made out of plastic, whose surface was left uncovered with upholstery. The chairs initially existed only in three different colours, but later on, were produced in a variety of colour and with a great variety of bases.



Figure 45: Plastic Armchair and Plastic Side Chair (1950-1953), Charles and Ray Eames



Figure 46: Wire Mesh Chair (1951-1953), Charles and Ray Eames

Developed from 1951 until 1953, another alteration on the previous chairs, was the Wire Mesh Chair (figure 46). The form and shape of this chair is the same as the Plastic Side Chair and shows another example of the adaptation of industrial technology to the production of furniture. The method of

⁶⁰ John Neuhart, Marilyn Neuhart, and Estate of Ray Eames, *Eames Design* (Harry N. Abrams, 1989), 127.

⁶¹ John Neuhart, Marilyn Neuhart, and Estate of Ray Eames, *Eames Design* (Harry N. Abrams, 1989), 139.

joining the wire members together was based on the resistance-welding technique used in making wire drawers, which had already been adapted to a type of base for the other chairs.⁶²

In 1956 Charles and Ray reached the high point of the Eames effort by designing a comfortable lounge chair, that also looks handsome, the Eames Lounge Chair and ottoman (figure 47). The beginnings of this chair exist since Eero Saarinen and Charles Eames submitted prototypes to The Museum of Modern Art's Organic Design in Home Furniture competition in 1940. The principles of this lounge chair can be found in the Plywood Lounge Chair they designed in 1946 (figure 48) but was never manufactured. The Eames Lounge Chair has more individual pieces than the other chairs and other furniture pieces made by the Eames Office. Also, unlike the Plywood Dining Chairs and the Plywood Lounging Chairs, the Eames Lounge Chair has pads on the seat, back, and ottoman to create a more comfortable chair.⁶³



Figure 47: *The Eames Lounge Chair and ottoman (1956), Charles and Ray Eames*



Figure 48: *The Plywood Lounge Chair (1946), Charles and Ray Eames*

Architecture as a side project

With Charles Eames's architectural background, the Eames Office also participated in the Case Study House Program in 1944. This was a housing program sponsored by *Arts & Architecture* magazine, which should showcase examples of affordably-priced post-war homes that used wartime and industrial materials. Eero Saarinen and Charles Eames were hired to design Case Study House number 8 and Case Study House 9. Case Study House 8 would become the home of Charles and Ray Eames themselves, and John Entenza, owner and editor of the *Arts & Architecture* magazine, would become the owner of Case Study House 9.

Case Study House number 8 was called the Bridge House (figure 49). The steel and glass house used standardized construction elements out of trade catalogues, some adapted from wartime use. The intention for this was to show a model for low-cost, do-it-yourself modern design. Due to the fact that post-war material rationing was an issue, the materials ordered for the first draft of the Bridge House were delayed. While they were waiting for the materials, Charles and Ray decided without consulting Eero Saarinen, to not build the house. Instead, they reconfigured the materials to create a new form, split into two separate structures nestled into the property's hillside. This new design from now on would be called the Eames House (figure 50). Because of the repurposing of the materials for the house, the style it was supposed to show changed to another sort. The house's kit-of-parts aesthetic showed more of a high-tech architecture, and while they used their own furniture to style

⁶² John Neuhart, Marilyn Neuhart, and Estate of Ray Eames, *Eames Design* (Harry N. Abrams, 1989), 151.

⁶³ John Neuhart, Marilyn Neuhart, and Estate of Ray Eames, *Eames Design* (Harry N. Abrams, 1989), 207.

the house, its interior assemblages of handmade objects and folk artifacts successfully personalized modern architecture, offering a model of contemporary decoration and “organized clutter” for a younger generation of architects (figure 51).⁶⁴

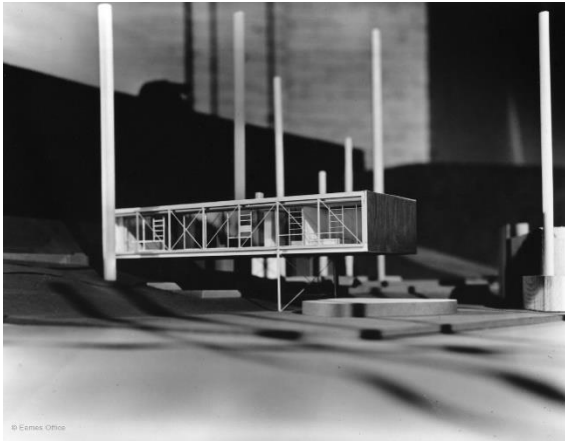


Figure 49: Case Study House 8; the Bridge House (1949), Charles and Ray Eames



Figure 50: The Eames House (1949), Charles and Ray Eames



Figure 51: Charles and Ray in their living room (1958), Charles and Ray Eames



Figure 52: Case Study House 9; The Entanza House (1950), Charles and Ray Eames

Case Study House number 9 (figure 52) had similar spaces as the Eames House. Also, the structural system was the same, although the structure here was concealed and more horizontally spaced, and the Eames House was more vertically spaced and visible. Because of these differences, both houses offer different perspectives on the relation between inside and outside space, as well as the relation between private and public space.

Aside from these two projects, Charles and Ray Eames designed two more architectural projects, the Herman Miller Showroom in 1950 (figure 53) and the De Pree House in 1954 (figure 54), that were realized. A few other projects, like the Billy Wilder House, the Kwikset House, and a national aquarium were never built.

⁶⁴ Donald Albrecht, *The Work of Charles and Ray Eames: A Legacy of Invention* (Harry N. Abrams, 1997), 15.



Figure 53: Herman Miller Showroom (1950). Charles and Ray Eames



Figure 54: De Pree House (1954), Charles and Ray Eames

Relation between the furniture and architecture

It is obvious that the priority for the Eameses was on designing furniture. Although they did design a few architecture projects that show great qualities, the focus and fun for Charles and Ray Eames obviously seemed to be more on designing chairs and other furniture pieces. This assumption can be supported by the fact that after 1954 they only designed a proposal for the National Aquarium from 1966 to 1969, but from then on never designed architecture again. At the same time, the last furniture piece they designed was in 1984, with a lot of other film, book, and toy projects, and exhibitions in between.

The relation between architecture and furniture for Charles and Ray Eames lies in the fact that their furniture was meant to be usable for all architecture projects, not only their own. The furniture was meant to be economically beneficial, so everybody could put it into their homes. Charles and Ray Eameses furniture was not connected to their own architecture, as they only implemented it in their own home, the Eames House.

V. Conclusion: connecting the architects

Furniture designers

What is obvious is the fact that both Alvar and Aino Aalto, and Charlotte Perriand and Le Corbusier had projects where they designed specific furniture for the overall architecture and interior design. Although Alvar and Aino Aalto to a greater extent than Charlotte Perriand and Le Corbusier, who remained more focused on architecture as the bigger picture. However, Charles and Ray Eames designed their furniture more apart from the architecture projects that they did. For them, the focus was more on the furniture they designed, for it to be used in whatever interior others would design. Their furniture was meant to be economical household furniture, available for all, as they consciously chose post-war materials and industrial production techniques. For Charles and Ray Eames, architecture projects were the start of their careers as designers and gave them their basic knowledge that they could then implement on furniture, but later on became secondary. For the Aalto's architecture remained as important as furniture during their whole careers. Charlotte Perriand seemed to take more joy from making furniture than architecture, but did both, and Le Corbusier saw architecture as the primary and furniture as a secondary, but saw the importance of furniture design for making an architecture project complete.

Views on mass-production

However the difference in thoughts vis-à-vis precedence of furniture, all the architect-duo's saw the importance and practicality in mass-produced furniture. Whereas Le Corbusier, as he wrote in 1925, said that all he wanted was "that we build modern mass-produced furniture and not affectations of royal styles"⁶⁵, however did not intend to have his and Charlotte Perriand's furniture to be mass-produced, because they designed for particular spaces only. And while Alvar and Aino Aalto also designed their furniture for particular spaces, they also designed it with the intention of it being mass-produced, though in smaller amounts⁶⁶, and in combination with it being practical and aesthetic. But Charles and Ray Eames were the ones to really get a grip on modern technology and mass-production. Their experimenting on how to get the perfect shapes for their furniture, prepared them for mass-producing all of their furniture, to be used by everyone.

The *Gesamtkunstwerk*

This similarity in the way that the Aalto's and Perriand and Le Corbusier looked at using furniture for their architecture can also be found in the way that they both treated their designs as a *Gesamtkunstwerk*, as mentioned before in chapter three and four. Instead of focusing only on the architecture in the bigger picture, they considered every little detail in their designs. For Charlotte Perriand and Le Corbusier, these little details meant tables, cabinets, and chairs, for Alvar and Aino Aalto is meant designing tables, chairs, cabinets, desks, glass tableware, and lamps. Although for Charles and Ray Eames the term *Gesamtkunstwerk* does not apply, as they focussed their designs on the furniture first, and then on producing them for others to use, they did however design the widest

⁶⁵ Marian Page, *Furniture Designed by Architects* (Whitney Library of Design, 1980), 8.

⁶⁶ Marian Page, *Furniture Designed by Architects* (Whitney Library of Design, 1980), 8.

range of furniture in addition to architecture. This includes chairs, desks, cabinets, toys, films, exhibitions, and books.

Concluding

The differences between the architects studied in this thesis are noticeable. Alvar and Aino Aalto designed furniture as an inseparable part of their architecture, Le Corbusier hired Charlotte Perriand to design furniture to fit his newest modern architecture, and Charles and Ray Eames, with a background in architecture, experimented and designed furniture for everyone and every project. But however the different approaches towards the use of furniture, they do share furniture design as the same important and career defining interest.

The combination of literature studies about the three architect-duo's showed the difference in the way they approached furniture design in architecture. The question of what furniture design meant for the lives of the architects, and the relation between certain furniture pieces and the projects they were specially designed for has become visible in this research. It is obvious that the furniture that they designed made their spaces and architecture better. This then shows how important furniture design can be in architecture. Looking at three architect-duo's instead of just studying one architect and comparing them to each other showed that there are different ways to approach furniture design in architecture and created a broader view on furniture in architecture.

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Figure 1: Alvar and Aino Aalto (1920). From: Alvar Aalto Foundation

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