Ludwig Mies van der Rohe : furniture and furniture drawings from the Design Collection and the Mies van der Rohe Archive, the Museum of Modern Art, New York

By Ludwig Glaeser

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Date
1977

Publisher
The Museum of Modern Art

ISBN
0870705555

Exhibition URL
www.moma.org/calendar/exhibitions/1801?high_contrast=true

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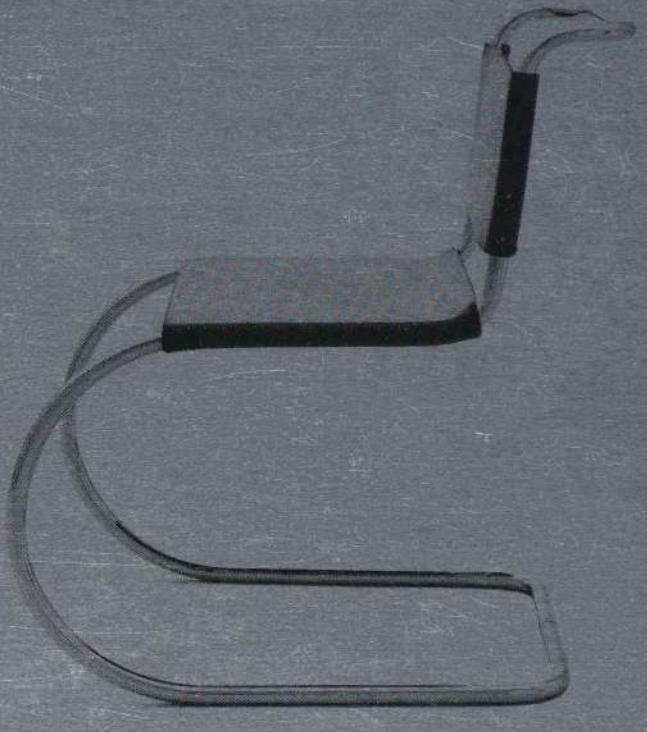

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The Museum of Modern Art New York

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Library of Congress Catalog Card Number 76-24509.
ISBN 0-87070-555-5.
The Museum of Modern Art, 11 West 53 Street,
New York, New York 10019
Design: Massimo Vignelli
Third printing 1979

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Acknowledgments

This exhibition of Mies van der Rohe's furniture from the Design Collection would not have been possible without the generous support of Knoll International. It has not only donated most of the pieces by Mies van der Rohe now in the Collection but has also funded the exhibition and undertaken the construction of a number of items that are not currently in production or were never built. I wish to thank, in particular, Robert Cadwallader, President of Knoll International, for his personal interest in Mies's furniture as well as in the exhibition, and, among the staff members of Knoll International who were at one time or another involved in the project, especially William Stephens and Richard Hopkins in the Design Development Group, who, with patience and care, supervised the execution of the prototypes.

I would further like to acknowledge the assistance I received from Philip Johnson and Mr. and Mrs. James Johnson Sweeney in our efforts to reconstruct the original states of several pieces. Philip Johnson, who was the first to bring Mies's furniture to this country, donated two major examples to the Collection. Mr. Herbert Tugendhat, Caracas, most generously gave, in 1970, the two original Tugendhat chairs saved from his parents' house in Brno. All exhibition items reproduced in the catalogue were photographed by Yukio Futagawa, Tokyo, who donated his precious time and unique skill to this project. I am equally indebted to Massimo Vignelli for his sympathetic support and for the design of the catalogue.

The historical and personal background of Mies's furniture designs, as far as it has emerged, owes much to the oral history program conducted by the Archive during the past years. While all of Mies's former friends and collaborators who contributed their recollections are too numerous to list, the following have been especially helpful in providing information: Marcel Breuer, Florence Knoll-Bassett, George Danforth, Howard Dearstyne, Edward Duckett, Werner Gräff, Sir Reay Geddes, Herbert Hirche, Friedrich Hirz, Edgar Kaufmann, Jr., Ferdinand Kramer, Manfred and Guido Lehmbruck, Dirk Lohan, Edward Olencki, Sir Nikolaus Pevsner, William Priestley, Bodo Rasch, John Rodgers, Georgia van der Rohe, Mia Seeger, Felix Tikotin, Dr. Georg Thonet, and Dr. Hans Wingler. In addition, I wish to thank Sue Evens of the Archive staff, who assisted in all stages of the exhibition's preparation, and Harriet Bee, who, with proven patience and skill, edited the catalogue texts.

Since the exhibition has not only drawn on the resources, but also on the staff, of the Mies van der Rohe Archive, which is entirely dependent on outside support, these acknowledgments would not be complete without an expression of gratitude to the Friends of the Mies van der Rohe Archive and their Chairman, Myron Goldsmith, and particularly to Phyllis Lambert, the Chairman of the Archive's Advisory Board and its principal supporter throughout its eight-year existence.

—L.G.

Preface

This survey of furniture by Ludwig Mies van der Rohe is the second in a series devoted to important groups of material in the Museum's Design Collection.

Mies was first of all an architect. Like Marcel Breuer, Le Corbusier, and Alvar Aalto, he created both a new architecture and the furniture suitable for it. The durability of his work, though not unique among the production of his peers, is exceptional in that his furniture achieves the same immunity to fashion that distinguishes his buildings. The Barcelona chair, designed in 1929, has been in continuous demand and increasing production since that date. Today it is the uncontested monument to calm and effortless elegance—almost a cult object for connoisseurs and yet, at the same time, so well known to millions that it may safely be used in all kinds of advertisements as the unmistakable sign of quality.

Mies van der Rohe is represented in the Design Collection by fifteen designs totalling, with their variations, twenty-three different examples. Included in this group is one chair which had never been manufactured, but which was made after his death from signed construction drawings now in the Museum's Mies van der Rohe Archive.

Established in 1968, the Mies Archive is a division of the Museum's Department of Architecture and Design, which had held on extended loan some forty-five architectural drawings originally assembled by Philip Johnson for his 1947 exhibition of Mies's work. The Archive's holdings now include 15,000 drawings bequeathed to the Museum by Mies before his death in 1969. Thirty-one of the architectural drawings were published in 1972 in a monograph by Ludwig Glaeser, Curator of the Mies van der Rohe Archive. Dr. Glaeser's studies in Berlin had included work with the architect Eduard Ludwig, who was responsible for the survival of those drawings which remained in Germany after Mies came to the United States, and which constitute the major part of the Archive's holdings. Seventy-five of the 774 furniture drawings, on loose sheets and in notebooks, are reproduced in this publication, most of them for the first time. This selection encompasses the most interesting variations on those structural and formal themes Mies never tired of refining.

Objects illustrating the history of modern design may be seen in the Museum's Goodwin Galleries. Some of the material is changed from time to time, but certain key works—among them furniture by Mies van der Rohe—are always on view.

—Arthur Drexler
Director
Architecture and Design

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Ludwig Mies van der Rohe and Lilly Reich on board an excursion boat on the Wannsee, a lake near Berlin. 1933 (photograph by Howard Dearstyne, one of their students)

The architect as designer is not as much a twentieth-century phenomenon as the eulogists of the modern movement have made us believe. Even when furniture was still the domain of craftsmen, an architect would include interiors in his design, extending the *rocaille* ornaments of wall surfaces to three-dimensional consoles and to freestanding chairs and tables. Admittedly, in these cases he was the designer of ensembles, homogeneous environments, rather than of isolated industrial prototypes. Also, he had craftsmen, on whose intuitive capabilities he could rely, to interpret his undetailed suggestions. There was no need for full sets of working drawings nor for constant efforts to reinvent dovetailing.

The first departures from this happy practice occurred in the first half of the nineteenth century with architects such as Karl Friedrich Schinkel, the German neoclassicist, who recognized the potential of prefabricated building elements as well as the need for universally usable chairs. The century is characterized by well-meant efforts to help the crafts catch up with industry through the establishment of decorative arts schools and museums. Typically, Martin Gropius, the Bauhaus founder's great uncle, built a decorative arts museum in Berlin and directed the decorative arts school there.

In 1907, continuing the significant coincidences that preceded the advent of the modern movement, Walter Gropius joined the office of Peter Behrens, who had moved to Berlin that year to become the chief design advisor to Germany's giant electrical corporation, Allgemeine Elektrizitäts Gesellschaft. Also in the same year, architects, artists, educators, officials, and industrialists founded the Deutscher Werkbund, the famous association which, through its exhibitions and publications, became one of the most effective promoters of modernist ideas. Its original goal, however, was only to raise aesthetic standards and thereby increase exportation of German industrial and craft products. Bridging both worlds, the versatile Behrens, who had started out as a painter, became one of the first industrial designers in the modern sense of the term. The range of his work, from type faces to factory halls, explains the attraction his office held for the future protagonists of modern architecture. It is also symptomatic that Le Corbusier's brief stay there, in 1912, occurred in connection with a survey he was undertaking on the state of industrialization in the European building trades.

Ludwig Mies van der Rohe's motive may have been similar when he joined Behrens's office in 1908, although it is more likely that what he discovered there were less the tendencies of an incipient modernism than unique opportunities to acquire specific skills. This was, in his own words, the reason for choosing Bruno Paul as his first employer after his arrival in Berlin in 1905. Trained as a stone mason in his father's workshop and in conventional architectural offices in his home town, Aachen, Mies felt badly prepared to detail wood interiors and furniture. Paul, another painter turned designer, who, in 1907, had been appointed director of the decorative arts museum's school in Berlin, had quickly acquired a reputation for his furniture designs. Mies's crafts background and personal inclinations made him at first follow the traditional approach and treat the interiors of his early houses as parts of the entire architectural scheme. The recognized antecedents of modern furniture by Charles Rennie Mackintosh or Frank Lloyd Wright were designed for specific purposes. The few exceptions, individual pieces brought out by avant-garde establishments such as the Wiener Werkstätten, were produced only in limited series. Moreover, the question of whether the future belonged to the designer of industrial prototypes or to the creator of unique masterpieces was still a hotly debated issue, especially at the Werkbund meeting in Cologne in 1914.

The defender of the artist's eternal prerogatives was Henry van de Velde, the leading figure of the Art Nouveau movement. Whether or not this brief movement deserves to be credited with the watershed role that modern art historians have often accorded it, its exponents did show a most modern response to an emerging life style. The aspirations of the new generation, more clearly reflected in the movement's German name, *Jugendstil* (style of youth), were not less valid for having been accessible only to those who could afford to have their new milieux custom designed. Van de Velde had set the example of the totally designed environment, which, in his house in Uccle, included even the garments of its female occupants. But he also revealed the dichotomy between the vision of a new life style and its universal dissemination which the younger generation felt called upon to resolve.

However varied the political convictions of the founders of modern architecture were, they shared certain Utopian ideals which they hoped would reconcile their aesthetic sensitivities with social realities. They also shared the belief that remedies could be provided only by modern industrial technology. These were "the methods of our time," advocated by Mies in his apodictic statement in 1923, that would enable the modern architect to "create form out of the nature of our tasks." Gropius, who had proclaimed a "return to the crafts" in his Bauhaus manifesto of 1919—hardly an unexpected reaction to the technological horrors of the First World War—reaffirmed his original position in a memorandum to the Bauhaus masters in 1922. They had again raised the question of whether they were to produce individual pieces without regard to the outside world or in contact with industry. Gropius hastened to clarify: "I seek unity in the fusion, not in the separation, of these ways of life." After accusing them of a "misunderstood 'return to nature' doctrine of Rousseau's," he concluded, "Today's architect has forfeited his right to exist. . . . The engineer on the other hand, unhampered by aesthetics and historical inhibitions, has arrived at clear and organic forms. . . ." The last remark seems to echo Le Corbusier's verdict in his 1920 article, "Trois rappels a MM. les architectes," that "the American engineers eradicate the dying architecture with their calculations."

Armchair by Marcel Breuer. 1925. Tubular steel chrome-plated frame, with canvas seat, back, and armrests. The Museum of Modern Art (229.34)

Side chair and coffee table by Mart Stam. 1926. Tubular steel frames with canvas seat and back for chair, wood top for table (from Werner Gräff, ed., *Innenräume*, 1928)

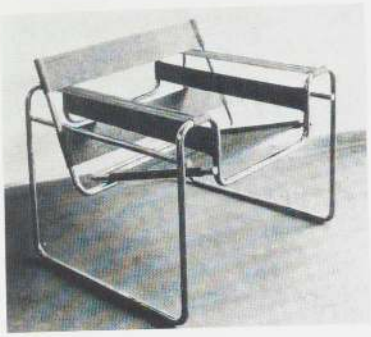
8 It is a matter of speculation whether the First World War postponed or accelerated modernist development. In Germany the defeat had created a climate that not only generated the notorious intellectual ferment of the 1920s but also one in which the predominance of Socialist parties and labor unions produced political circumstances favoring the new architecture. With a recovering economy, the second half of the decade saw an increasing number of modern buildings actually constructed, particularly in the area of public housing. Like the other visionaries who had become activists, Mies had moved from the Novembergruppe, the revolutionary artist's association with which he had exhibited his first modern projects, to the Werkbund. As the association's vice president, he soon had an opportunity to take charge of the Weissenhof Housing Exhibition in Stuttgart, in 1927, to which he invited all the leading modern architects in Europe. By that time the Werkbund movement was dominated by architects, another indication of the shift from design individualism to professional pragmatism.

In their task of bringing a brave new world into existence, furniture was at first not a primary concern to these architects especially since it was no longer a question of designing unique sets but of specifying mass-produced items. These were not available, with perhaps a few exceptons such as Thonet's functional-looking bentwood chairs. Although Le Corbusier had found them acceptable for his programmatic Esprit Nouveau Pavilion at the Decorative Arts Exhibition in Paris, in 1925, as industrial products they certainly did not project the technological image his *machine a vivre* demanded. The exhibition, on the other hand, provided a disquieting lesson for progressive contemporaries on how easily traditional craftsmen and furniture designers could adopt a modern idiom and convert it into a successful fashion. Indeed, in only a few years these polished pseudo-Cubist ensembles would be joined by groups of tubular steel chairs.

Fortunately, there was the Bauhaus, and, while it was not the only place where genuinely modern design began to emerge, it was undoubtedly the most seminal. Innovative products, from table lamps to wall paper, found a growing market, which the Bauhaus itself had helped to create. This was, of course, not only due to Gropius's entrepreneurial skills but to a more fundamental response to a new, egalitarian lifestyle, which found wide acceptance among a generation that regarded itself as the first born into a truly modern century. Thus, when the implements of this new life became available they were affordable—in 1931, the price of the Mies side chair with leather slings was sixty-eight marks (or sixty-one 1976 dollars), which is about one-sixth the current list price—because they were industrial products. This alone, however, would not have guaranteed the dissemination of Bauhaus designs; their success rested on a conceptual quality that made all products, however diverse in purpose and execution, compatible with each other by virtue of their common denominator—a meaning they shared and the consumer recognized. In order to convey this new status of sign and message, objects had to be designed not only with new forms but also for new materials, and at that time hardly any other material seemed more effective for a chair than exposed metal, with a hard, reflective surface that would reinforce its technological character. It was supposed to make a statement about functional objectivity (lacking a better translation of the then much used German term *Sachlichkeit*) as well as the progressive rejection of the nooks and crannies and the dust-collecting upholstery of furniture of the past.

It is hard for anyone today to realize how obsessed the modern revolutionaries were with all aspects of hygiene. It was not just a rationalization but a firmly held belief that the ever-larger picture windows would guarantee healthier living conditions. For the same reason, the flat roofs decreed by modern architecture were to serve as sun decks and exercise facilities, which, for instance, in a preliminary scheme for Le Corbusier's Villa Stein at Garches, even included a jogging track. The psycho-history of modern furniture still has to be written, but one can easily imagine the childhood experiences shared by the generation of Gropius, Mies, and Le Corbusier. The bourgeois interiors of the 1880s, the decade of their births, must have appeared, from a toddler's vantage point, like a rain forest: innumerable richly machine-carved legs of pseudo-Renaissance chairs and tables, tasseled plush velvet upholstery and curtains, which kept rooms in a permanent penumbra. The great clean-up the founders of modern architecture were to conduct assumed all the dimensions of a classic confrontation between generations and, as such, was also steeped in adolescent morality. Stucco façades, stuffy interiors, and ornament per se were seen as equal to bourgeois hypocrisy, while beauty, if still acceptable at all, was only valid as the "splendor of truth," in the apocryphal words that Mies liked to quote.

One can extend these speculations one step further by considering the invention of the cantilever chair as a symbolic event as well as a technological feat. Admittedly, the continuous loop of the tubular steel frame is a logical result of the material properties and production techniques. The smooth horizontal surfaces allow the chair to glide over the floor, providing the kind of mobility so dear to modern man. The minimal seat plane appears suspended above the ground, creating an impression of weightlessness appropriate to an age that conquered the air—in fact, some of the first passenger airplanes were equipped with tubular steel chairs. Most significant of all, however, seems to be the "leglessness" that eliminated all associations with the archetypal chair, the symbolic seat of paternal authority. The abolition of the solid, rooted supports on which the primeval ruler elevated himself above his subjects amounted to a democratizing gesture which rejected past hierarchical orders. Whether plausible or not, such interpretations confirm many doubts that the forms of



the first modern chairs resulted automatically from—to use Mies's phrase—"the methods of our time."

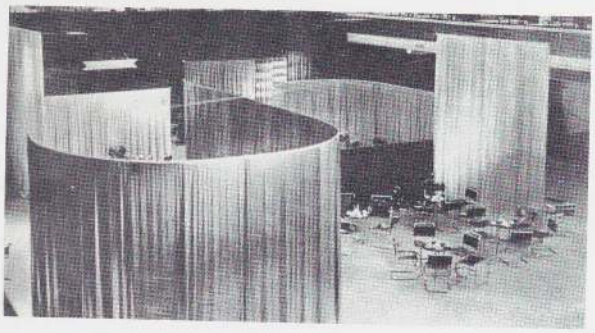
As with any other style, the modern vocabulary was related to earlier forms, its reductionist principles notwithstanding, which led to the Bauhaus preoccupation with geometric fundamentals. But even the pure forms of cube, cone, and cylinder had already been exploited in the past to monumentalize, for instance, the visionary projects of the French revolutionary architects at the end of the eighteenth century. The cube is, of course, the logical geometric shape for a chair, as Adolf Loos and Josef Hoffmann had already demonstrated with their club chairs. The cube is also the basic shape of Marcel Breuer's Wassily chair, the first tubular steel chair, although the volume's outline is merely circumscribed by the frame. This approach of reducing a chair to its structural diagram is already present in his earlier children's furniture and derived from similar de Stijl exercises by Gerrit Rietveld. It is also one of those historical coincidences that Breuer began to develop this chair in Dessau in the same year, 1925, in which Le Corbusier rehabilitated Thonet's bentwood chairs in his Esprit Nouveau Pavilion in Paris. The transposition from one bent tubular material to the other is as obvious as the anecdote is believable: Breuer hit upon steel tubing when, having acquired his first bicycle, he contemplated the perfection of its handle bars.

It seems only natural that Breuer's idea should have taken hold in The Netherlands, the bicycle country of the continent. As fast as the news traveled on the modern circuits, so was it exploited, and, to judge from the 1975 steel furniture exhibition in Amsterdam, by the end of the 1930s, about one hundred models of tubular steel furniture had been produced in The Netherlands. Moreover, it was also a Dutch architect, Mart Stam, who would enter history as the inventor of the cantilever chair. He is said to have assembled, for a family member in 1926, a prototype out of gas pipes and fittings which, by intention or by virtue of this improvisation, was to be a camping chair capable of being dismantled. One of the foreign architects invited to build a house at the Weissenhof Exhibition, Stam recognized the problem of how to present the model houses not only fully equipped but also with exemplary modern furniture. At a meeting—the only one attended by Le Corbusier—in Stuttgart's Hotel Marquartstein on November 22, 1926, Stam mentioned his cantilever chair, supposedly making a sketch on the back of of the wedding announcement of the painter Willi Baumeister. This now lost evidence was, until recently, in the possession of the Stuttgart architect, Bodo Rasch, who included Mies's cantilever chair in a 1927 publication, crediting the idea to Stam. Mies never denied Stam's priority, and claimed only a technical innovation that gave his chairs resilience.

In answer to a letter sent out by Nikolaus Pevsner in 1935 in preparation for his *Enquiry into Industrial Art in England*, Mies gave a brief, illustrated account of steel furniture development. He first listed two American cantilever designs against which he had to defend his patent claim: a chaise longue, of 1904, and a chair by Nolan, of 1922, both of which had frames of steel bars bent at the front into a coil that exploited the spring principle for resilience. He then mentioned Breuer's chairs as the first to employ tubular steel; these, however, were still rigid. Finally, he described Stam's gas-pipe chair, of 1926, and the improved version, of 1927, produced for the Weissenhof Exhibition. The latter was not resilient, as the curved sections of the tubular frame had been reinforced by the insertion of solid bars which, reportedly, did not prevent the cantilever from sagging. Mies, therefore, concluded, "I was the first to have exploited consistently the spring quality of steel tubes. I made the experiments in early summer of 1927 and applied for a patent on August 24, 1927." Mies succeeded in this, as in so many other cases, because he not only recognized the potential of an idea but also pursued it patiently down to the last technical detail. He certainly had no past experience with the material nor with its method of production, the seamless tubing process introduced by the Mannesmann works in 1886, the year of Mies's birth. The process allowed rods of plain carbon steel to be drawn cold into tubes with thin walls—those generally specified by Mies had an external diameter of 24 millimeters ($^{15}/_{16}$ inch) and a wall thickness of 2 millimeters ($^{1}/_{16}$ inch)—which were not only extremely light but also highly resilient. Moreover, the tubes could be bent by hand, making the production of a small series possible even in blacksmiths' shops. Eventually, mass production relied on ingenious machines that could not only shape tubular frames at great speed between adjustable roller elements but also prevent any deformations in narrow curve segments, through the insertion of a single-ball mandrel.

Fortunately, Mies did not have to wait for technology to catch up with his invention but could unveil usable models at the opening of the Weissenhof Exhibition in July 1927. Several rooms in his apartment house, a four-story slab crowning the exhibition terrain, were furnished with his cantilever chairs, with and without arms and fitted with separate leather slings for back and seat. As companion pieces, Mies had designed a tubular stool with a leather sling seat and a coffee table with a circular glass top supported by two U-shaped frames crossing each other at the bottom. In their reduction to essentials, the designs are proverbially Miesian, and their clarity owes as much to the almost diagrammatic separation of the supported and supporting elements as to the pure geometry of the delineating forms. Composed exclusively of circular or straight horizontals and verticals—the slightly inclined back portion of the chair frame is the only concession to human anatomy—the forms are still indebted to Bauhaus fundamentals. This may also explain why these chairs have not achieved the same timelessness as his later classics.

It is another matter of speculation whether these first chairs had



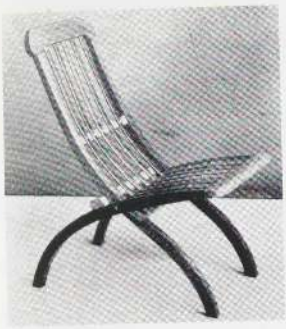
"Velvet and Silk Cafe" installation by Mies van der Rohe and Lilly Reich. Mode der Dame Exhibition, Berlin. 1927 (from *Cahiers d'Art*, vol. 3, 1928)

been affected by his close collaboration with Lilly Reich, who had a decisive influence on all his later furniture designs. She had her own model rooms in Mies's apartment house in which she used his tubular steel chairs, and she collaborated with him on the glass industries display at the Weissenhof Exhibition. This was the first of Mies's famous exhibition designs in which he was said to have elevated installation techniques to "a minor art." It is certainly more than a coincidence that his involvement in furniture and exhibition design began in the same year as his personal relationship with Lilly Reich. They had known each other for a number of years through their mutual involvement in Werkbund activities. From 1924 to 1927 Lilly Reich directed an annual Werkbund exhibition of exemplary design at the Frankfurt fair. She had been a member of the association since before the First World War and had had one of her shop window displays in Berlin published in the Werkbund yearbook of 1913. The precise, geometric arrangement and the repetitive use of display objects, in this case containers and tools of the pharmacist's trade, already show the approach she brought to perfection in the industrial exhibits at the World Exposition at Barcelona, in 1929, and the Berlin Building Exhibition in 1931. Her window display style also reveals the direct influence of Josef Hoffmann, under whom she had worked in Vienna beginning in 1908 during her apprenticeship at the Wiener Werkstätten.

Lilly Reich, who is said to have operated a *couture salon* in Frankfurt, always had a special interest and expertise in textiles. The first of her diverse contributions in this area was the "Velvet and Silk Café" that she and Mies designed for the Mode der Dame Exhibition in Berlin in September 1927. This occasion also provided a showcase for quantities of Mies's tubular steel furniture; groups of his chairs and tables were placed in spaces created by the display stands, freestanding curved and straight tubular frames from which the fabrics were hung in great lengths. These are the antecedents of the interposed wall elements that Mies was to use in the Tugendhat House and the Barcelona Pavilion as space-articulating devices. "The effect was one of the most ravishing, through the harmony of the fabrics, and the movement of the mural surfaces he had managed to create with these fabrics," wrote Christian Zervos, in 1928, in a *Cahiers d'Art* article in which Mies was held up as an example of "a certain number of German architects, who do not at all lack sensitivity and finesse." The harmony of the fabrics was undoubtedly due to careful color coordination, and the handling of color was another aspect of their work which Lilly Reich seemed to have affected directly. At a time when an aseptic white had become the modernist hue, her belief that "one must have courage for color" was more than justified.

With only black-and-white photography in existence, there is little information about the colors in Mies's early works. In a talk given by Mrs. Tugendhat in Brno in 1969 a more detailed description of the colors and materials which Mies and Lilly Reich tested in the house is provided. The principal sitting area may serve as an example for the range of color. In front of the tawny, golden onyx wall, on a rug of natural wool, stood a group of Barcelona and Tugendhat chairs, a Tugendhat X coffee table, and a bench table. The cushions of the Barcelona chairs were covered in emerald green cowhide, those of the Tugendhat chairs in a silver gray fabric. Ruby red velvet had been chosen for the cushion of a reclining chair placed against the long glass wall, which could be closed by curtains of silver gray Shantung silk. Sparkling accents were created throughout by the chrome-plated chair and table frames, heating pipes, and column sheathings. In order to emphasize the floor as a plane, parallel and equal to the ceiling, it was surfaced in its entirety with white linoleum. This remained an exception, for in most interiors, such as the 1930 Philip Johnson apartment in New York, Mies and Lilly Reich used so-called twisted matting, a machine-woven, yard-wide rice straw material, imported from China. Covering the floors wall-to-wall, these mat surfaces imparted to the rooms a certain Japanese flavor which Mies must have approved. Like most modern architects, he could not but admire the traditional Japanese interior, if for no other reason than the absence of furniture which obviated the trauma of the leg forest. Although Mies always denied any Japanese influence on his architecture there are nonetheless affinities, for instance, in the contemplative nature of his spaces, which, like the Barcelona Pavilion, seem to tolerate but one silent viewer. By the end of the 1920s there was sufficient demand in Berlin for a store to specialize in contemporary Japanese every-day objects, which, with their understated refinement, had much appeal to the educated tastes of the Werkbund members.

This was certainly the case with Lilly Reich who is remembered especially for unfailing taste combined with rigorous standards as to what was modern design. Extremely articulate, she participated in the actual work through conversation, and while Mies did much of his thinking by sketching—consuming stacks of typewriter copy paper—Lilly Reich seems to have had her ideas always ready in her head. Mies, according to one of his employees from these years, rarely solicited anybody's comments but was always eager to hear her opinion. Even without any temporal distance the nature of such collaboration makes it nearly impossible to sort out ideas and hands. Only in a few instances does the surviving evidence provide clues: curvature studies, unmistakably by Mies's hand, attest to his participation in a Lilly Reich chair design, an upholstered seat and back wood frame mounted on tubular steel runners, produced as model LR 120 and shown in the dining room of her model house at the Berlin Building Exhibition. Lilly Reich's and Mies's model houses at that exhibition were not only conceptually an entity but also physically linked by a long wall as if to symbolize their close connection. In fact, at this exhibition, they officially shared the direction of the principal section, "The Dwelling in Our Time," where Lilly Reich was also responsible for the design of innumerable industrial displays. By temperament and background—she came from a well-to-



Folding chair by an unknown designer. 1927-28. Beechwood (from *Die Form*, no. 6, 1928)

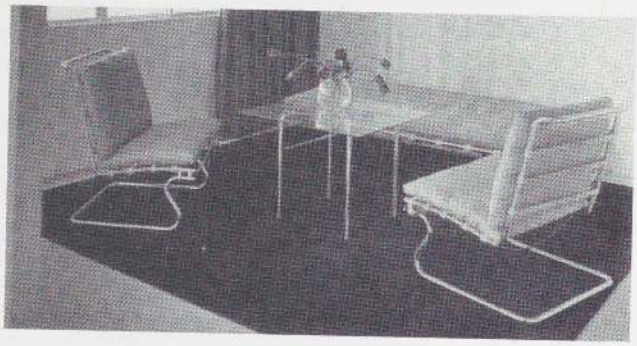
do, factory-owning family in Berlin—Lilly Reich was eminently suited for such challenges. Her energetic and enterprising nature also benefited Mies's office although she never ceased to maintain her own. She continued to take care of his business and personal affairs after he left for Chicago in 1938, and she visited him there at the outbreak of the war. It is not certain whether she had hopes of joining him and teaching at the Illinois Institute of Technology as she had taught under Mies at the Bauhaus. Lilly Reich survived the war but did not live long enough to see Mies again; she died at the age of sixty-two in Berlin in 1947.

This was exactly twenty years after the beginning of a partnership that had coincided with one of the most productive periods in Mies's career in Germany. The following year, 1928, saw not only the completion of the houses for the silk manufacturers Lange and Esters in Krefeld but also the start of the Tugendhat House in Brno, as well as the exhibition designs for Barcelona. At first, these did not include the German Pavilion, and the circumstances of its origin are not without relevance to the character of the Barcelona furniture. According to Mies, the pavilion was an afterthought since the Barcelona exposition was meant to follow the nineteenth-century tradition of presenting industries rather than nations. Although none were planned at the beginning, some substitutes for national pavilions appeared in the course of the preparations. The German officials, apparently caught by surprise, asked Mies, who was supervising the installation of various industrial exhibits with Lilly Reich, to design, almost overnight, a national pavilion. Its modest size, which was determined as much by the limited time and funds as by Germany's new republican image, did not impede the pavilion's strictly representative purpose. Its principal function was to serve as a setting for an inaugural ceremony in which the Spanish king was to sign his name into a golden book.

For this symbolic act Mies designed the table which was placed against the onyx wall and which, like an altar, identified the ritual center. A second, and larger, table in front of the light wall, must have served a more profane purpose, the deployment of champagne bottles and glasses. The ceremonial purpose of the pavilion is further evident in the nature and placement of the seats, which clearly reflect hierarchic distinctions. There were only two Barcelona chairs, which, placed at right angles to the onyx wall, faced the entrance across the length of the room. All other seats were ottomans placed at a respectful distance along the glass walls on either side of the room. The two Barcelona chairs were obviously meant for Alfonso XIII and Victoria Eugénie, whose reign was to be in jeopardy before the pavilion had been completely dismantled and shipped back to Germany. Ironically, Mies, the former president of the Novembergruppe, which took its name from the German revolution of 1918, designed what amounts to a modern version of a royal throne. But, as Curt Glaser wrote in his review of the Novembergruppe's ten-year exhibition in 1930, "Convictions do not make art. The creative forces among the former comrades have long given up the November spirit that once brought them together. A building like the German Pavilion is not evidence of a shared faith . . . but of a mature artistic personality."

It is, indeed, no small achievement to have translated into an unmistakably contemporary design all those historical allusions, which must, at least subconsciously, have entered Mies's mind. He was, after all, a native of Aachen, the city of Charlemagne, and a professed admirer of vernacular medieval architecture. It is left to speculation whether the design of the Barcelona furniture started with an individual piece that might disclose a specific source of inspiration. The tables, for instance, suggest the sawbuck, a common table trestle, as the model for the cross support. The same shape also was used in World War I trenches for knife-rest barbed-wire palisades, which the Germans called Spanish Riders. In both cases the crosses are connected at their intersections by a transverse bar omitted by Mies in his adaptation, which made the Barcelona tables reportedly quite unstable. The ottoman, perhaps the most derivative of the Barcelona pieces, has the longest line of predecessors—from the folding stools of ancient Egypt and the curule chairs of the Romans to the Neoclassicist revivals of the early nineteenth century. Yet comparing Mies's version with only a few of its antecedents reveals all the subtleties beneath the simplicity of his design. The lateral symmetry of the cross support, for instance, is relieved by hardly noticeable shifts in the other directions: the cross joint is moved off center toward the seat by a few millimeters; the radius of the curve under the seat is slightly shorter than that of the bottom curve, where the feet project on either side beyond the seat. In correspondence with the proportions of the Barcelona chair, the ottoman is wider than it is deep, and its alignment in rows in the pavilion anticipates its later elongation into a bench for his 2400 Lakeview Avenue apartment building in Chicago, of 1962. While Mies never used the Barcelona table design again, he converted the ottoman into a coffee table for his own apartment in Chicago, replacing the seat with a travertine top.

In medieval times, the principle of the traditional X stool was applied to folding chairs in which the cross supports extended above the seat surface to end in armrests. In one common form the sides of these chairs were made of laths, which alternately crossed each other under the seat and ended in horizontal bars at the bottom and at the top, where they formed armrests which, in turn, connected to a back panel. In an adaptation of this version to a wooden lounge chair, an unknown German designer extended the laths of one side to back height and bent the other down to seat level, changing the direction of the chair by ninety degrees. Mies had undoubtedly known this design, which was reproduced in the Werkbund journal, *Die Form*, in June 1928, on the same spread with some of his tubular steel pieces, and which is a natural "missing link"



Tubular Tugendhat chairs in model interior by Carl Otto and Jan Ruhtenberg, Berlin Building Exhibition. 1931 (from *Innen-Dekoration*, July 1931)

between the historical precedents and their modern reincarnation. Mies dramatically simplified the form of the frame, employing, in the side crosses, only one curve for the back-and-leg bar and two for the seat-and-leg bar. In the original chrome-plated Barcelona chairs these seat-and-leg bars were two separate pieces welded to the back bars, while for the current stainless-steel version, Mies adopted a half-lap wood joint which reduces the cross element to its two natural components. The sides are connected by transverse bars which, at the front of the seat and at the top and bottom of the back, are welded together. The medieval lathwork has been replaced by leather straps, which, alternating at the central transverse bar, are screwed to the bar's edge. The chair's elegance owes much to its lightness, but the choice of material seems indebted neither to English nineteenth-century strap metal rocking chairs nor to the American precedents of Mies's cantilever chairs. The use of flat steel bars seems, rather, dictated by the logic of the design, in which the frame represents the edge of two intersecting curved planes. Visually, too, the flat bars seem to rest more comfortably on the ground, while in elevation their profile almost disappears.

In the original chair, the bars, which in section measured 35 millimeters (1⅜ inches) by 11 millimeters (7/16 inch), were 1.5 millimeters (1/16 inch) thinner than in the current stainless-steel version produced by Knoll in the United States. Stainless steel is said to have had an increasing appeal to Mies not only because of its warm tone, even if mirror-polished, but also because of its absolute reliability in contrast to chrome plating, which, if not carefully executed, tends to peel. Moreover, stainless steel enabled him to reduce the substantial fillets in the narrow angles of the cross joints required by the original assembly and plating process. As, even today, the welding of the joints and the polishing of the frame is done mostly by hand, the chair has been criticized as an anachronism, but this attitude overlooks the fact that it was never designed for mass production nor meant to be particularly comfortable for its original purpose as a ceremonial seat. Thus, the cushions, which were covered with white kid leather but only loosely tufted, lacked the durability of the later editions with their carefully designed welt and button details.

Mies, who liked comfortable, spacious chairs, and often drew traditional wing chairs into his austere interiors, was certainly not unaware of the Barcelona chair's limitations. For the Tugendhat House of the following year, which was to demonstrate the new architecture in every respect, comfort could hardly have been provided by conventional club chairs. By applying the cantilever principle of the tubular steel chairs to a flat bar frame to give it resilience, Mies arrived at the Tugendhat chair, where a continuous seat and back frame is, in front at either side, screwed onto a support frame that descends in a sharp S curve to the floor. The flexibility of the flat bar steel, traditional spring material, is exploited most effectively to allow an agreeable bouncing motion. An additional concession to comfort are the arms which not only make it easier to get out of the chair but also improve its appearance, as their projection, parallel to the seat frame, relieves the top-heaviness of the relatively high back. The cushions rest on leather straps that span the frame laterally; two curved stiffening bars under the seat keep it from bending inward under the weight of a sitter. More complex and ambigious in its form, the Tugendhat chair has never found the same popularity as the much-copied Barcelona chair. Whether the hybrid concept of the Tugendhat chair prompted Mies to design the chair simultaneously in a tubular armless version is uncertain, but a year after the completion of the Tugendhat House in 1930, two such chairs were shown at the Berlin Building Exhibition.

The same double-track approach was taken in the design of the Brno chair, although all of the examples but one in the Tugendhat House were tubular. The motivation for the design of this chair was again the desire to improve the existing models and to produce a more comfortable and practical dining chair. The earlier tubular side chair had the disadvantage, particularly in the version with arms, of having semicircular curves that extended about 250 millimeters (10 inches) beyond the seat edge, making it difficult to get out and around the chair. Mies, therefore, flattened the frontal curve in the Brno frame, which loops around the single seat and back piece attached to it in front and back. The lighter curve at the bottom still had the drawback of allowing the chair to tip forward too easily. But it took up much less space so that twenty-four could be placed around the extended dining room table in the Tugendhat House. All of them had upholstered seat panels covered in white calf parchment, which was also wrapped around the arm section of the frame. The flat bar version followed the same proportions, but the frame was not continuous. It was reduced to two runners connected at the bottom by a cross bar and, in front and back, by the seat panels which, somewhat against Mies's structural logic, assumed the function of the frame. In the current stainless-steel version, the front curve is even flatter, and the thickness of the steel bars as well as of the seat and back panels has been increased, making it somewhat less gracious.

Another piece of flat bar furniture that made its debut in the Tugendhat House is the classic X coffee table. Originally called the Dessau table, it may have been designed in or for the Bauhaus, whose director Mies had become in August 1930. Again, the simplicity and elegance—a cross of four bar angles supporting a square glass plate—is Miesian par excellence.

Many of the furniture pieces in the Tugendhat House, particularly in the upper rooms, were made entirely of wood, using precious tropical veneers such as the vividly patterned zebrawood in the children's rooms. Among them were tables of different sizes, which followed what one might now call the Parsons formula: the square legs were moved to the corners

Dining table with rosewood veneer and chair with parchment seat and back from Mies van der Rohe's apartment in Berlin. Late 1920s. Presently in possession of Georgia van der Rohe

and lined up flush with the top, as if the entire table were cut out of a cube. The veneer applied vertically to the legs continued without interruption into the fascia of the top, which is always wider than the legs in the desk and dining tables but equal in the coffee tables. Mies had first furnished his model apartment at the Weissenhof Exhibition with these wood pieces, which, despite his preoccupation with steel furniture, he continued to use frequently. There was a growing controversy in the 1920s between the defenders of warm wood and tradition and of modern steel and progress, which filled the pages of trade and art magazines alike, among them *Creative Art* where, in 1929, Charlotte Perriand, who had collaborated with Le Corbusier in the design of his furniture, wrote in an almost ecstatic rebuttal: "Metal plays the same part in furniture as cement has done in architecture. It is a revolution. . . . Brightness—loyalty—liberty in thinking and acting. We must keep morally and physically fit. Bad luck for those who do not." The differences between Le Corbusier's and Mies's perceptions of furniture as elements of the new architecture are particularly apparent in their treatment of wood and cabinetwork. Even without his known predilection for naval architecture Le Corbusier would have ended up with a compact submarine environment since his aim of a complete functional rationalization of the modern dwelling required all storage elements to disappear into the interior walls. Mies, who was not adverse to turning a freestanding cabinet into an interposed wall or vice versa, had, however, no scruples about designing wardrobe-type pieces of furniture, as in the upper rooms of the Tugendhat House. Covered with precious veneers and executed with the highest standards, these, like all other designs by Mies, still belong as exquisite individual objects to the past craft tradition rather than modern machine production. At any rate Mies must not have taken the wood-metal issue too seriously, as in his own apartment he had added wood dining chairs that were designed in the same manner as the wood tables and were originally intended for the Tugendhat House. The bench table in the sitting area there was a miniature version of a large low table with legs replaced by solid sides, first shown in the glass industries exhibit at the Weissenhof in 1927. The large desk in the library area of the Tugendhat House was originally designed in analogy to the dining table as a wood slab cantilevered eccentrically from one cruciform support anchored in the floor. But since Mr. Tugendhat preferred a movable desk, its top was therefore equipped with four chrome-plated tubular steel legs. This was probably the beginning of a preoccupation, especially Lilly Reich's, with furniture designs that combined tubular elements with wood.

The results not only had a distinctly modern and architectural look in their clear separation of supporting metal and supported wood parts but also made the furniture lighter and, what was perhaps an even more important aspect, permitted it to be dismantled. Thus, all the furniture that Philip Johnson commissioned in 1930 for his New York apartment fitted into twelve crates. It included such items as a leather-covered desk on tubular legs, which Lilly Reich had designed for her own apartment, and bookshelves in which tubular steel poles held the wood boards between them like ladders. In another design for a low shelf, the poles pierced through the boards, which cantilevered at either end. This variation was first used for a freestanding cabinet in the Tugendhat House where the inserted steel tubes not only supported the interior shelf but the entire cabinet body, which had sliding smoked-glass doors on either side. In some cases the tubular elements were reduced to the subordinate role of providing short metal feet, as in the case of the day bed which also made its first appearance in the Johnson apartment and is now the only one of these combination pieces that has been put into production again by Knoll. Originally, its mattress rested on a wide wood frame and a cross webbing of rubber straps, which were so tightly strung that in one incident they collapsed the frame, injuring a visitor to the Berlin Building Exhibition in 1931.

At this exhibition, Mies and Lilly Reich introduced in their various model houses and apartments a number of new pieces which were either elaborations or further developments of the 1927 chair designs. There was, first, the lounge version of the tubular steel chair, somewhat lower and wider with an inclined seat, which made the model with arms, in particular, even more reminiscent of a Thonet rocking chair than did the preceding side chair. The lounge chair had, for improved comfort, a one-piece roll and pleat cushion that rested on straps stretched across the frame. This solution, which provided an uninterrupted seat surface, is credited to Lilly Reich, who is said to have also detailed the continuous caning in which these lounge chairs, as well as the side chairs, were available. Here, as with the wood furniture, she exploited the visual as well as tactile play of contrasts between the literally cold metal parts and the textured, sometimes even sensually soft, surfaces.

Another model developed in 1931 was a cantilevered chaise longue in tubular steel, with a two-piece frame variation. The quite ungeometric form reflected the anatomical realities of the human reclining position: the curves, starting from the floor like any other cantilever chair, moved up and then down in straight lines to support legs and thighs and then continued upward in a wide arc to cradle the back. In the two-piece variation, the separate seat frame is extended to give support to the feet, the base frame is bent further back and clamped with brackets to the seat frame below the knees. The point of the spring connection and the form of the rising curve must have preoccupied Mies considerably, to judge from the numerous charcoal studies. It remained the only other application for the spring connection of the Tugendhat chair, although Mies continued to investigate diverse possibilities.

The chaise longue was the last of Mies's executed chair designs, as none of the new models he proposed in the coming years were put into production, not even the reclining frame, of 1932, which he had developed far enough to consider a patent application. Although derived from the chaise longue, the

tubular frame resembled, in its straightened elongated shape, a simple deck chair. While meant to serve as such, it was conceived for a more universal use. As a freestanding piece, the frame could rest in two positions in its own cradle, a semicircular cantilever, which, rising above the seat, also provided armrests. As an attached piece, the frame could be hooked into a railing on a ship's deck or suspended from a tree branch or ceiling hook by means of a wire and spring device, which was to add a degree of resilience. Not only were new designs to remain unrealized; Mies was never to have another opportunity for as complete and definite a statement about the modern domestic interior as at the Berlin Building Exhibition of 1931.

While the Weissenhof Exhibition, in 1927, had been an avant-garde event, the Berlin exhibition four years later amounted to almost a celebration of the modern movement's official recognition and wide acceptance. Its influence began to spread beyond the frontiers: an exhibition by the Werkbund in Paris, in 1930, where Mies's and Breuer's tubular steel chairs hung side by side from floor to ceiling across a wall, was acclaimed in the press as presenting the "skeleton of a new life." At the same time, Philip Johnson and Henry Russell Hitchcock were preparing an exhibition, which opened at the beginning of 1932 at the Museum of Modern Art and gave the new architecture the status of an international style. This was as much a reflection of its actual achievements as of the public perception of modern architecture which was increasingly identified with a new life style and which, although austere, was healthy, honest, and full of promise. In a review of the model rooms at the Berlin Building Exhibition an author reproved the traditionalists for their "horror vacui," proclaiming the bare interiors as "projection screens for the radiations of an existential feeling that has grown richer again." The exhibition itself was also an act of optimism in so far as it had been organized in the face of a worsening world-wide economic crisis, which already had deprived Mies and most of the participating architects of any commissions.

However, the situation seemed, at least in the beginning, not to affect furniture production too adversely. The architects, who had all been rushing into tubular steel design, now had the additional incentive of royalties as a source of income. At the beginning of the 1930s the manufacturers of tubular steel chairs had also caught up with the trend, recognizing a unique opportunity for a major inroad into the established markets for wood furniture. The reaction of a firm like Thonet, which considered tubular steel furniture as a logical extension of its existing program into a different material, was to secure the necessary production capacity through the acquisition of smaller manufacturers. Desta (Deutsche Stahlmöbel), in Berlin, which Thonet absorbed in 1929, produced tubular steel chair designs by such leading modern architects as Mart Stam, Erich Mendelsohn, and the Luckhardt brothers. The patent and design rights, however, were often retained by the original firms, as in the case of Desta where they were retained by its former owner, Anton Lorenz, who formed an office for development and marketing of furniture designs.

The name Lorenz is connected with some of the major legal battles fought over design priorities during this period. In order to retain his rights on the Mart Stam chair he sued Thonet, which, despite Walter Gropius's assistance as expert, lost the case in the German high court in 1932. Nevertheless, Thonet was able to consolidate its monopoly in the same year as producer of Stam's designs. Its French subsidiary had been bringing out Le Corbusier's group since 1929, while, in Germany, it had gotten hold of Breuer's designs through the acquisition of Desta, which Lorenz had merged with Standard-Möbel, the firm that Breuer and another Hungarian had set up in the mid-1920s. Finally, as the last one to join the illustrious stable, Mies signed a contract in November 1931 with Thonet-Mundus in Zurich, which offered him both an annual retainer (2,500 marks or 2,200 current dollars) and royalty fees (five per cent of the retail price). Obviously, the prospects of large-scale production, world-wide distribution, and the resulting income were reason enough for Mies to abandon his previous producer.

For four years he had all his pieces made in what he described as a small locksmith's shop, the Berliner Metallgewerbe Joseph Müller. In 1931, its technical manager established his own firm in Berlin under the name Bamberg Metallwerkstätten, which even had its own showroom designed by Mies. His office also seems to have put together the sales catalogue in which each item was identified by an MR or LR prefixed code number. It included all fifteen chair, stool, and table models that Mies had designed in steel, as well as a chair, four tables, a bed, and two couch frames that Lilly Reich had contributed. All frames were offered in lacquered, nickel- or chrome-plated finishes and various cover materials such as cowhide or pigskin, two-cord yarn fabric or plain and checkered linen, caning, and, for the tables, plywood, rosewood for the Tugendhat coffee table, and clear or black glass. Whether the entire line was part of the Thonet contract is uncertain, as the 1934 catalogue lists only the tubular steel chairs with caning or fabric—the armchair in fabric shows an unexpected addition of wood strips to the top of the arm portion of the frame—and the chaise longue in the one-piece version. This limitation may have had political as well as commercial reasons since after 1933 the new regime in Germany disapproved of metal furniture, which, besides being associated with the aberration of modern architecture, lacked warmth and substance to qualify for proper "Blut und Boden" (blood and soil) interiors.

However, tubular steel chairs were, even then, acceptable in doctors' or business offices, and, since the fashion continued outside Germany, Mies derived an income from his royalties. In 1937, for instance, when he had given up all hope of receiving commissions in Germany and decided to leave for the United States, Thonet's sales of his chairs amounted to 637,572 marks

(1,019,860 current dollars) of which Mies received 30,225 marks (48,346 current dollars). A part of this income, however, went to Anton Lorenz, with whom, apparently under the threat of another lawsuit, Mies had signed, in 1934, an agreement to exploit on a fifty-fifty basis both their patent and design rights for tubular steel furniture. But Mies was not altogether able to avoid legal battles, as he was asked by Thonet to take action against an infringement of his patent rights by two other German metal furniture manufacturers, Mauser and Arnold. The lawsuit, which began in 1937, before he and Lorenz had left for the United States, was carried on by their agents, Lilly Reich in Mies's case, and patent attorneys throughout the war years. The final court decision in March 1944 was corrupted by political motivations, as it accepted the obviously fabricated evidence of an obscure priority and allowed anullment action against Mies's patent rights. Even protective clauses of the execution procedures were not deemed applicable to someone like Mies who had left Germany for reasons of culture and politics and found employment in an enemy country. The attorneys were also kept busy during the war years with suits by Mies and Lorenz against Thonet, which had sought to revise their financial terms; and between Mies and Lorenz themselves, since the latter tried to by-pass their agreement. After the war Mies, as a United States citizen, could have regained his patent rights but, with the improvement of his circumstances, must not have felt it worth the effort.

While Thonet resumed production of the tubular steel chairs after the war, all Mies's furniture in this country was brought out by Knoll Associates, known since 1957 as Knoll International. It was a natural choice for a number of reasons, not the least of which was the personal contact with Florence Knoll, who had been Mies's student in Chicago. The revival of his pieces occurred on an *ad hoc* basis whenever Knoll's shops or Mies's office found time, or a particular architectural project by Mies required a specific piece in larger quantities. For individual pieces, Mies had found a craftsman of rare capabilities in Chicago, whose own contributions to the development of the stainless-steel versions entitled him to sign his work as a "Mies original by Gerald Griffith." The first pieces to be considered by Knoll in 1947 were the Barcelona chair, the Barcelona ottoman, also in a version with a leather sling seat, and the X coffee table from the Tugendhat House, misnamed the Barcelona table. The last to be introduced, in 1970, was the leather sofa that Mies had designed for his own apartment in Berlin and, supplemented with a lounge chair, used for the Toronto Dominion Building. The flat bar version of the Brno chair had joined the Knoll program in 1960 in connection with the Seagram Building, where Philip Johnson had specified it for the Four Seasons Restaurant. The Tugendhat chair without arms, the tubular steel dining and lounge chairs, both without arms, and the day bed on tubular legs were added to the collection in 1964. The following year Mies entered into a contract with Knoll which covered only the right to use his name, as none of his designs were any longer protected. He therefore did not receive royalties but only flat-fee payments over a ten-year period, which proved advantageous for Knoll, since it obviously must have underestimated the rising demand. The prototypes for all pieces were made under the supervision of Mies's office, which also provided new drawings. Since the originals, including the vellum set prepared in autumn 1931, probably for the Thonet contract, had remained in Germany, these new drawings were based on actual pieces of furniture extant in this country.

Most of the variations found in the current models are due to technical and practical improvements prompted by current production methods or by more demanding institutional use of the furniture. Thus, the leather straps of the Tugendhat chairs are no longer held together by belt buckles, nor are the back panels of the Brno chairs fastened to the frame with leather-covered tacks. There are also differences in the execution of the same model produced by Knoll affiliates in other countries where local production techniques and materials necessitated adjustments. Thus all steel parts made of polished stainless steel in the United States are still chrome plated abroad as in the original designs. While Mies is said to have been disappointed by the slow pace and lagging output in which his furniture became available, he was, on the other hand, preoccupied with opportunities to actually build at large scale. Moreover, he saw no need to involve himself again in the design of furniture, as he regarded the existing pieces as definitive statements which he felt would serve all purposes in his future work.

While nothing has survived to illuminate the design process that led to the classic solutions—except his own remarks about "graveyards of chairs" comprising the rejects of the Barcelona experiments—several hundred sketches and studies from the 1930s still exist to document the intensive exploration of chair forms. There are innumerable variations of existing shapes, combinations of one detail with different elements, applications of proven configurations to new materials, and, probably most revealing and rewarding, instances where Mies permitted his imagination to run free. For example, he studied the possibilities of a Barcelona chaise longue by extending the cross frame to accommodate a reclining body. From there he branched out, in one variation, combining frame elements to a reversed-Z-shaped double cantilever configuration employing the Tugendhat chair spring connection. This device seems to have held a particular fascination for Mies since he came back to it whenever he saw the possibility for an application. Like all designers of modern furniture in the 1920s and 1930s, Mies constantly sought an acceptable substitute for the bulky spring elements in conventional upholstered chairs, which had fallen under the modernist ban. Reduced as they were to minimal components, the new chairs seemed to offer but one option to improve their comfort and that was through flexibility built into the steel support frames or wooden seat shells themselves. The search for resilience, however, lost its urgency with the introduction of foam rubber as a compact upholstery material.

16 In existence since the early 1920s, when new methods for the preservation and centrifugation of natural latex rubber were invented, it was not extensively used by furniture manufacturers until after the Second World War. However, according to a 1972 article in *Rubber Developments*, Mies was among the first designers to suggest this application, as he had had the chair cushions in the Barcelona Pavilion made of foam rubber.

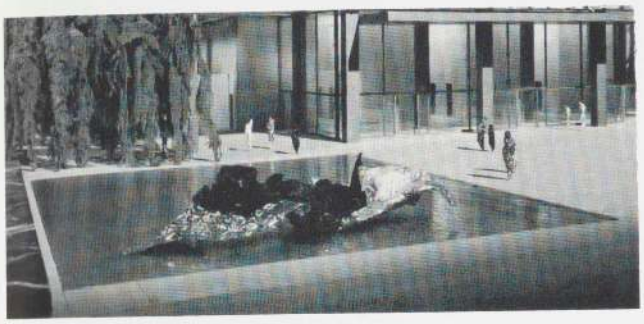
Variations of the Tugendhat chair itself, in which the supporting frame, alone or in combination with the armrests, was given diverse curvilinear forms, were developed in detail, and twelve of them were even submitted for design registration in 1936. In some of these proposals, the seat and back panels are structurally part of the support frame in the same way as in the flat bar version of the Brno chair. This chair became another important point of departure as Mies examined various alternatives of the frame-suspended seat and back elements. From a triangular hook shape he arrived at a solid triangular support for which he sought a patent in 1935 but failed because of an American priority.

Investigating the possibilities of the Brno frame, he introduced a gap between seat and back which would have given resilience to the chair's back as well. A number of charcoal curvature studies show the Brno frame equipped with bentwood seat shells. Whether these drawings were made in connection with Lilly Reich's dining chair for the Berlin Building Exhibition or in connection with their later exploration of bentwood seat shapes is uncertain. There is, however, no doubt about Mies's deep interest in these curved continuous surfaces nor about the source of his inspiration; a catalogue of the Alvar Aalto furniture exhibition at the Wohnbedarf store in Zurich, of 1933, was found between his sketches. In many of them he seeks ways to fuse the reclining seat contour with flat bar supports that are derived from the Barcelona or Tugendhat formulas, or made up of circle segment combinations which, in their intricacy, often resemble Thonet rocking chairs. In fact, there is an entire series of related sketches for rocking chairs, which, by contrast, have quite simple functional outlines. In some studies the continuous seat surface is extended barrel-like to the ground, resting only on a rudimentary coat-rack frame; in others the surface is prolonged laterally to form a bench. Finally, there are designs for lounge and deck chairs in which the surface is dissolved into narrow or wide bent strips, reminiscent of nineteenth-century garden chairs.

Another idea that Mies adopted from Alvar Aalto was to use bent laminated wood strips as a resilient support element. Related in shape to the frame curve of the Brno chair, these supports are either solid, tapering off at the end of the armrest, or split into strands that are bent below the seat and above into armrests and clamped together again at the back. In further exploiting the technical innovation which made more substantial wood bars bendable by inserting thin layers of a different wood, Mies added steel rods to increase resilience. In August 1935 he was granted a patent for a runner-type chair support in flexible materials, which he later transferred to Lilly Reich. In October of the same year he also obtained a patent for an automobile seat to which he had applied his earlier idea of an independently movable back. The gap between back and seat is here, however, only an indentation in the continuous but flexible surface, allowing the back to move forward when the seat is depressed under a person's weight.

The car seat design has a monolithic appearance, and the earlier distinction between supporting and supported components is also obscured in the last group of furniture designs that Mies was to make. Whether, as has been suggested, he had begun to investigate plastic materials in Germany, perhaps in response to a competition invitation in 1936 by the publishers of *Modern Plastics*, has not been established. The existing sketches, a binder with 150 sheets, were all made here in the early 1940s, probably for a venture contrived by Anton Lorenz. It never seemed to have advanced far enough for full-scale drawings to be made, but Mies's preliminary exploration is most comprehensive and systematic. The sketches are grouped according to their types and their components: one-piece chairs with and without arms; two-piece chairs with and without arms where the seat and back shell rests on a separate base, or where the armrests are part of the base, or where seat and back have their own interlocking base parts. While the seat surface itself, modeled after a common tractor seat, which Mies even drew into one of the sketches, underwent little transformation, the back, arm, and base parts appear in endless graduated variations and combinations. In some the backs are given a flat and taut curve, then wrapped around to form wings as in Empire chairs, or they are separated from the armrests by circular cut-outs or fused with them as in the chairs designed in 1940 by Charles Eames and Eero Saarinen for a Museum of Modern Art competition. The bases are solid or hollowed pedestals, or trestle-like cradles for the separate shells, or, in the one-piece chairs, appear as side and rear spurs or runners developed out of the seat shape. In character these shell forms are most organic, often resembling bone structures, in some instances even with allusions to rib structures.

In contrast to all his other furniture drawings, which are strictly elevations, these sketches give perspective three-quarter views. And while the linearity of all his previous designs owed much to the ductile flow of the one-dimensional curvatures, these conchoidal chairs are astonishingly sculptural objects of an almost baroque character. While one may see in them reminiscences of his early exposure to Art Nouveau—both his first employers, Bruno Paul and Peter Behrens, had been leading practitioners of the style—they can also be attributed to a deep inclination for sculptural form. Mies's ancestral background of stone masons would easily explain any predisposition, and his only friendship with a renowned artist in the years before the First World War involved a sculptor,



Cover by Herbert Bayer of catalogue, *Das neue Holzmöbel Aalto (The New Wood Furniture Aalto)*. Wohnbedarf store, Zurich. 1933

Chair design by Charles Eames and Eero Saarinen. 1941. Drawing for the Organic Design Competition organized by The Museum of Modern Art (863.42)

Model of plaza in front of Seagram Building, New York, by Mies van der Rohe. 1955-57. Mies van der Rohe Archive, The Museum of Modern Art (586.76)

Wilhelm Lehmbruck. Yet, whatever the extent of his talents may have been, he never seemed to have trusted them and suppressed their expression throughout his life. A decade after the design of the conchoidal chairs he allowed a model to be made of the large folded metal sculptures he envisioned in the center of the two reflecting pools in front of the Seagram Building, but would not accede to their execution, although they had been admired by those who had seen the preliminary studies.

Mies always cherished his privacy and had let only those who worked or studied with him observe the creative process, making the world believe that the Barcelona chair had sprung from his head, like Athena, in its final perfection. The furniture designs reveal, perhaps better than any other aspect of Mies's work, the range of his imagination but also, one is tempted to say, the moral imperatives that guided the long process of elimination. "I often throw things out I like very much. They are dear to my heart, but when I have a better conviction, a clearer idea . . . then I follow the clearer idea," Mies declared in the "Conversations Regarding the Future of Architecture" that were recorded in 1956. "Thomas Aquinus," he continued, "said reason is the first principle of all human work. Now, when you have grasped that once, then you act accordingly. So, I would throw everything out that is not reasonable. I don't want to be interesting, I want to be good."

For lack of more explicit statements, we will never know the extent to which Mies had adopted the Aquinian reinterpretation of Aristotelian reason. His interest in Catholic writers and thinkers is well known, but they were never his only source of stimulation. One can make as plausible a case for Immanuel Kant's philosophy, which had never really gone out of fashion in Berlin, and it was this city's intellectual climate that had formed Mies's mind after he had settled there at the age of twenty-two. The Dutch architect Hendrikus Petrus Berlage is said to have introduced him to the "truth of materials" doctrine, but Mies, unlike most modernists, did not satisfy his reductionist impulses by merely leaving materials exposed. It was for him more a matter of their inherent qualities, the discovery of laws that would give the resulting form the sanction of being preordained. Thus, if one reads "material" for Kant's "nature" in certain passages of, for instance, the *Critique of Pure Reason*, they read like guidelines that Mies may have set for himself. Kant writes that reason offers not only sets of principles but also an invitation to experiment. However, its approach to nature is not passive but, rather, like that of a judge who extracts answers to questions he himself has formulated. Mies's indebtedness to Kant is even more obvious in his striving for universality, which, particularly in his late work, gained such importance that one is tempted to paraphrase Kant's categorical imperative, "Create only those forms through which you can at the same time will that they should become a universal law." It was this attitude of developing forms out of a material's nature and of purifying them to a point where they achieved universal applicability, which Mies understood as being good rather than interesting.

These self-imposed rigorous restraints, of course, affected only the final stages of the design process and, as the chair drawings so clearly demonstrate, did not diminish his initial inventiveness. Second only to Mies's original imagination is his unique, inborn sense of proportion, which was effective even within the limited margins of the given anatomical dimensions. What appealed most to those who, at the beginning of the 1930s, had converted to the consolidated modernism best described by the German term *Neue Sachlichkeit*, was the understated elegance of his designs. Ennobling the simplicity and clarity of their forms, it made Mies chairs classics in a matter of years. The models brought out again after the Second World War were the basic versions stripped of such removable details as the arms of the 1927 side chair, which were liable to reintroduce a period flavor. They not only remained in demand at a time when the word Bauhaus acquired a distinctly pejorative meaning, but the Barcelona chair even became a status symbol with a high incidence of poor imitations. When the time had come for the 1920s to be rediscovered—resulting in the current revival of tubular steel furniture—Mies's designs seemed less than ever confined to the period of their origin. To the degree in which they have become timeless, they now stand out as the work of an individual whose achievements in this area confirm his pre-eminence among the designers of our century.

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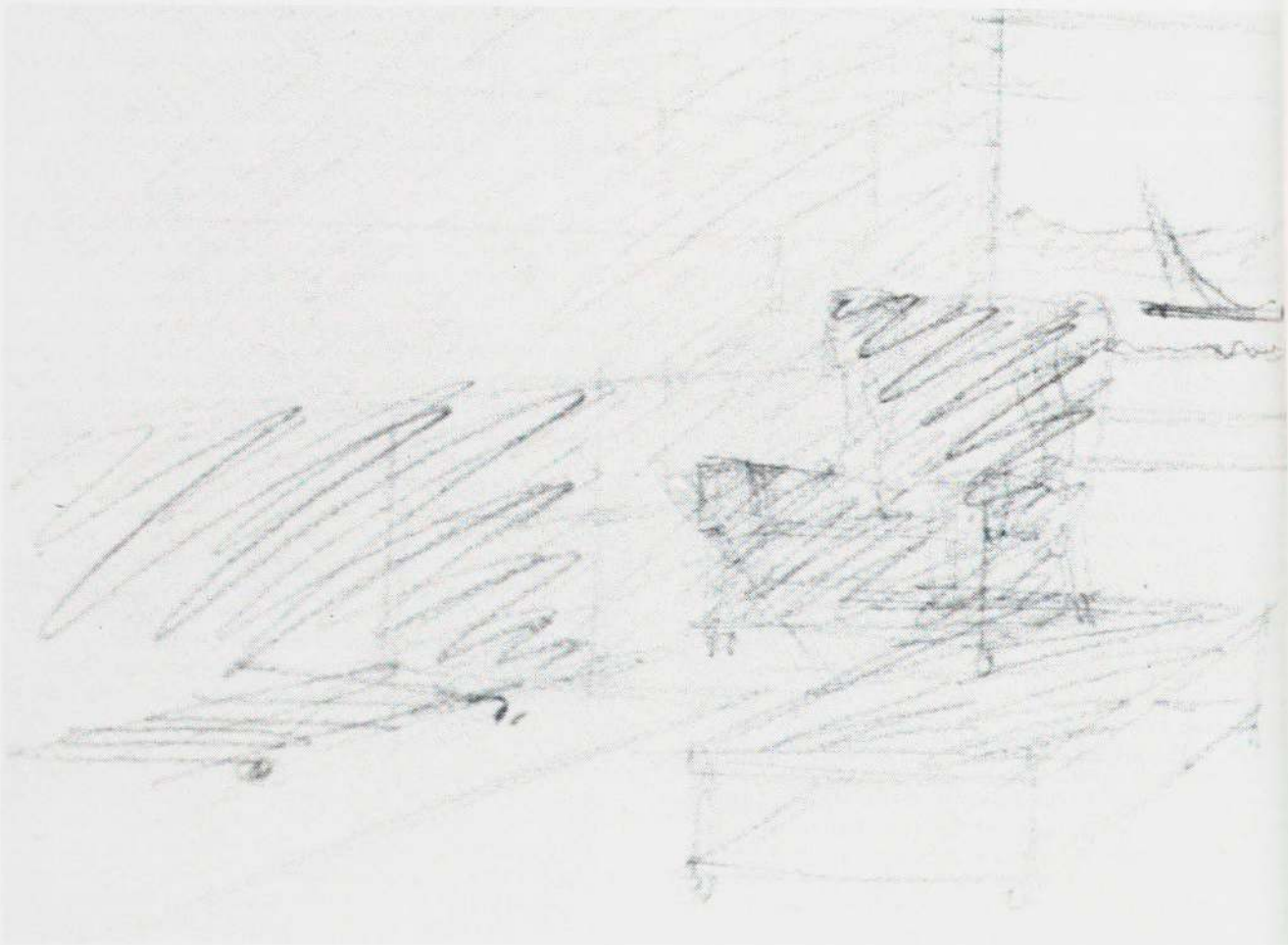


Drawing of wing chair. Detail from interior perspective for the Hubbe House project, Magdeburg. 1935. Pencil on board, 480 x 670 mm (19 x 26 3/8in.). Mies van der Rohe Archive, The Museum of Modern Art (711.63)

1. Sketch of figure with side chair. Detail. Pencil on paper, 295 x 208 mm (11 5/8 x 8 3/16 in.). Mies van der Rohe Archive, The Museum of Modern Art

The catalogue is arranged according to four general groupings: tubular steel frames, tubular support elements, bar steel frames, and experimental chair designs. In the descriptions of individual items, all dimensions and materials are based on original drawings (mainly the full-size vellum set of August-September 1931) in the Archive or on original pieces of furniture in the Collection. Later deviations or variations are indicated only where relevant. All measurements are taken in millimeters and then converted into the nearest 1/16 inch. The model numbers are given where known in parentheses after the manufacturers' names.

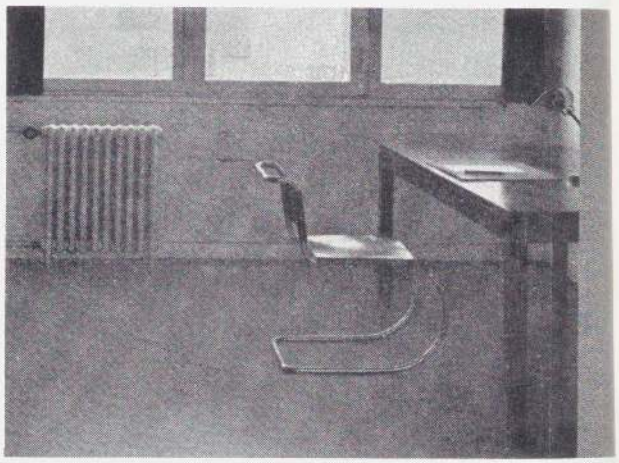
In the dimensions of the drawings, height precedes width. If not otherwise indicated, all drawings belong to the Mies van der Rohe Bequest received by the Archive after 1969. The number in parenthesis at the end of each entry indicates the Museum of Modern Art accession number.

Photographs of all current models are by Yukio Futagawa, Tokyo; all others are from the Mies van der Rohe Archive, The Museum of Modern Art, New York.

20 Materials
Steel tubes, chrome plated (current model, U.S.: stainless steel) in three sections connected by dowels and screws or welded, one stiffening rod; belting leather slings for seat, laced at underside and screwed to rear of frame at back (originally available with lacquered or nickel-plated frame and with plain two-cord yarn fabric slings or continuous lacquered caning).

Dimensions
Height 790 mm (31 in.), seat height 440 mm (17 5/16 in.), width 470 mm (18½ in.) [current model: 495 mm — 19½ in.], depth 720 mm (28 5/16 in.) [current model: 699 mm — 27½ in.]; tube diameter 24 mm (15/16 in.), wall thickness 2 mm (1/16 in.).

Manufacturers
(1927-30) Berliner Metallgewerbe Joseph Müller, Berlin; (1931) Bamberg Metallwerkstätten, Berlin (MR 10); (1932-present) Thonet (MR 533), (1964-present) Knoll International (256).



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2. Side chair, as shown in model room of apartment house by Mies van der Rohe at the Weissenhof Housing Exhibition, Stuttgart. 1927 (from Werner Gräff, ed., *Innenräume*, 1928)

3 and 4. Original side chair. The Museum of Modern Art, gift of Edgar Kaufmann, Jr. (22.49)

3

4

4

22 Materials
Steel tubes, chrome plated in five sections connected by dowels and screws or welded, arm tubes screwed to frame at back and fastened with brackets at bottom, one stiffening rod; belting leather slings for seat and back, laced at rear and underside (originally available with lacquered or nickel-plated frame and with plain two-cord yarn fabric slings or continuous lacquered caning, also around armrests).

Dimensions
Height 790 mm (31 in.), seat height 440 mm (17 5/16 in.), width 520 mm (20 7/16 in.), depth 820 mm (32 1/4 in.); tube diameter 24 mm (15/16 in.), wall thickness 2 mm (1/16 in.); in one variation, frame is 5 mm (3/16 in.) narrower at rear than in front to allow parallel alignment of arms with cantilever curve before passing around back.

Manufacturers
(1927-30) Berliner Metallgewerbe Joseph Müller, Berlin; (1931) Bamberg Metallwerkstätten, Berlin (MR 20); (1932-present) Thonet (MR 534); (1977) Knoll International (256 A).

5

6. and 7. Original side chair with arms and leather seat and back. The Museum of Modern Art, gift of Edgar Kaufmann, Jr. (20.49)

6

6

7

24 Materials
Steel tubes, chrome plated in two sections connected by dowels and screws or welded, one stiffening rod; belting leather sling, laced at underside (originally available with lacquered or nickel-plated frame and with plain two-cord yarn fabric or lacquered caning).

Dimensions
Height 440 mm (17 5/16 in.), width 450 mm (17 11/16 in.), depth 500 mm (19 5/8 in.); tube diameter 24 mm (15/16 in.), wall thickness 2 mm (1/16 in.).

Manufacturers
(1927-30) Berliner Metallgewerbe Joseph Müller, Berlin; (1931) Bamberg Metallwerkstätten, Berlin (MR 1).

8

9

8. Original stool with leather sling. The Museum of Modern Art, promised gift of Philip Johnson

9. Original stool with lacquered frame and cane seat (from *Die Form*, vol. 3, June 1928)

10. Lounge chair by Mies van der Rohe and bed and bedside table by Lilly Reich, as shown in model house by Lilly Reich at the Berlin Building Exhibition. 1931

11. Sketches for low tables. Early 1930s. Pencil on paper, 211 x 296 mm (8 5/16 x 11 11/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (899. 74)

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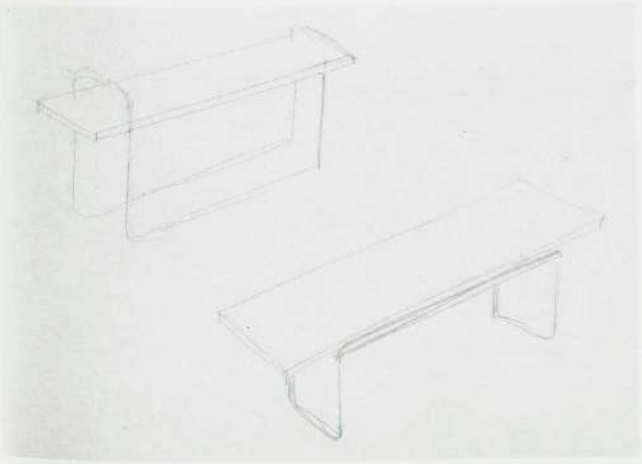


11

Lounge Chair 1931

26

Materials
Steel tubes, chrome plated in five sections connected by, dowels and screws, one stiffening rod; nine rubber or leather straps; continuous roll and pleat cushion with plain or checkered linen cover (originally available with lacquered or nickel-plated frame and with continuous lacquered caning).

Dimensions
Height 840 mm (33 in.), seat height 400 mm (15¾ in.), width 550 mm (21⅝ in.), depth 900 mm (35⅜ in.), seat inclination 50 mm (1 15/16 in.); tube diameter 24 mm (15/16 in.), wall thickness 2 mm (1/16 in.) and 3 mm (⅛ in.) for the two cantilever/seat sections of frame.

Manufacturers
(1931) Bamberg Metallwerkstätten, Berlin (MR 30); (1977) Knoll International (247).

12 and 13. Current reproduction of lounge chair with beige velvet cushion. The Museum of Modern Art, gift of Knoll International (297.76)

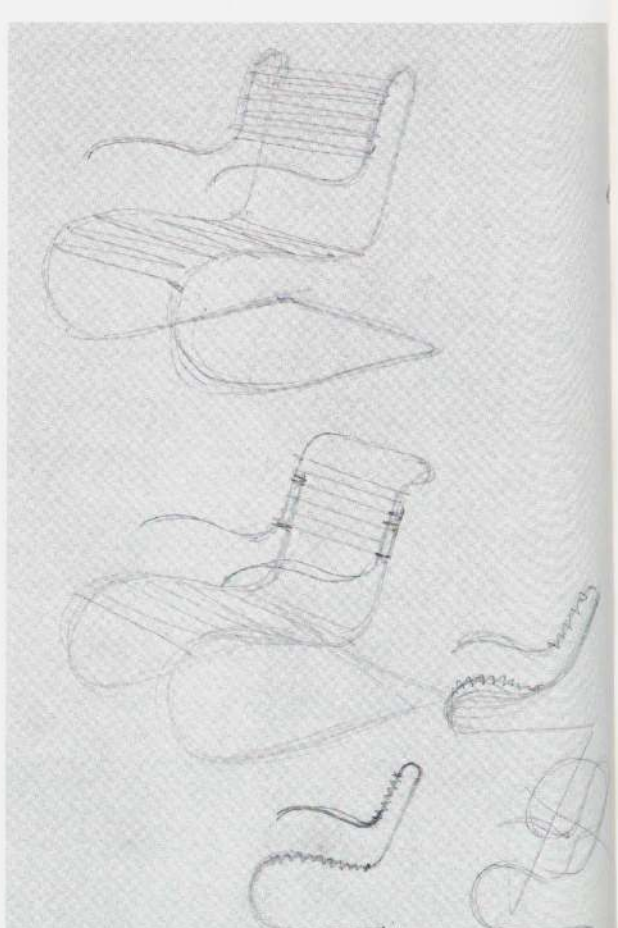
12

13

28 Materials
Steel tubes, chrome plated in seven sections connected by dowels and screws, arm tubes screwed to frame at back and fastened with brackets at bottom, two stiffening rods; nine rubber or leather straps; continuous roll and pleat cushion with plain or checkered linen cover (originally available with lacquered or nickel-plated frame and with continuous lacquered caning, also around armrests).

Dimensions
Height 840 mm (33 in.), seat height 400 mm (15¾ in.), width 600 mm (23⁹⁄₁₆ in.); depth 950 mm (37⁵⁄₁₆ in.); tube diameter 24 mm (¹⁵⁄₁₆ in.), wall thickness 2 mm (¹⁄₁₆ in.) and 3 mm (⅛ in.) for the two cantilever/seat sections of frame.

Manufacturers
(1931) Bamberg Metallwerkstätten, Berlin (MR 40);
(1977) Knoll International (248).



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14. Sketches of lounge chairs with arms. Early 1930s. Pencil on paper, 296 x 210 mm (11¹¹⁄₁₆ x 8⁵⁄₁₆ in.). Mies van der Rohe Archive, The Museum of Modern Art (622.74)

15 and 16. Current reproduction of lounge chair with arms and black cushion. The Museum of Modern Art, gift of Knoll International (298.76)

15

16

30 Materials
Steel tubes and bars, chrome plated in five sections connected by dowels and screws; black glass top (originally available with lacquered or nickel-plated frame and with clear glass or lacquered plywood top).

Dimensions
(MR 130) height 500 mm (19⅝ in.), diameter 600 mm (23⅜ in.); (MR 140) height 500 mm (19⅝ in.), diameter 700 mm (27⅝ in.); tube diameter 24 mm (15/16 in.), wall thickness 2 mm (1/16 in.).

Manufacturers
(1927-30 Berliner Metallgewerbe Joseph Müller, Berlin; (1931) Bamberg Metallwerkstätten, Berlin (MR 130,140); (1977) Knoll International (259).

17. Side chair and coffee table in entrance hall on upper level of Tugendhat House, Brno, Czechoslovakia. 1930

18 and 19. Current reproduction of coffee table. The Museum of Modern Art, gift of Knoll International (410.76)

20. Original coffee table measuring 600 mm (23⅜ in.) in height and diameter. The Museum of Modern Art, gift of Alfred H. Barr, Jr. (474.70)

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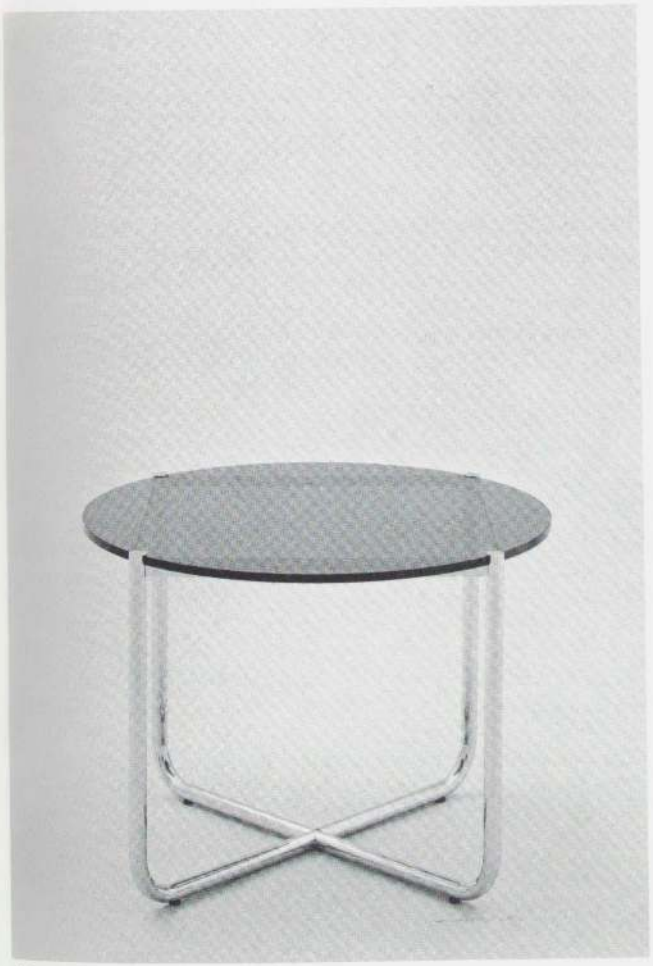

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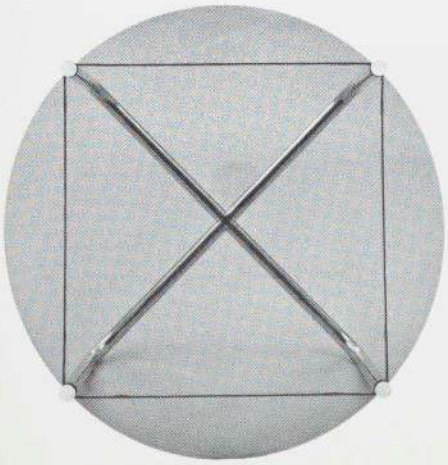

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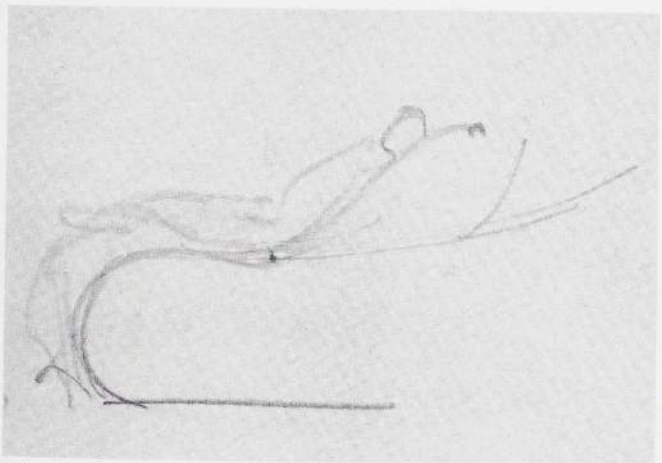

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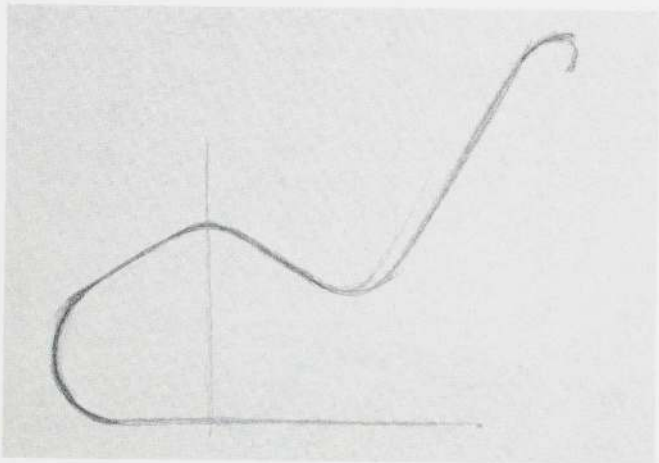

22

Materials
Steel tubes, chrome plated in six sections connected by dowels and screws, three stiffening rods; thirteen rubber straps; continuous roll and pleat cushion with plain or checkered linen cover (originally available with lacquered or nickel-plated frame).

Dimensions
Height 955 mm (37½ in.), seat height at knees 490 mm (19¼ in.), width 600 mm (23⁹⁄₁₆ in.), depth 1,200 mm 47³⁄₁₆ in.); tube diameter 25 mm (1 in.), wall thickness 2 mm (⅛ in.) and 5 mm (³⁄₁₆ in.) for the two cantilever/seat sections; originally available as small model with higher overall and seat heights and a shorter depth, produced by Thonet.

Manufacturers
(1931) Bamberg Metallwerkstätten, Berlin (MR 100); (from 1932 on) Thonet (MR 535); (1977) Knoll International (241)

21. Sketch for chaise longue. Early 1930s. Pencil on paper, 285 x 224 mm (11¼ x 8⅞ in.). Mies van der Rohe Archive, The Museum of Modern Art (616.74)

22. Sketch for chaise longue. Early 1930s. Pencil on paper, 211 x 295 mm (8⁵⁄₁₆ x 11⅝ in.). Mies van der Rohe Archive, The Museum of Modern Art (715.74)

23 and 24. Original chaise longue with reproduction of navy blue cushion. The Museum of Modern Art, gift of Philip Johnson (295.76)

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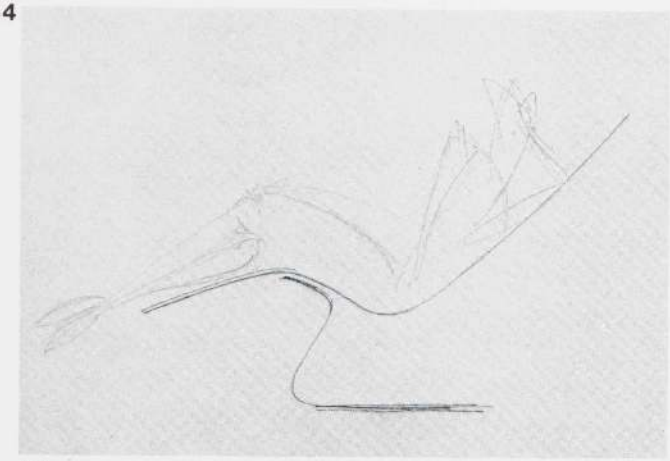

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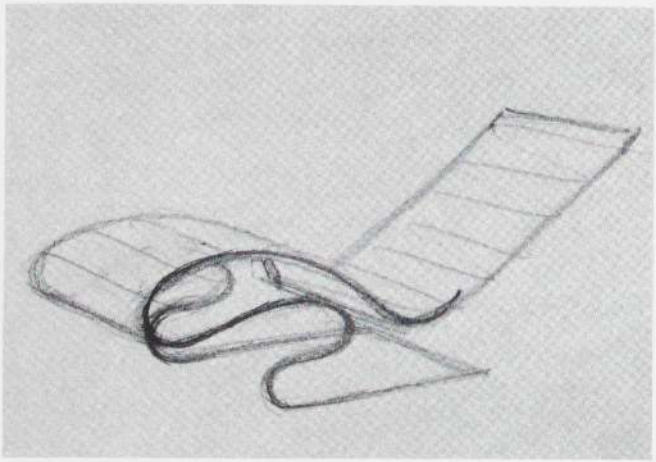


26

Materials
Steel tubes, lacquered, nickel or chrome plated, reclining frame in four sections, support frame in two sections, connected by dowels and screws, both frames clamped together by brackets; two stiffening rods; rubber straps; continuous roll and pleat cushion with plain or checkered linen cover.

Dimensions
Height 950 mm (37 5/16 in.), seat height at knees 500 mm (19 5/8 in.), width 600 mm (23 9/16 in.), depth 1,200 mm (47 3/16 in.); tube diameter 25 mm (1 in.), wall thickness 3 mm (1/8 in.).

Manufacturer
(1931) Bamberg Metallwerkstätten, Berlin (MR 110).

25. Sketch for chaise longue with spring frame. 1931. Pencil on paper, 330 x 208 mm (13 x 8 3/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (552.74)

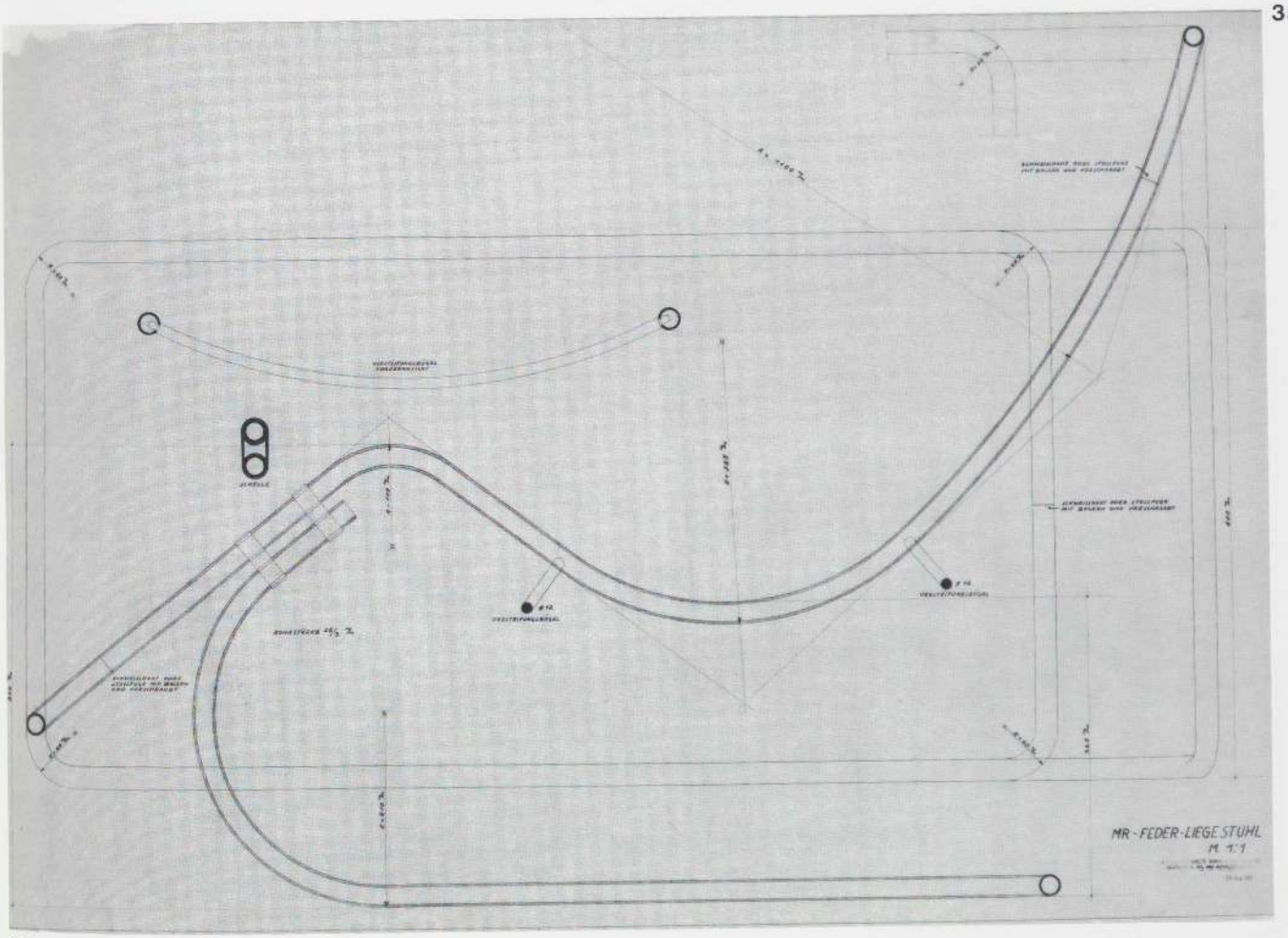
26. Sketch for chaise longue with double cantilever frame. Early 1930s. Pencil on paper, 225 x 350 mm (8 7/8 x 14 in.). Mies van der Rohe Archive, The Museum of Modern Art (934.74)

27. Elevation and plan drawing for chaise longue with spring frame. Scale 1:1. Dated 19 August 1931. Pen and ink on vellum, 1,556 x 996 mm (61 5/16 x 39 1/4 in.). Mies van der Rohe Archive, The Museum of Modern Art (962.74)

28. Perspective drawing of chaise longue with spring frame and seat straps. 1931. Pencil on paper, 228 x 545 mm (9 x 21 1/2 in.). Mies van der Rohe Archive, The Museum of Modern Art (774.74)

29. Preliminary curvature study for chaise longue with spring frame. Scale 1:1. 1931. Charcoal on tracing paper, 1,091 x 1,357 mm (43 x 53 1/2 in.). Mies van der Rohe Archive, The Museum of Modern Art (1243.74)

30. Preliminary curvature study for chaise longue with spring frame. Scale 1:1. 1931. Charcoal, pencil, colored pencil on tracing paper, 960 x 1,344 mm (37 13/16 x 53 in.). Mies van der Rohe Archive, The Museum of Modern Art (1245.74)



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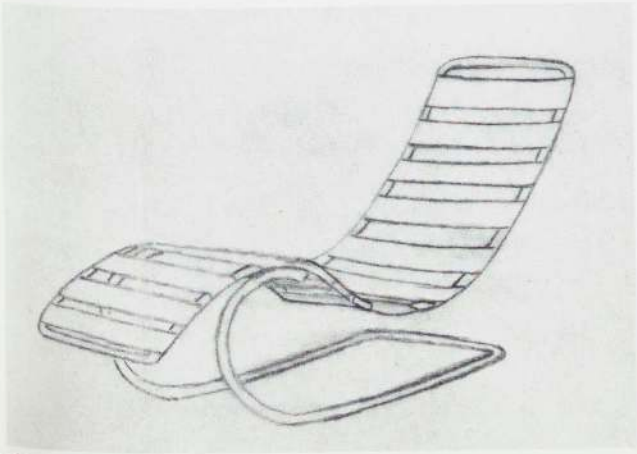

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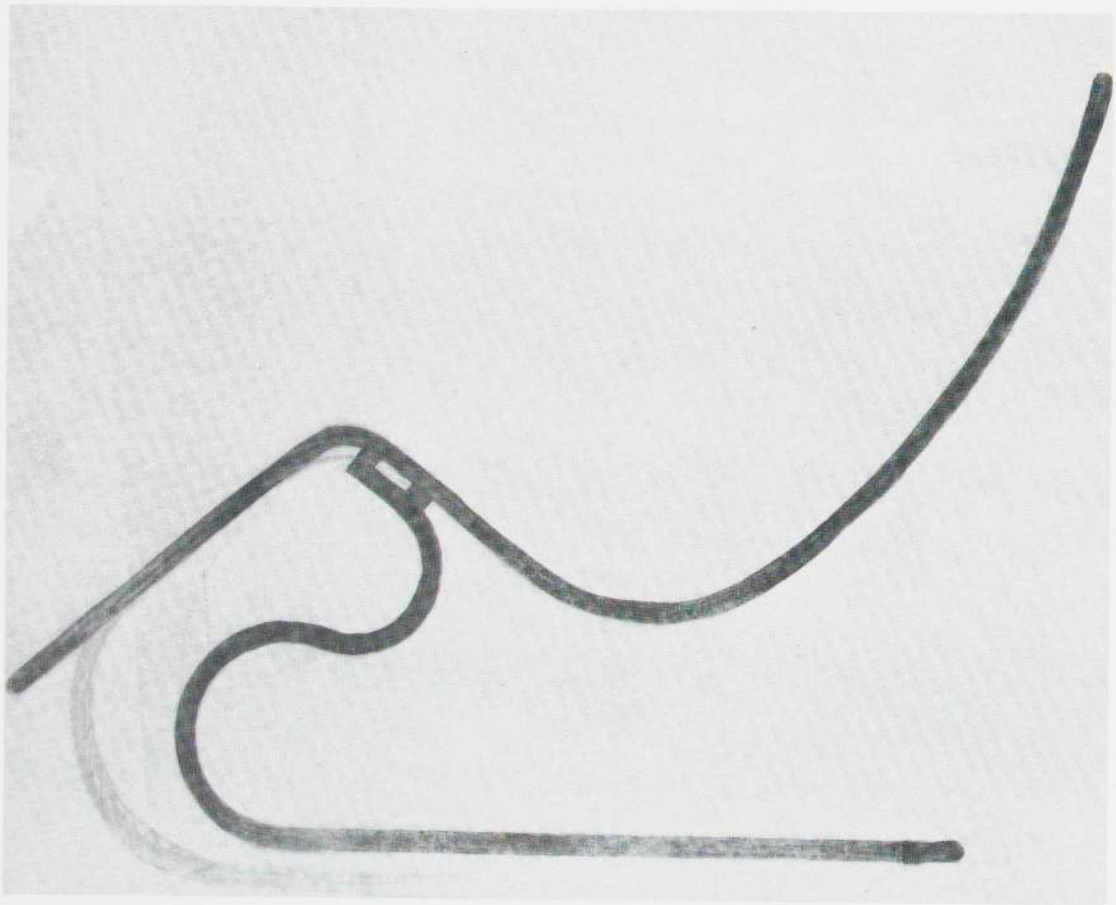

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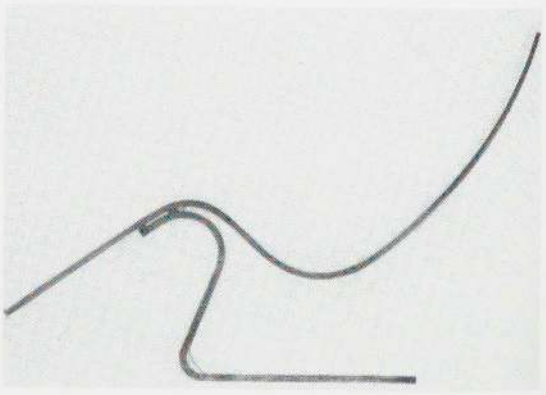


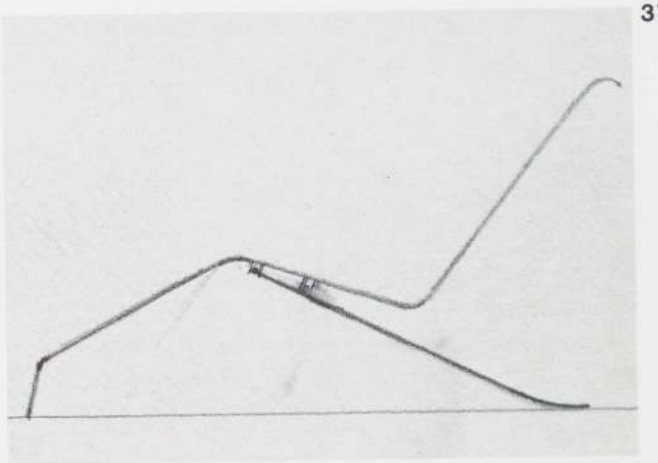
30

Reclining Frame 1932

Materials
Steel tubes, chrome-plated reclining and support frames in sections connected by dowels and screws, three stiffening rods, reclining frame adjustable to two positions by means of hooks resting on pegs attached to the support frame; rubber straps; continuous roll and pleat cushion.

Dimensions
Height at high position 925 mm (36⅜ in.), seat height at knees 440 mm (17 5/16 in.), width 660 mm (25 15/16 in.), depth at high position 1,720 mm (67⅝ in.); tube diameter 25 mm (1 in.).

Manufacturer
Never in production. (Cradle-support version—1977) Knoll International (242)



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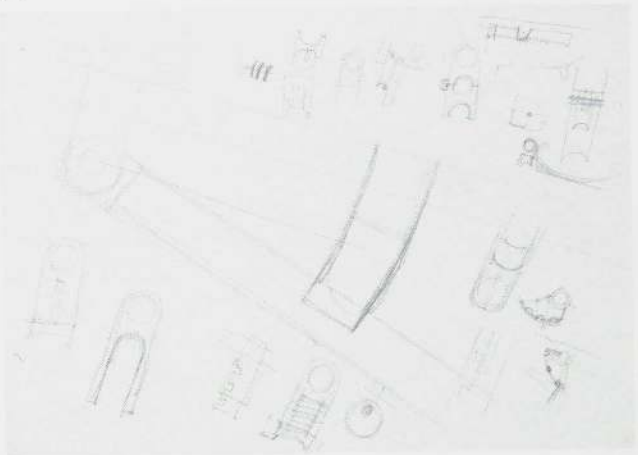

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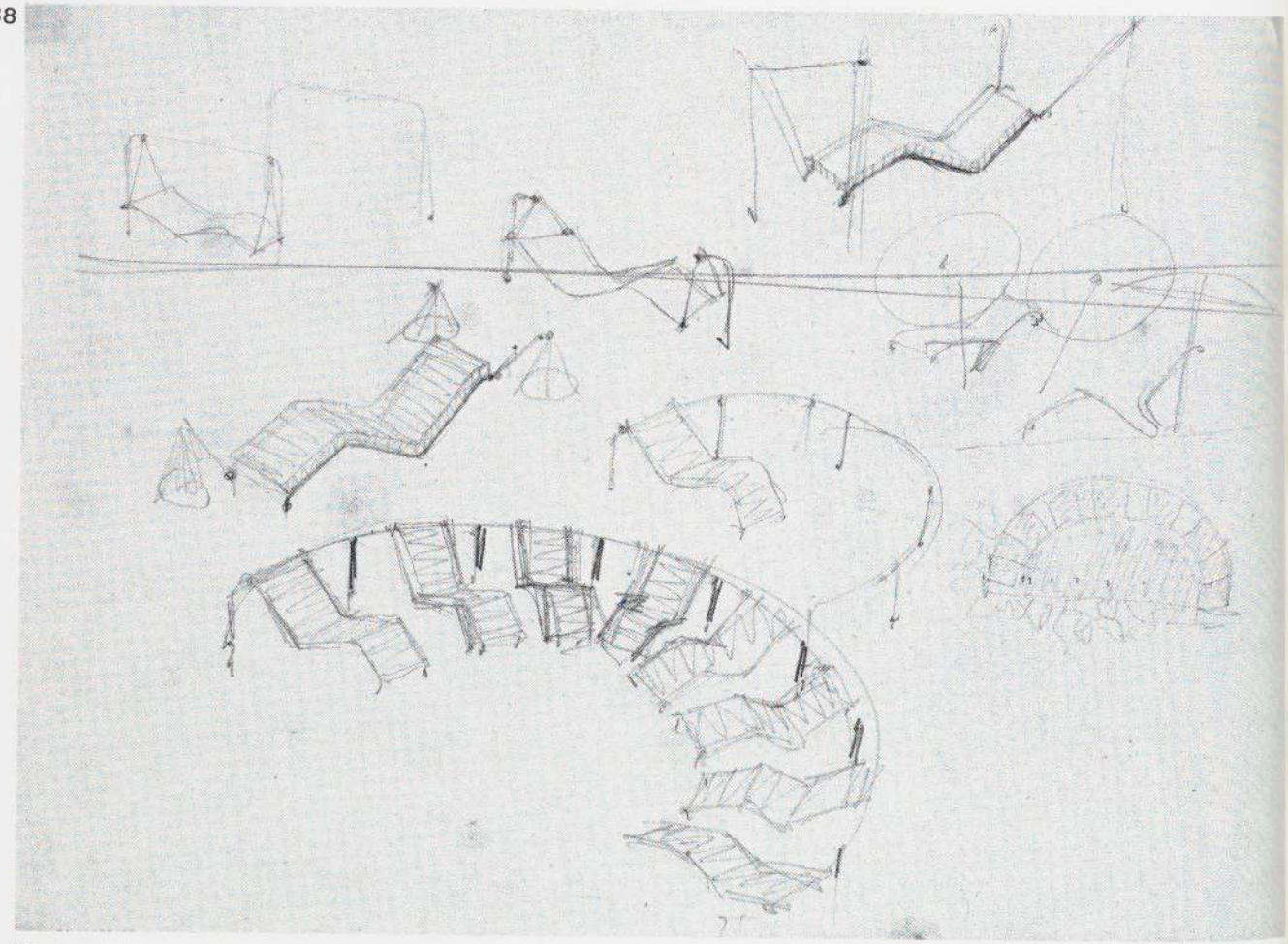
31. Sketch of reclining frame with rear support. 1931-32. Pencil on paper, 210 x 296 mm (8 5/16 x 11 11/16 in.). Mies van der Rohe Archive, The Museum of Modern Art

32. Sketch of rear support and clamping details for reclining frame. 1931-32. Pencil on paper, 209 x 296 mm (8¼ x 11 11/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (887.74)



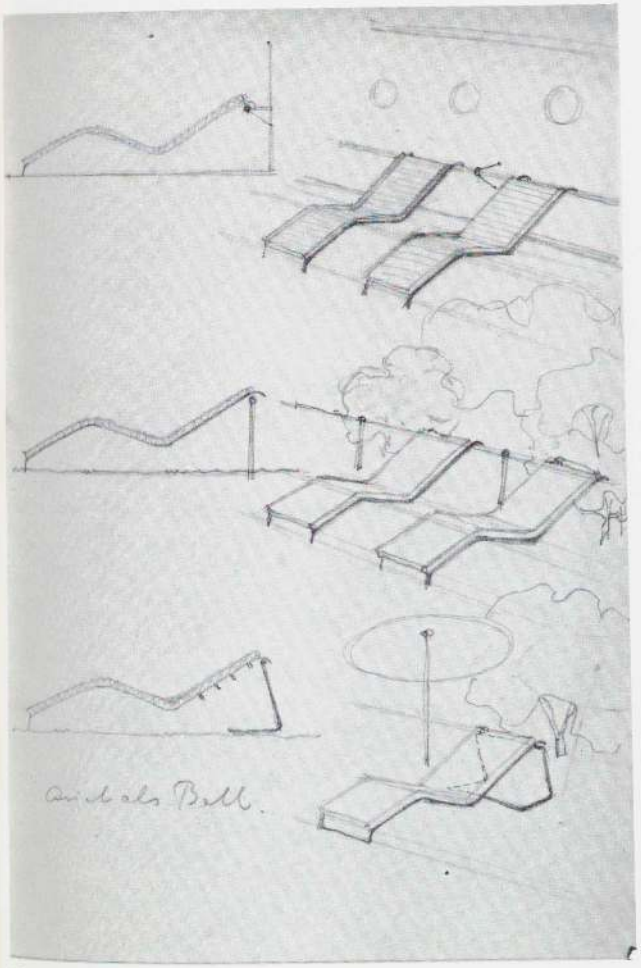
33. Sketch of reclining frame with different support configurations. 1931-32. Pencil on paper, 209 x 296 mm (8¼ x 11 11/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (929.74)

33

34. Sketch of reclining frame with different support configurations. 1931-32. Pencil on paper, 296 x 209 mm (11 11/16 x 8 1/4 in.). Mies van der Rohe Archive, The Museum of Modern Art (927.74)

36. Reclining frame suspended under beach house. Student project by Eduard Ludwig for a course by Mies van der Rohe, Bauhaus, Dessau. 1931

35. Sketch of reclining frame with different support configurations. 1931-32. Pencil on paper, 296 x 209 mm (11 11/16 x 8 1/4 in.). Mies van der Rohe Archive, The Museum of Modern Art (926.74)



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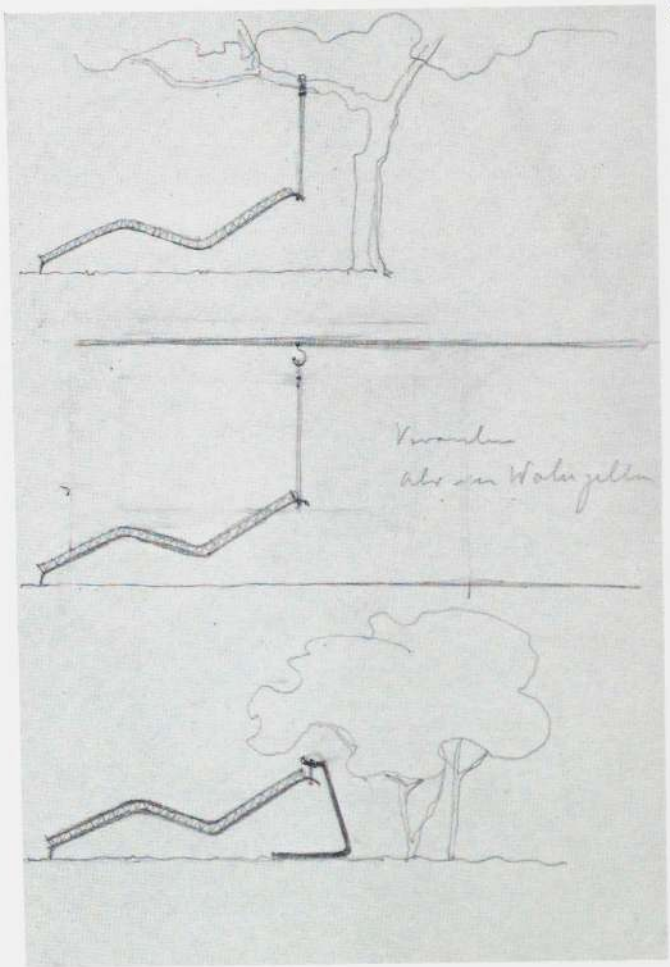

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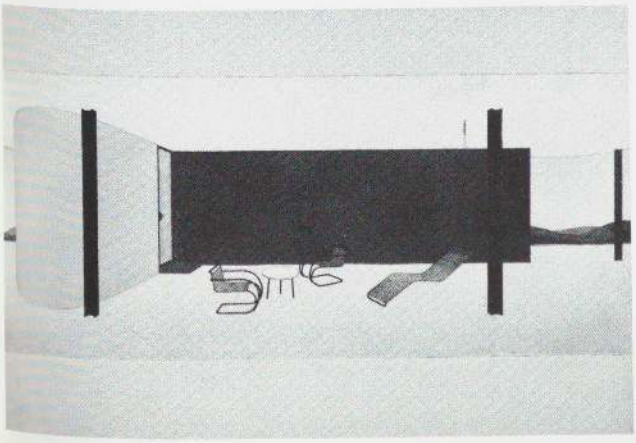

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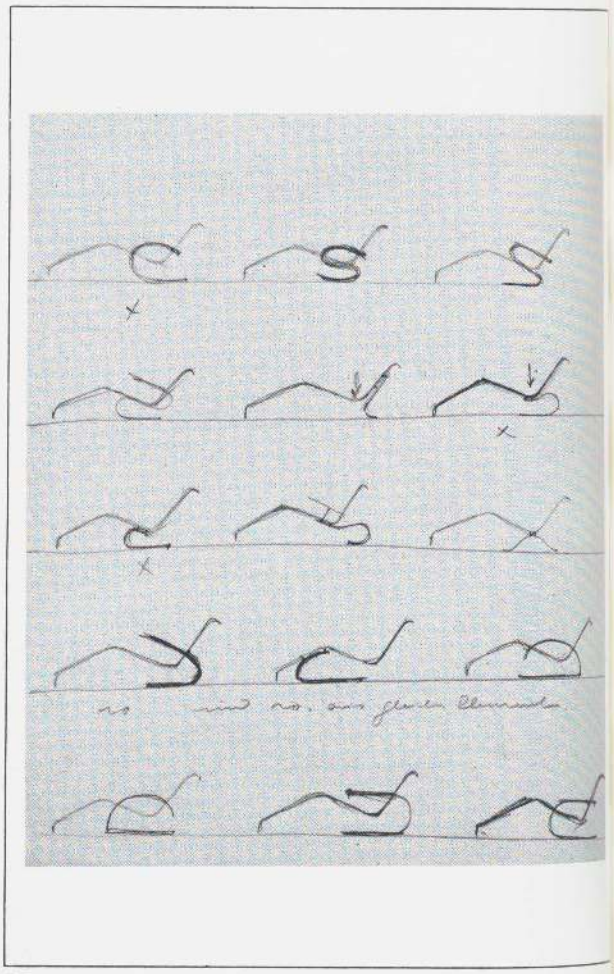
40 37. Sketches for reclining frame with different support elements. 1931-32. Pencil on paper, 200 x 170 mm (7⅞ x 6¾ in.). Mies van der Rohe Archive, The Museum of Modern Art (488.74)

38. Current reproduction of reclining frame with navy blue cushion. The Museum of Modern Art, gift of Knoll International (296.76)

39. Elevation drawing of adjustable seat frame with separate support and ottoman frame. 1931-32. Pencil on paper, 100 x 209 mm (3¹⁵⁄₁₆ x 8¼ in.). Mies van der Rohe Archive, The Museum of Modern Art



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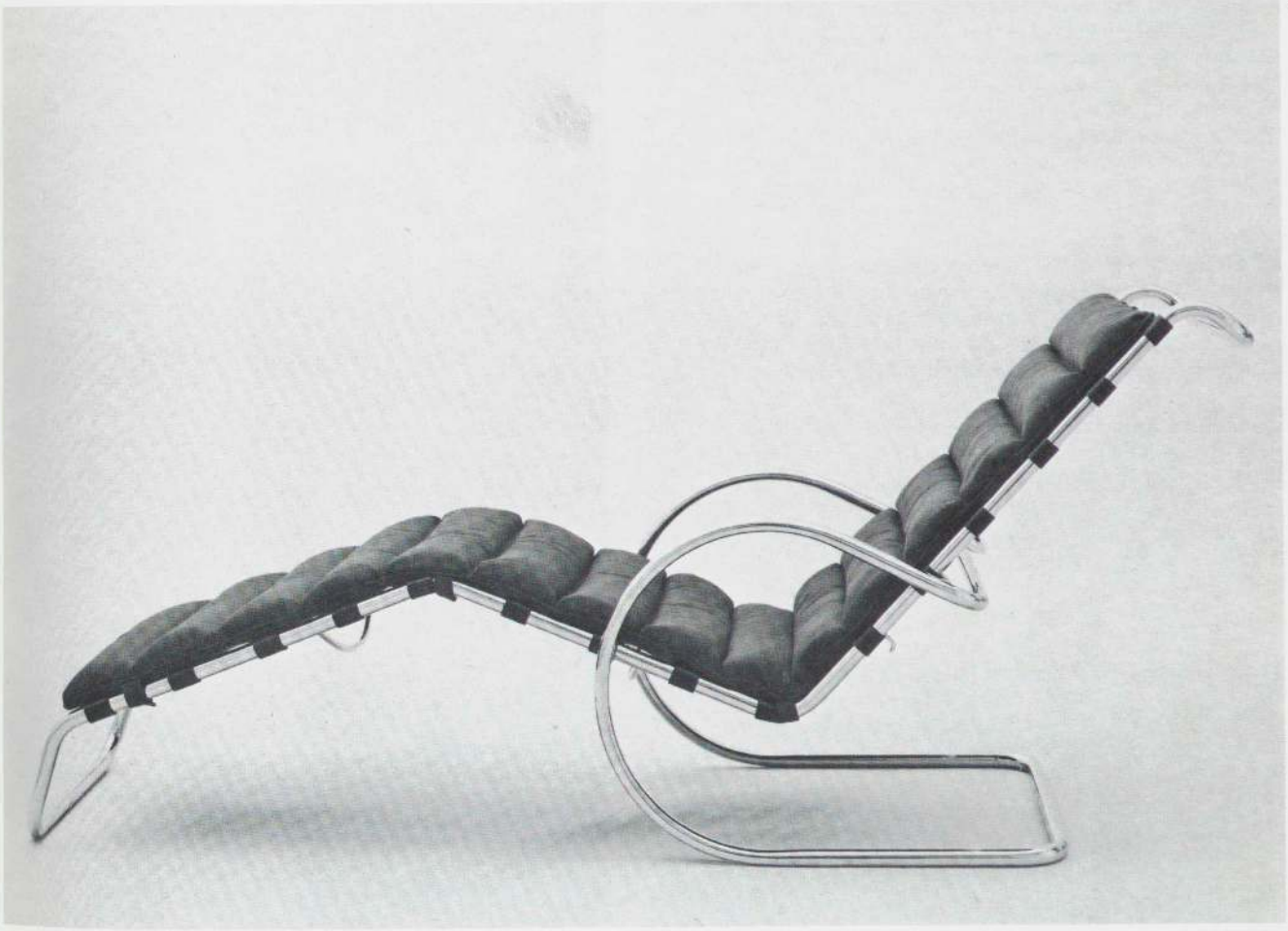

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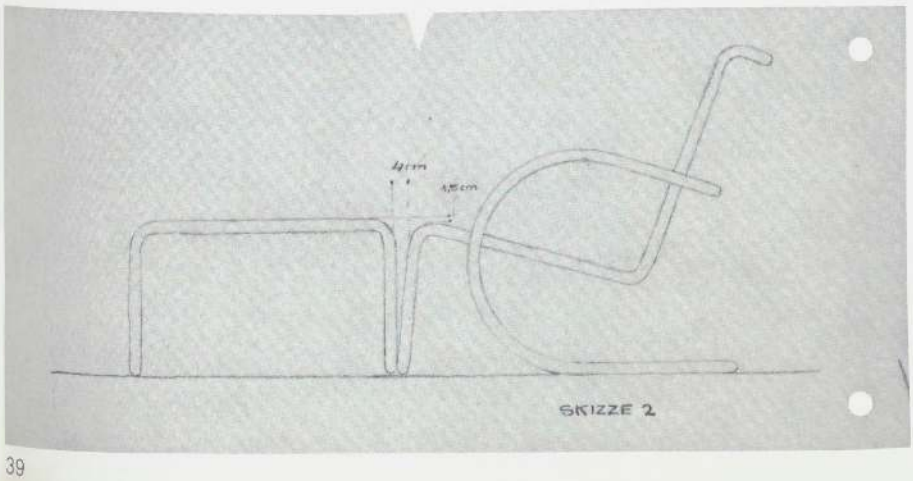


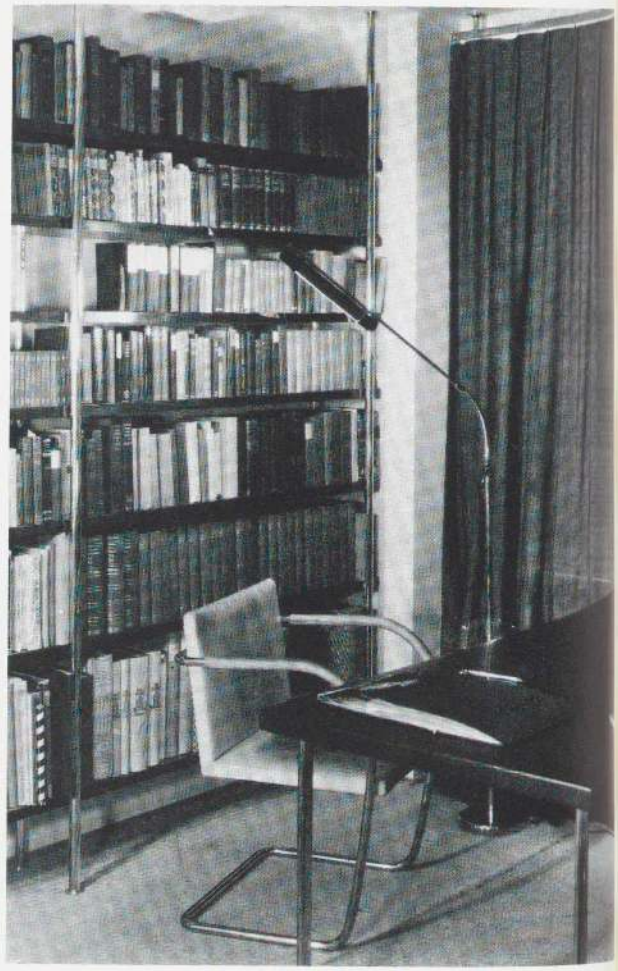
39

42 40. Desk with leather-covered top and tubular steel legs, book shelves with rosewood veneered planks and tubular steel supports, as installed in the apartment of Philip Johnson, New York. 1930

41. Drawing of connection between leg and table top. Detail. Early 1930s. Pencil on paper, 296 x 438 mm (11 1/16 x 17 1/4 in.). Mies van der Rohe Archive, The Museum of Modern Art (1251.74)

42. Perspective drawing of cabinet with pearwood veneered frame, tubular steel supports, and glass doors on either side on main floor of Tugendhat House, Brno, Czechoslovakia. Detail. 1930. Pencil on paper, 625 x 952 mm (24 5/8 x 37 7/16 in.). Mies van der Rohe Archive, The Museum of Modern Art

43. Drawing for tubular steel floor-to-ceiling flower stand. 1934. Pencil on paper, 315 x 225 mm (12 1/4 x 8 3/4 in.). Mies van der Rohe Archive, The Museum of Modern Art



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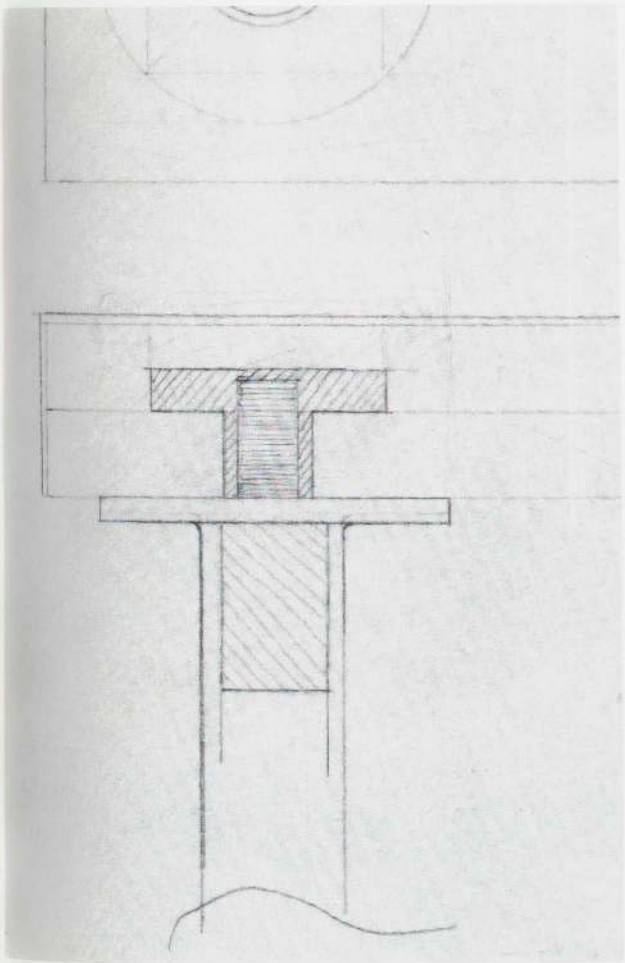

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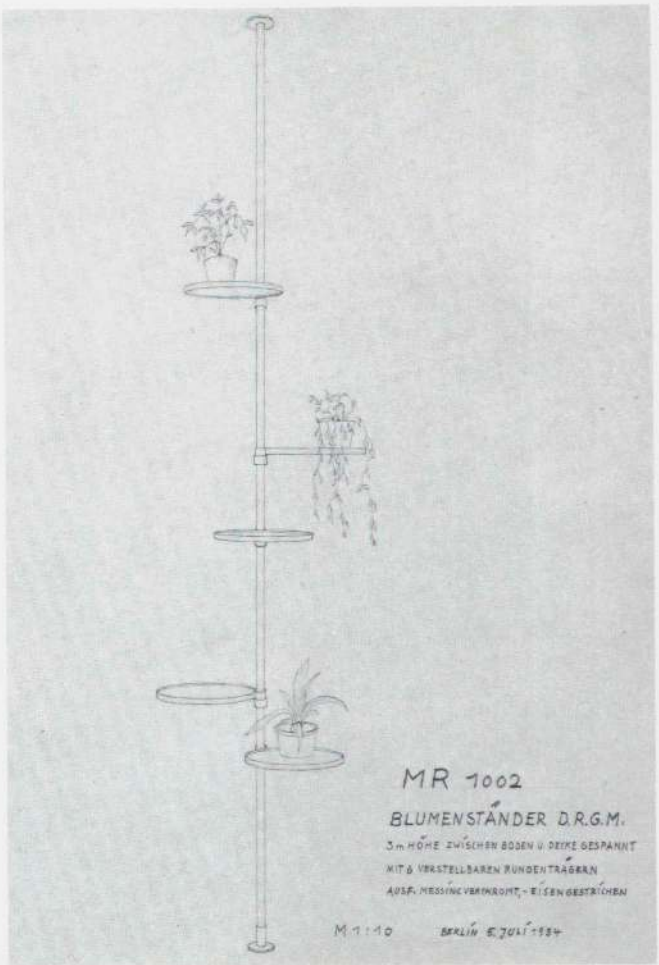
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BLUMENSTÄNDER D.R.G.M.
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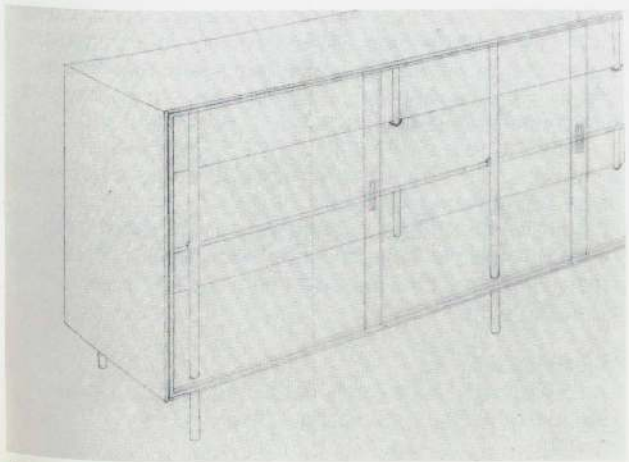

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Couch 1930

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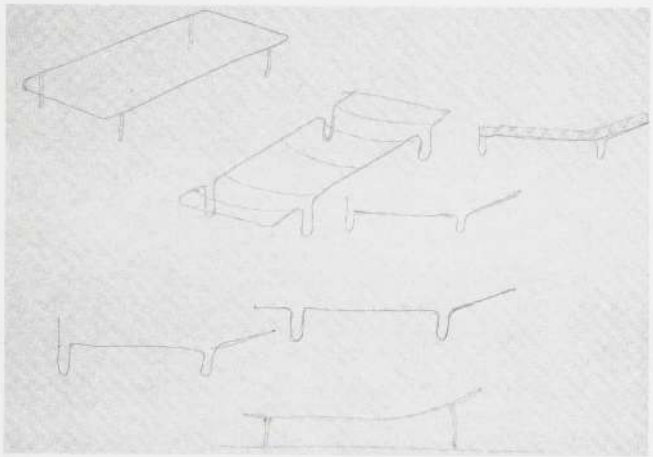

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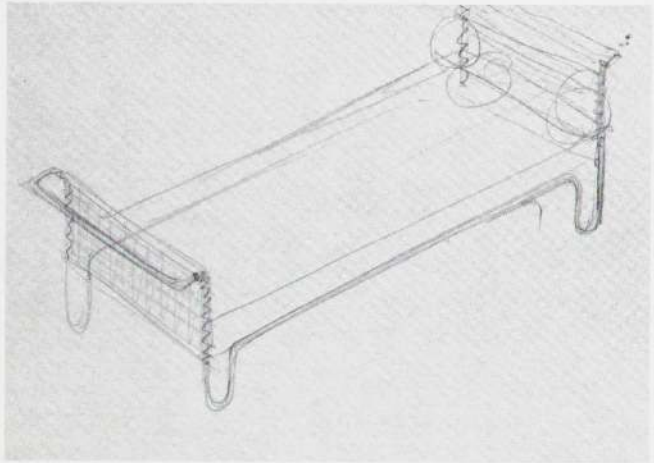

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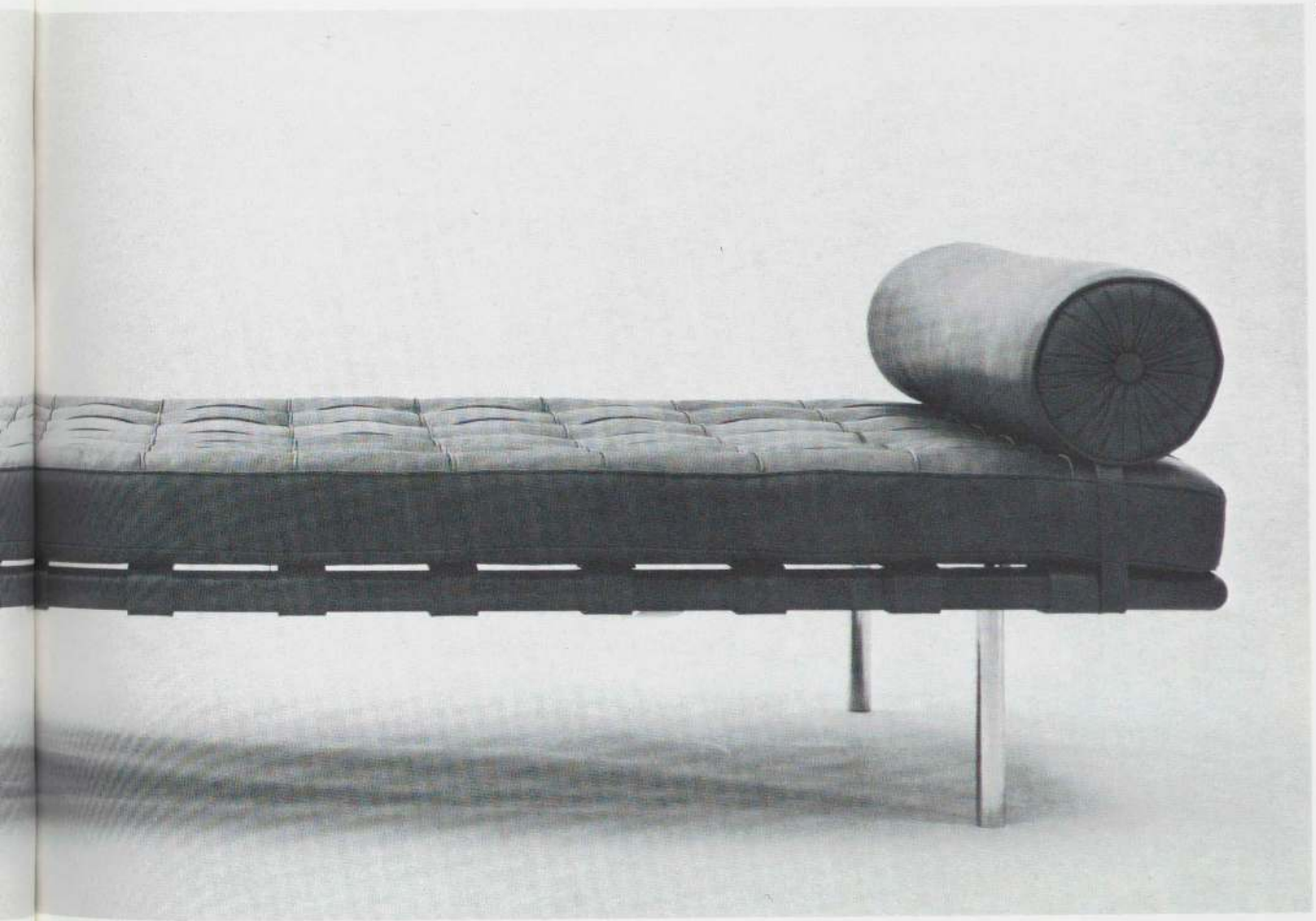
46

Materials
Wood frame with lap joints and attached half-round edge, tubular steel legs set into frame with slotted metal sleeve to tighten leg by screwing flange; eleven rubber straps; mattress and bolster in fabric or leather.

Dimensions
Height (top of frame) 285 mm (11¼ in.), length 2,000 mm (78⅝ in.), width 1,000 mm (39⅜ in.), thickness of frame 50 mm (1 15/16 in.), width of frame 100 mm (3 15/16 in.); diameter of foot tube 26 mm (1 1/16 in.), distance of feet from ends of frame 257.5 mm (10⅛ in.).

Manufacturers
(From 1930 on) Richard Fahnkow/Günther and Co., Berlin; (1964-present) Knoll International (258).



44. Sketches for tubular steel bed frames. Early 1930s. Pencil on paper, 211 x 296 mm (8 5/16 x 11 11/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (799.74)

45. Sketch for tubular steel bed frame. Early 1930s. Pencil on paper, 211 x 296 mm (8 5/16 x 11 11/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (797.74)

46. Current model of couch with wood frame on tubular steel legs, and with leather mattress and bolster. The Museum of Modern Art, gift of Knoll International (416.76)

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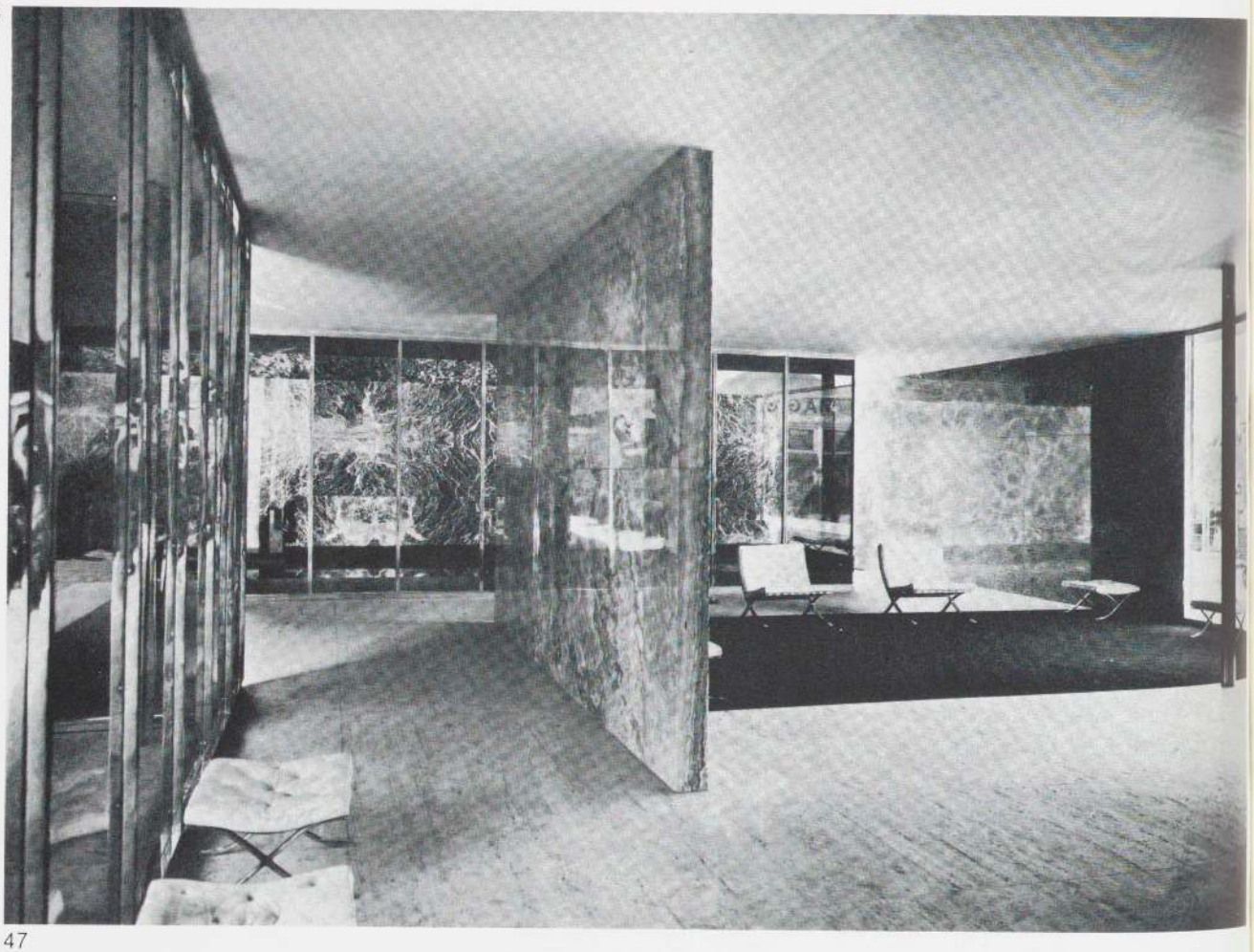

47

Materials
Flat steel bars, chrome plated (current model, U.S.: stainless steel) in nine sections welded together; nine seat and eight back leather straps screwed into edges of transverse bars; solid horsehair cushions with plain fabric or pigskin cover, top of cushions divided by welts into twenty equal parts with buttons at the intersections.

Dimensions
Height 760 mm (29 7/8 in.), seat height 345 mm (13 9/16 in.), width 750 mm (29½ in.), length 754 mm (29 5/8 in.); steel bar width 35 mm (1 3/8), steel bar thickness 11 mm (7/16 in.); strap width 38 mm (1½ in.).

Manufacturers
(1929-30) Berliner Metallgewerbe Joseph Müller, Berlin; (1931) Bamberg Metallwerkstätten, Berlin (MR 90); (1948-present) Knoll International (250).

47. Barcelona chairs and ottomans in reception area of German Pavilion, World Exposition, Barcelona, Spain. 1929

48. Section and plan drawing of Barcelona chair with strap layout. Early 1930s. Pencil, red pencil on paper, 906 x 983 mm (35 11/16 x 38 ¾ in.). Mies van der Rohe Archive, The Museum of Modern Art (957.74)

49 and 50. Current model of Barcelona chair. The Museum of Modern Art, gift of Knoll International (552.53)

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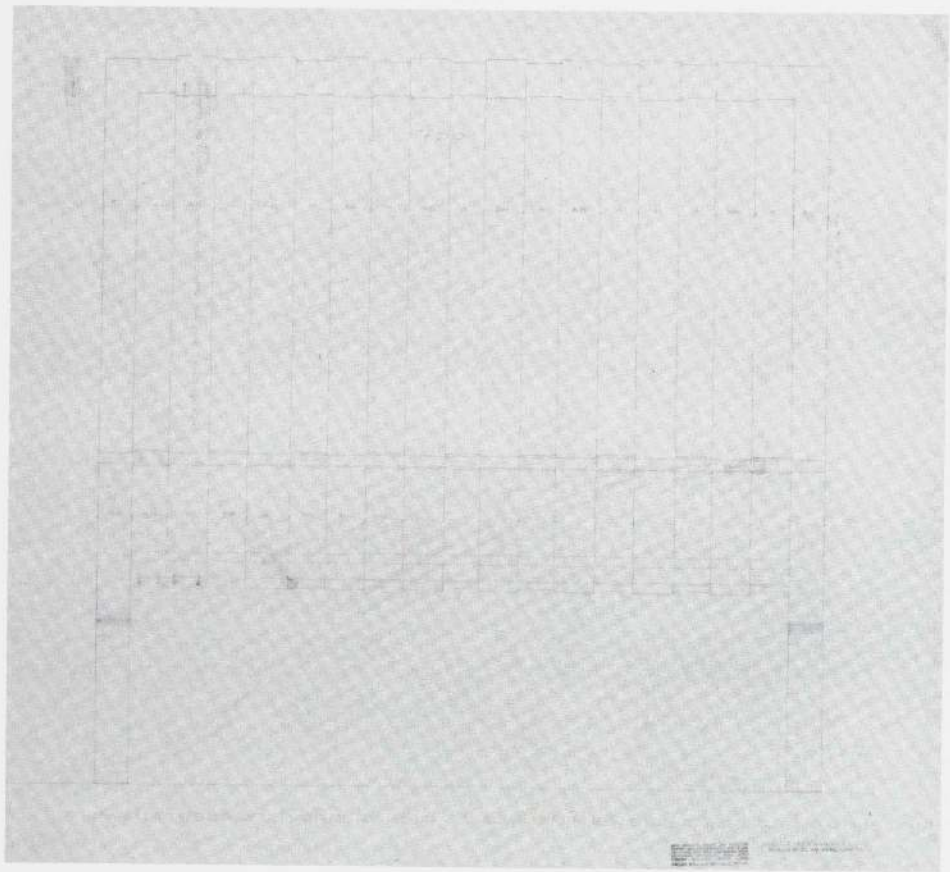

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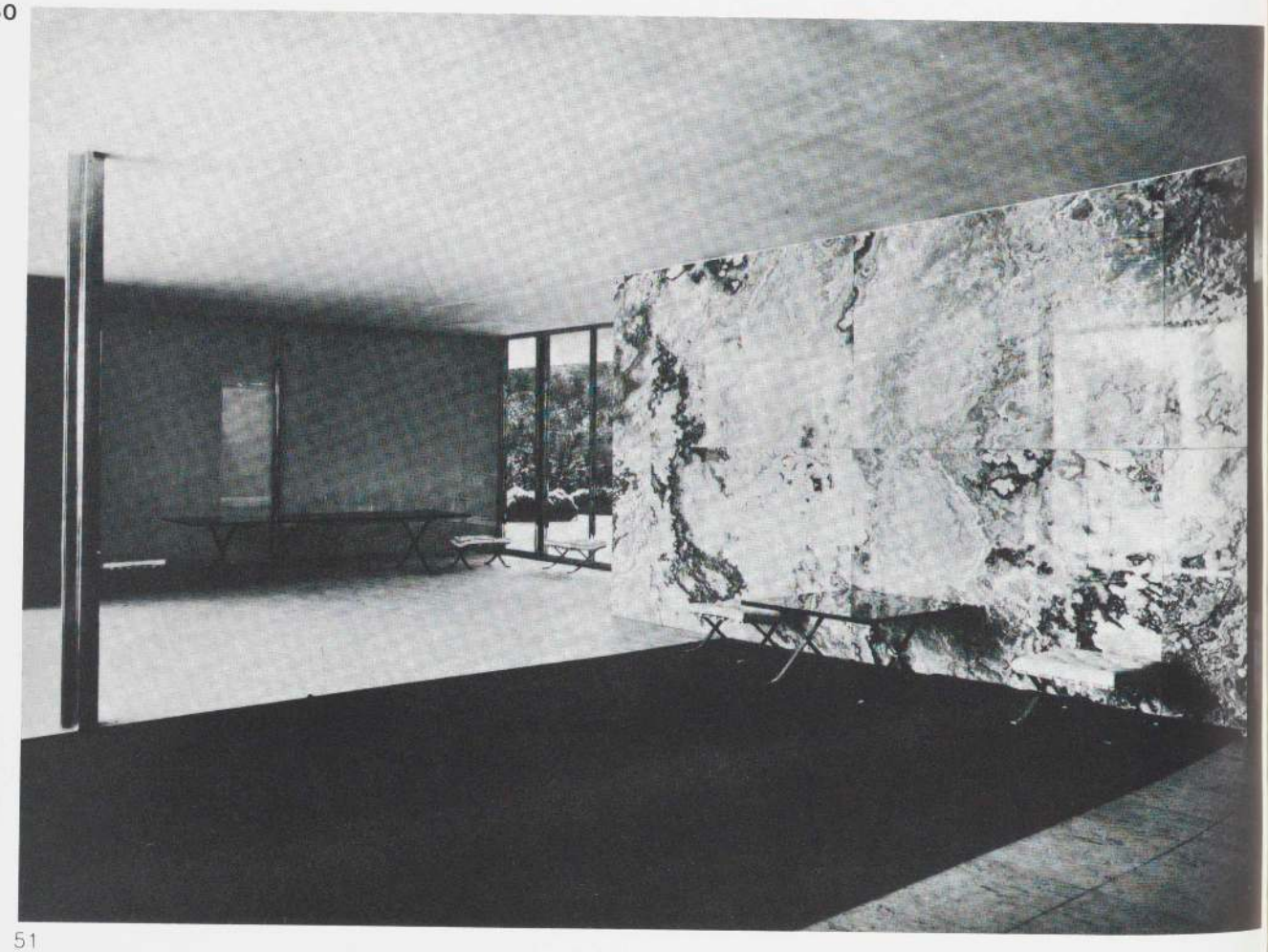

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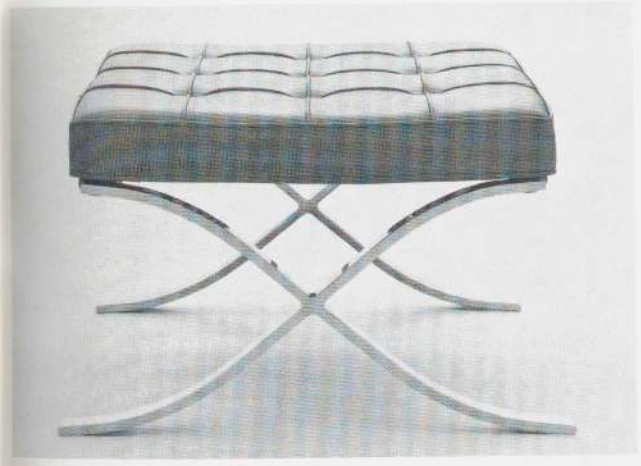

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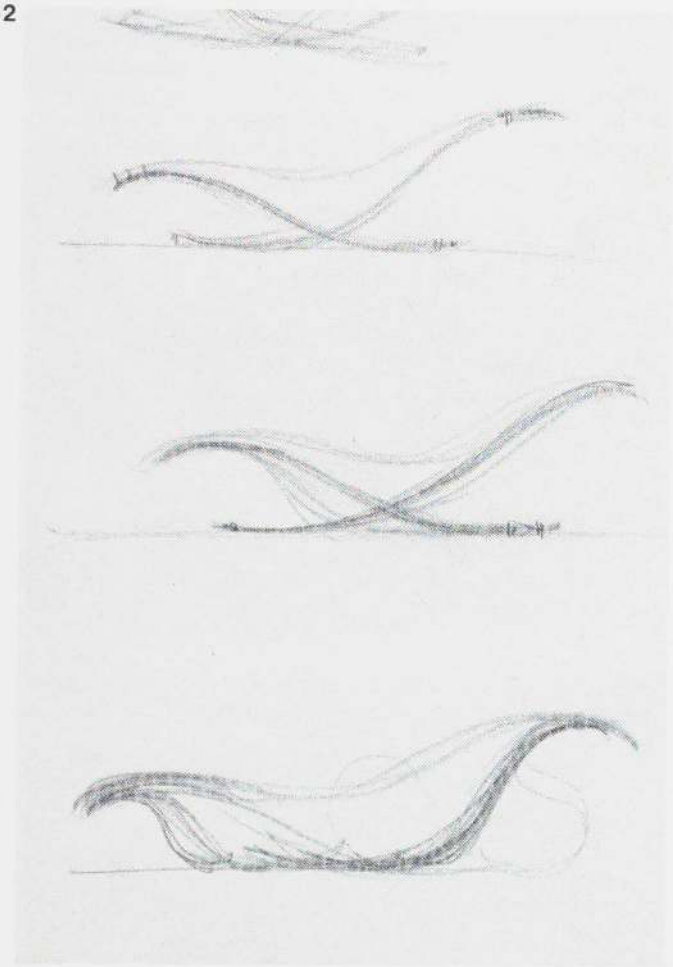
Materials
Flat steel bars, chrome plated (current model, U.S.: stainless steel) in eight sections welded together; seven leather straps screwed into edges of transverse bars; solid horsehair cushion with plain fabric or pigskin cover, top of cushion divided by welts into sixteen equal parts with buttons at the intersections (current model available with belting leather sling, laced at underside).

Dimensions
Height (top of frame) 290 mm (11 3/8 in.), width 580 mm (22 13/16 in.), depth 600 mm (23 9/16 in.), seat depth 540 mm (21 1/4 in.); steel bar width 35 mm (1 3/8 in.), steel bar thickness 11 mm (7/16 in.).

Manufacturers
(1929-30) Berliner Metallgewerbe Joseph Müller, Berlin; (1931) Bamberg Metallwerkstätten, Berlin (MR 80); (1948-present) Knoll International (251, 253)

51. Barcelona ottomans and tables placed against onyx and light walls in reception area of German Pavilion, World Exposition, Barcelona, Spain. 1929

52 and 53. Current model of Barcelona ottoman. The Museum of Modern Art, gift of Knoll International (415.76)



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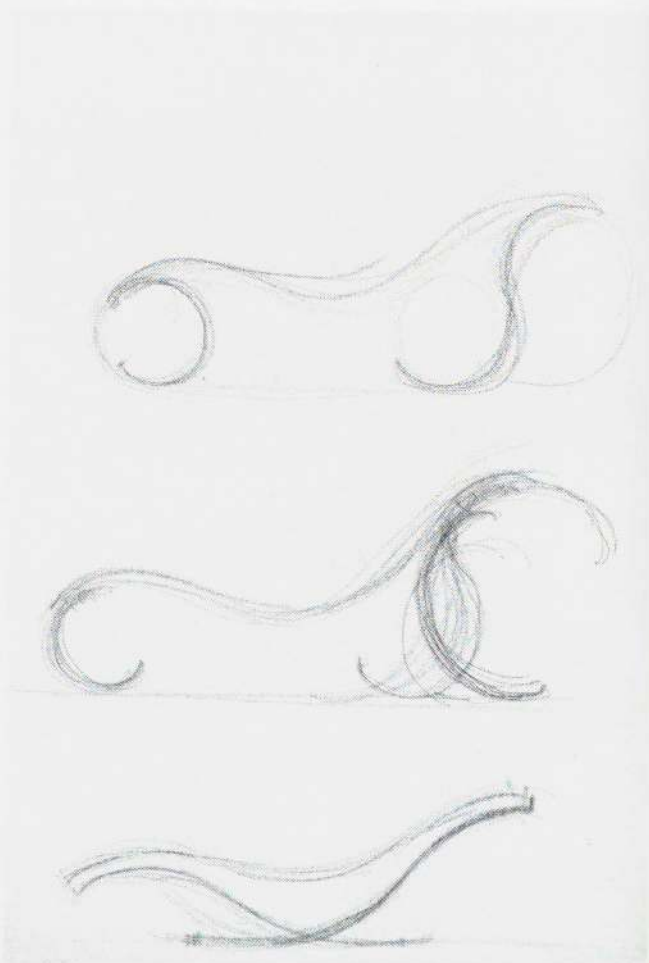

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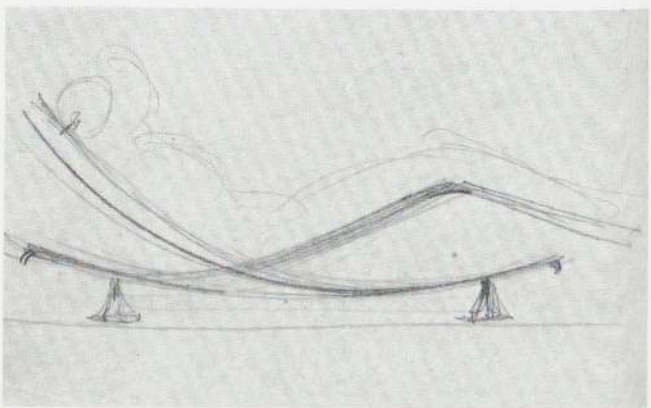

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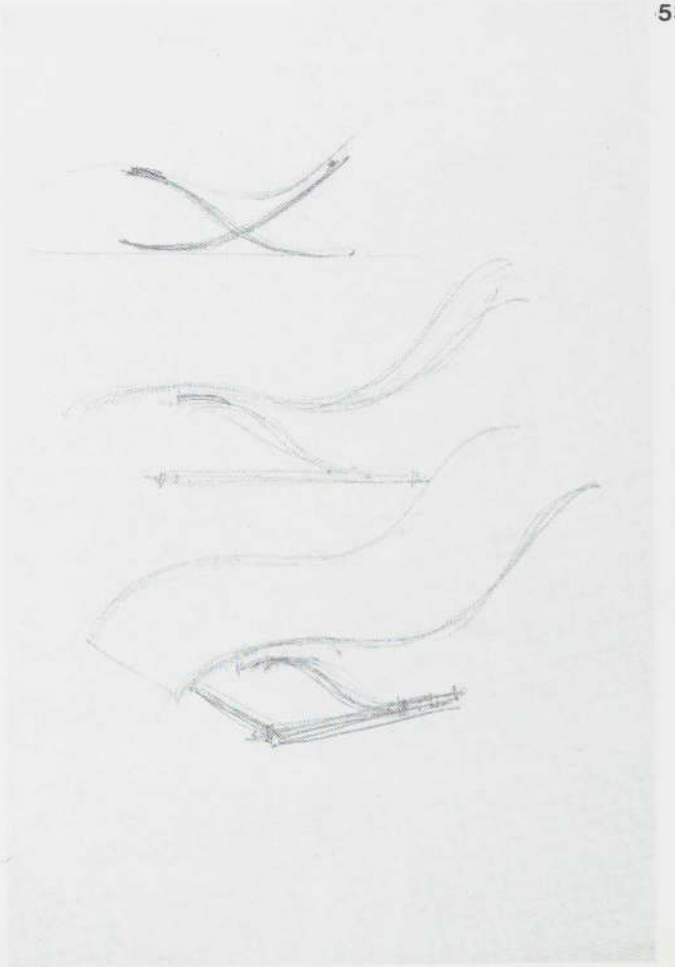
54. Sketches of Barcelona chaise longue. 1934. Red pencil on paper, 306 x 209 mm (12 1/16 x 8 1/4 in.). Mies van der Rohe Archive, The Museum of Modern Art (524.74)

55. Sketches of Barcelona chaise longue and derivations. 1934. Red pencil on paper, 320 x 207 mm (12 5/8 x 8 3/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (525.74)

56. Sketches of Barcelona chaise longue and derivations. 1934. Pencil on paper, 285 x 224 mm (11 1/4 x 8 7/8 in.). Mies van der Rohe Archive, The Museum of Modern Art (557.74)

57. Sketch of Barcelona chaise longue. 1934. Pencil on paper, 103 x 173 mm (4 1/16 x 6 7/8 in.). Mies van der Rohe Archive, The Museum of Modern Art (1210.74)



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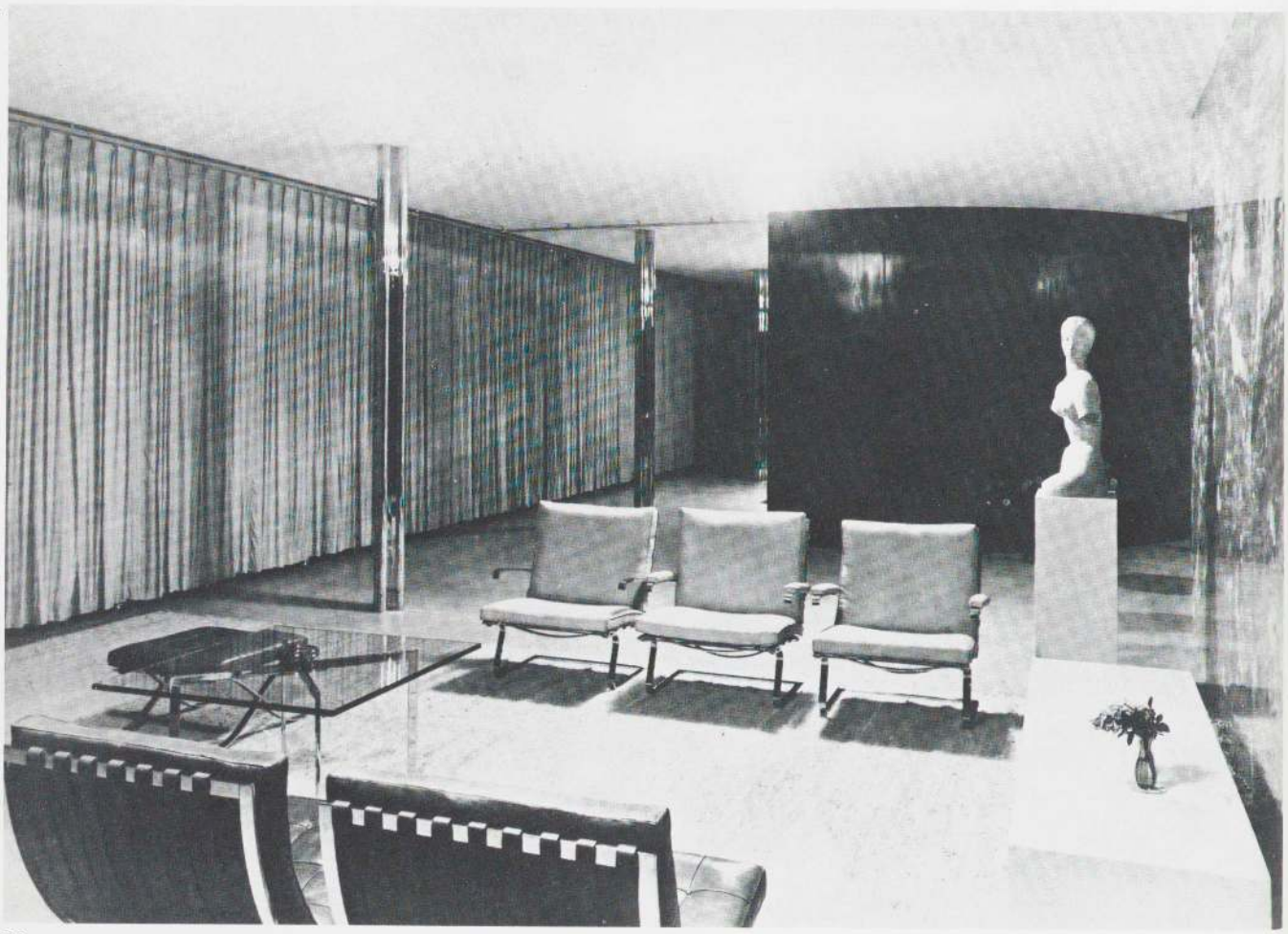

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Materials
Flat steel bars, chrome plated (current model, U.S.: stainless steel) in six sections and two arm pieces (current model without armrests), joints connected by screws or welded, two stiffening rods; eight horizontal leather straps with belt buckles; solid horsehair cushions with plain fabric or pigskin cover.

Dimensions
Height 875 mm (34 3/8 in.) [height of current model reduced by 60 mm—2 3/8 in.], seat height 320 mm (12 5/8 in.), width 770 mm (30 1/4 in.), depth 700 mm (27 5/8 in.), steel bar width 35 mm (1 3/8 in.), steel bar thickness 11 mm (7/16 in.), cushion thickness 65 mm (2 9/16 in.).

Manufacturers
(1929-30) Berliner Metallgewerbe Joseph Müller, Berlin; (1931) Bamberg Metallwerkstätten, Berlin (MR 70); (1964-present) Knoll International (254); (version with arms—1977) Knoll International (254 A)

58. Tugendhat chairs with silver gray cushions in the sitting area on the main floor of Tugendhat House, Brno, Czechoslovakia. 1930.

59, 60 and 61. Original chair from Tugendhat House with pigskin cushions. The Museum of Modern Art, gift of Herbert Tugendhat, Caracas, and Knoll International, 1970 (414.76)

62 and 63. Frame of original chair from Tugendhat House. Details. The Museum of Modern Art, gift of Herbert Tugendhat, Caracas, and Knoll International, 1970 (414.76)

64. Frame of original chair from Tugendhat House. The Museum of Modern Art, gift of Herbert Tugendhat, Caracas, and Knoll International, 1970 (414.76)

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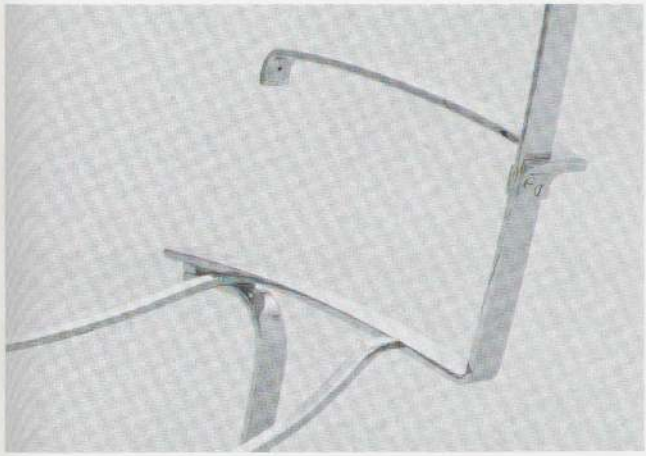

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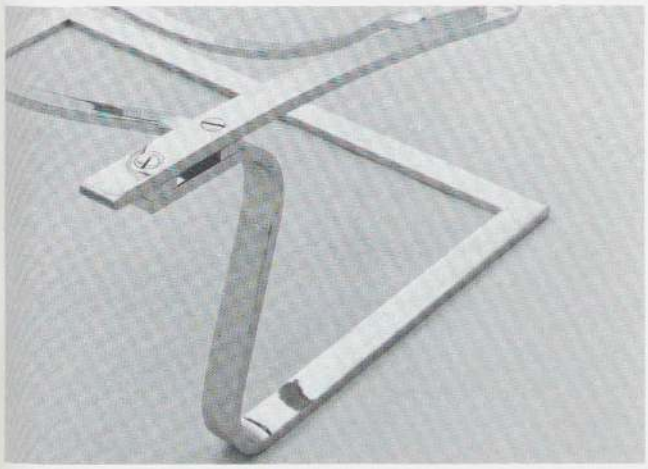

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64

Tugendhat Chair 1930-31 and Variations 1936

Materials
Steel tubes, lacquered, nickel or chrome plated in sections connected by dowels and screws, support and seat frame clamped together by brackets; eight horizontal straps; cushions with plain or checkered linen cover or continuous lacquered caning.

Dimensions
Height 880 mm (34 9/16 in.), seat height 340 mm (13 3/8 in.), width 700 mm (27 5/8 in.); tube diameter 24 mm (15/16 in.), wall thickness 2 mm (1/16 in.); cushion thickness 65 mm (2 9/16 in.).

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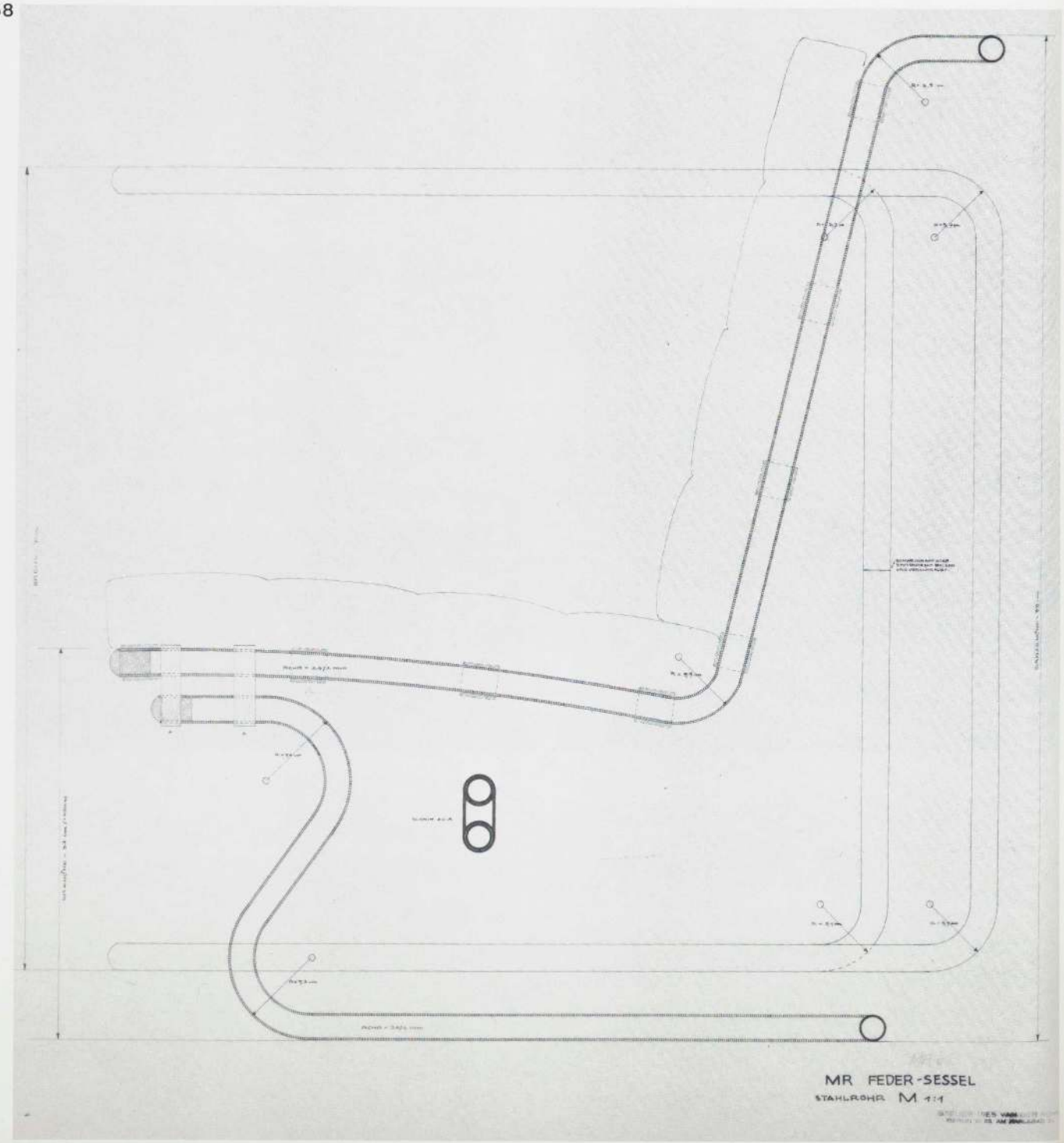
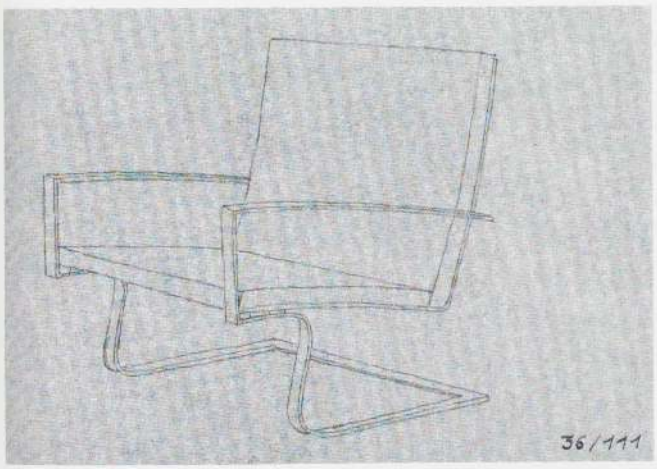


Manufacturers
(1930) Berliner Metallgewerbe Joseph Müller, Berlin; (1931) Bamberg Metallwerkstätten, Berlin (MR 60).

65. Elevation and plan drawing of tubular steel Tugendhat chair. Scale 1:1. 1931. Pen and ink on paper, 1,045 x 1,010 mm (41 3/16 x 39 13/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (948.74)

66 through 71. Perspective drawings of Tugendhat chair variations with and without spring connection, and with different support-frame or armrest configurations. Scale 1:10. From a set of eighteen blueprints submitted for a design patent in 1936. Mies van der Rohe Archive, The Museum of Modern Art



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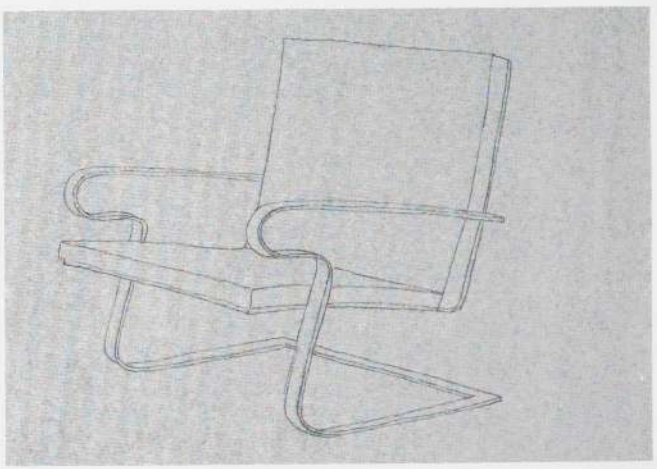

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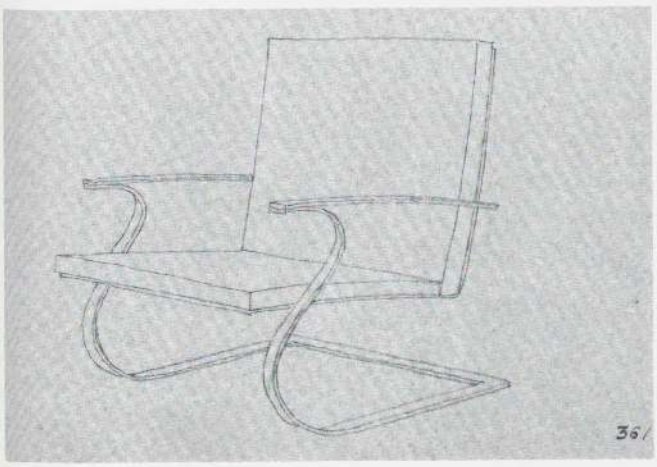

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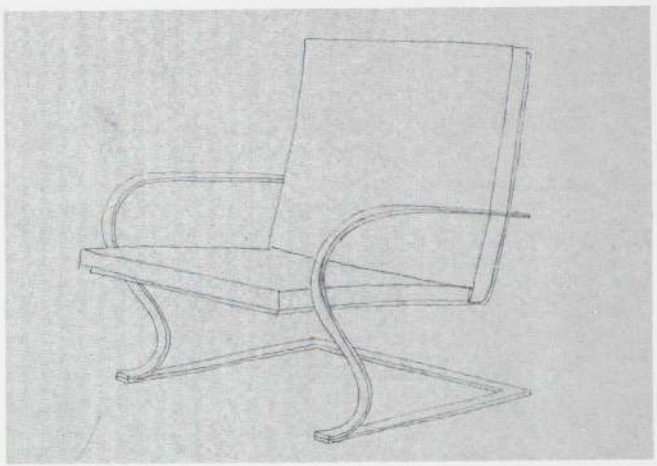

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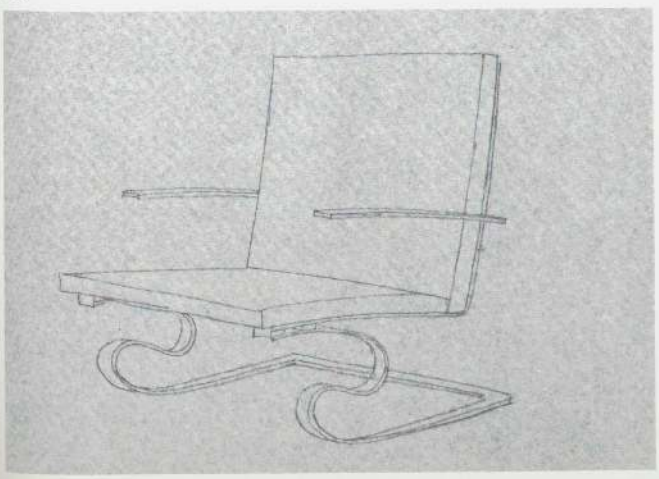

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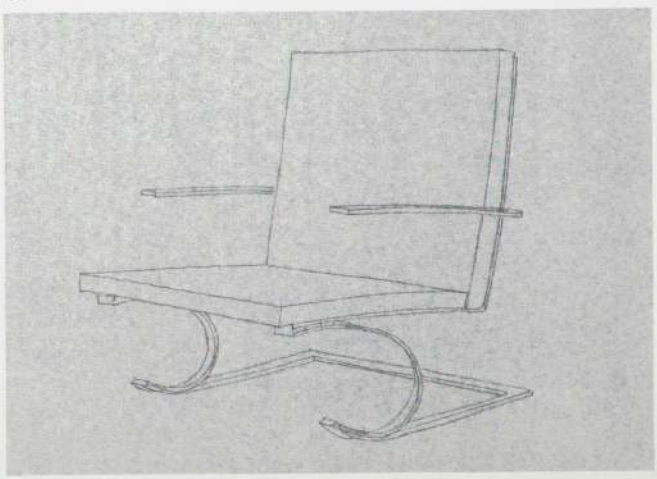


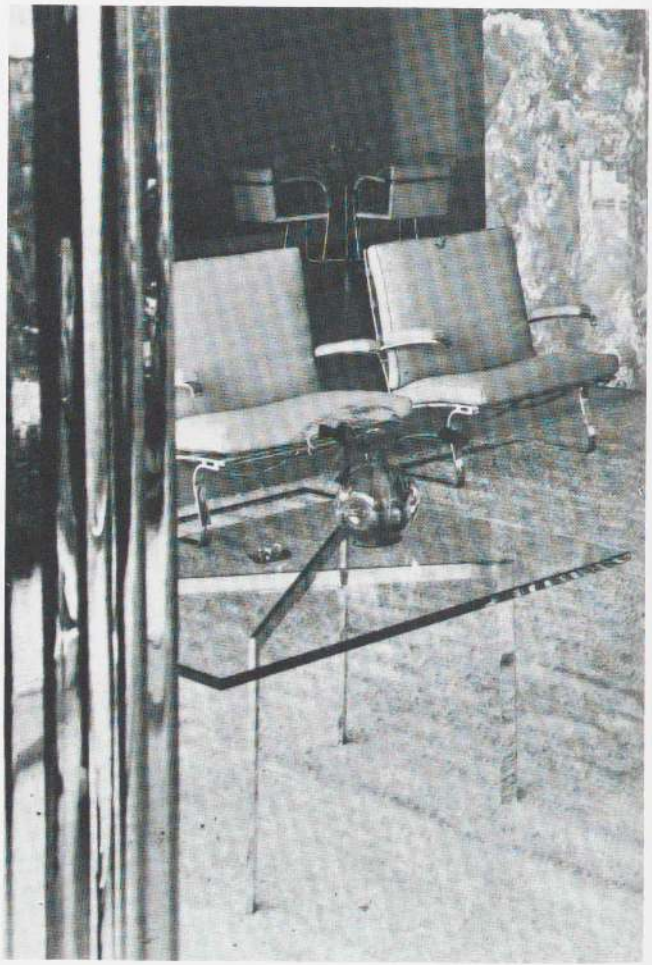
71

Tugendhat Coffee Table 1930

60 Materials
Flat steel bars, chrome plated (current model, U.S.: stainless steel) in sections welded together; clear plate glass (originally available with lacquered or nickel-plated frame and black glass or rosewood top).

Dimensions
Height of frame 530 mm (20 13/16 in.), length of frame at side 900 mm (35 3/8 in.); steel bar width 35 mm (1 3/8 in.), steel bar thickness 11 mm (7/16 in.); length of glass at side 1,000 mm (39 5/16 in.), thickness of glass top 20 mm (13/16 in.).

Manufacturers
(1930) Berliner Metallgewerbe Joseph Müller, Berlin; (1931) Bamberg Metallwerkstätten, Berlin (MR 150); (1948-present) Knoll International (252). Originally labeled Dessau table, it is now listed in the Knoll International catalogue as Barcelona table.



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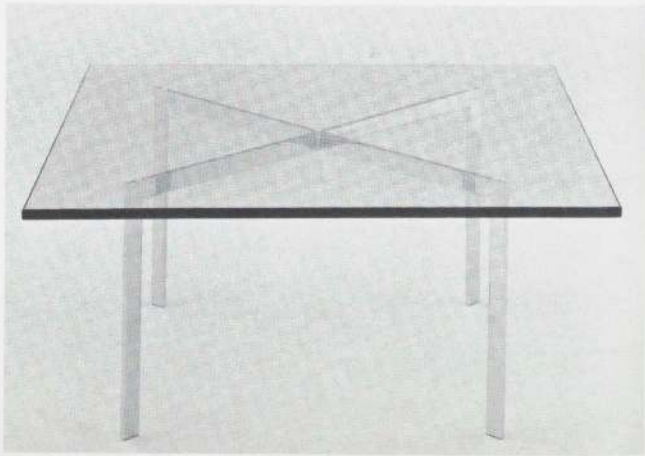

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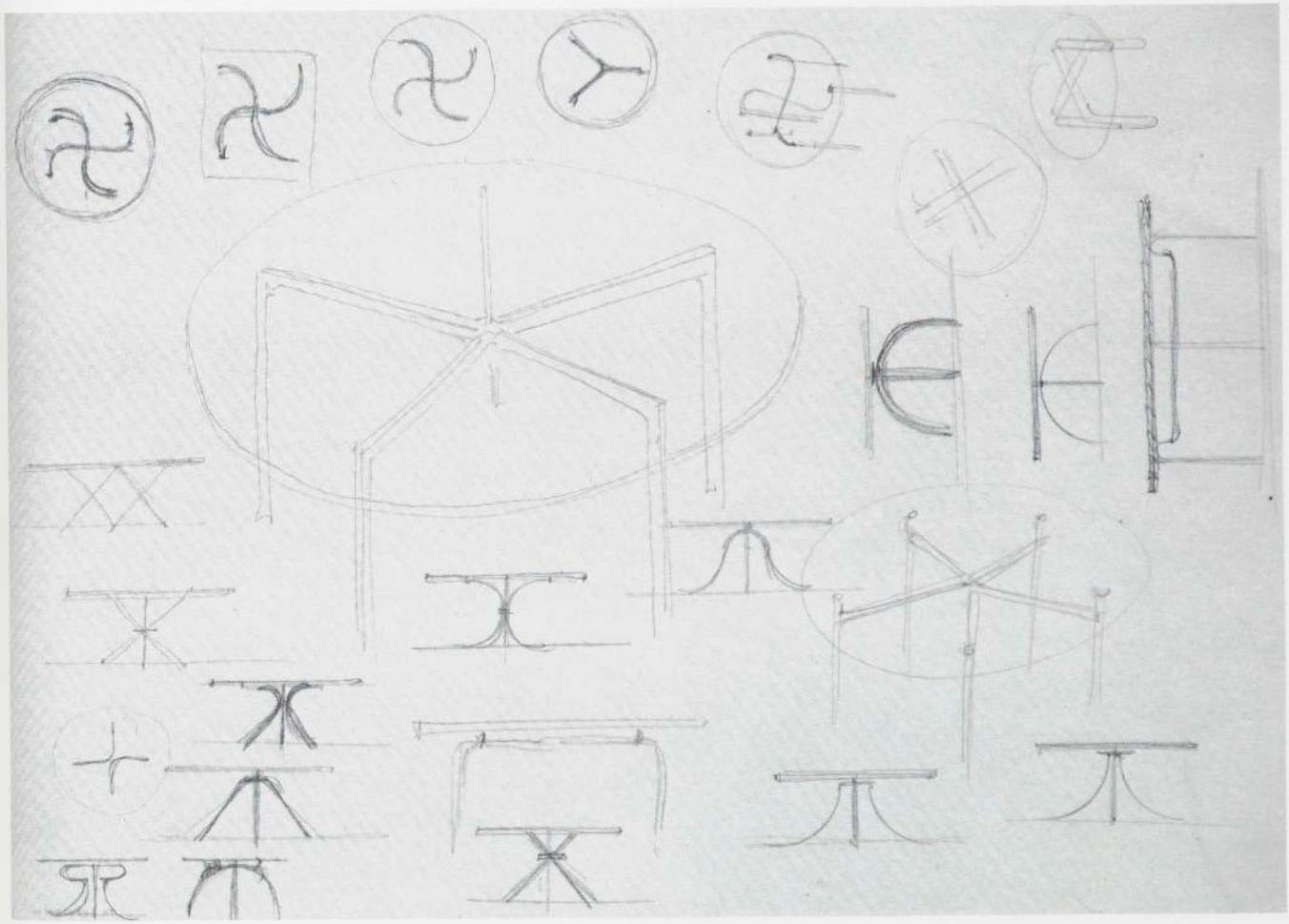
72. Coffee table in the sitting area on the main floor of Tugendhat House, Brno, Czechoslovakia. 1930

73. Current model of the Tugendhat coffee table. The Museum of Modern Art, Phyllis B. Lambert Fund (161.58)

74. Sketches of tables with different flat bar and tubular steel leg configurations. Early 1930s. Pencil on paper, 209 x 296 mm (8 1/4 x 11 11/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (894.74)



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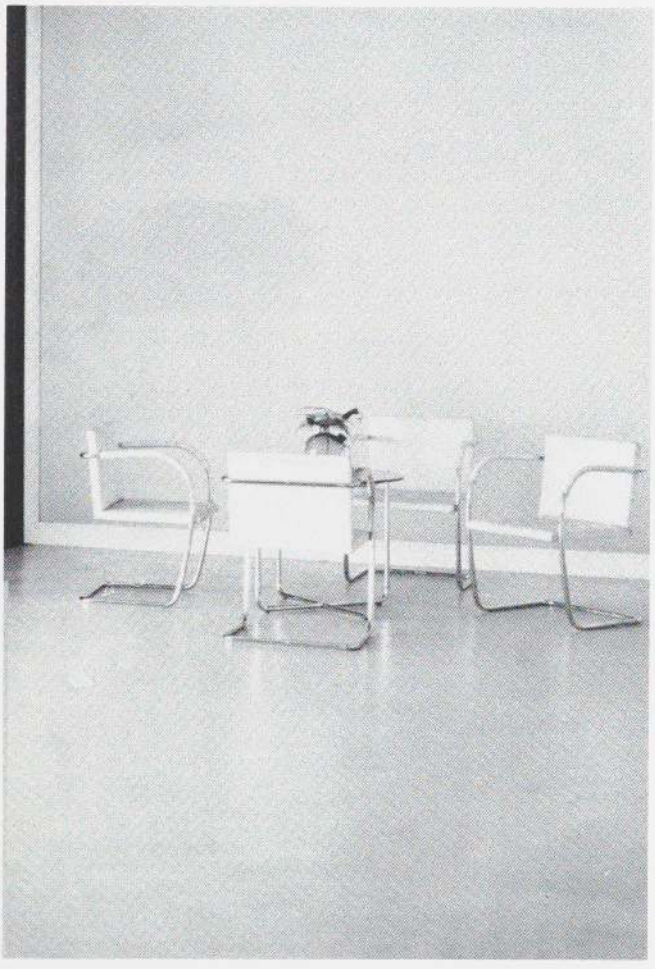

75

Materials
Steel tubes, chrome plated in two sections connected by dowels and screws or welded; wooden seat and back frames connected by iron angles and supported by metal studs projecting from frame; upholstered and covered with white calf parchment (originally available with lacquered or nickel-plated frame and fabric and leather cover).

Dimensions
Height 786 mm (30 7/8 in.), height of frame 695 mm (27 3/8 in.), height of seat 437.5 mm (17 3/16 in.), width of frame 550 mm (21 5/8 in.), depth 595 mm (28 3/8 in.), depth of frame 565 mm (22 3/16 in.); tube diameter 24 mm (15/16 in.), tube wall thickness 2 mm (1/16 in.), seat and back thickness 30 mm (1 3/16 in.).

Manufacturers
(1929-30) Berliner Metallgewerbe Joseph Müller, Berlin; (1931) Bamberg Metallwerkstätten, Berlin (MR 50); (1977) Knoll International (245).

75. Brno chairs with tubular steel frames and coffee table behind the dining area on the main floor of Tugendhat House, Brno, Czechoslovakia. 1930

76. Original Brno chair with tubular steel frame and white parchment covered seat and back. The Museum of Modern Art, gift of Philip Johnson (411.76)

63

64 Materials
Flat steel bars, chrome plated in three sections welded together, attached angles screwed to seat and back; wood frame upholstered and covered with leather.

Dimensions
Height 810 mm (31 13/16 in.), height of frame 690 mm (27 1/8 in.), height of seat 440 mm (17 5/16 in.), width of feet 410 mm (16 1/8 in.), depth 570 mm (22 3/8 in.); steel bar width 35 mm (1 3/8 in.), steel bar thickness 11 mm (7/16 in.), setback of bottom cross bar 100 mm (3 15/16 in.).

Manufacturers
(1929-30) Berliner Metallgewerbe Joseph Müller, Berlin;
(1931) Bamberg Metallwerkstätten, Berlin (special order only);
(1960-present) Knoll International (255).

77. Current model of Brno chair with flat bar stainless-steel frame and black leather covered seat and back. The Museum of Modern Art, gift of Knoll International (412.76)

78. Brno chair with flat bar chrome-plated steel frame and leather covered seat and back in Mrs. Tugendhat's bedroom on the upper floor of Tugendhat House, Brno, Czechoslovakia. 1930

79. Curvature study for Brno chair with tubular frame and molded seat. 1931. Charcoal on paper, 883 x 695 mm (34 13/16 x 27 3/8 in.). Mies van der Rohe Archive, The Museum of Modern Art (968.74)

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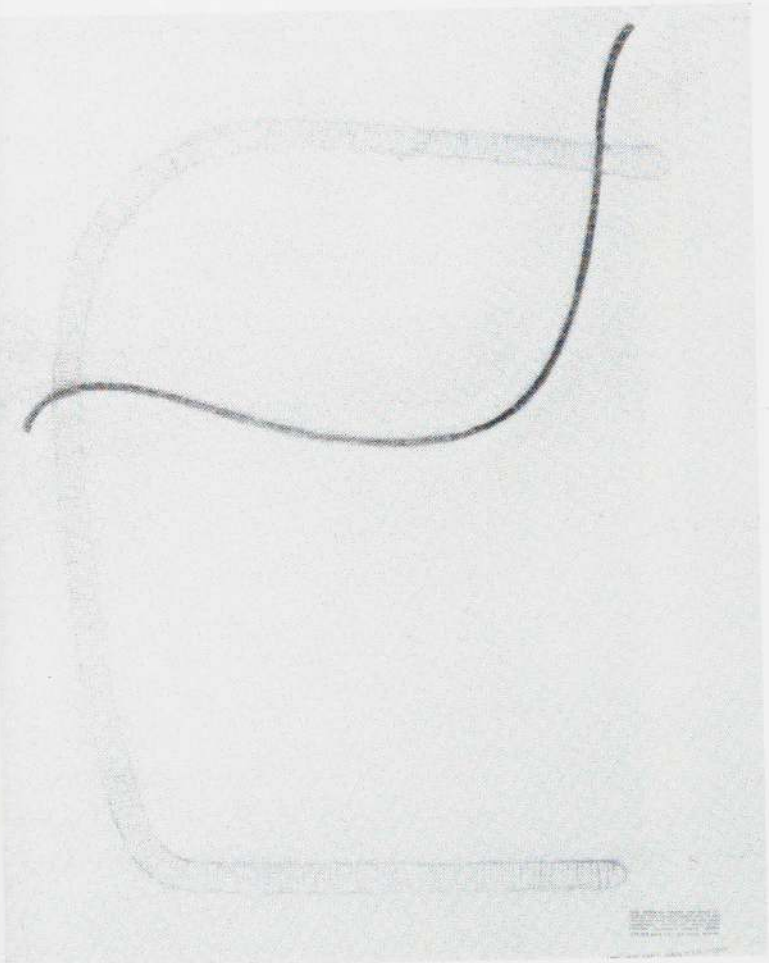

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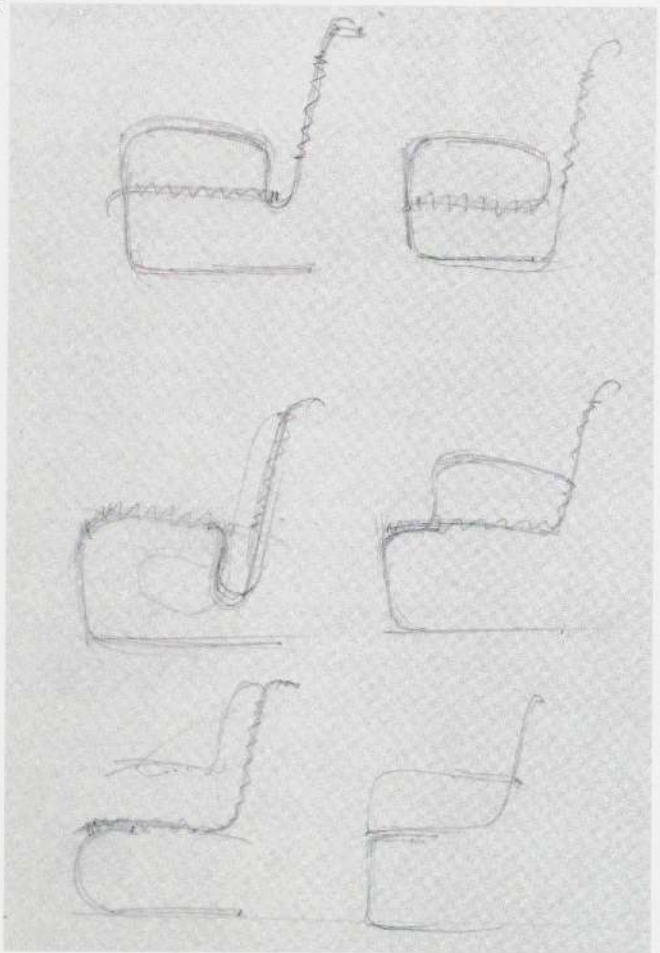

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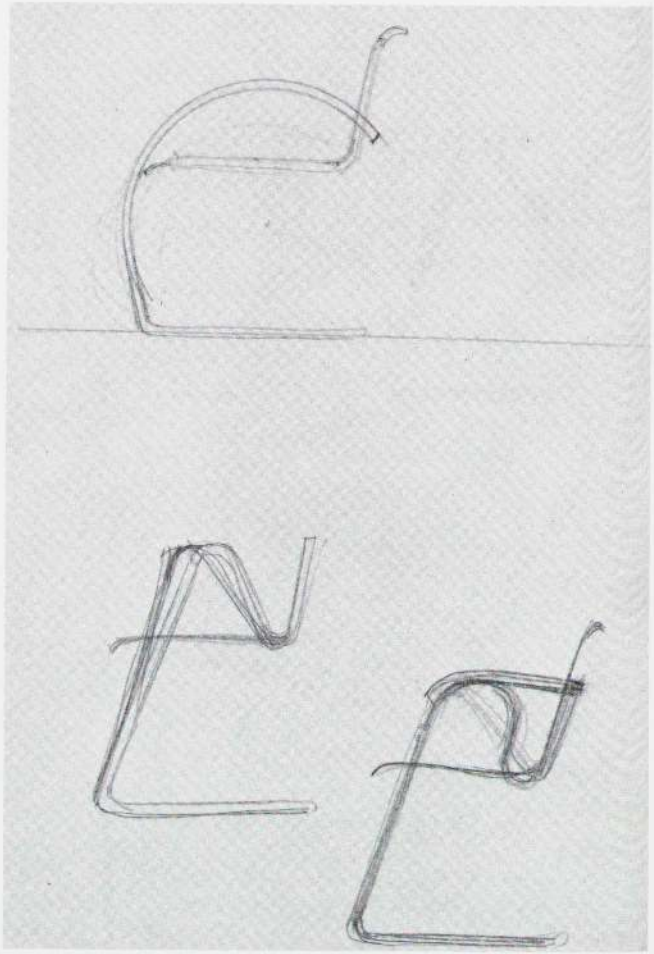

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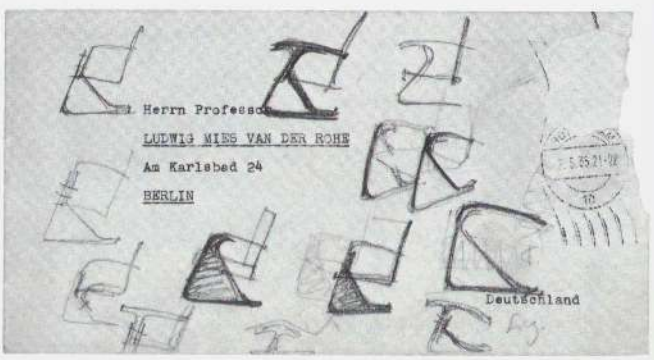
Herrn Professor
LUDWIG MIES VAN DER ROHE
Am Karlsbad 24
BERLIN
Deutschland

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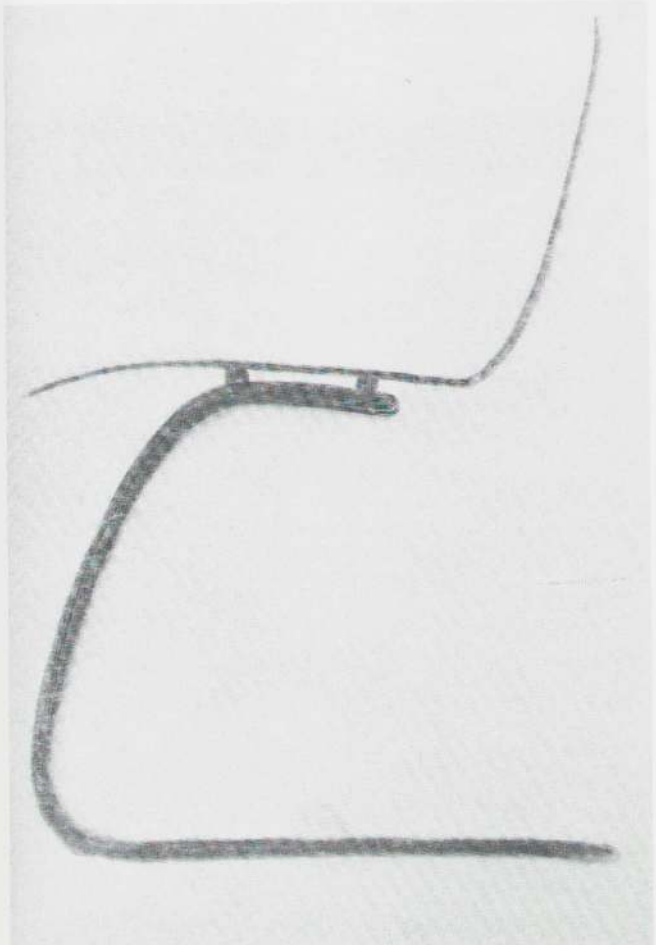


83

84

80. Sketches of Brno chair variations or other frame supported seat and back units. 1934. Pencil on paper, 296 x 211 mm (11 11/16 x 8 5/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (656.74)

81. Sketches of cantilever chairs with continuous and separate seat and back surfaces. Early 1930s. Pencil on paper, 296 x 211 mm (11 11/16 x 8 5/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (628.74)

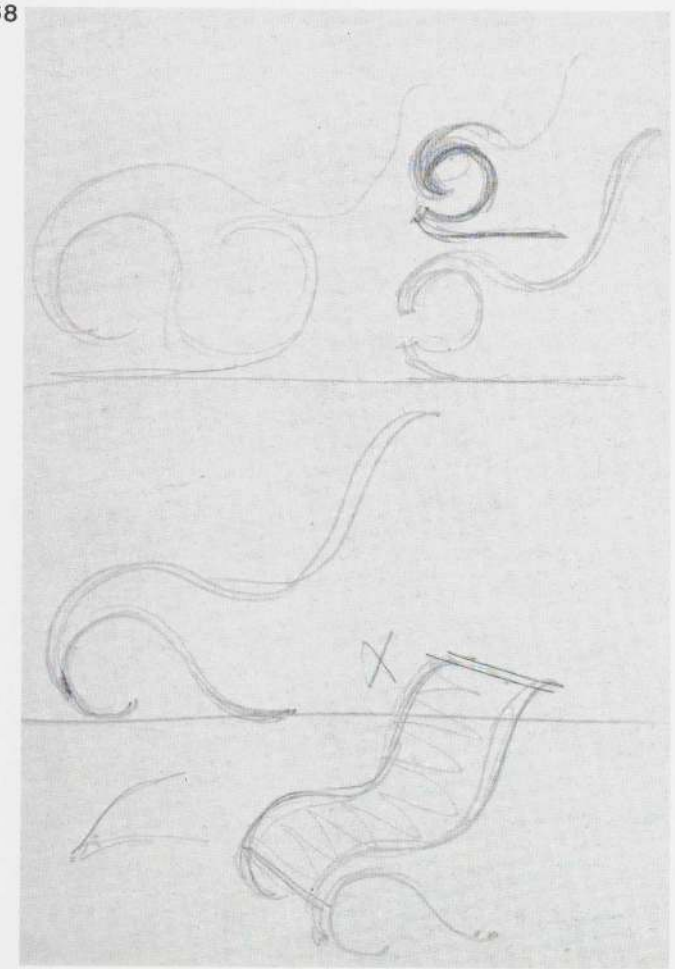
82. Sketches of cantilever chairs with hollow or solid triangular supports. 1935. Pencil on envelope, 100 x 190 mm (3 15/16 x 7½ in.). Mies van der Rohe Archive, The Museum of Modern Art

83. Curvature study for molded seat supported by tubular runners. 1931. Charcoal on paper, 1,048 x 845 mm (41 5/16 x 33 5/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (986.74)

84. Dining chairs with tubular steel runners and upholstered seat and back unit by Lilly Reich, as shown in the dining room of her model house at the Berlin Building Exhibition. 1931

Bentwood Chair Studies 1933-34

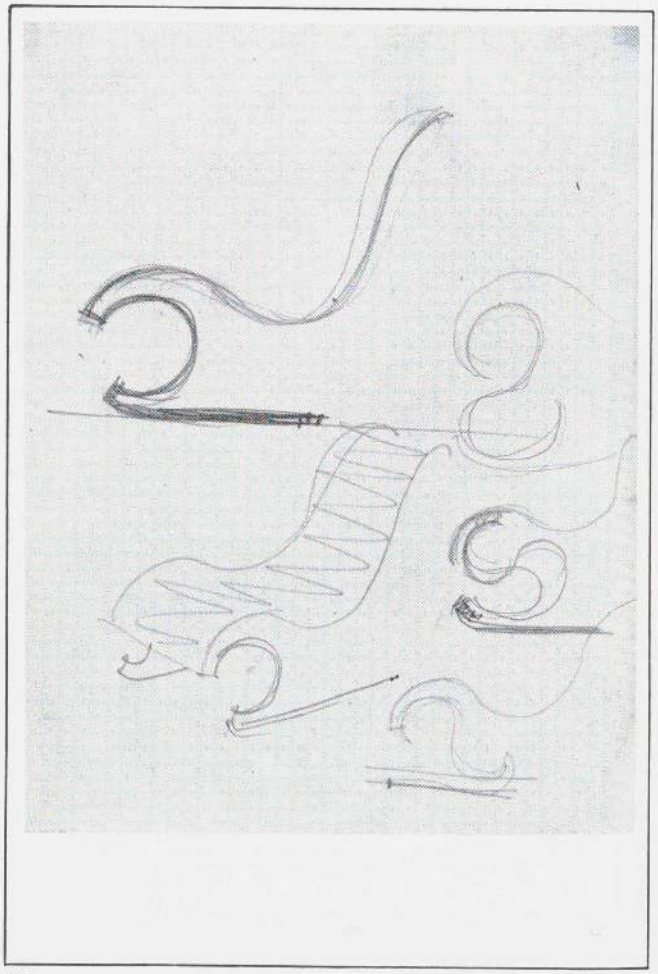
68



85. Sketches of chairs with bentwood seat surfaces and spring connected supports. 1933-34. Pencil on paper, 284 x 224 mm (11 ¼ x 8 ⅞ in.). Mies van der Rohe Archive, The Museum of Modern Art (545.74)

86. Sketches of chairs with bentwood seat surfaces and spring connected supports. 1933-34. Pencil on paper, 284 x 224 mm (11¼ x 8⅞ in.). Mies van der Rohe Archive, The Museum of Modern Art (546.74)

89. Drawing of chair with bentwood seat surface and flat bar steel support with bottom spring connection. 1934. Pencil, pen and ink on paper, 209 x 324 mm (8¼ x 12 13⁄16 in.). Mies van der Rohe Archive, The Museum of Modern Art (763.74)



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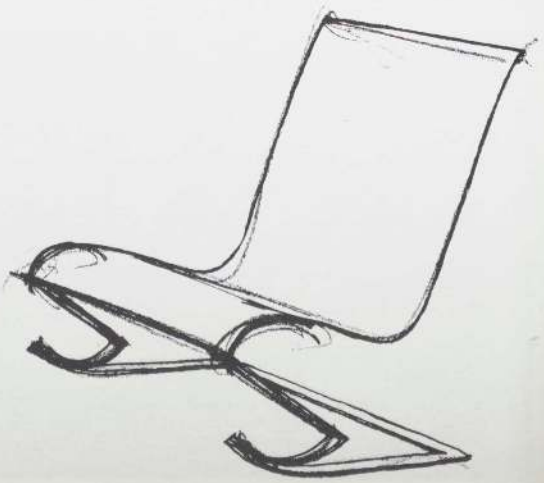
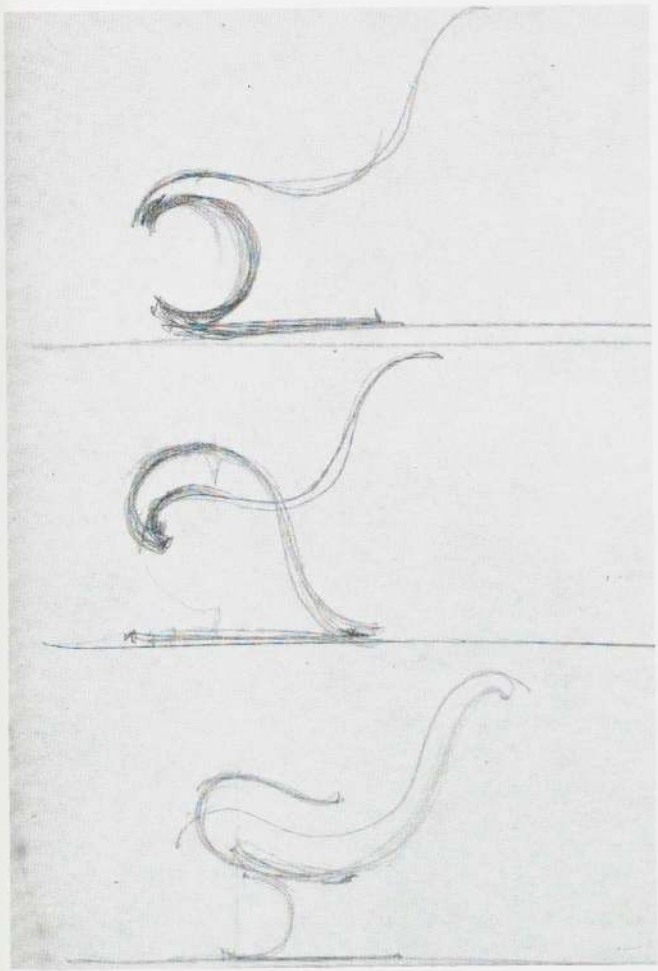


89

87. Sketches of chairs with bentwood seat surfaces and spring connected supports. 1933-34. Pencil on paper, 285 x 223 mm (11¼ x 8 13/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (709.74)

88. Sketches of chairs with bentwood seat surfaces and spring connected supports. 1933-34. Pencil on paper, 285 x 224 mm (11¼ x 8 7/8 in.). Mies van der Rohe Archive, The Museum of Modern Art (689.74)

90. Sketch of chair with separate seat supported by a rear frame with bottom spring connection and with back supported by a front cantilever frame. Detail. Early 1930s. Pencil on paper, 285 x 223 mm (11¼ x 8 13/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (555.74)



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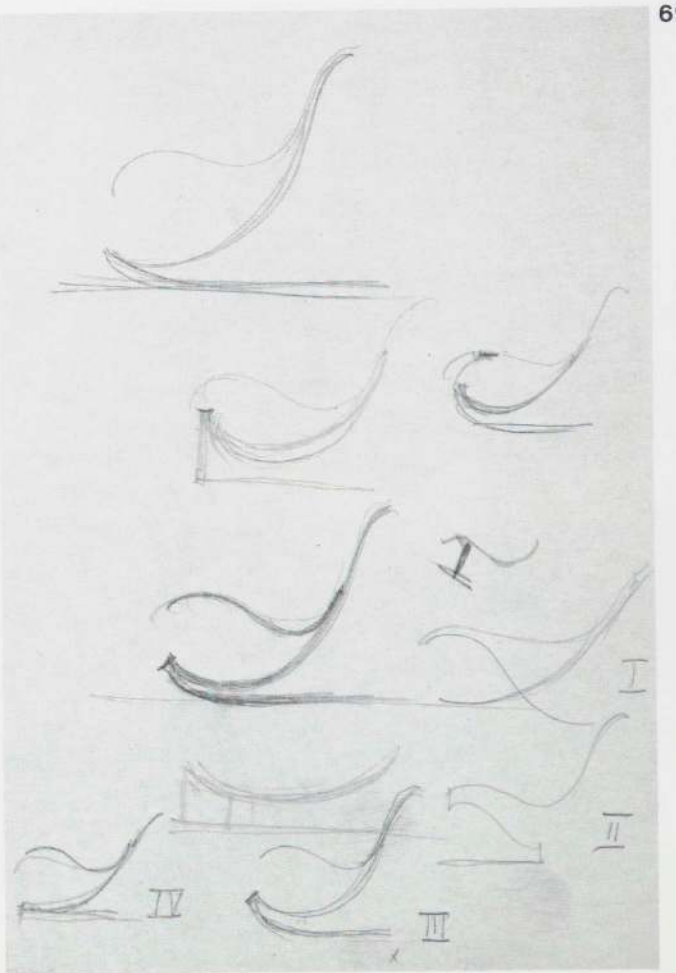

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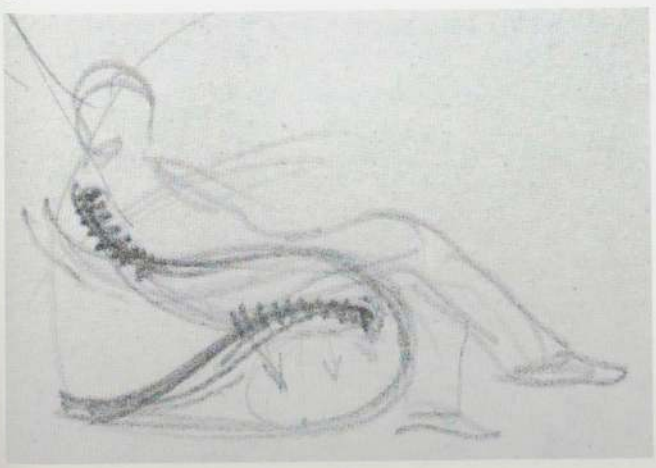
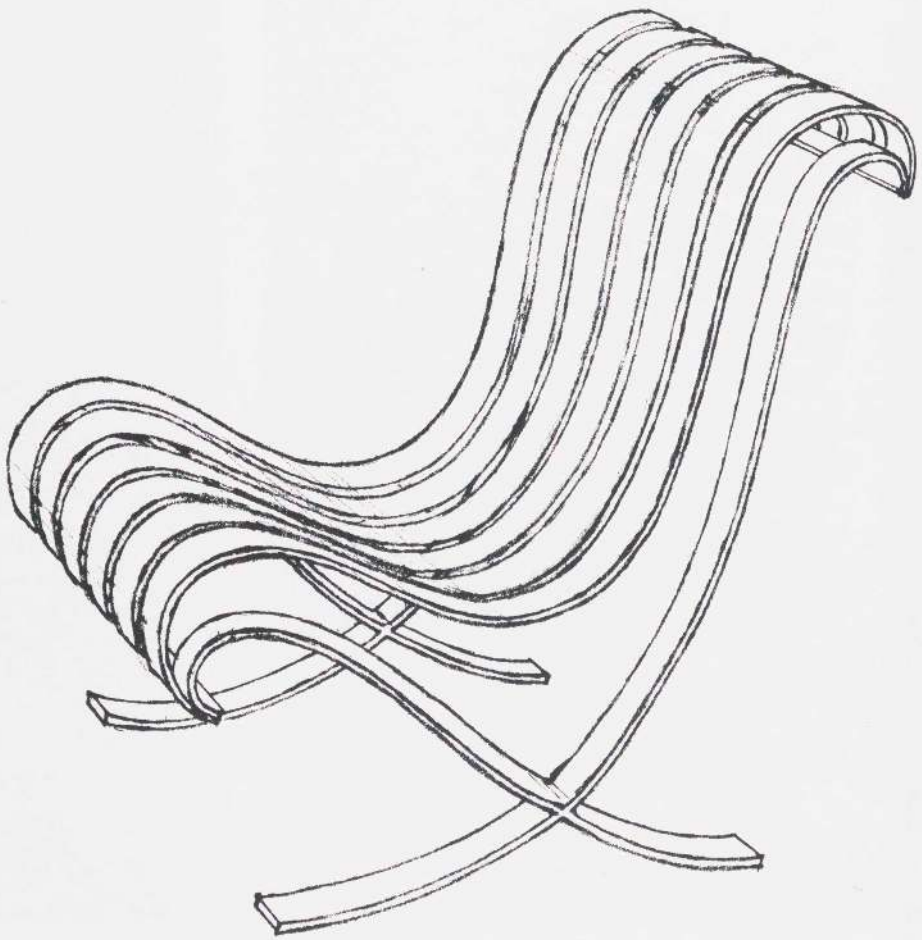


90

91. Drawing for chair with high back, Barcelona-type frame, and slatted seat surface. 1934. Pencil on paper, 278 x 291 mm (10 15/16 x 11½ in.). Mies van der Rohe Archive, The Museum of Modern Art (767.74)



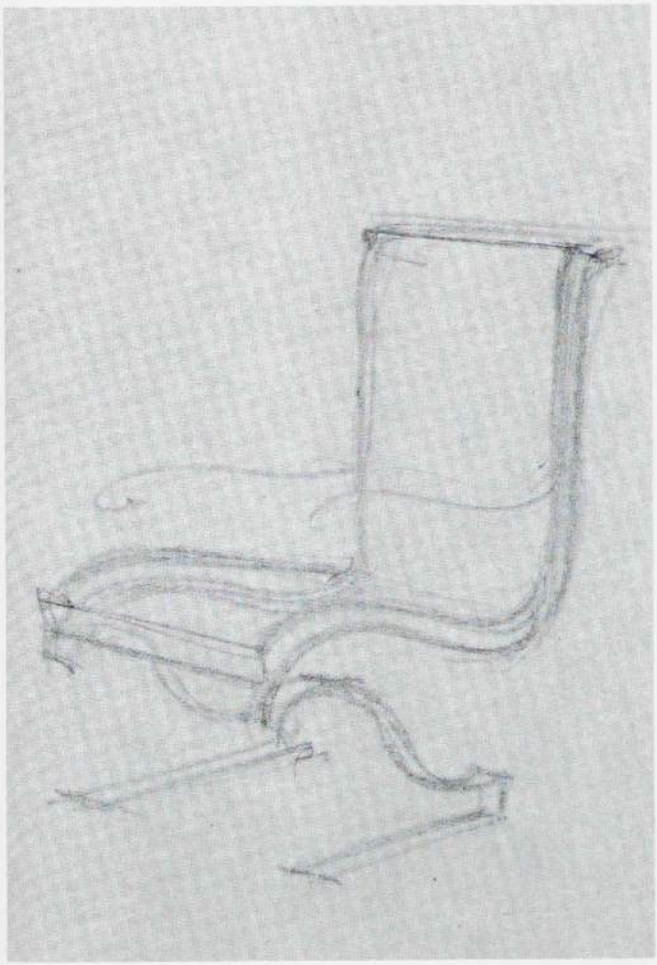
91

92. Sketch of chair with high back and upholstered seat surface on reversed-Z-shaped support. 1934. Pencil on paper, 229 x 298 mm (9 1/16 x 11 3/4 in.). Mies van der Rohe Archive, The Museum of Modern Art (671.74)

93. Sketch of the reversed-Z-type chair with Kangaroo feet and arms. Detail. 1934. Pencil on paper, 328 x 209 mm (12 15/16 x 8 1/4 in.). Mies van der Rohe Archive, The Museum of Modern Art (662.74)

94. Drawing for chair with bentwood seat surface and trestle-type support frame. 1934. Colored pencil on paper, 210 x 295 mm (8 5/16 x 11 5/8 in.). Mies van der Rohe Archive, The Museum of Modern Art (606.74)

95. Drawing for chair with bentwood seat surface and coat-rack-type support frame. 1934. Colored pencil on paper, 211 x 295 mm (8 5/16 x 11 5/8 in.). Mies van der Rohe Archive, Museum of Modern Art (608.74)



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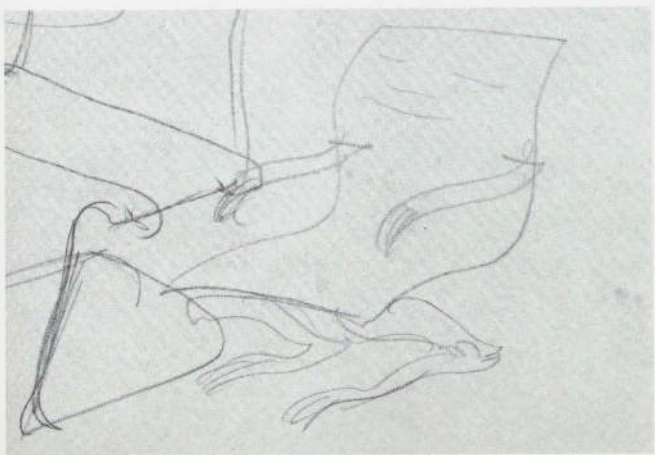

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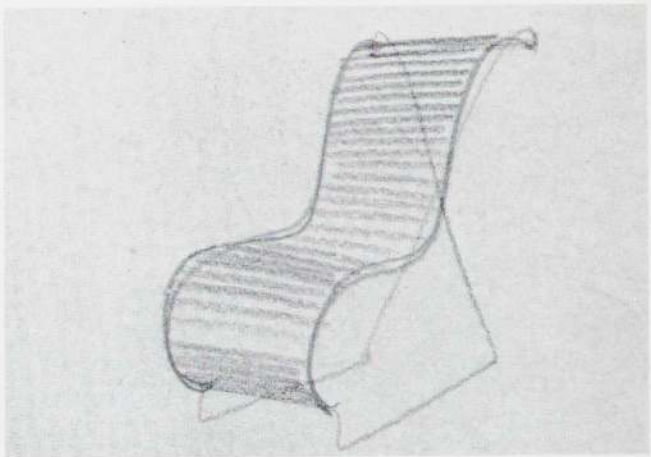

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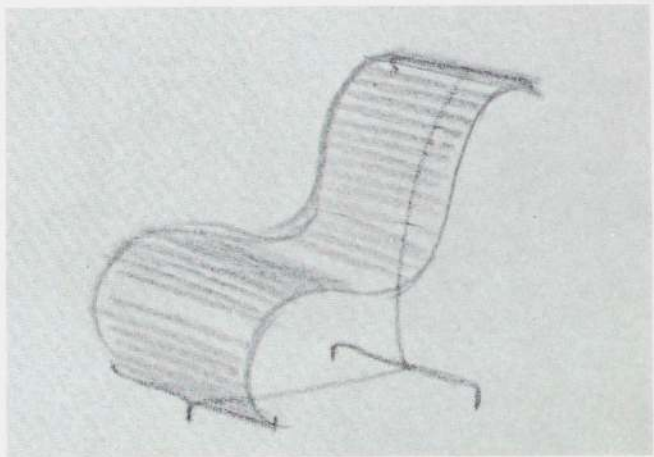
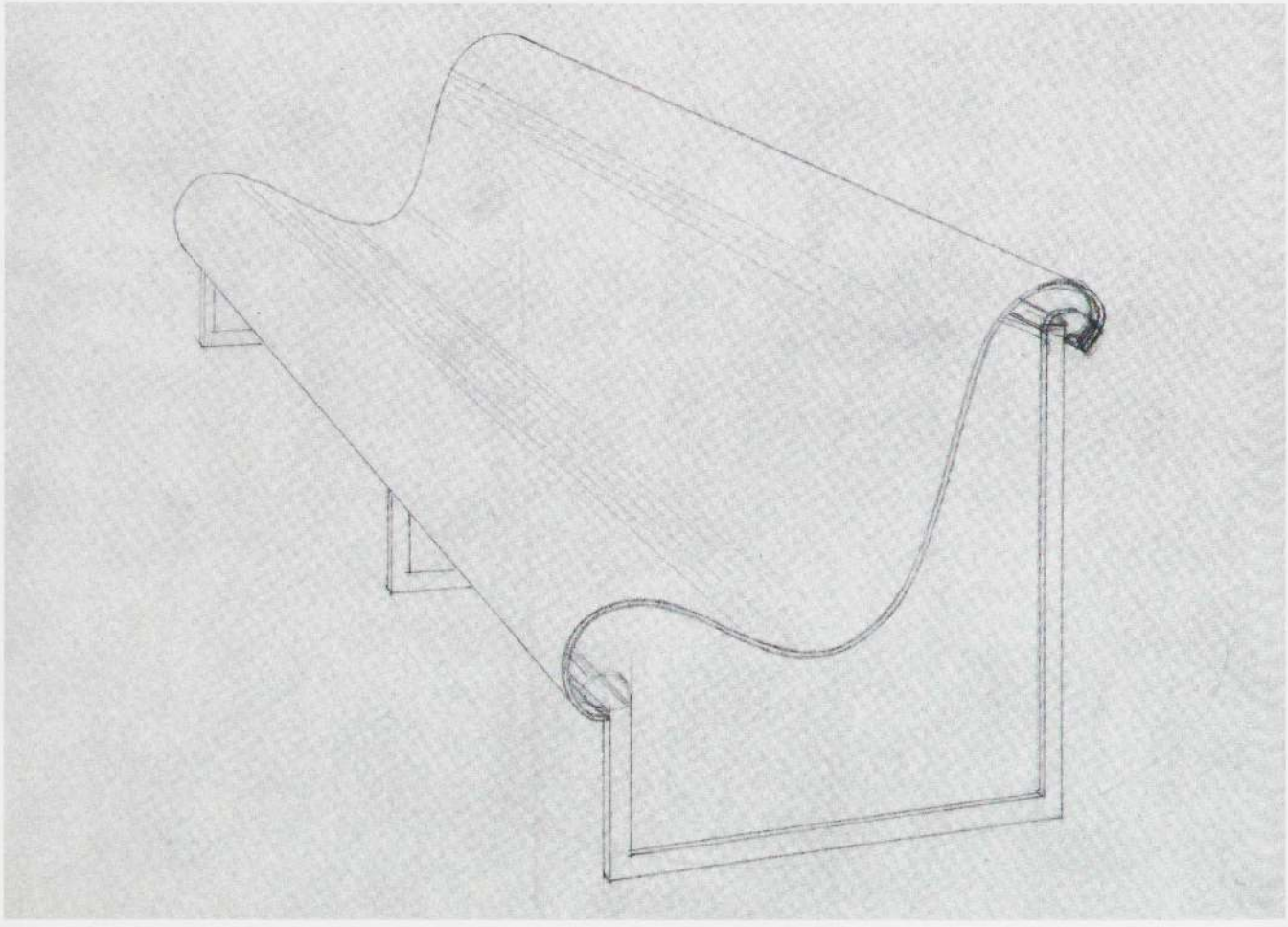


95

96. Drawing of bench with bentwood seat surface and angular flat bar support frame. 1934. Pencil on paper, 277 x 292 mm (10 15/16 x 11½ in.). Mies van der Rohe Archive, The Museum of Modern Art (923.74)

97. Drawing of deck chair or day bed with slatted laterally bent seat surface and angular flat bar support frame. 1934. Pencil on paper, 323 x 400 mm (12 ¾ x 15 ¾ in.). Mies van der Rohe Archive, The Museum of Modern Art (924.74)



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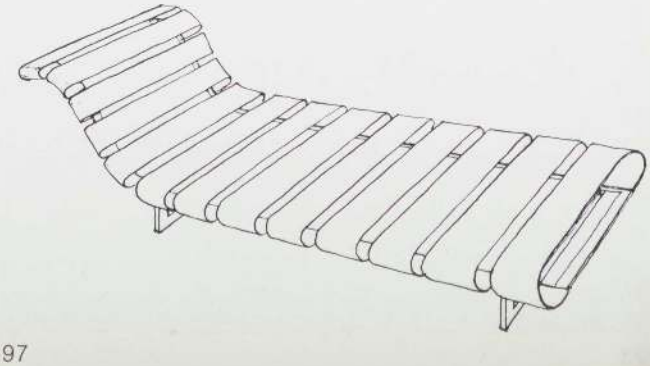
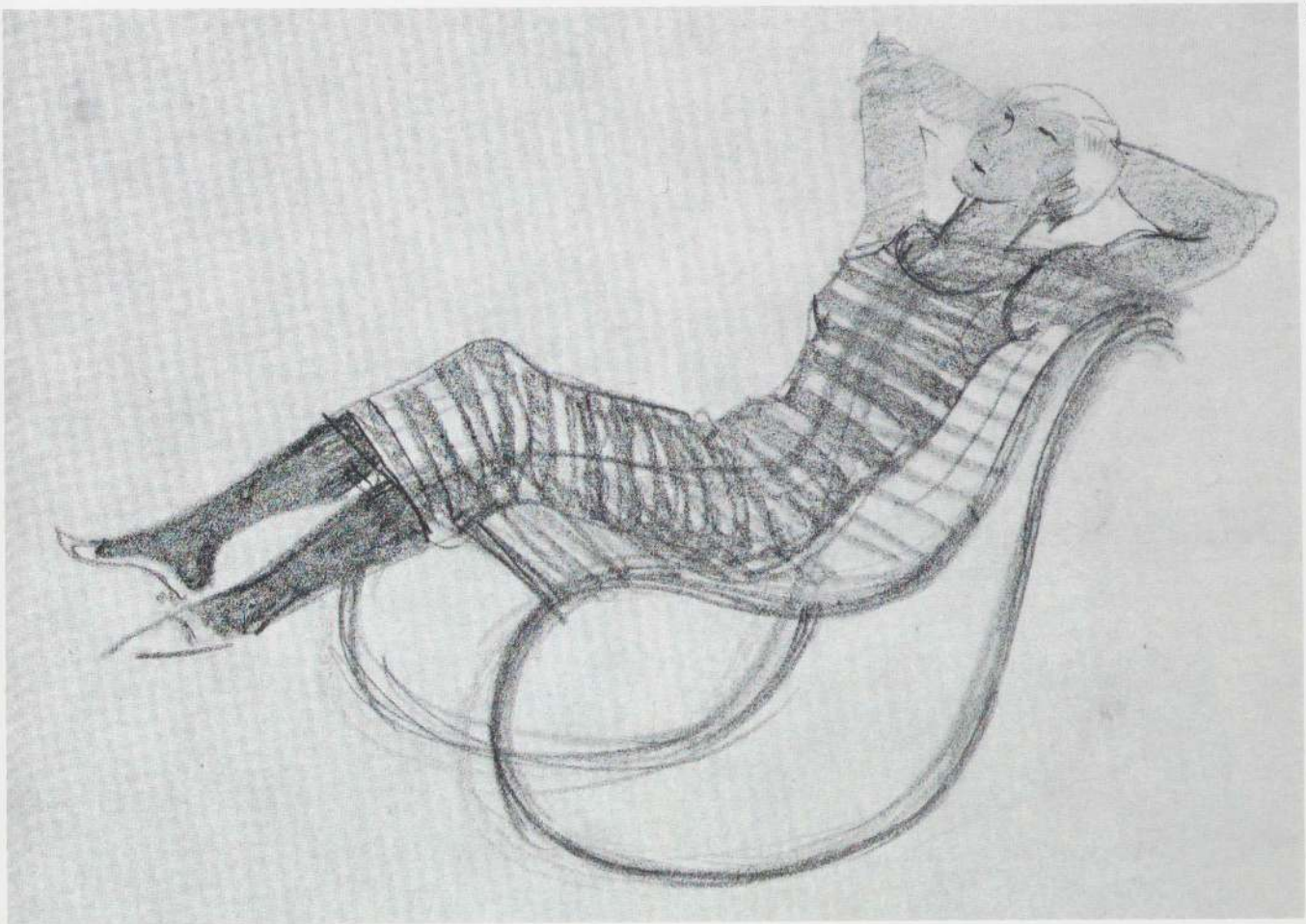


97

99. Drawing of rocking chair with bentwood seat surface and flat bar support frame. 1934. Pen and ink on paper, 275 x 312 mm (10 13/16 x 12 5/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (770.74)

98. Drawing of rocking chair with continuous seat surface and tubular frame. 1934. Pencil, colored pencil on paper, 211 x 295 mm (8 5/16 x 11 5/8 in.). Mies van der Rohe Archive, The Museum of Modern Art (603.74)



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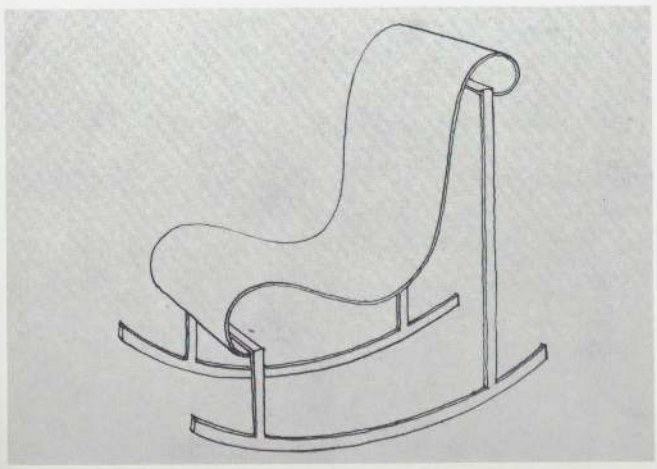

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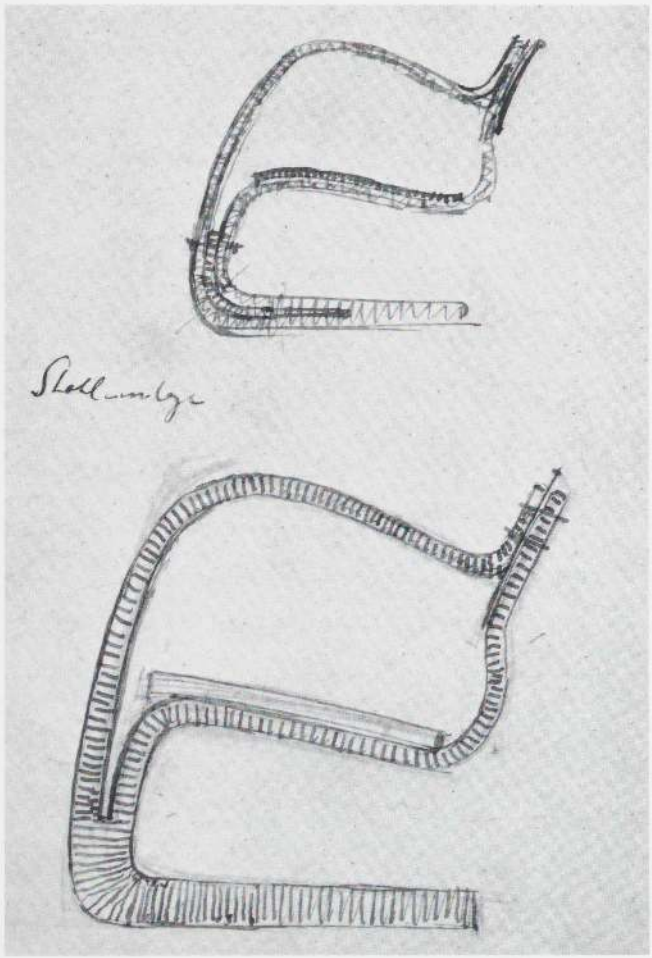

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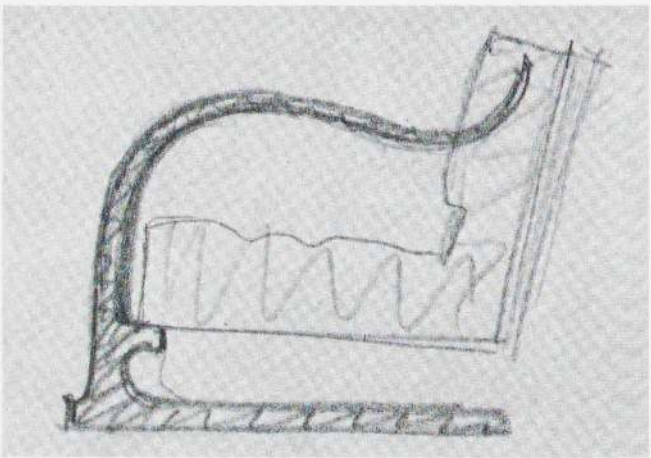

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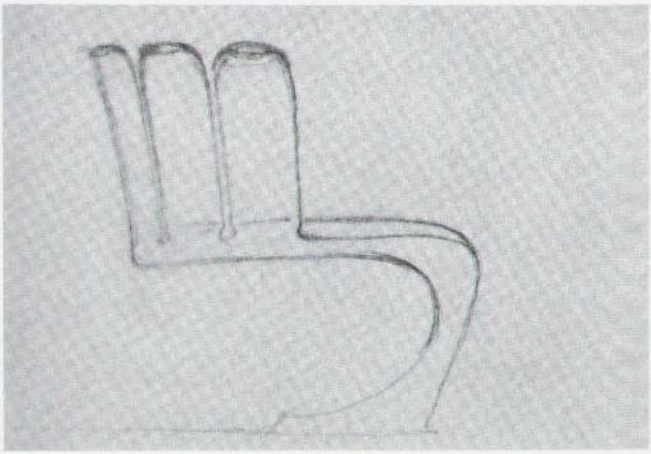

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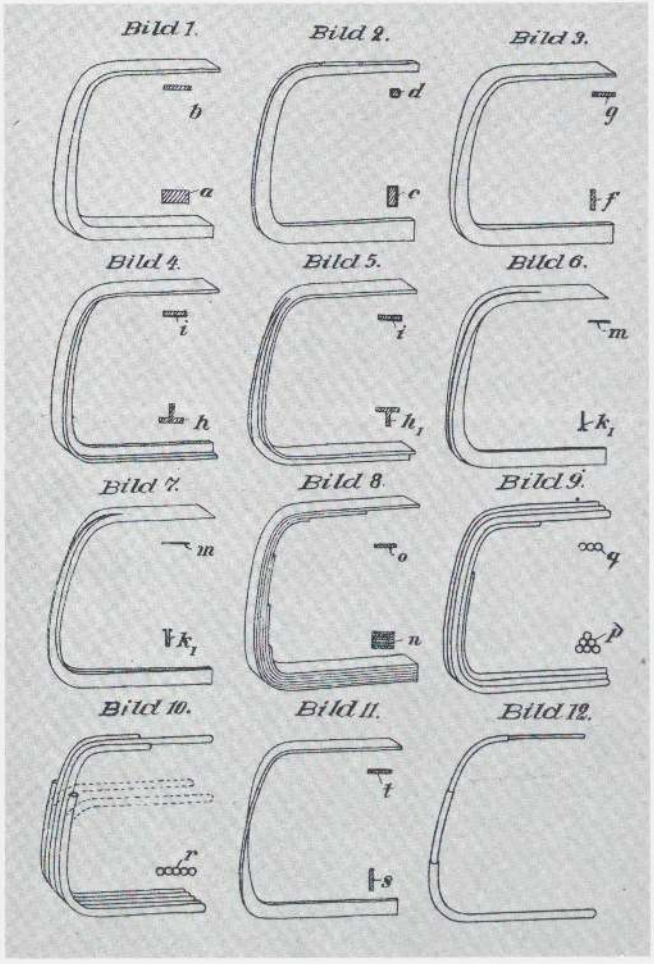

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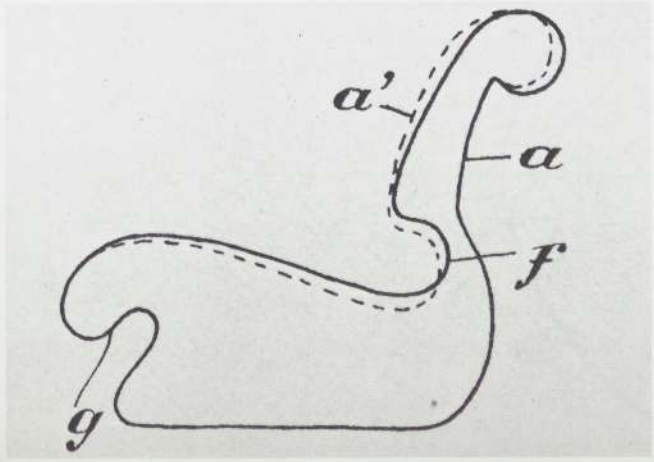

104

100. Sketch of chairs with split bentwood frames and steel rod reinforcement. 1934-35. Pen and ink, colored pencil on paper, 209 x 297 mm (8¼ x 11¾ in.). Mies van der Rohe Archive, The Museum of Modern Art (1173.74)

101. Sketches of chairs with bentwood frame supporting, at front and back, upholstered seat and back unit. Detail. 1934-35. Pencil on paper, 210 x 295 mm (8 5/16 x 11 5/8 in.). Mies van der Rohe Archive, The Museum of Modern Art

102. Sketch of cantilever chairs with slotted back shell. Detail. 1930s. Pencil on paper, 220 x 310 mm (8 5/8 x 12 3/16 in.). Mies van der Rohe Archive, The Museum of Modern Art

103. Illustration from the printed description of the resilient runner-type support for chairs, for which Mies was granted a patent in Germany on August 15, 1935. Mies van der Rohe Archive, The Museum of Modern Art

104. Illustration from the printed description of the car seat for which Mies was granted a patent in Germany on October 24, 1935. Detail. Mies van der Rohe Archive, The Museum of Modern Art

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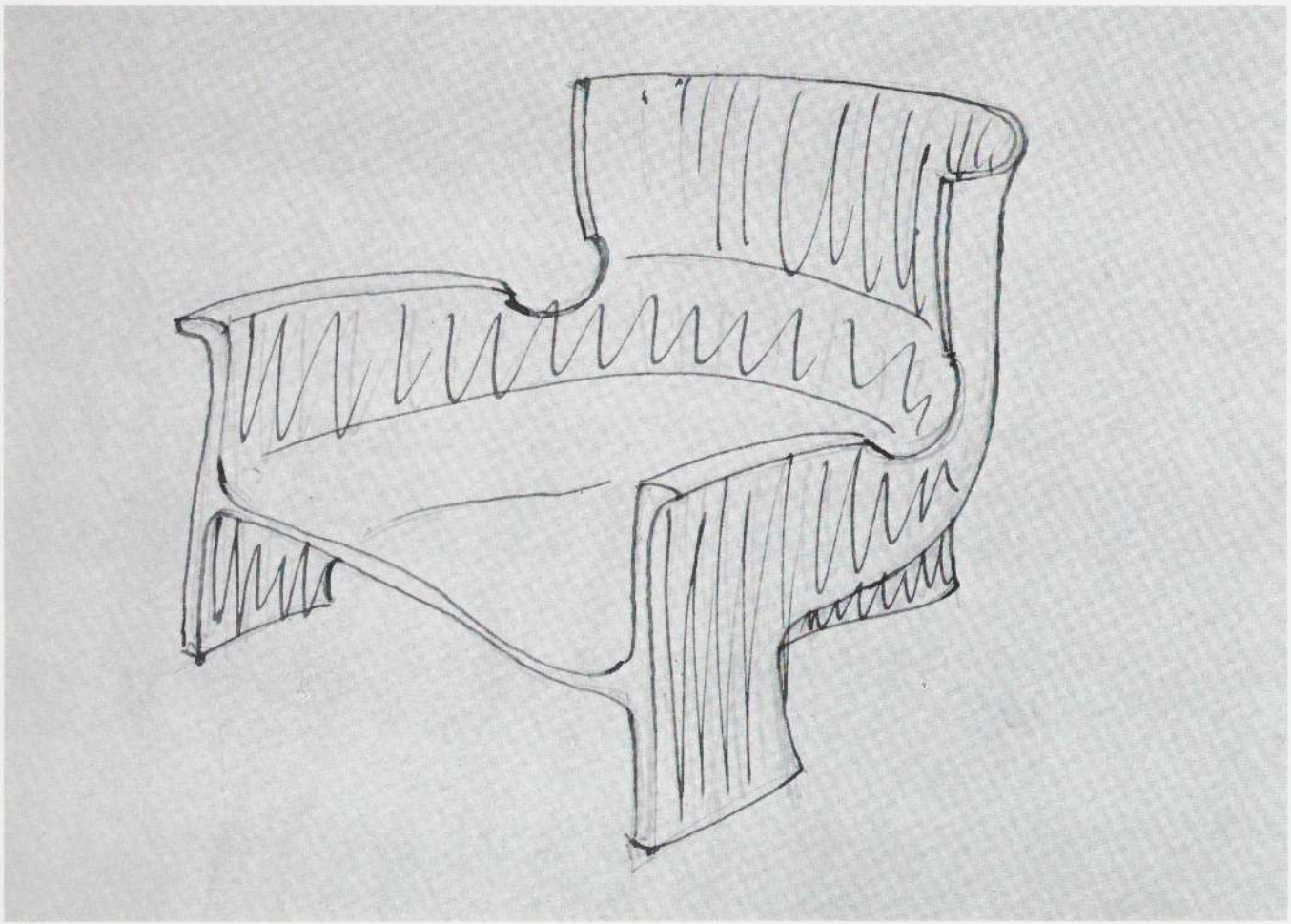


105

105. Sketch of conchoidal chair with arms. Early 1940s. Pen and ink, pencil on paper, 152 x 211 mm (6 x 8 5/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (1088.74)

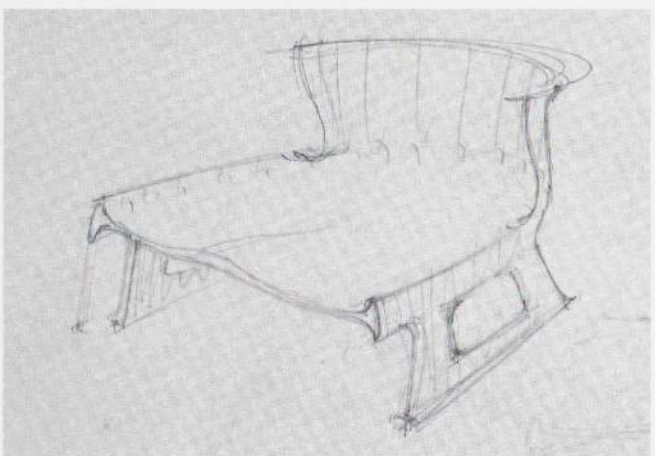
106. Sketch of tractor seat. Early 1940s. Pen and ink on paper, 152 x 208 mm (6 x 8 3/16 in.).Mies van der Rohe Archive, The Museum of Modern Art (1129.74)

107. Sketch of conchoidal chair without arms. Early 1940s. Pencil on paper, 152 x 211 mm (6 x 8 5/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (1047.74)

108. Sketch of conchoidal chair without arms. Early 1940s. Pencil on paper, 152 x 206 mm (6 x 8 1/8 in.). Mies van der Rohe Archive, The Museum of Modern Art (1075.74)

109. Sketch of conchoidal chair without arms. Early 1940s. Pencil on paper, 152 x 215 mm (6 x 8 3/4 in.). Mies van der Rohe Archive, The Museum of Modern Art (1053.74)

110. Sketches of conchoidal chair without arms, from the rear. Early 1940s. Pencil on paper, 152 x 212 mm (6 x 8 3/8 in.). Mies van der Rohe Archive, The Museum of Modern Art (1018.74)



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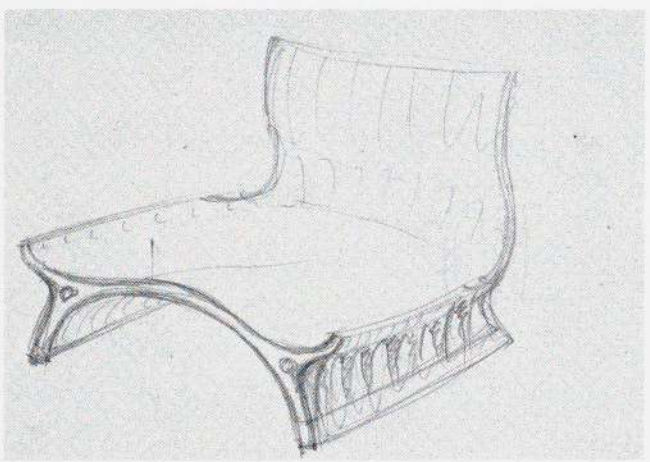

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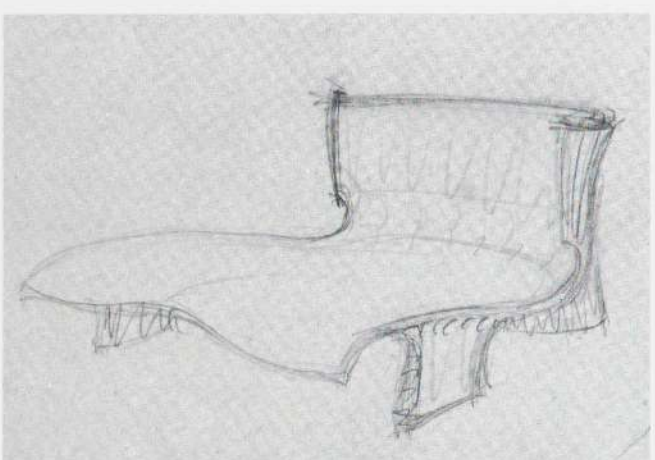

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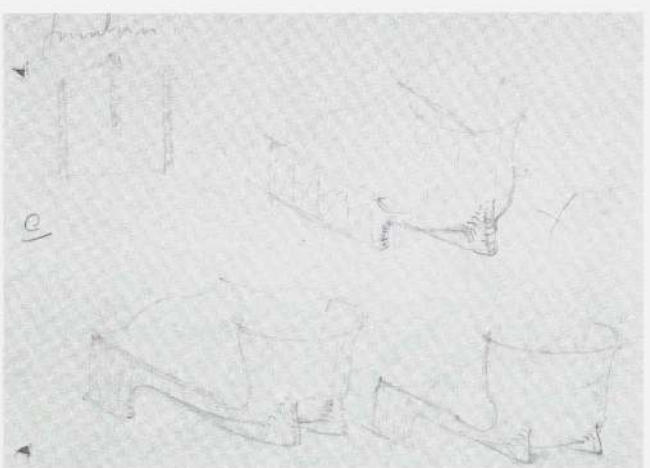


110

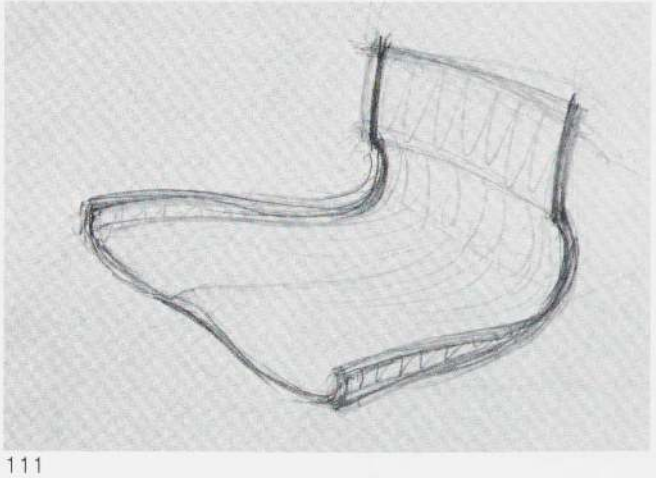
111. Sketch of conchoidal seat shell. Early 1940s. Pencil on paper, 152 x 208 mm (6 x 8 3/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (1022.74)

112. Sketch of conchoidal seat shell. Early 1940s. Pencil on paper, 152 x 208 mm (6 x 8 3/16 in.) Mies van der Rohe Archive, The Museum of Modern Art (1109.74)

113. Sketch of conchoidal seat shell. Early 1940s. Pencil on paper, 152 x 208 mm (6 x 8 3/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (1028.74)

114. Sketch of conchoidal seat shell. Early 1940s. Pencil on paper, 152 x 210 mm (6 x 8 5/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (1033.74)

115. Sketch of conchoidal seat shell with separate H-shaped base. Early 1940s. Pen and ink on paper, 152 x 206 mm (6 x 8 1/8 in.). Mies van der Rohe Archive, The Museum of Modern Art (1086.74)



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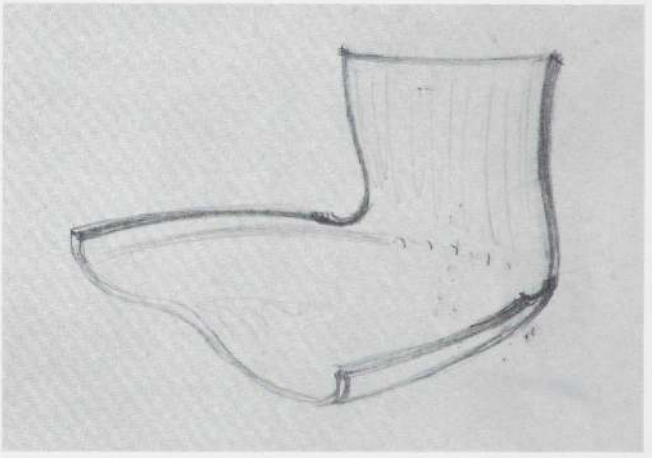

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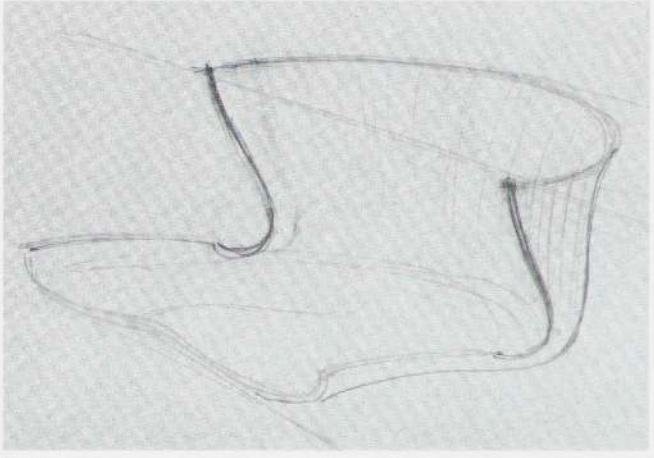

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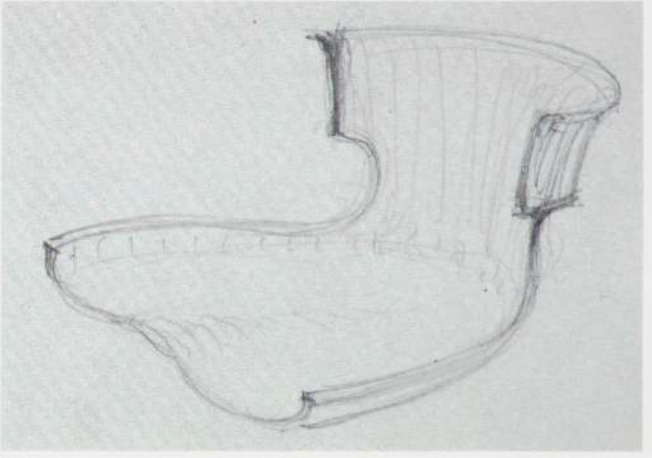

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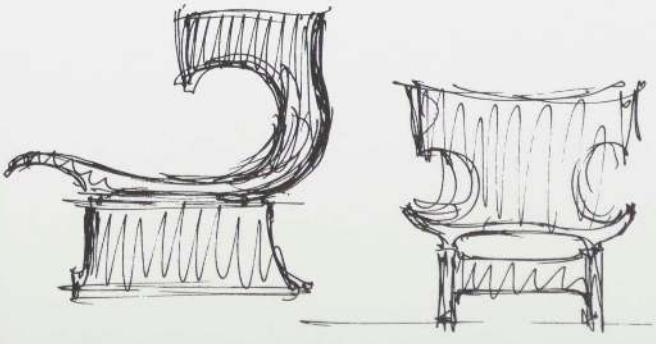


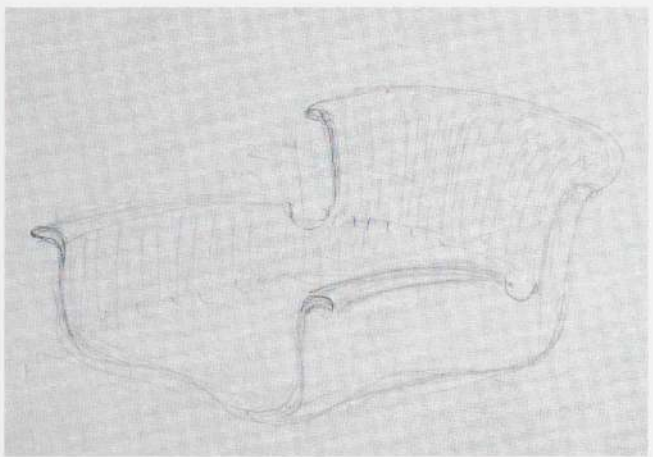
115

116. Sketch of conchoidal seat shell with arms. Early 1940s. Pencil on paper, 152 x 208 mm (6 x 8 3/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (1042.74)

117. Sketch of conchoidal seat shell with arms. Early 1940s. Pencil on paper, 152 x 208 mm (6 x 8 3/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (1106.74)

118. Sketch of conchoidal seat shell with arms. Early 1940s. Pencil on paper, 152 x 207 mm (6 x 8 3/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (1061.74)

119. Sketch of conchoidal seat shell with arms. Early 1940s. Pencil on paper, 152 x 207 mm (6 x 8 3/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (1059.74)



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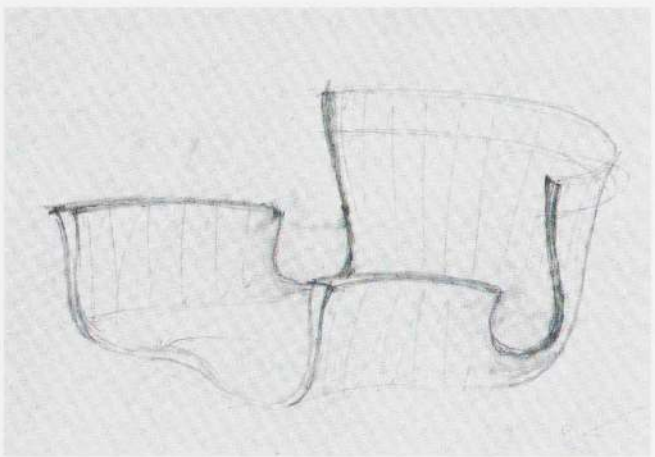

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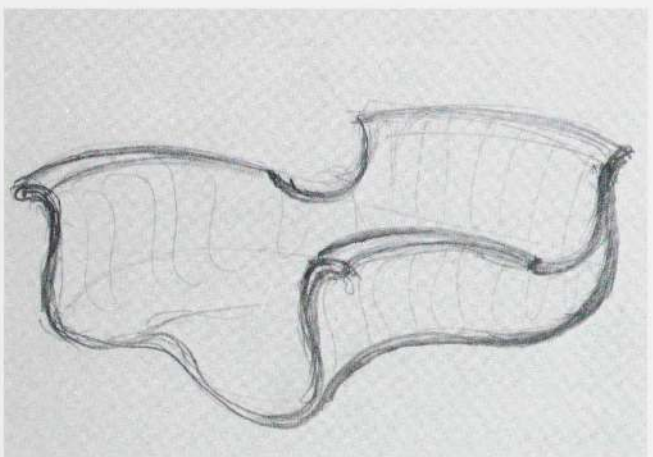

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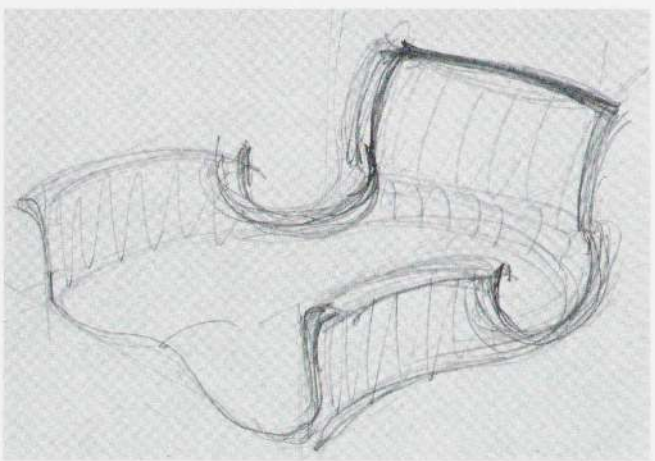
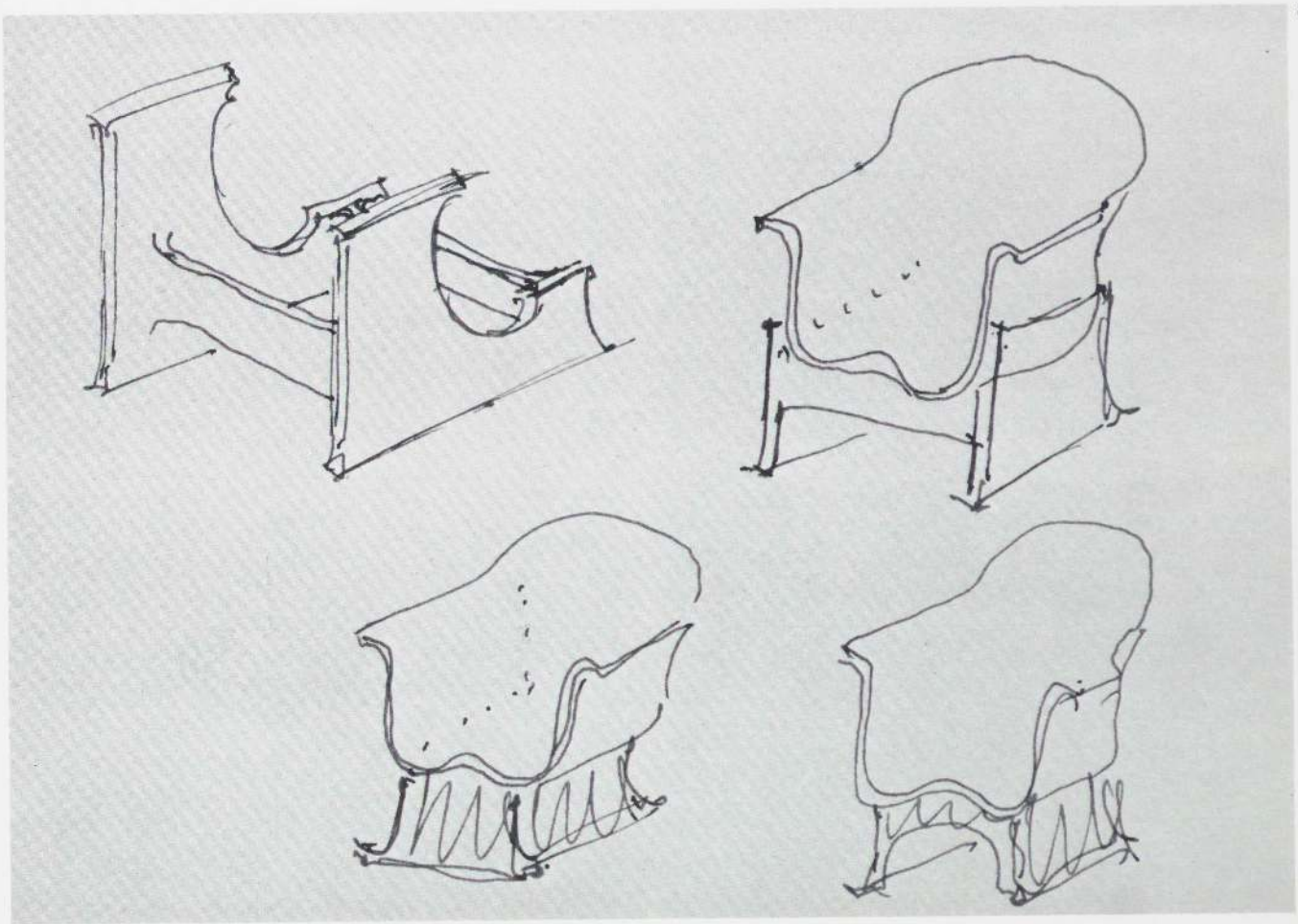


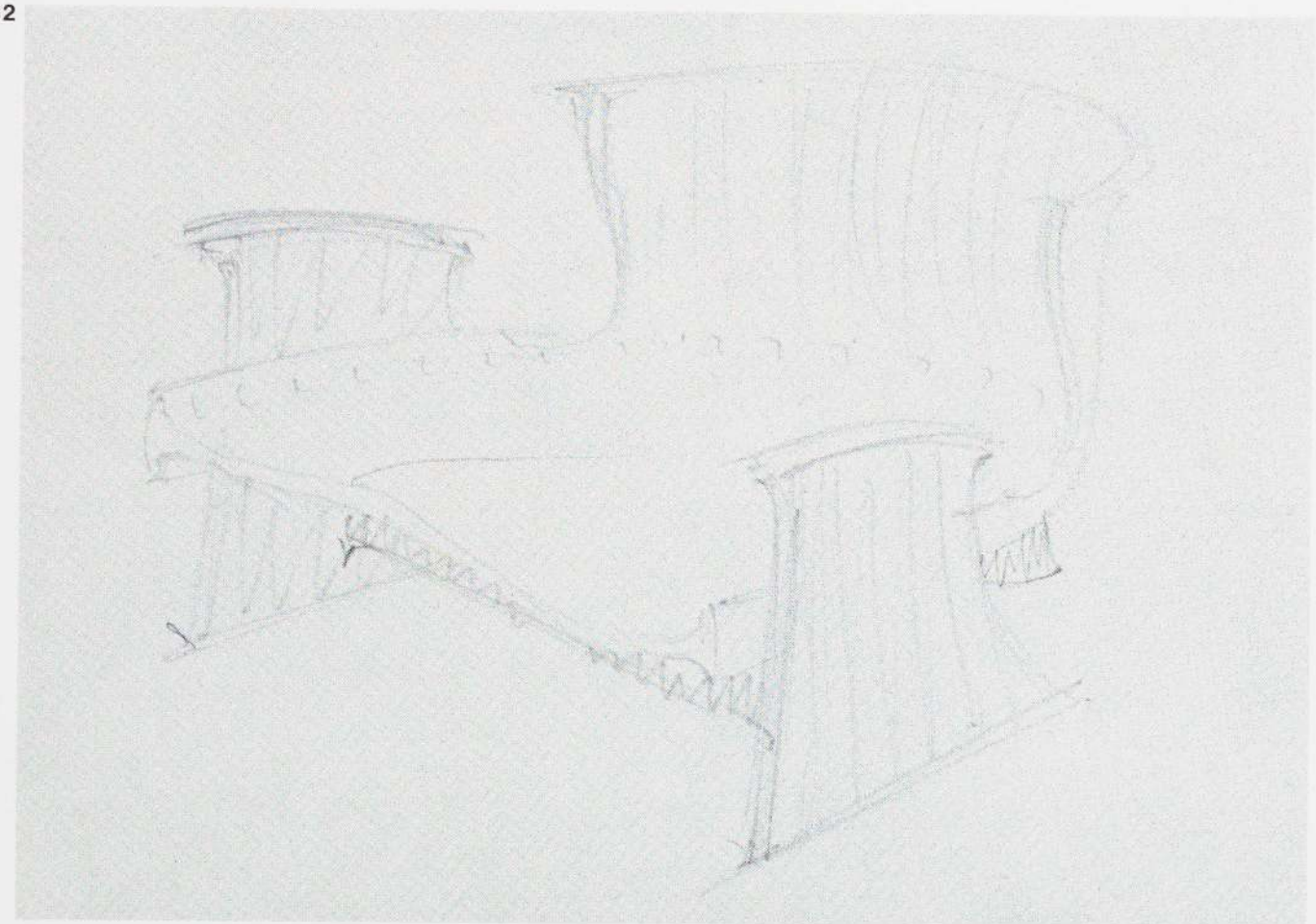
119

120. Sketches of conchoidal seat shell with arms in different bases. Early 1940s. Pen and ink on paper, 152 x 206 mm (6 x 8 1/8 in.). Mies van der Rohe Archive, The Museum of Modern Art (1094.74)



120

121. Sketch of conchoidal chair with separate seat shell with rear support and front base with arms. Early 1940s. Pencil on paper, 152 x 211 mm (6 x 8 5/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (1105.74)



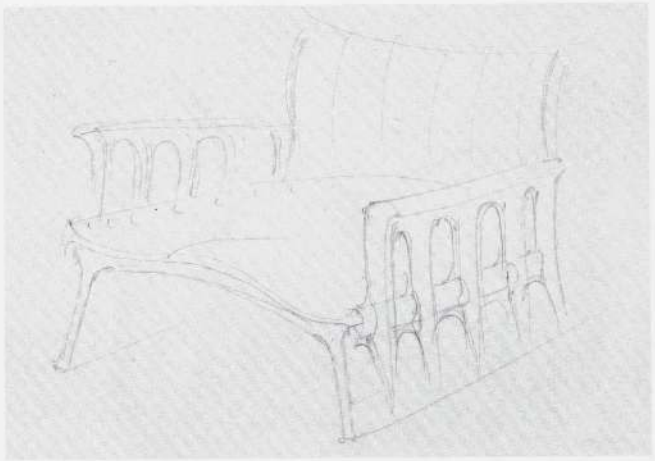
121

122. Sketch of conchoidal chair with separate seat and base with overlapping open armrests attached to the seat. Early 1940s. Pencil on paper, 152 x 206 mm (6 x 8 1/8 in.). Mies van der Rohe Archive, The Museum of Modern Art (1019.74)

123. Sketches of conchoidal chair bases with arms and of separate seat shell with its own rear support. Early 1940s. Pen and ink on paper, 207 x 152 mm (8 3/16 x 6 in.). Mies van der Rohe Archive, The Museum of Modern Art (1093.74)

124. Sketches of conchoidal chair base with separate arm and back unit. Early 1940s. Pencil on paper, 152 x 207 mm (6 x 8 3/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (1119.74)

125. Sketches of conchoidal chairs with armless seat base and rear support back unit. Early 1940s. Pencil on paper, 152 x 208 mm (6 x 8 3/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (1099.74)



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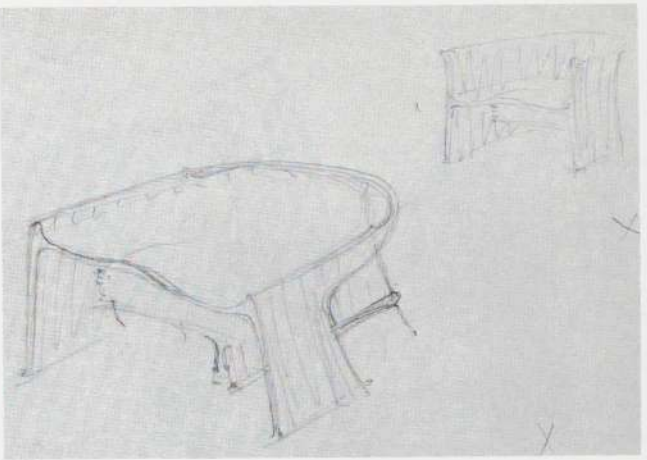

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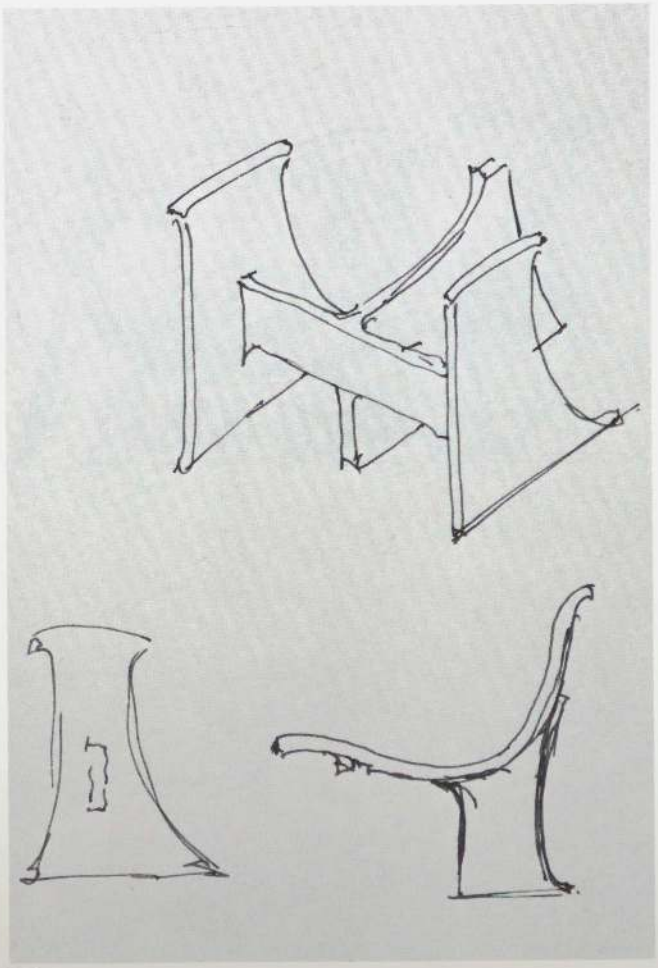

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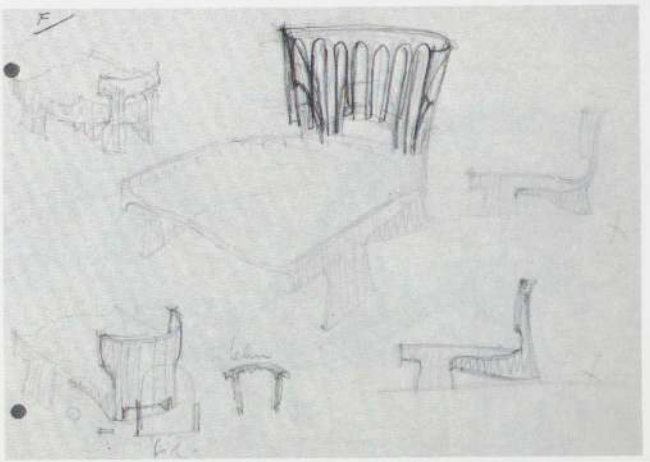

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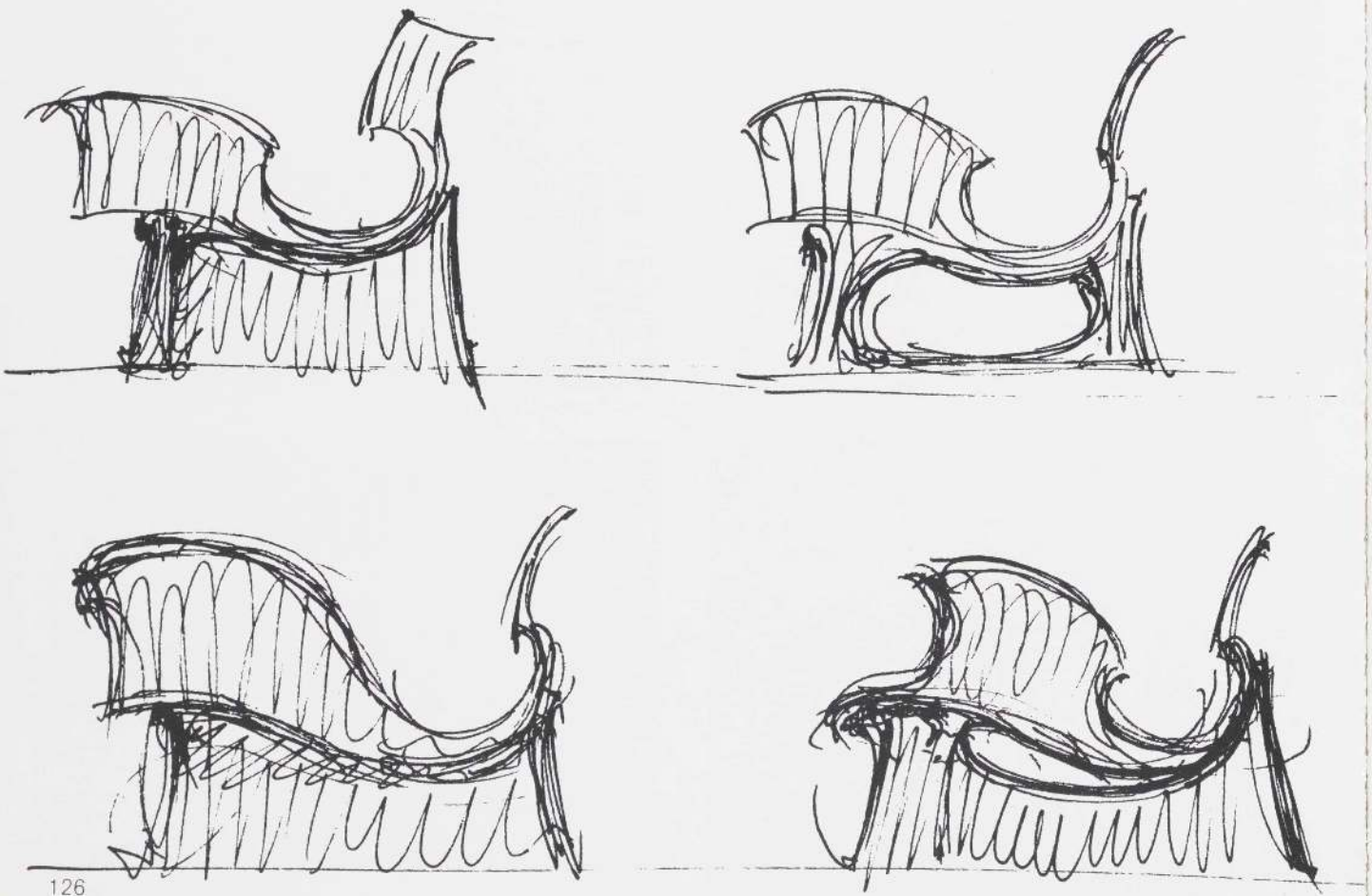

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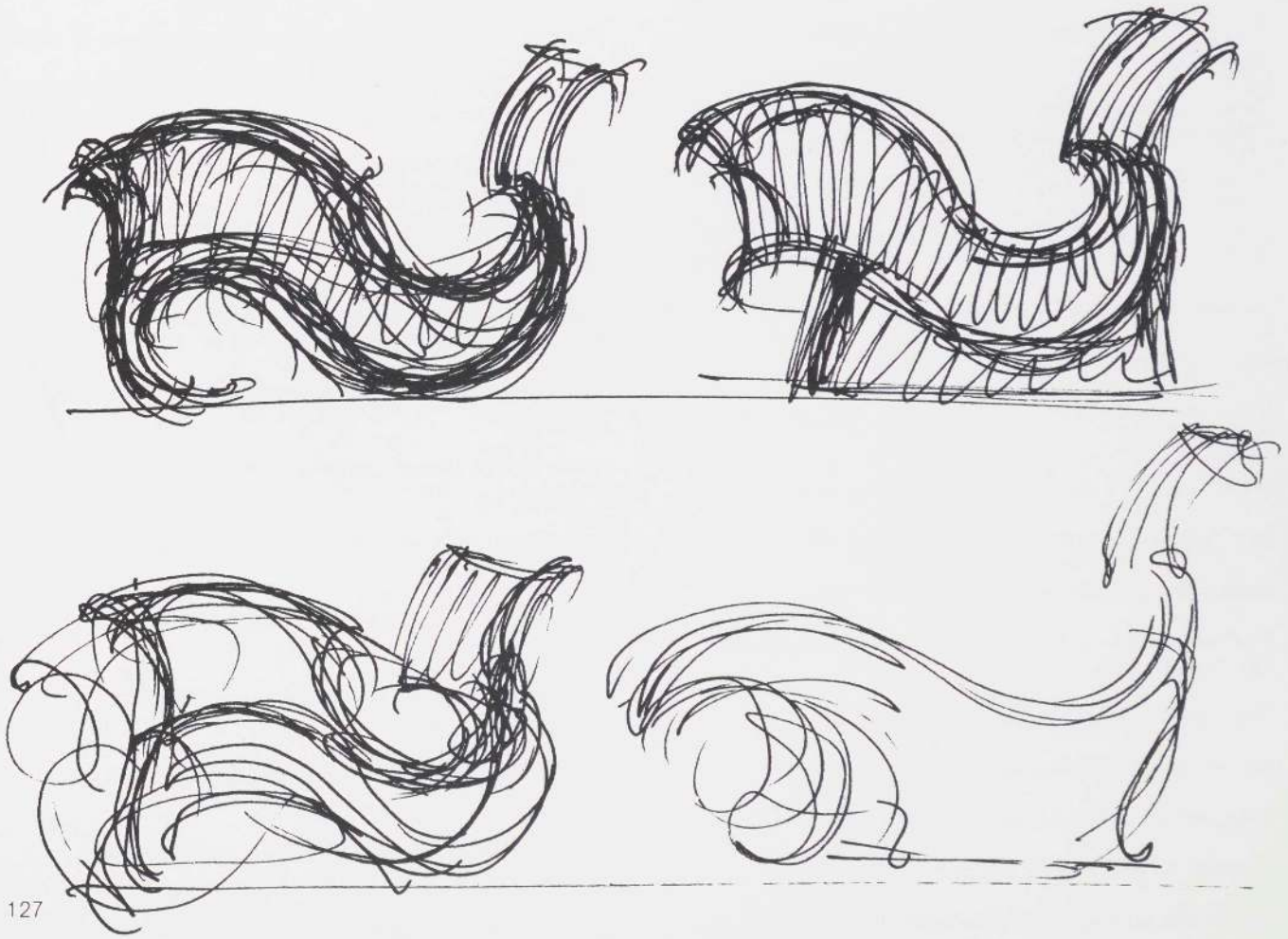
126. Sketches of conchoidal seat shells with arms and separate bases. Early 1940s. Pen and ink on paper, 152 x 210 mm (6 x 8 5/16 in.). Mies van der Rohe Archive, The Museum of Modern Art (1103.74)

127. Sketches of conchoidal seat shells with arms and separate bases. Early 1940s. Pen and ink on paper, 152 x 209 mm (6 x 8¼ in.). Mies van der Rohe Archive, The Museum of Modern Art (1154.74)



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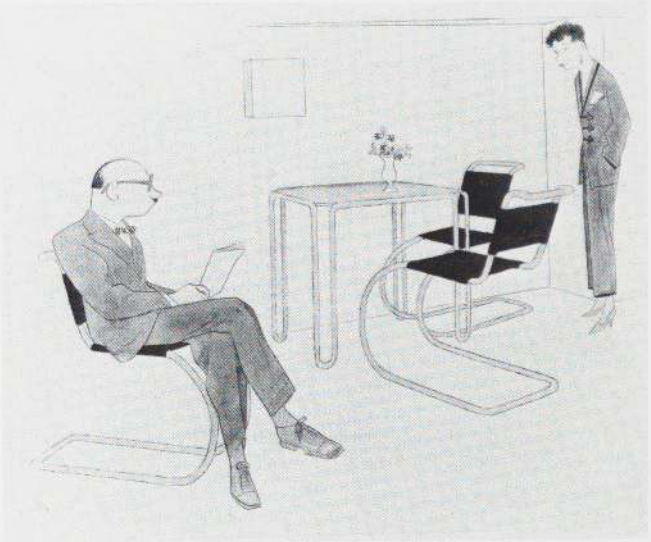

"Edgar, how does this vase come into our milieu?" — Cartoon by Karl Arnold, 1929. Private Collection, Munich

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