16. Wilhelm Wagenfeld (1900–1990) and Jakob Jucker (1902–1997)
Table lamp, 1923–24
Made in the metal workshops of the Weimar Bauhaus
Chrome-plated metal and glass
Museum of Modern Art, New York

INTRODUCTION

DOMINIQUE FOREST

The first use of the word "design" to mean a plan or pattern for a manufactured object appears in nineteenth-century England, in the writings of Henry Cole, the organizer of the Great Exhibition in London in 1851—the original World's Fair. Two years earlier, Cole had launched the *Journal of Design and Manufactures* in collaboration with Richard Redgrave.

The definition of "design" has evolved over time and now embraces a broad range of associations. It was in the United States, in the years before World War II, that it came to describe a creative discipline whose purpose was to shape products so as to enhance their appearance, and possibly their performance. A professional in this field was now referred to as a "designer." Not until the 1950s, though, did the word "design" take its place beside the term "industrial aesthetics" in continental Europe. Soon the expressions became interchangeable, and "design" ultimately triumphed, becoming commonplace in the parlance of architectural and home furnishing circles. However, many people still did not understand exactly what the word encompassed, and additional clarification was needed. The Centre de Création Industrielle (CCI), established in 1969 by the Musée des Arts Décoratifs in Paris, was thus inaugurated with an exhibition titled *Qu'est-ce que le design?* (What is design?). Charles Eames, Joe Colombo, and Roger Tallon, all legendary figures, were invited to give their own definitions and provide illustrative examples.

The history of design is inseparable from the vast changes that swept through the Western world between 1850 and 1950, particularly the extraordinary acceleration of the production of manufactured goods. Remarkable efficiencies arose from mechanization and the mastery of new materials. In the 1860s, the English Arts and Crafts movement started a debate about the respective qualities and production conditions of artisanal crafts and industrial goods. This controversy was taken up again in Germany in the early twentieth century, and figured into the new ideas and experiments that, in the 1920s, were synthesized in that laboratory of forms for the modern age, the Bauhaus (plate 16). From then on, a powerful tide of modernism would progressively eradicate the forms and styles of the past, ultimately severing ties with tradition. Because modernism established itself on the rejection of ornament, one strand of the history of design concerns the movements back and forth with respect to one enduring question: whether form and function should have primacy, or decoration.

The first study of the conditions of modernity that led to the emergence of design was *Pioneers of the Modern Movement* (1936), by the art historian Nikolaus Pevsner. The objectives of a pragmatic approach to design, serving the needs of industry and end users, were explored in the writings of American designers, including *Horizons* (1932) by Norman Bel Geddes and *Designing for People* (1955) by Henry Dreyfuss. Theorists, critics, and architects soon made their own contributions to the debate, including the Italian Gillo Dorfles, in *Il disegno industriale in Italia* (1957), and the Briton Reyner Banham, in *Theory and Design in the First*

OPPOSITE
17. Vico Magistretti (1920–2006)
***Atollo* table lamp**, 1977
Made by Oluce (Italy)
Aluminum and polyurethane
Museum of Modern Art, New York

BELOW
18. Jonathan Ive (b. 1967)
***iMac* computer**, 1997
Made by Apple Inc. (U.S.)
Musée National d'Art Moderne, Centre Georges Pompidou, Paris

Machine Age (1960). In the 1970s, the history of design began to arouse particular interest in many countries. The French scholar Jocelyn de Noblet produced one of the first syntheses of the subject in *Design, introduction à l'histoire de l'évolution des formes industrielles de 1820 à aujourd'hui* (1974).

Along with countless publications on design, a number of exhibitions have, since the early 1980s, responded to the growing public interest in the decor and products of a changing world. In 1983–84, the Philadelphia Museum of Art presented a show entitled *Design Since 1945*. Its very instructive catalog was written primarily by the leading figures of the time, designers and manufacturers both European and American: Ettore Sottsass, George Nelson, Max Bill, Timo Sarpaneva, Olivier Mourgue, Bruno Danese, Hans Wegner, and Marco Zanuso. Ten years later, *Design miroir du siècle* opened at the Grand Palais in Paris. It had the ambitious goal of demonstrating and explaining the principles of design, by means of more than 1,600 "designed" objects, ranging from coffee cups to cars.

Design has won its place slowly in the permanent collections of museums. The Museum of Modern Art in New York was among the first to add the everyday objects that are now associated with "design" to its collections, in the 1930s. Gradually, other museums of modern and decorative art, in cities ranging from London and Paris to Rotterdam, Montreal, and Munich, began to follow suit. Specialized museums devoted exclusively to design appeared considerably later. The Vitra Design Museum, designed by Frank Gehry, was established by the furniture company Vitra in Weil am Rhein in 1989, the same year that London's Design Museum opened its doors. While Italy boasted a number of company-sponsored museums (those of Kartell and Alessi, for example), it had to wait a long time for the Triennale Design Museum to open in Milan in 2007. In Tokyo, the Japanese fashion designer Issey Miyake inaugurated the center known as 21_21 Design Sight in 2008, to host temporary exhibitions on design.

While museums have certainly played an important role in raising awareness of design among the public at large, designers themselves have come together to advocate for recognition of their work by manufacturers and governments. Professional organizations have likewise contributed to the recognition and understanding of design. Over the course of the twentieth century, then, design has defined and encompassed a vast undertaking: that of constantly renewing products and adapting them to their times. Moreover, design has continued to expand its scope, which now extends from vehicles to furnishings, and from high tech to the routine objects of daily life. Because this process has manifested itself in different forms, and at different paces, in Europe, the U.S., and Asia, the contributors to this volume were given the latitude to present the history of design in each region as they saw best. Each writer has picked out the salient features and personalities—indeed, the highlights—of design in these places over the long period covered in this volume, which extends from the end of the World War II to the present day. We have called upon acknowledged experts in the field, scholars with many important works already to their credit, to contribute to this comprehensive study.

OLD CONTINENT AND NEW WORLD: THE EMERGENCE OF DESIGN

DOMINIQUE FOREST

PRECEDING PAGE
19. Gerrit Rietveld (1888–1964)
***Zig-Zag* chair**, 1934
See plate 33.

BELOW
20. William Morris
(1834–1896)
Green Dining Room, 1866
Victoria and Albert Museum,
London

It was in mid-nineteenth-century England that a debate first began about the aesthetic and moral qualities of manmade goods. From the end of the eighteenth century, fundamental economic transformations had propelled the rapid development of the country's industrial base, which depended upon coal as its source of energy and the steam engine as its source of power. The expertise and impressive creativity of the era's engineers led to a new mastery of metalworking and machinery. Somewhat later, this surge in industrial development reached Germany and France, and then the United States. An improvement in the quality of life—particularly in the towns and cities, where populations grew rapidly—led to a sharp increase in the demand for basic manufactured products, including both traditional goods, like textiles, and an array of new objects produced for household or office use. Mechanized or semi-mechanized methods of production made these items accessible at competitive prices, assuring their commercial success. In the final decades of the nineteenth century, manufacturers armed with new processes and capabilities came to rival skilled artisans, making high-quality decorative objects available to a wider clientele; the development of large-scale ceramic production in England is just one example. Many industrial products now competed directly with handcrafted works, raising deep concerns among the traditional artisanal class, and prompting British thinkers to embark upon a serious consideration of how such objects were made.

A BRITISH UTOPIA

The vigorous growth of British mills and factories alarmed many aesthetes and artists, leading them to ponder the relationship between art and industry. Their debates were in fact a continuation of ongoing conversations about the decorative arts and how they were taught and valued compared to the fine arts. Around 1860, the phenomenon known as the Arts and Crafts movement emerged at the instigation of the art critic John Ruskin (1819–1900). This movement, whose influence peaked between 1880 and 1910, aimed not to separate the artist and the artisan, but to reconcile their work in a new synthesis, echoing an idealized notion of the Middle Ages. The construction of a cathedral—in which architects, masons, and artisans skilled in stone carving, stained glass, and goldsmithing collaborated harmoniously—was cited as an example.

The proponents of Arts and Crafts were dismayed by the unequal and ultimately doomed struggle that was taking place between the artisan's workshop and the modern factory. Their concerns had less to do with the economic consequences of the conflict than with

LEFT
21. Owen Jones (1809–1874) **Decorative motifs from houses in Pompeii, from *The Grammar of Ornament***, 1868, plate 23
Bibliothèque des Arts Décoratifs, Paris

BELOW
22. **Electric radiator**, 1913
Made by Belling (U.K.)

the "quality" of the object produced and the negative impact of modern manufacturing methods on the worker. In an artisanal setting, there is a unity between, and control over, an object's conception and execution; this commonality necessarily produces an "authentic" and "virtuous" object, an article that is genuine and brings satisfaction to its creator. In contrast, the factory worker is deprived of any initiative in the creation of the product, which is thus deprived of its "authenticity"; it has been churned out with purely mercenary motivations, very far removed from the ideal of a harmonious beauty.

Ruskin and the architect Augustus Pugin (1812–1852) were among the first to articulate these issues and, in the framework of the Arts and Crafts movement, to propose solutions, which took the form of models for decorative objects, furniture, and household decor, as well as architecture. In 1859, the architect Philip Webb built the Red House near London for William Morris (1834–1896), one of the movement's most prominent figures. This residence broke with contemporary architectural conventions in its layout and design, as well as in the materials used. Morris, a designer, artisanal manufacturer, and critic, had committed himself to a militant crusade against the evils of industrialization and the resulting loss of traditional expertise and "good taste": "But it is waste of time to try to express in words due contempt of the productions of the much-praised cheapness of our epoch. It must be enough to say that this cheapness is necessary to the system of exploiting on which modern manufacture rests."

The English thinkers of the Arts and Crafts movement contested the facile acquiescence to contemporary practices. They advocated a tranquil, harmonious accord between people and the objects they make, arguing in favor of simple, functional products, respect for natural materials, and a certain restrained "rightness" in interior decor (plate 20). In so doing, they foreshadowed a debate that would arise several decades later in the other advanced industrial power, Germany, and contribute to the emergence of a new means of reconciling an era and the objects it produced: design.

DECORATION EVERYWHERE, AND FOR EVERYONE

The nineteenth century was gripped by a veritable frenzy for ornament. Everything—or practically everything—had to be decorated. New industrial processes allowed the creation of accessibly priced objects mimicking the appearance of the costly goods that had been manually produced a few decades before. Ornament invaded houses, living rooms, dining rooms, and kitchens. It was liberally applied to all industrial output, from metal boxes to bowls, plates, glasses, household fabrics, linoleum floor tiles, furniture, lighting fixtures, and wallpaper. Nothing escaped the onslaught of flowers, ribbons, neo-Renaissance grotesques, tartans, and countless juxtapositions of geometric, floral, classical, or medievalist motifs (plates 21, 22).

The working and newly minted middle classes were playing a game of catch-up: ornament had long been inaccessible to the common person. This decorative

BELOW
23. Peter Behrens (1868–1940)
Electric kettle, 1909–10
Made by AEG (Germany)
Musée National d'Art Moderne, Centre Georges Pompidou, Paris

RIGHT
24. **Poster for a Deutscher Werkbund exhibition**, 1914
Private collection

OPPOSITE
25. Peter Behrens (1868–1940)
Entry hall of the headquarters of Hoechst AG, Frankfurt, 1920–24

overload was a reaction to the forced abstinence of earlier generations, a reaction made possible by the mechanization of techniques for reproducing decorative motifs on every kind of consumer good.

The modernization of the punch card–operated Jacquard loom gave a strong impetus to the production of patterned fabrics, while, in the first half of the nineteenth century, the technique of transfer printing, or decalcomania—in which a support is used to transfer the ink to a surface such as metal, ceramic, or glass—opened the floodgates to a deluge of decorated items that were scarcely more expensive than those that were completely unadorned.

The decoration of an object had slipped from the artisan's hand. Now that the designs of the past could be reproduced en masse, they lost all value in the eyes of those who were once their creators. In the opinion of its detractors, such ornamentation could only have a pernicious impact on the purchaser and user.

ORNAMENT AND CRIME

The rapid and pervasive industrialization that Germany underwent in the late nineteenth and early twentieth centuries revolutionized perceptions and called into question the fundamental tenets of both architecture and design.

A number of the ideas originally developed in England were embraced by the German architect Hermann Muthesius (1861–1927), whose initial attraction was to Arts and Crafts architecture. He revived the arguments about form that had preoccupied the British movement, and once again posed questions concerning the unity of the arts and the relationship between artisanal crafts, artistic creation, and industrial production. Inspired by these issues, as well as by the ongoing debate about the revitalization of German art, he established the Deutscher Werkbund at Munich in October 1907. The Werkbund engaged in various forms of discussion, action, education, and propagandizing (plate 24); originally its goal was to ennoble industrial production and align it more closely with artisanal standards. Its membership included industrialists, artisans, artists, and architects, among them Peter Behrens (plate 25). Following years of wide-ranging debate, their ideas coalesced around the use of industrialized—meaning simplified and standardized—methods to make high-quality German products.

Muthesius roundly criticized the industrial output of his era, most of which perpetuated outdated forms and motifs. He and others so vigorously challenged the propensity for applying ornamentation always and everywhere that it came to be seen as an aberration. But in Germany, these debates about the meaning of ornament and the relationship between artisanal and

BELOW
26. Walter Gropius (1883–1969) and Adolf Meyer (1881–1929) **The Fagus factory in Alfeld an der Leine, Germany**, 1911–13

OPPOSITE
27. Joost Schmidt (1893–1948) **Poster for a Bauhaus exhibition in Weimar**, 1923

industrial products, or between art and craft, were underpinned by other preoccupations—namely, the economic performance and competitiveness of German products. These concerns did, however, remain somewhat veiled behind less pragmatic ones. As Muthesius commented in 1915, "It's not a question of dominating the world, nor of financing it, nor of teaching it lessons. It's a deeper question of giving the world a face."

In the same period, the Viennese architect Adolf Loos (1870–1933) published his manifesto *Ornament and Crime* (1908), which called for a radical break with the idea of ornamentation, raising fundamental questions about the purpose of artistic expression. In a 1924 interview, Loos was asked whether modern man had any need of ornament. He responded, "Modern man, a man with modern sensibilities, has no need of ornamentation; on the contrary, he detests it."[1] Loos's vision, resolutely set on the future, also had a clear economic objective: ornament was a waste of time, effort, and money for producers, and encouraged the creation of objects whose form and decoration would inevitably become outdated.

Thus were laid, in the first years of the twentieth century, the foundations of a powerfully innovative movement that would renew the realm of architecture and the decorative arts. The bursting forth of the modern world—technologically advanced and boldly inventive—was destined to make ornament obsolete.

THE BAUHAUS

Born in Berlin in 1883, Walter Gropius began his career in 1907, in the office of Peter Behrens, who proclaimed his architectural manifesto with the turbine factory he built for AEG, and also designed a broad array of electrical devices for that company (plate 23). Gropius established his own architectural firm in 1910. Like Behrens, he was affiliated with the Deutscher Werkbund and involved in the debate about how best to implement modern ideas in both objects and architecture. An architect first and foremost, Gropius focused on the potential for standardization in construction projects. He was interested in creating prefabricated components and also investigated novel construction materials and techniques.

In 1913, Gropius completed a factory commissioned by Fagus, a shoe last maker, in Alfeld an der Leine in Lower Saxony (plate 26). In this important building, he demonstrated a number of fundamental features of the architecture of the future, including lighter load-bearing elements, flat roofs, and the very innovative use of glass curtain walls. He envisioned the factory as a rational architectural ensemble, meticulously adapted to its function. The carefully conceived interior design showed his humanistic concern for the working conditions of Fagus's employees. This building was a spectacular and highly visible showcase for the ideas that would to be embraced by an entire generation of European and North American architects.

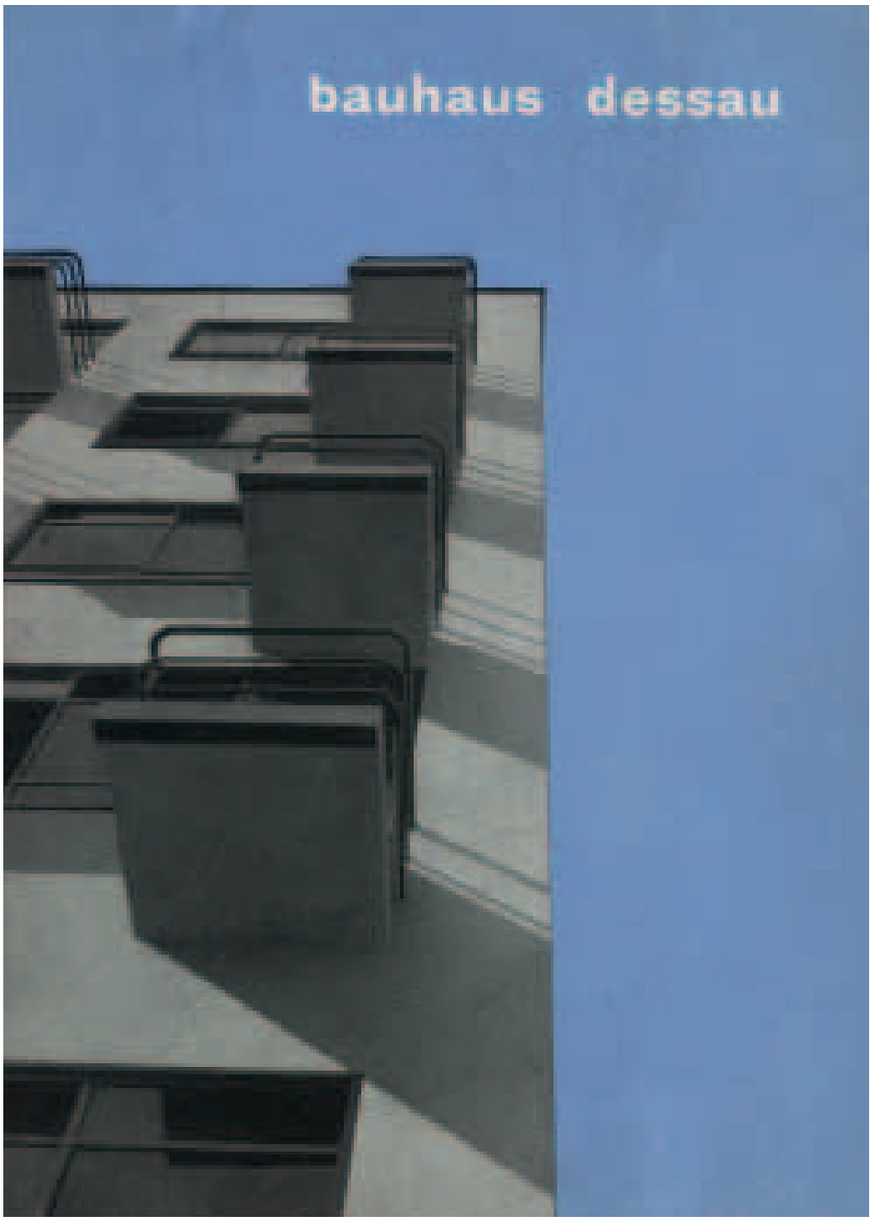
In 1919, Gropius assumed the direction of two art schools in Weimar, which he merged under the name of Staatliches Bauhaus (plate 27)—the literal meaning of *Bauhaus* being "construction house" or "building


STAATLICHES
BAUHAUS
AUSSTELLUNG
JULI
SEPT
WEIMAR
1923

RIGHT
28. Herber Bayer (1900–1985)
Cover of a brochure for the Bauhaus in Dessau, showing the building by Walter Gropius, 1926

OPPOSITE, TOP
29. Herbert Bayer (1900–1985)
Cover of the first Standard-Möbel catalog to feature Marcel Breuer's metal furniture, 1927

OPPOSITE, BOTTOM
30. Josef Albers (1888–1976)
Stackable tables, c. 1927
Varnished ash, painted glass
The Josef & Anni Albers Foundation, Bethany, Connecticut



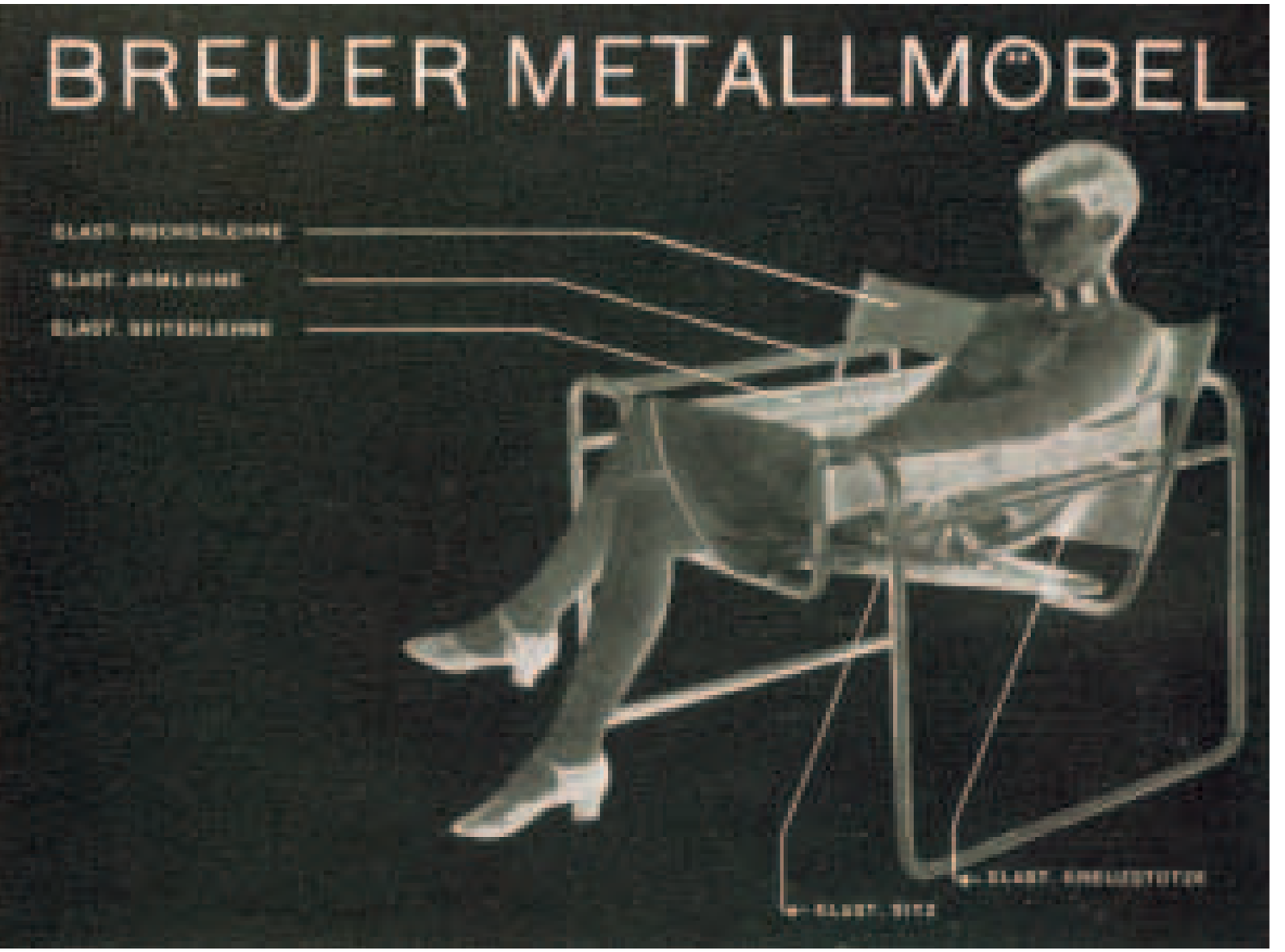
house." The Weimar Bauhaus closed in 1924, and a second one was built in Dessau in Saxony and inaugurated in December 1926 (plate 28). There Gropius planned to develop and implement a new language of forms with universal application. Instruction was provided in theory, as well as in the applied arts (textiles, ceramics, goldsmithing, and metalworking), with some classes being taught by artists. Some of the greatest figures of twentieth-century modernism served on the faculty, including the architects Gropius, Ludwig Mies van der Rohe, and Marcel Breuer; the artists Wassily Kandinsky, Josef Albers, Paul Klee, and Oskar Schlemmer; and the designers László Moholy-Nagy, Wilhelm Wagenfeld, and Marianne Brandt.

In its teaching and its artisanal workshops, the Bauhaus harmonized theory and practice. The *Wassily* armchair (1926), made from chrome-plated steel tubes and leather, was designed by Breuer and produced in the workshop he supervised (plate 29). And it was in the school's metal workshop that, in 1924, Wagenfeld designed and executed the one of the masterpieces of twentieth-century design, the lamp that bears the Bauhaus name (plate 16). The cabinetmaking atelier carried out extensive research into the use of plywood and also explored modular furniture production (plate 30), while, beginning in 1929, the wallpaper studio designed and produced collections that eschewed realistic motifs and focused on the properties of the material itself. Their output was a great commercial success.

The Dessau school thus played a seminal role, providing the home for a new aesthetic that was destined to leave a lasting legacy in Europe, and even more so in the United States. A number of important Bauhaus figures moved to North America after the Nazis closed the school in 1933, including Gropius, Mies van der Rohe, and Breuer. The principles of the Bauhaus—the extreme purity of form, the priority assigned to function ("form follows function"), and the elimination of anything extraneous—were integrally associated with the artistic ferment that stirred certain European circles at the beginning of the twentieth century. A number of avant-garde painters rejected the figural representation of reality with a fervor that had spiritual overtones; these artists included Kandinsky, Kazimir Malevich, František Kupka, and Piet Mondrian, who began working with Theo van Doesburg in 1917 to establish the neoplasticism movement, De Stijl, in the Netherlands. As Van Doesburg explained, "After 1913, we all felt a need for abstraction and simplification. A mathematical approach seemed necessary to counter impressionism, which we rejected." Gropius's theories embraced this fresh perspective. He was convinced that the force of the mind would prevail in the creation of the modern world.

DESIGN FOR ARCHITECTURE

Marcel Breuer created his *Wassily* armchair in 1926, the year the Bauhaus transferred its classes and workshops to the new building in Dessau. In fact, the chair was designed to harmonize with its architectural setting: new architecture called for new materials and new furnishings. Like Gropius and Mies van der Rohe, Breuer was an architect. He was particularly interested in furniture design and advocated an absence of style in his


BREUER METALLMÖBEL

BELOW
31. Le Corbusier (1887–1965), Charlotte Perriand (1903–1999), and Pierre Jeanneret (1896–1967)
Reclining chaise longue, 1928
Made by Thonet Frères (France)
Chrome-plated and painted steel, leather, fabric
Museum of Modern Art, New York

OPPOSITE
32. **Charlotte Perriand on the reclining chaise longue she designed with Le Corbusier and Pierre Jeanneret**, 1928
Charlotte Perriand Archives

creations, focusing exclusively on function. In Breuer's opinion, "We don't expect things to express anything other than their function and the structure necessary for that function." Mies van der Rohe expressed a similar view: "Less is more."

Breuer left the Bauhaus in 1928 because he disagreed with the school's emphasis on teaching and practicing the decorative arts, which he felt came at the expense of architectural instruction. He pursued his architectural career in Berlin, and subsequently worked in England and the U.S., where he moved in 1937, before later returning to Europe. Breuer was particularly attentive to the interiors of his buildings, striving for coherence between the architecture and furnishings. From the outset, he paid close attention to the selection of materials (solid wood, chrome-plated steel tubing, laminates, and aluminum) and created several pieces of furniture that set the standard for the European avant-garde. In 1932, he designed his *B32* chair with its distinctive cantilevered seat. This chair, which is still in production, is a cornerstone of the reputation that Breuer enjoys not only as an architect but also as a designer.

Other architects attuned to Bauhaus ideas also designed furnishings: Mies van der Rohe (the *Barcelona* chair, 1929), Le Corbusier (the *Grand Confort* chair and *Reclining chaise longue* with Charlotte Perriand and Pierre Jeanneret, 1928; plates 31, 32), Gerrit Rietveld (the *Zig-Zag* chair, 1934; plate 33), and Alvar Aalto, who designed the *Paimio* chair (1930–31; plate 34), made from glue-laminated wood, for the patients of a sanatorium he built in the Finnish town of that name between 1929 and 1933.

For many modern architects, designing furniture for public buildings (such as hospitals, religious structures, and schools) was an essential part of their work, allowing them to link the interior to the exterior and thereby ensure the coherence and unity of the structure. Equally they wanted to prevent the installation of unrelated furnishings that would obscure the forms and volumes of their interiors, or be incompatible with the new architectural materials they employed, such as concrete, glass curtain walls, and metal. In principle, the architect was supposed to create a complete environment, following Aalto's example in his sanatorium in Paimio. Aalto asserted, with logic and simplicity, that furnishings "are accessories to architecture."

While few of the "new" architects were as involved with furniture design as Aalto and Breuer, a number of them did, in the early decades of the twentieth century, create furnishings and accessories that remain iconic in the history of design. Some of these pieces are, indeed, still being produced and distributed today, and remain sought after for their comfort, their classic beauty, and the quality of their materials.

OPPOSITE
33. Gerrit Rietveld (1888–1964)
***Zig-Zag* chair**, 1934
Oak
Museum of Modern Art,
New York

ABOVE
34. Alvar Aalto (1898–1976)
***Paimio* armchair** (first series),
1930–31
Made by Oy Huonekalu-ja
Rakennustyötehdas (Finland)
Bent plywood, beech
Musée National d'Art Moderne,
Centre Georges Pompidou,
Paris

35. **Cover of a catalog for Thonet's furniture in tubular steel**, 1933
Musée National d'Art Moderne, Centre Georges Pompidou, Paris

TRADITION AND THE AVANT-GARDE

The adaptation of everyday objects to the contemporary world that occurred between 1920 and 1950 did not result from a popular embrace of Bauhaus principles. Gropius may have declared that objects "must be perfectly adapted to their purpose, that is to say fulfill their practical function, and be durable, economical and attractive,"[2] but the reality of the situation was otherwise. The infinite variety of geometric and floral motifs had mounted its assault well before the Exposition Internationale des Arts Décoratifs et Industriels Modernes of 1925 gave art deco its name. Ornamentation invaded all kinds of everyday objects (furniture, glassware, fabrics, wallpaper), as well as household fixtures (heating, lighting, and so forth).

In France, this craze for ornament aroused great dismay among the ranks of the avant-garde, particularly the members of the UAM (Union des Artistes Modernes), who had hoped that the industrial recovery of the interwar years would serve as a means of disseminating their modernist ideas. Established in 1929, the UAM included many architects, decorators, poster artists, and designers who had broken ties with the far more conservative Salon des Artistes Décorateurs. Whether they were founding members of the UAM or not, all the supporters of the avant-garde were to be found at its shows—from Francis Jourdain to René Herbst and Robert Mallet-Stevens, as well as Pierre Chareau, Charlotte Perriand, Eileen Gray, and Le Corbusier. However, their avowed objective of destroying the "parasites of the aesthetic" came up against the powerful opposing forces of tradition, and their visionary new directions were ignored or rejected by the single-minded logic of commerce.

The concept of modernity was evidently perceived very differently by a receptive elite than by a mass audience! It would take decades for new ideas and forms, sometimes poorly executed, to make their way into the households of the future. Moreover, the emergence of new way of living would depend, in its early stages, not only on a strong aesthetic program, but also on the mastery of new technologies and materials (structural steel, reinforced concrete, and architectural glass) and the use of industrial materials (such as nickel-plated metal tubing and laminates) in new contexts (plates 35–38).

NEW THINGS IN OLD GUISES

The end of World War I, which the U.S. entered in 1917, marked for that country a fresh surge in the economic growth it had experienced in the preceding decades. This spurred an increase in the urban population, as well as in the purchasing power of the city dwellers, who had a strong desire for modern consumer goods. Manufacturers grew and diversified at a rapid rate, becoming archetypal representatives of a newly powerful and dynamic America. The country was now undeniably an industrial powerhouse, confident of its technological skills and productivity. Cutting-edge industries included the transportation sector (airplanes, automobiles), chemistry, communications, and domestic appliances. In the two decades between 1910 and 1930, car ownership in the U.S. soared from one in

BELOW LEFT
36. René Herbst (1891–1982)
Chair, 1930
Made by Établissements René Herbst (France)
Chrome-plated steel, elastic cords
Musée National d'Art Moderne, Centre Georges Pompidou, Paris

BELOW RIGHT
37. René Coulon (1908–1997)
Armchair, 1938
Made by Saint-Gobain (France)
Tempered curved glass, leather seat
Musée des Arts Décoratifs, Paris

BOTTOM
38. Eileen Gray (1878–1976)
Cabinet with pivoting drawers from the E-1027 house in Roquebrune-Cap-Martin, 1926–29
Painted wood
Musée National d'Art Moderne, Centre Georges Pompidou, Paris

BELOW
39. Henry Dreyfuss (1904–1972)
Vacuum model *150*, 1935
Made by Hoover (U.S.)
Musée des Beaux-Arts, Montreal

OPPOSITE
40. **The Singer Building under construction in New York**, 1905–8

184 people to one in five. Nevertheless, as in Europe, many manufacturers of the 1920s continued to produce outdated designs little suited to the enthusiastic consumerism of a vigorous, forward-looking America.

This was the era when electromechanical devices (refrigerators, fans, space heaters, kitchen utensils, vacuum cleaners, phonographs, telephones, light fixtures) were rapidly developed for a vast new domestic market, bringing about revolutionary changes in lifestyles and daily activities. However, the manufacturers of these objects had no frame of reference for their design besides existing knowledge and habits, and thus the new products of the early twentieth century were still laden with antiquated motifs and ornamentation. Between 1925 and 1930, though, the art deco style was imported from Europe and established a firm hold on American design.

THE LITTLE SEAMSTRESS

The sewing machine was the first precision mechanical device to make its way into a significant fraction of European and American households, in the last two decades of the nineteenth century. Considerable quantities were produced in Europe, and then even greater numbers in the U.S. When it was completed in 1908, the skyscraper constructed by the Singer sewing machine company in New York was the tallest building in the world, a spectacular demonstration of the firm's success and prosperity (plate 40).

Since 1850, all sewing machine manufacturers had faced the same problem: how to make a cast-iron and steel machine aesthetically presentable. It was a fairly complex device, with wheels, gears, and other elements suggestive of workshops and factories. Manufacturers had to find a way to ensure user safety, while masking the technical and utilitarian aspect of a machine that was increasingly making its way into well-appointed domestic interiors. Understandably, producers turned to ornament to obscure any allusion to the world of hard labor and engine grease, and to transform the little sewing machine into a decorative object suitable for a sitting room. Its somber black surface was lavishly transfer-printed with gilding and elaborate motifs like sphinxes, garlands, and floral sprays. As freestanding pieces of furniture, too large to be concealed in a closet, treadle-powered models were often encased in the sort of cabinetry considered suitable to a civilized domestic interior.

Quite a number of domestic novelties fell victim to the chameleon syndrome, including the phonographs and radios manufactured by the Edison Company, which were concealed in small, elaborately decorated chests, adorned with inlays of exotic woods. Vacuum cleaners were sometimes covered with colored artificial leather. In 1910, "technological" objects like these were still considered overly reminiscent of the industrial workplace, and were hidden beneath decorative overlays. However, a completely different approach was to be adopted in the coming decades: instead of being camouflaged, technology and materials gradually began to be emphasized. The influence of the designer was making itself felt (plate 39).

THE IMAGE OF SPEED

The imperatives of a production-driven economy, the modernizing impulse of skilled designers, and the resolutely optimistic attitude of American consumers enjoying rapid progress all led to the aesthetic renewal of the ordinary objects used in the home and the workplace. Components made of new materials like aluminum were not concealed beneath paint but enthusiastically displayed, as symbols of a product's "industrial" efficiency. Steel, now protected from corrosion by chrome plating, lent itself to a wide range of uses, while new metal-stamping techniques facilitated the production of small parts, from the housing of a toaster to a pen cap. Indeed, stamping gave designers an unprecedented freedom in determining the outward shape of manufactured goods.

In the 1920s, the popular imagination began to associate modernity with transatlantic crossings by great

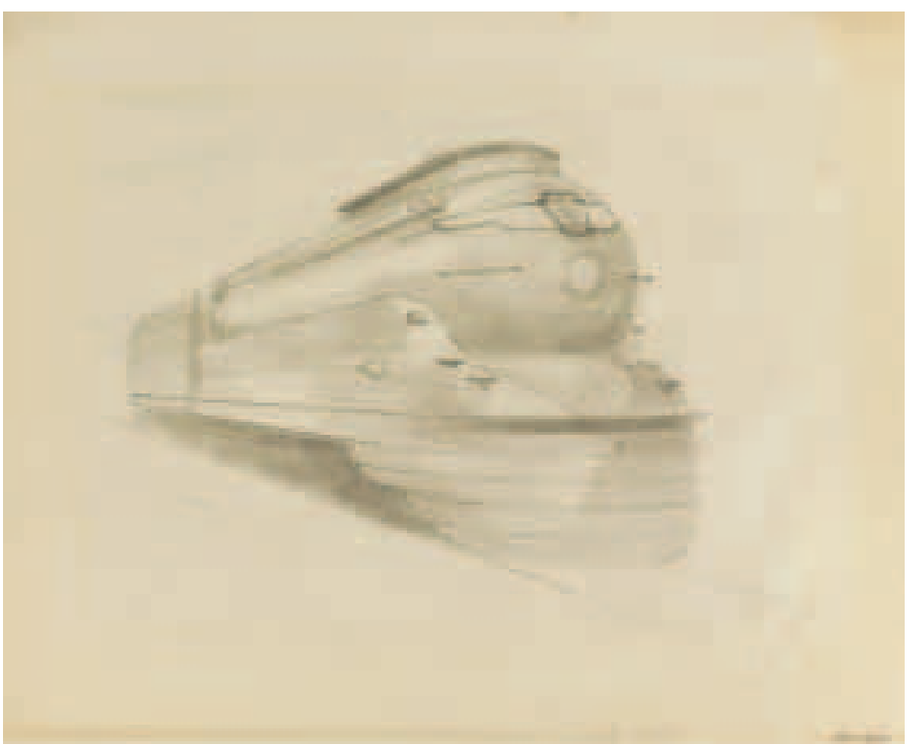

THE
EVENING

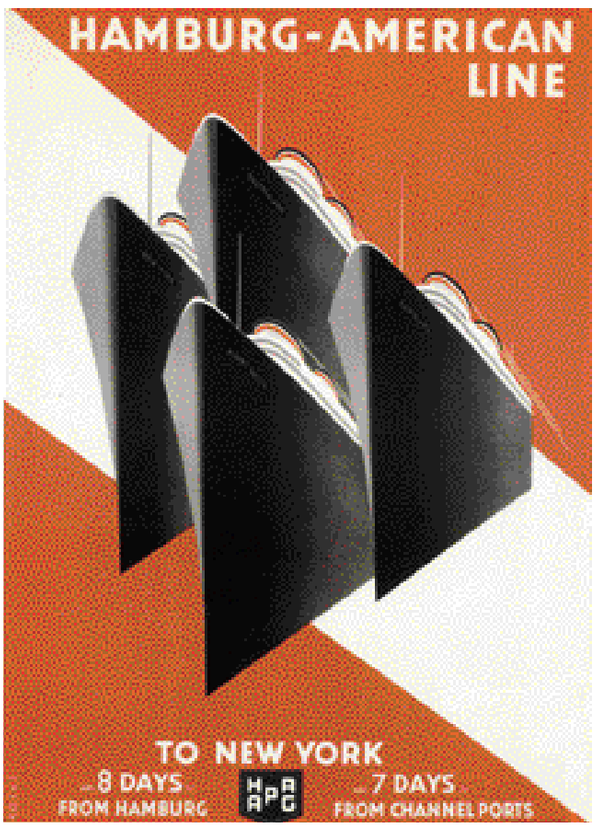

NEW YORK
CENTRAL
SYSTEM

OPPOSITE
41. Henry Dreyfuss (1904–1972)
***20th Century Limited* locomotive**, 1938

BELOW
42. Raymond Loewy (1893–1986)
Drawing of the *K4S* locomotive for the Pennsylvania Railroad Company, New York, 1936–37
Cooper-Hewitt, National Design Museum, New York

RIGHT
43. **Poster for the Hamburg-American Line**, c. 1930





ocean liners whose hulls were designed to cut through the waves (plate 43), and even more with air travel, which experienced rapid growth in the U.S.: in the decade between 1920 and 1930, the country boasted some forty airlines. Manufacturers coated the fuselages of their planes with Duralumin, a hardened aluminum alloy, and researched the best designs to facilitate airflow over aircraft wings and bodies. These flying machines, which allowed Americans to traverse their country's vast expanses, became symbols of a modern, rapid, and efficient new world.

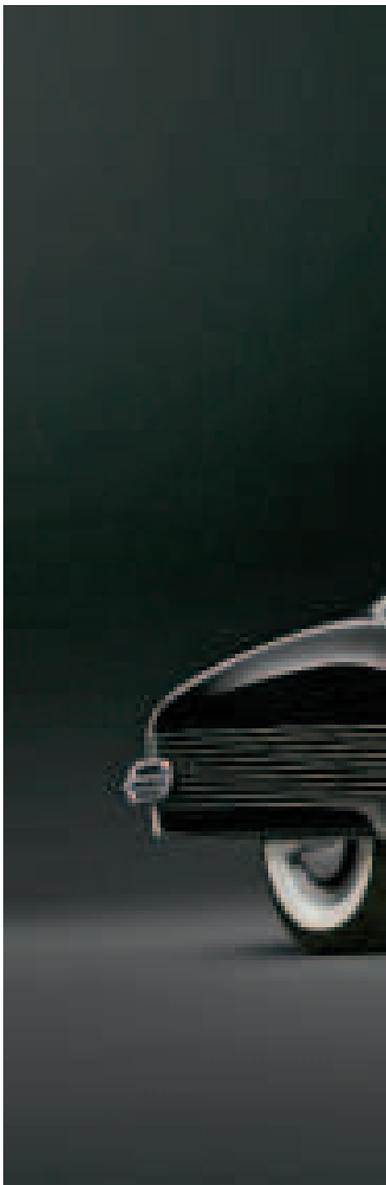
The airplane and the train engaged in a fierce competition. The railroads, which had made such a vital contribution to the development of the U.S., confronted the rounded, gleaming fuselages of the new airplanes with old-fashioned locomotives that belched smoke and noisily spurted water and steam. These behemoths were burdened with a complex of rods, gears, and pistons, all dominated by an immense horizontal boiler painted a somber black. Technology without adornment, indeed, but not in this case much admired: trains had begun to seem rather old-fashioned by the 1930s. Thus, in 1932, the Union Pacific Railroad called in William Bushnell Stout, a legendary designer and engineer in the automotive and aeronautic fields. He designed for them the Pullman *M10000*, featuring a Duralumin body with a smooth, simplified profile, the first "streamlined" train. In 1934, the Chicago, Burlington and Quincy railroad introduced the *Zephyr*, also the work of an aeronautical engineer, who covered the entire body in stainless steel. Other railroads emulated these examples, retrofitting their old locomotives and giving new ones a sleek look adapted to contemporary tastes.

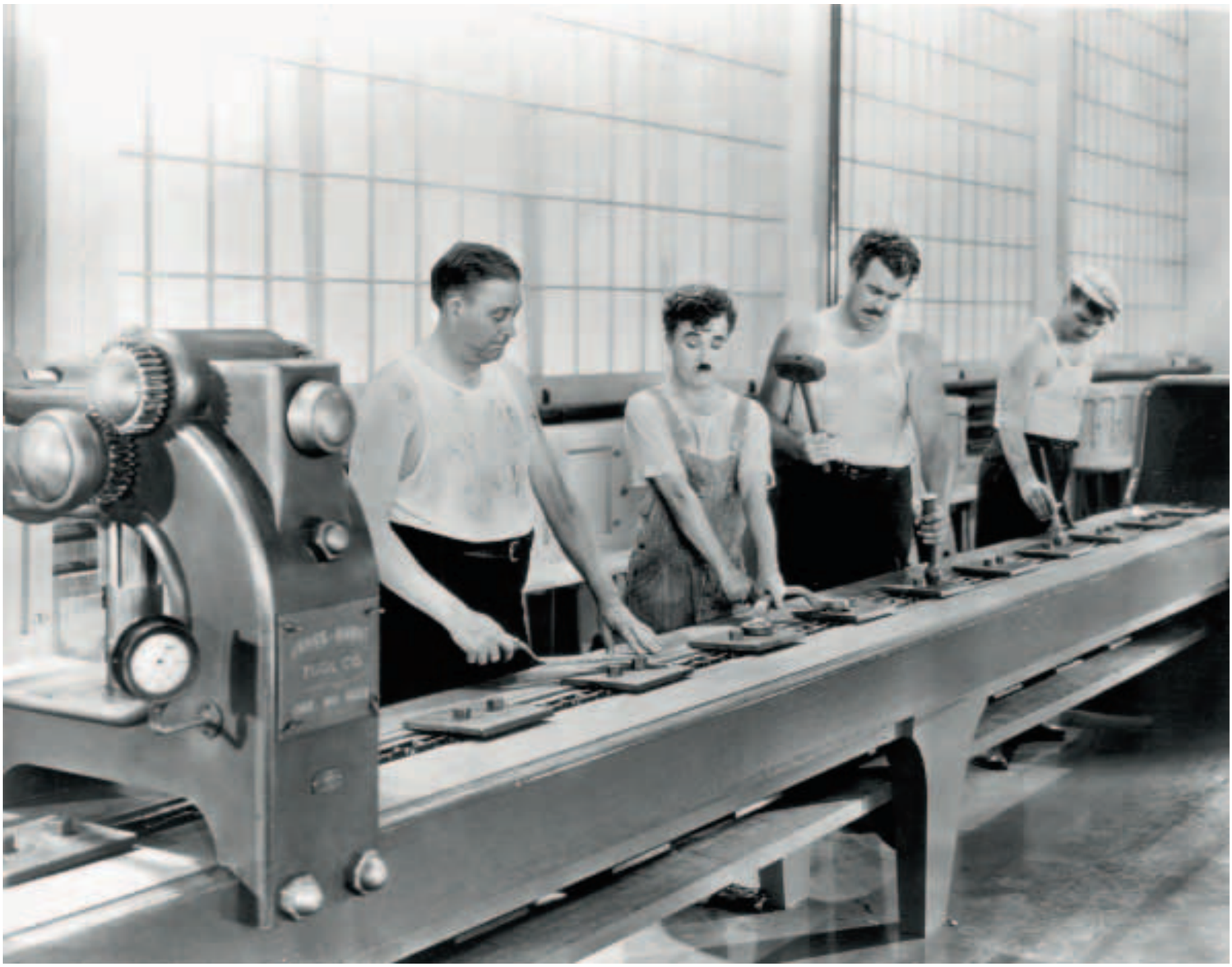
Three of America's most important avant-garde designers developed locomotives, virtually building their careers on these spectacular machines: Norman Bel Geddes, Raymond Loewy, and Henry Dreyfuss (plates 41, 42). Their locomotives were smooth, sleek, and rounded, creating an aerodynamic look that gave at least the illusion of enhanced performance. What mattered was image, communication, style—the idea of power and speed. Now trains were a match for planes!

In the 1930s, the major automakers began to alter the look of their new models as well. Cars had generally retained a tall, upright profile, but this was now replaced by sleek, rounded forms (plate 44). Manufacturers also developed concept cars to evoke consumer fantasies. One example was Buick's beautiful *Y-Job* of 1938, designed by Harley J. Earl (plate 45).

BELOW
44. **Advertisement for Buick automobiles**, 1945
Private collection

RIGHT
45. Harley Earl (1893–1969)
Buick *Y-Job*, 1938
General Motors Heritage Center, Sterling Heights, Michigan





MODERN TIMES

As exemplars of American modernity, of a society on the move, manufacturers of all kinds eagerly adopted the new visual idiom. As early as 1925, the major industrial groups were recruiting designers, sometimes as outside consultants and sometimes as employees, but always with the same objective: to increase sales. The electrical appliance maker Westinghouse called in Donald H. Donner in 1926, while Ray Patten collaborated with General Electric to design an alarm clock in the purest streamlined style, like a railroad locomotive. From 1933–35, as the country began its long emergence from the Depression and industry recovered, the design of many mass-market products was refreshed. In 1936, the industrial designer Egmont Arens created the definitive model of the Kitchen Aid food mixer, which became a classic of household design and is still being produced (plate 48). For the same company, Hobart Manufacturing, Arens designed a remarkable kitchen slicer in 1940; it was fashioned from cast aluminum and steel with fluid, aerodynamic lines (plate 47).

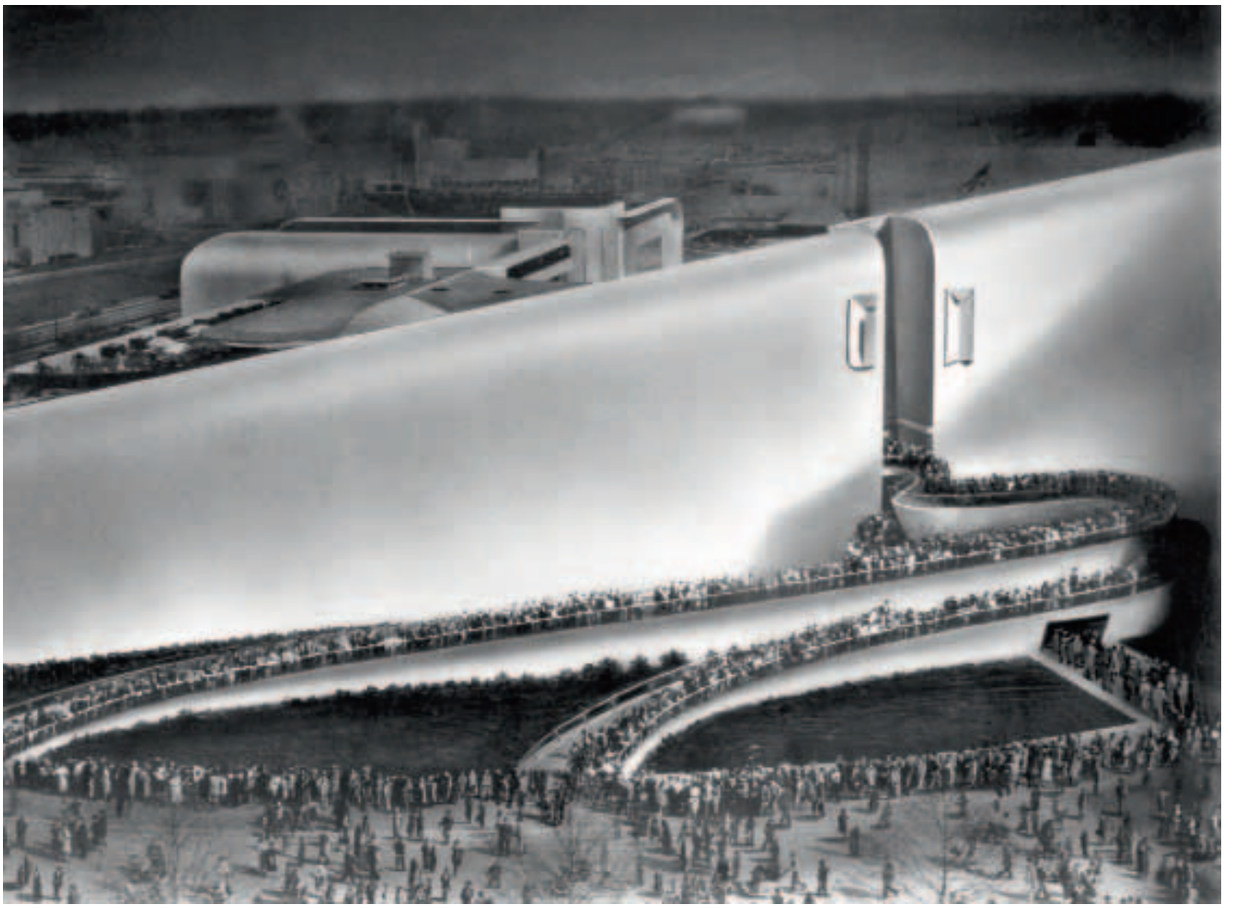
In the years preceding World War II, American design was dominated by four men: Walter Dorwin Teague (1883–1960), Norman Bel Geddes (1893–1958), the French-born Raymond Loewy (1893–1986), and Henry Dreyfuss (1904–1972). All four worked to define the field of industrial design in theory and practice, and to clarify its role in the economy. Moreover, they all established studios in New York that welcomed rising young American and European designers. Teague proved to be an astute and talented businessman, collaborating with corporations including Kodak and Texaco (plate 49). A theorist as well as a practicing designer, Bel Geddes was very conscious of the economic impact of his profession. In 1932, he published *Horizons*, a book that that would long be influential among thinkers and designers. This work endorsed the streamlined style as an apt expression of contemporary America (plate 51), and predicted that industrial design would be an important factor in the nation's growth and prosperity. Indeed, the book was an enthusiastic attempt to anticipate the future: for Bel Geddes, speed was "the cry of our era, and greater speed one of the goals of tomorrow." A designer-architect (like Teague) and a friend of Erich Mendelsohn and Frank Lloyd Wright, Bel Geddes designed the General Motors pavilion at the 1939 World's Fair in New York (plate 50). Within this spectacular structure, called Futurama, visitors rode a conveyor belt over an enormous diorama of a possible

OPPOSITE
46. **Film still from Charlie Chaplin's *Modern Times***, 1936

BELOW
47. Egmont Arens (1889–1966)
Slicing machine model *410*, c. 1940
Made by Hobart (U.S.)
Cast aluminum, steel, rubber
Museum of Modern Art, New York

OVERLEAF
48. Egmont Arens (1889–1966)
Kitchen mixer model *K 45*, 1962
Made by Kitchen Aid (U.S.)
Musée National d'Art Moderne, Centre Georges Pompidou, Paris

PAGE 49
49. Walter Dorwin Teague (1883–1960)
Camera model *800*, c. 1957
Made by Polaroid Corporation (U.S.)
Cooper-Hewitt, National Design Museum, New York



future America, a tantalizing vision of gleaming cities, suburbs, and freeways.

During the 1930s, the aerodynamic look influenced a vast array of manufactured products aimed at the American mass market. Toasters, refrigerators, radios, photographic equipment, lamps, and office supplies all assumed rounded forms with a strong emphasis on horizontality. Sometimes they resembled something quite other than themselves: Loewy's pencil sharpener of 1933 is a literal quotation of aeronautic design (plate 52).

In the U.S., streamlined design overlapped with "nautical moderne" in architecture. Between 1935 and 1940, the geometric forms of art deco buildings gave way to stylistic elements borrowed from transatlantic liners, including flat roofs, an emphasis on horizontality, rounded corners, and decorative schemes with clearly marked parallel bands. This taste also carried over into the design of certain products—radios, for example. Nautical moderne had an influence in Europe, as well, which is visible in the architecture and furniture of the years immediately preceding World War II.

Between the two world wars, at a time when the country was shaken by a major economic crisis, American manufacturers and designers were able to develop an original and effective formal language, popular in its appeal, and structured around the theme of speed and power. This streamlined look, the American style of 1930 to 1940, would endure in Europe in the years immediately following the war, as a symbol of the enviable American way of life. In the flourishing U.S. of the 1950s, the streamlined look transformed itself to evoke anew the spirit of success, progress, and dynamism: it became the "rocket style," which made abundant use of colored plastics and chrome trim. The earlier

"American style," reduced to a generalized fluidity and roundness of form, still persisted for a time in a postwar Europe in search of models, notably in the British automobile industry and among manufacturers of "modern" consumer conveniences. But now, in the 1950s, design, so long shaped by the dialogue between Europe and the United States, went in search of new territories.

OPPOSITE, TOP
50. Norman Bel Geddes (1893–1958)
Illustration of Futurama, the General Motors pavilion at the New York World's Fair, 1939
General Motors Heritage Center, Sterling Heights, Michigan

OPPOSITE, BOTTOM
51. Norman Bel Geddes (1893–1958)
***Soda King* siphon bottle**, 1938
Made by Walter Kidde (U.S.)
Cooper-Hewitt, National Design Museum, New York

ABOVE
52. Raymond Loewy (1893–1986)
Office pencil sharpener, 1933
Prototype
Private collection

THE UNITED STATES

PENNY SPARKE

PRECEDING PAGE
53. Charles Eames (1907–1978) and Ray Eames (1912–1988)
***DAR* (*Dining Armchair Rod*) chair**, 1948–50
See plate 87.

OPPOSITE
54. **Electric toaster**, c. 1910
Made by General Electric (U.S.)

Design must play a central role in any discussion of the United States in the period after 1945. In the nineteenth century, the U.S. had been a leader in mass production and the development of advanced technology, and in the interwar years it had helped to create the modern profession of industrial design, which was emulated around the globe. Building on these accomplishments, the country went on, after the war, to define the modern consumer society, in which design played an important role, and to export this lifestyle to the rest of the world. The U.S. led the way in designing vehicles and kitchen appliances, and in making the "dream home" the key site of consumer aspiration and desire (plate 54). Its leading designers of the postwar era—Charles and Ray Eames, Eero Saarinen, George Nelson, and later Robert Venturi, Michael Graves, and others—acquired international reputations and became household names.

Postwar design in the U.S. built on two parallel traditions. One derived from the interwar focus on the mass production of technological objects, such as automobiles and refrigerators. It that context, the role of design was to make products more attractive in order to increase consumer desire. The evocative aesthetic of streamlining developed out of this objective in the 1930s, and after 1945, even more evocative forms were developed in the areas of automotive design and kitchen gadgets. The other strand of American design borrowed the simple, geometric forms of European modernism. Manifesting itself first in the traditional decorative arts—furniture in particular—this approach engendered an upmarket, sophisticated domestic style epitomized by the work of Charles Eames. While streamlined objects found their way onto the streets and into the office and the kitchen, European-inspired designs were much more at home in the living room.

In the years after 1945, the U.S. exported a model of modern living that combined affluence with technological utopianism and had design at its core. Leading the way in the space race of the 1950s and '60s, the U.S. persuaded the world that the future lay in the application of technology to our everyday lives. In the twenty-first century, the U.S. has once more taken the lead, this time in the development of advanced electronics and in the application of "design thinking" to contexts beyond the designed object. Most significantly, the U.S. has reinvented the very notion of design several times over the last century and a half. More than any other country, perhaps, it has established design as a flexible, responsive concept that can meet the needs of the day.

DESIGN BEFORE 1945

In the international history of industrial design, the 1920s and '30s in the U.S. represent a crucial period. It was then that the role of the consulting industrial designer came into being, as it became clear that design constituted a form of added value, with the power to dictate commercial success or failure. The background to this thinking lay in the nation's earlier success in mass production, which has been charted by the historian of technology David A. Hounshell in his book *From the American System to Mass Production, 1800–1932: The Development of Manufacturing Technology in the United States*. Hounshell starts with the changes that took place in U.S. arms production in the nineteenth century and continues through automobile manufacturing in the 1920s, taking in clocks, sewing machines, bicycles, and agricultural machinery along the way. He argues that Henry Ford's *Model T* represented a system of pure mass production (plate 55), which, however, lasted only twelve years, until Alfred P. Sloan at General Motors

RIGHT
55. ***Model T* Ford**, 1908

BELOW
56. ***Model A* Ford**, 1920

introduced flexible mass production in response to the need for product differentiation.

Henry Ford's system of mass production depended, above all, on the concept of standardization. His famous dictum that people could have any color "as long as it's black" led to the idea of a widely available basic car, made from standardized components that could be easily manufactured, assembled, and repaired. The status that the Model T conferred on its purchasers was linked solely to the fact that they had exchanged their horse for an automobile. It did not matter in the context of that first purchase what the object looked like, merely that it was affordable. When it came to the acquisition of a second car, however, the principle of outdoing one's neighbor came into play. Then it became necessary to provide some form of added value through design. At that point, General Motors' principle of flexible mass production came to the fore. In response, Ford placed his philosophy of manufacturing under review, closing his plant for a year in order to readjust his production processes and add design to the mix. The result was the Model A Ford (plate 56).

Hounshell's text concludes just at the point when the industrial designer (better known as a stylist at that time), in the form of Harley Earl, was parachuted into General Motors to create a level of differentiation for its automobiles. Hounshell's study emphasizes an important moment in the story of modern design, one in which technology and culture came into direct conflict with each other. In the event, culture won the day, and design provided the means by which the two forces could achieve a workable compromise. From that point onward, the new mass-production industries were sensitive to the vagaries of the fashion system. Understanding that they had to accommodate art within their rational operations, manufacturers came to value the role of the designer.

THE EMERGENCE OF THE DESIGN PROFESSION

The competition between Ford and General Motors in the mid-1920s marked an important moment in the emergence of the industrial designer. Alfred P. Sloan, vice president of General Motors, hired the coach builder Harley Earl to make his cars look more appealing. This strategy was rapidly emulated by the manufacturers of other new technological goods, including domestic appliances like refrigerators (plate 57), office machines, telephones, and radio sets. Challenged by the Great Depression, these manufacturers decided to inject artistic styling into their products in an attempt to fight off their competitors. Raymond Loewy's 1929 design for the Gestetner Duplicator is a case in point:

57. **Advertisement for the *Shelvador* refrigerator, manufactured by Crosley**, 1936

LEFT
58. Raymond Loewy
(1893–1986)
Duplicator, 1929
Made by Gestetner (U.K.)
Victoria and Albert Museum,
London

BELOW
59. Walter Dorwin Teague
(1883–1960)
Kodak Bantam Special camera, c. 1936
Made by Eastman Kodak (U.S.)

OPPOSITE
60. Henry Dreyfuss
(1904–1972)
Model *302* telephone for Bell Telephone Laboratories, 1937
Made by Western Electric (U.S.)
Yale University Art Gallery,
New Haven, Connecticut

he modernized that rather crude-looking piece of office machinery by adding a smooth body shell (plate 58).

The emergence of American industrial design in the late 1920s and '30s has been documented by a number of historians. Jeffrey Meikle's 1979 book *Twentieth Century Limited: Industrial Design in America, 1925–1939* gives one account of the development of the design profession. His analysis focuses on the fact that "technological innovation and mass production brought former luxury items to people at lower income levels" and on the aspiration of industrial designers to inject a level of modern luxury into new goods. It was no coincidence that several of the leading industrial designers had begun their careers in advertising graphics and department stores, which, in emulation of French models, had been quick to embrace the modern style. Loewy, for example, had worked at Saks Fifth Avenue in New York, designing the elevator attendants' uniforms, among other things.

In his book *All Consuming Images: The Politics of Style in Contemporary Culture,* Stuart Ewen approaches the emergence of American industrial design from a cultural perspective. He claims that industrialization "displaced the customary fabric of culture" and that the marriage between art and commerce offset that displacement by bridging the gap between production and consumption.

The best-known American industrial designers of the day—among them Loewy, Walter Dorwin Teague (plate 59), Henry Dreyfuss (plate 60), and Norman Bel Geddes (plate 61)—penned their own accounts of their careers, in which they stressed their perception of themselves as idealistic modernists. Linking themselves to the modern European architectural movement allowed them to separate themselves from the commercial context that had created them. In his 1940 text *Design This Day: The Technique of Order in the Machine Age*, Teague, for example, makes repeated references to Le Corbusier, Walter Gropius, and Mies van der Rohe, suggesting, perhaps, that his name should be added to the list.

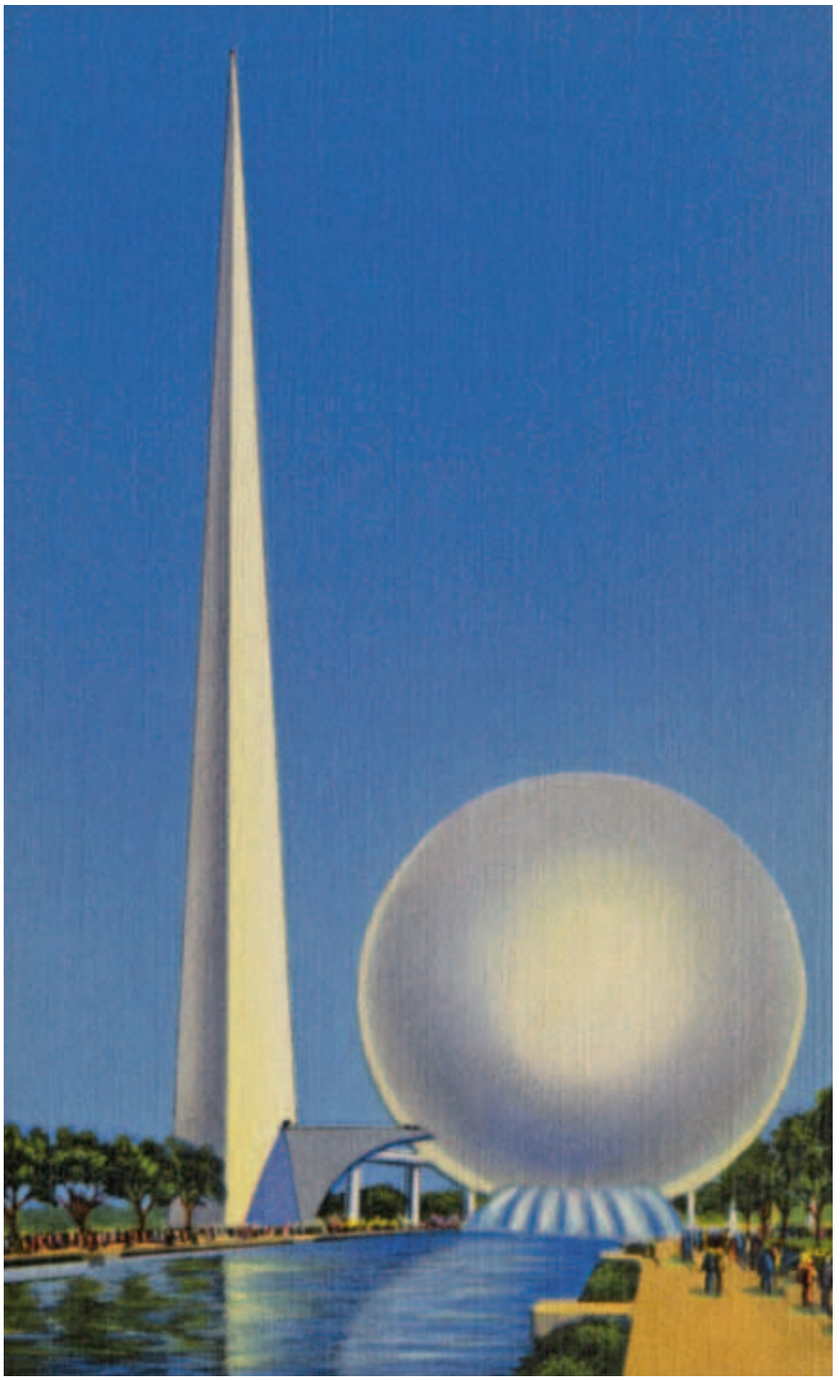
Most accounts of the work of the American consultant designers of the 1930s concentrate on their advocacy of dramatic streamlined forms depicting the future and play down their market-oriented pragmatism. However, the majority of their time was, in reality, devoted to redesigning consumer goods. If the consultant designers were heralded by the press of the day—and *Time* and *Life* magazines did showcase their work and report on the details of their daily lives as if they were Hollywood stars—it must be realized that their celebrity status was crucial to the manufacturers who

BELOW
61. Norman Bel Geddes (1893–1958)
***Patriot* radio**, c. 1940
Made by Emerson Radio Corporation (U.S.)
Victoria and Albert Museum, London

OPPOSITE
62. **Postcard showing the Trylon and the Perisphere at the 1939 New York World's Fair**

employed them, bestowing as it did an instant added value on their products. The designers themselves became brands, and their names were used as a form of product endorsement. In turn, the products became advertisements for the designers.

Industrial designers quickly became an intrinsic component of the American commercial system that had engendered them. Their arrival marked the moment when "designer culture"—that is, the attribution of added value to an object, image, or environment because it has a well-known designer's name attached to it—came into being. Such was the power of the first generation of American consultant designers that the application of their names to the design of a train, or of a biscuit, bestowed an instant aura on those artifacts. A number of explanations have been offered for this phenomenon. The most persuasive suggests that it represents consumers' need to construct their identities through the acquisition of commodities associated with the name of an individual known to possess a high level of taste. This explanation builds on the fact that, in the years before industrialization and the rupture between production and consumption, the upper classes had been guaranteed social status through the acquisition of custom-made, handcrafted artifacts. The association of a name with otherwise anonymous, mass-produced goods could restore to them a certain individualism. And as the numbers of standardized products increased, the need to individualize them became even more pressing. The consultant designers were acutely aware of the diversity of consumer tastes in the marketplace. Bel Geddes, for example, acquired his knowledge of the market by undertaking extensive consumer surveys, and he proposed four different radio designs to the Philco Radio Company—the *Highboy*, the *Lowboy*, the *Lazy-boy*, and a radio-phonograph



combination—each styled with a different market in mind.

While the automotive industry usually preferred to keep its stylists in-house and maintain their anonymity, many other new industries engaged in producing consumer goods, including domestic appliances and office machinery, benefited from bringing in generalist consultant designers who had a special overview of the sector as a whole. The model of consultant design that emerged in the U.S. starting in the late 1920s was rapidly emulated by other countries that wished to embed design in their emerging industries and thereby increase consumer desire. And in the years after 1945, the dissemination of this model of design was one of the strategies of American cultural imperialism.

THE 1939 NEW YORK WORLD'S FAIR

The U.S. entered World War II in 1941, following the Japanese attack on Pearl Harbor. Only two years earlier, however, it had been celebrating its achievements in technology and design, and looking forward to an optimistic future in which those two forces would take the American people to a new level of material affluence. The 1939 New York World's Fair, held in the borough of Queens, across the Hudson River from Manhattan, was conceived as a celebration of industrial achievement. Its main theme was "Building the World of Tomorrow," and the key question addressed was where the products and processes of modern civilization were leading. The industrial designer, rather than the architect, was the hero of the event, and the obvious figure to visualize America's future. As Walter Dorwin Teague, who was on the fair's board, explained, "Because the industrial designers are supposed to understand public taste and be able to speak in a popular tongue as a profession and they are bound to disregard traditional forms and solutions and to think in terms of today and tomorrow, it was natural that the Board of Design should turn to them for the planning of the major exhibits in which the theme of the Fair is to be expressed." Teague was personally responsible for the design of the Ford, U.S. Steel, Eastman Kodak, and National Cash Register pavilions.

The style of the temporary pavilions was influenced by product streamlining, and smooth, rounded surfaces were widely employed. The 610 foot tall (186 m) Trylon and 180 foot tall (55 m) Perisphere visually dominated the event (plate 62). The avenues that radiated out from the white center of the site were surfaced with vivid colors that grew darker as they moved toward the periphery. Dreyfuss designed the Perisphere's interior exhibit, *The City of Tomorrow*. Transport featured strongly at the fair, with an emphasis on the future role of new road and rail systems. Loewy's *Transport of Tomorrow* exhibit included a streamlined taxi, an ocean liner, cars, and trucks, as well as a rocket ship that was predicted to travel between New York and London in 1960. Bel Geddes showcased the results of his transportation experiments in the General Motors pavilion, Futurama. His *Highways and Horizons* exhibit envisioned a network of motorways covering the U.S. Together, the industrial designers created a popular, futuristic fantasy, projected forward from the technological and design advances already achieved, that captured the public's imagination in an unprecedented way. Little did they know that, before their dream could be realized, the world was to experience a hiatus during which all progress would be refocused in a new direction, namely victory in war.

BELOW
63. Charles Eames (1907–1978)
Leg splint, 1942
Made by Evans Products Company, Venice, California (U.S.)
Molded plywood
Museum of Modern Art, New York

OPPOSITE
64. ***Stratoliner* passenger plane**, 1940
Made by Boeing (U.S.)

WARTIME DEVELOPMENTS

The war years were crucial in preparing the U.S. for the future, particularly for what came to be seen in Europe as its dominance of postwar design. Most significant was the leap forward that occurred in the invention of new materials, and of new applications for old ones (plate 63). Much has been written about nylon (mostly in the context of the sheer leg coverings that became cheap substitutes for silk stockings), but little has been said about its use in parachutes. Aluminum was widely employed in the war effort, and women were asked to part with their saucepans so that the metal could be melted down and repurposed. Products that had hitherto depended on aluminum had to make do with substitute materials. For example, Parker's *Vacumatic* pen, which had previously featured an aluminum plunger, was redesigned with a celluloid one.

The streamlined forms of prewar automobiles were applied to aircraft fuselages. Take for instance Boeing's *Stratoliner*, introduced as a commercial craft sixteen months before the U.S. entered the war but given over to military use (plate 64). This plane was larger than any that had come before. Its cabin, nearly twelve feet (3.7 m) wide, was big enough to provide berths for overnight travelers. The *Stratoliner* represented the new world of air travel and was admired internationally.

The consultant designers of the interwar years played an important, albeit low-key, role during the conflict, mostly waiting for an era of peace in which they could once again display their talents. One young designer—Eero Saarinen, the son of the Finnish architect Eliel Saarinen who headed the Cranbrook Academy of Art—is known to have had a significant part in the war effort. He was one of a handful of designers employed by the U.S. Office of Strategic Services, formed in 1942 and run by William Donovan. As head of the Special Exhibitions Section, Saarinen used his skills to make models for new weapons and devices, as well as props for the White House war room.

Wartime design focused, therefore, on the inventive reuse of materials and artifacts and the development of new ones, as well as on the strategic application of design techniques. While it did not necessarily produce any new icons, it helped in the war effort, and in preparing society and designers for the dramatic shift that was to occur in the years after 1945.


NX 19901
NX 19901

LEFT
65. **Russel Wright holding a clay model of a chair designed and manufactured for a national furnishings program**, c. 1940

BELOW
66. **George Nelson posing with the *Action Office System* manufactured by Herman Miller**, c. 1964
Vitra Design Museum, Weil am Rhein, Germany

OPPOSITE
67. **Advertisement for Orlon acrylic fiber, manufactured by DuPont**, c. 1950

THE MODERN CONSUMER SOCIETY

A sophisticated consumer society emerged as a significant sector of the population sought modern homes, cars, and household goods with which to express its new affluence. The "American dream" represented a new world of plenty in which consumer goods played a key role. Inevitably, designers were needed to create them. Viewed from abroad, the new homes that occupied the suburban areas around American cities stood for the country's perceived cultural, political, and economic superiority, and in the context of the Cold War, the U.S. was quick to exploit that fact by exporting its vision of domestic life as widely as it could.

In 1953, for example, Edgar Kaufmann Jr., a curator at the Museum of Modern Art (MoMA) in New York, developed an exhibition entitled *American Design for Home and Decorative Use* for display in Finland. The names of well-known American designers appeared in the catalog—among them Eero Saarinen, Charles Eames, Don Wallance, Eva Zeisel, Harry Bertoia, Russel Wright (plate 65), and George Nelson (plate 66). This exhibition was one instance of the U.S. using a cultural program to further its economic agenda in Europe. Indeed, since 1951 MoMA had played a key role in promoting the U.S. as a style leader in Europe. The underlying message was that Europe should embrace the American model, especially its emphasis on the modern home and its accessories as *the* markers of the modern consumer society (plates 68–72). The U.S. saw consumerism as something to be celebrated, a sign of affluence and part of a modernizing strategy that depended strongly on the power of design. The emphasis was firmly placed on the twin themes of innovation and U.S. superiority. On one level, the strategy was successful, as American consumerism and the mass material culture that emanated from it were widely embraced in Europe. On another, it provoked a strong anti-Americanism that, by the mid-1950s, manifested itself in a number of different places across Europe.

Initiatives such as Kaufmann's exhibition rode on the back of the Marshall Plan of 1948–52, under which the U.S. poured large amounts of financial aid into Western Europe in order to strengthen its industrial sector and create a barrier against the Eastern bloc. This program played a key role in the reconstruction of postwar Europe.

While consumer demand continued to set the pace for design innovation in the U.S. in the years after 1945, it was the speed of technological change that made such innovation possible. New production technologies dramatically influenced the way in which manufacturing was organized. Mass production became the common means of ensuring that consumers had an abundance of goods available to them at prices they could afford. In addition, technology joined with design in a hungry pursuit of new materials with which

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BELOW
68. **Advertisement for DuPont paints**, c. 1950

OPPOSITE
69. Greta von Nessen (1900–1978)
***Anywhere* lamp**, 1951
Made by Nessen Studio Inc. (U.S.)
Aluminum, enameled steel
Museum of Modern Art, New York

to meet consumers' growing desire for novelty and industry's demands for ever cheaper means of manufacturing goods. It continued to be the designer's task to ensure that these new materials acquired forms and meanings both appropriate and desirable.

The period after 1945 saw the beginning of a new phase of industrial expansion in the Western world, and an intensification of the corporate globalism that was to become such a strong feature of late twentieth- and early twenty-first-century culture. It was characterized by the consolidation of the large American corporations formed in the early part of the century—General Motors, DuPont, and General Electric, among many others—and their increasing presence in Europe and beyond. Many of the technological breakthroughs that had occurred during the war years were now exploited commercially, and initiatives put on hold by the war were resumed. As an in-house DuPont publication explained, "postwar America had new needs and made new demands. It was to satisfy these that the company now turned its attention. The program included modernizing plants and adding manufacturing facilities to fill expanded markets for pre-war product lines. Also it encompassed facilities to develop new processes and products which had been delayed by the war." After the war, DuPont moved into the development and manufacture of a range of new synthetic fabrics such as Orlon and Dacron, in addition to the already familiar nylon (plate 67). DuPont's experience echoed that of corporations in many other industries, including the automakers General Motors, Ford, and Chrysler, as well as the large-scale manufacturers of household goods, such as the Tupperware Corporation and General Electric. Although they were all committed to standardized mass production, their growing orientation toward the consumer required them to become increasingly designled and to offer the market a wide variety of goods. In 1957, for example, one American furniture manufacturer offered "twenty different styles of standard sofas . . . eighteen styles of love seats and thirty-nine upholstered chairs." Inevitably they ranged from traditional to modern in style. Some of the companies that produced consumer goods—including General Electric, Westinghouse, and Chrysler—also derived an extra level of economic stability from military contracts.

BELOW
70. **Advertisement for a General Electric refrigerator with a freezer compartment**, 1953

OPPOSITE, TOP
71. Russel Wright (1904–1976)
***American Modern* dinnerware**, 1937
Made by Steubenville Pottery Company (U.S.)
Glazed earthenware
Metropolitan Museum of Art, New York

OPPOSITE, BOTTOM
72. Don Wallance (1909–1990)
***One* flatware**, 1952
Made by H. E. Lauffer (Germany)
Stainless steel
Museum of Modern Art, New York

Smart Riding Habit —

"RIDE THE ROCKET!"

Like to meet the most glamorous of all the "Rockets"? Just pay a visit to your Oldsmobile dealer and ask for an introduction . . . to the "98" *Holiday Coupé*. Once you've admired those dream-car lines . . . once you've relaxed in that luxury interior . . . you'll lose your heart for sure. But wait! The real thrill comes when you take the wheel. When you feel the surging power of the "Rocket" Engine . . . the carefree smoothness of Hydra-Matic Drive* . . . the gliding ease of Oldsmobile's "Rocket Ride." Here indeed is a "smart riding habit" . . . a very good habit for you!

"98"

"ROCKET" OLDSMOBILE

OPPOSITE
73. **Advertisement for the Oldsmobile *Rocket 98***, 1951

BELOW
74. **Students at Black Mountain College, North Carolina**, 1945

THE DESIGN INFRASTRUCTURE

By the late 1940s, design was not just the means by which new consumer goods reached new audiences; it had also developed its own infrastructure and was becoming a force to be reckoned with. Professional designers had begun to organize themselves in the late 1920s in order to protect their creative efforts. In 1944, fifteen well-known designers came together to create the Society of Industrial Designers, whose first president was Walter Dorwin Teague.

Design education was also well established by the early postwar years. One important school, Black Mountain College, had been established in North Carolina in 1933 (plate 74). Although its teaching had a fine and performing arts emphasis, the important American designer and inventor Buckminster Fuller was an early alumnus, while the Bauhaus's preeminent textile designer, Anni Albers, was a member of its teaching staff. In fact, a number of the Bauhaus designers who had fled Germany in the 1930s became influential in the U.S. The "New Bauhaus," founded in Chicago in 1937, clearly drew on the work of its German predecessor; former Bauhaus teacher László Moholy-Nagy was its founding director. In 1944, it changed its name to the Institute of Design. Gradually the European staff was supplemented by Americans, and in the 1950s the school became part of the Illinois Institute of Technology. The Cranbrook Academy of Art, established in 1932, also played an important role in this context. Set up by the Finnish architect Eliel Saarinen, its alumni included his son Eero, Charles and Ray Eames, and Florence Knoll.

The imported ideas of European modernism remained an important component of postwar American design. Their influence was felt most strongly in the areas of architecture, furniture, and the decorative arts. This contrasted significantly with the distinctively American sphere of product and automobile design, which was more populist and focused on the idea of "dreams that money can buy" (plate 73). Not surprisingly, these two approaches—one oriented toward high culture, and the other toward a mass audience—frequently came into conflict. Where the consuming public was concerned, however, it was merely a matter of stylistic choice. While the Bauhaus look suited the new open-plan lifestyle of the domestic living and dining areas, the kitchen and the garage housed goods that were less high-minded and more stylistically evocative. Automobiles and refrigerators boasted bulbous metal forms, while dining chairs featured slim, tapered shapes of Scandinavian origin.

75. Conrad Buff III (1926–1989), Calvin Straub (1920–1998), and Donald Hensman (1924–2002) ***Case Study House No. 20*, Altadena, California**, 1958
Photograph by Julius Schulman
J. Paul Getty Trust Research Institute, Malibu

THE AMERICAN KITCHEN

By the 1950s, the American dream was unequivocally evoked by the suburban home (plate 75). Popular magazines printed in strong colors featured loving married couples and whole families living the ideal life in their horseshoe-shaped kitchens. Gone was the small, all-white laboratory kitchen of the interwar years. Instead, 1950s open-plan kitchens, managed by glamorous housewife-hostesses, featured bulbous refrigerators in a range of colors. In 1955, Frigidaire, for example, offered its refrigerators in "Sherwood green," "Stratford yellow," and "Snowy white."

These could be accompanied by floral wallpaper and an array of new, equally colorful streamlined gadgets, from mixers to toasters. Postwar mixers were among the most stylized products in the world. By the 1950s, a wide range of manufacturers, including Sunbeam, Dormeyer, Hamilton Beach, Westinghouse, KitchenAid, Montgomery Ward, and Universal, had entered into the highly competitive marketplace for mixers. The iconic Sunbeam *Mixmaster* owed a huge debt to contemporary automobile styling, especially door-handle designs (plates 76, 77).

One product, Tupperware, may serve to represent a number of characteristics of the American consumer society of the 1950s. While the polyethylene food containers made by the Tupperware company were simple and functional, rather than overtly stylish (plate 78), they played an important role in the public acceptance of plastic goods.

Tupperware was invented by Earl Silas Tupper, a former tree surgeon who moved into the plastics industry and set out to create an airtight food container. His aim was to ensure that leftover food could be stored in refrigerators, thereby avoiding waste. The simple products he created were not intended for display, therefore, but rather to be stored away out of sight. As such, they could not be marketed on the basis of their appearance. Their most important selling point was, in fact, the seal joining the lids to the containers to make them airtight, a design feature that could be recognized only by the noise emitted when they were opened, dubbed the Tupperware "burp."

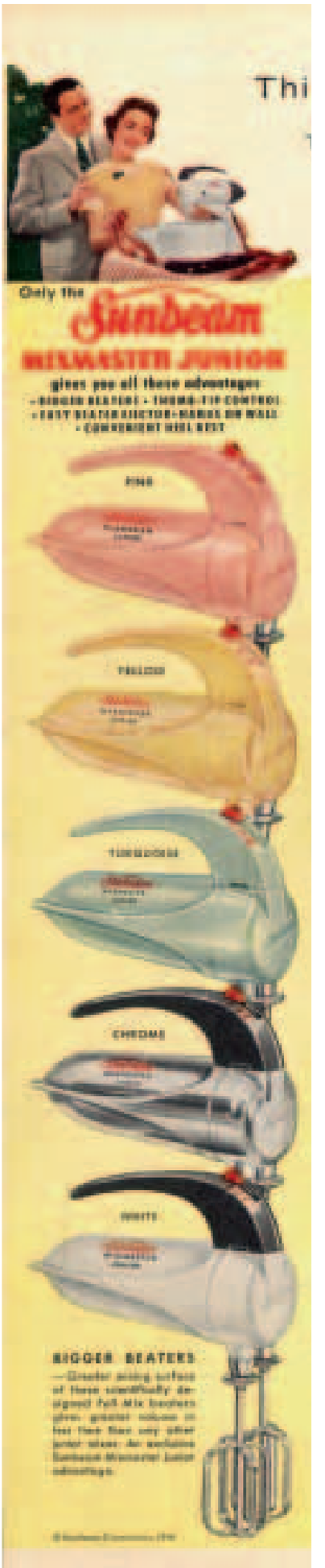
The containers' near invisibility provided a serious selling challenge that was addressed in the early 1950s by one of the company's door-to-door saleswomen, a single mother named Brownie Wise. Her strategy was to completely sidestep the retail sector and develop a method of direct selling that involved working face-to-face with female consumers in their own homes.

By the middle of the decade, the Tupperware party had taken shape, and countless suburban hostesses were selling Tupperware items at gatherings in their living rooms (plate 79). This subtle sales strategy built on the shift in emphasis, initiated in the prewar years, from the housewife's identity as homemaker and consumer to her new one as hostess. Wise "Tupperized" suburban women by providing them with what they needed most—a social life, rather than food containers—and by building on their desires. At first Tupperware items were bought as gifts, but gradually women felt able to purchase them for themselves. To offset the inherent rationality (waste-saving) of the Tupperware product and transform them into objects of desire, Wise introduced a high level of glamour into the party culture she promoted, setting the pace herself by wearing fashionable clothes, upholstering her furniture in flamingo pink, and driving a pink Cadillac. Wise, in effect, designed an image and a lifestyle for Tupperware, which women bought along with these simple plastic goods.

In 1956, like the Jeep before it, the neutral Tupperware container was selected as an item of "good design" by the curators at MoMA. By that time, it had come to be seen, in the words of Alison J. Clarke, as a "shining beacon of hope in a period defined by an unprecedented rise in mass consumption and a perceived decline in mass consumer taste." This unobtrusive, practical object had apparently reversed that trend and repositioned the designer-engineer, rather than the popular stylist, as the hero of the modern world. However, MoMA's validation of the Tupperware container ignored the fact that its success was due to its novel method of marketing rather than the inherent effectiveness of its simple design.

BELOW
76. ***Mixmaster* stand mixer**, 1953
Made by Sunbeam Corporation (U.S.)
Science Museum, London

RIGHT
77. **Advertisement for the Sunbeam *Mixmaster Junior***, 1956



LEFT
78. Earl S. Tupper (1907–1983)
Milk jug and water jug, 1946
Made by Tupper Corporation (U.S.)
Polyethylene
Museum of Modern Art, New York

BELOW
79. **Tupperware party, Sarasota, Florida**, 1958
Museum of Modern Art, New York

BELOW
80. **Bill Mitchell (left) and Paul Gillian with a model of the *Firebird IV* in the General Motors pavilion at the 1964 New York World's Fair**
General Motors Heritage Center, Sterling Heights, Michigan

OPPOSITE, TOP
81. **Advertisement for General Motors' Pontiac brand**, 1958

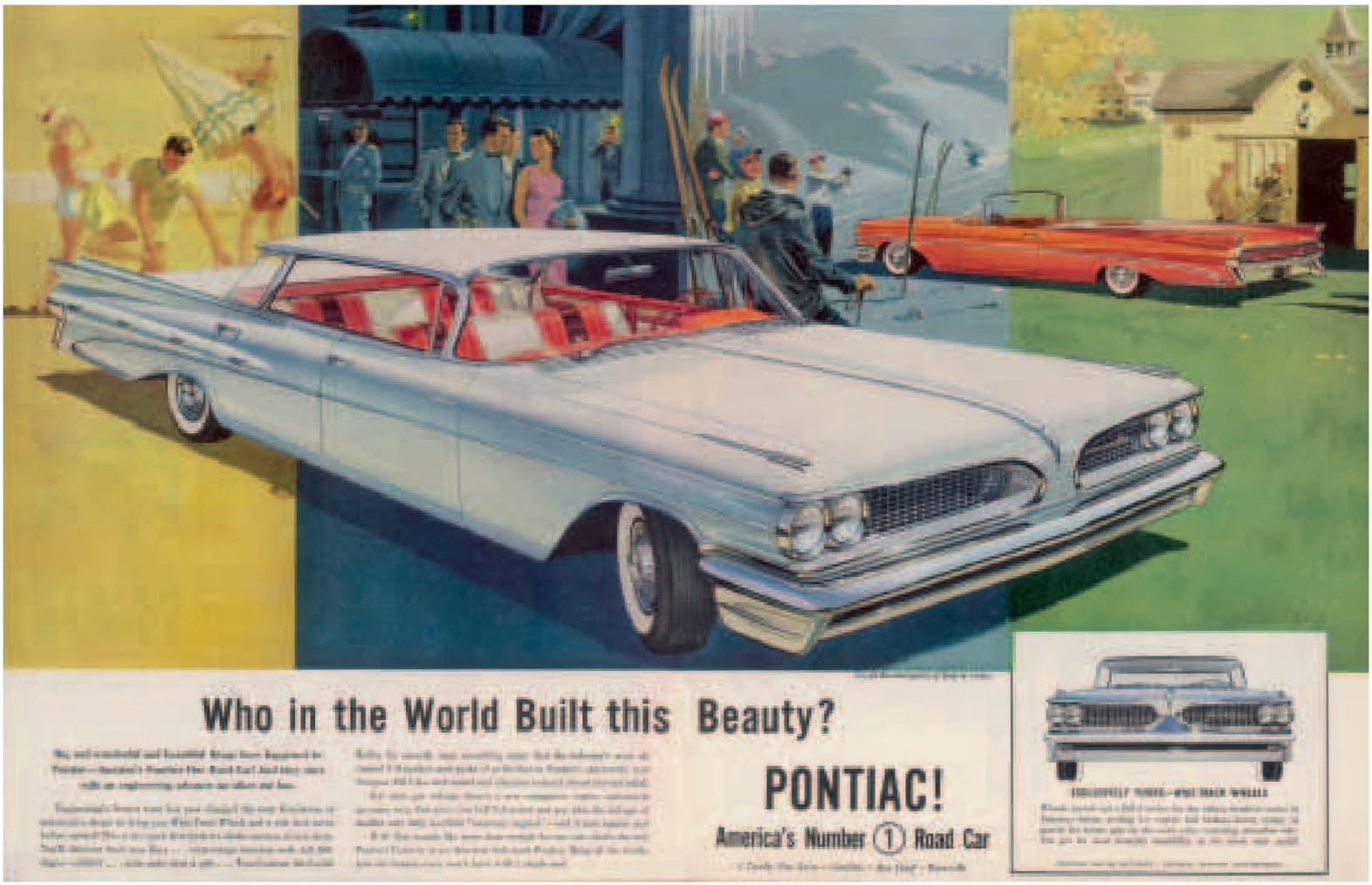
OPPOSITE, BOTTOM
82. **Advertisement for the Studebaker *Commander***, c. 1950

THE AUTOMOBILE INDUSTRY

The automobile played a major role in the expansion of the suburbs in the postwar years. Every housewife had to have a car to do the shopping, while her husband drove to work on the new highways. Increased affluence made the purchase of a car possible for more people than ever before

Even more than the creators of household gadgets, the American automobile designers of the 1950s took the idea of styling to its limits and were responsible for some of the most visually extreme products of the era. While some independent companies—Kaiser Frazer, Tucker, and Studebaker—produced striking cars in the early postwar years (plate 82), the leading forces in automotive design were General Motors, Chrysler, and Ford. Competing neck and neck from the mid-1950s onward, these companies incrementally added extra features to their cars in the battle to attract customers. The add-ons included more chrome trim and increasingly stylized tail fins, taillights, and radiator grilles, inspired by jet and rocket imagery; technical novelties, like power steering and electric windows; and luxurious interior amenities such as beauty accessories, drink cabinets, and cigarette lighters (plate 81). The designers created a technological utopia that was enormously attractive to a generation living in the early days of space exploration and believing in the redemptive power of modern technology. Many of them had worked in aeronautics during the war, and some had served apprenticeships in Harley Earl's styling section at General Motors. Typically (with the exception of Raymond Loewy for Studebaker) automobile designers worked on an in-house, rather than a consultancy, basis. Virgil Exner, Bob Bourke, Bill Mitchell, George Walker, Eugene Boudinat, Howard Darrin, and Alex Tremulis (most of them unknown to the general public, as it was the name of the car, not its stylist, that was advertised) are the among the designer-heroes of the era (plates 80 and 83).

Earl maintained his position as the leading automobile designer of the day. He was heavily influenced by jet fighters and space travel, and believed that getting into a car should be like going on vacation. It was he who introduced the tail fin, in the 1951 Buick *LeSabre* concept car, named after the F-86 Sabre fighter jet (plate 84). Earl also developed the curved windshield, which was inspired by airplane cockpits. His pièce de résistance was the 1959 Cadillac *Eldorado* (plate 85), whose huge fins sported "rocket" taillights.


Who in the World Built this Beauty?
PONTIAC!
America's Number (1) Road Car

BELOW, TOP
83. Alex Tremulis (1914–1991)
Tucker *Sedan*, 1948
Made by the Tucker Corporation (U.S.)

BELOW, BOTTOM
84. Harley Earl (1893–1969)
Buick *LeSabre* convertible, 1951
Made by General Motors (U.S.)

OPPOSITE
85. Harley Earl (1893–1969)
Cadillac *Eldorado* (detail of tail fins), 1959
Made by General Motors (U.S.)

THE MUSEUM OF MODERN ART AND "GOOD DESIGN"

Sharply opposing the image of excess and luxury conveyed by American automobiles in this era, MoMA set out its shingle as an arbiter of good design, which it equated with the concept of modernist design. Edgar Kaufmann Jr.'s rhetorical description of the concept of good design stressed the qualities of "integrity, clarity and harmony." Significantly, the examples he cited were all chairs created by early modernists such as Marcel Breuer and Le Corbusier, as well as by a number of later adherents of the same school of design, including the Scandinavians Finn Juhl and Bruno Mathsson and the Americans Charles Eames and George Nelson. Just as Nikolaus Pevsner had identified a stable of pioneer modernists back in the mid-1930s, so Kaufmann's work at MoMA established an elite cadre of innovative second-generation modernists who became known internationally. MoMA's message was clear: Modernism was alive and well in postwar Scandinavia and the U.S., epitomized by the work of a certain group of designers. As for work that catered to other tastes, in the resounding words of Kaufmann, "Streamlining is not good design." American modernists like him felt that the country's postwar design strategy should be to emulate Europe, rather than to acknowledge the indigenous industrial design movement of the interwar years, which they considered vulgar by comparison. The specter of the superiority of European taste lingered on.

Exhibitions continued to place design before the American public in the 1940s and '50s, although none of the postwar events held at MoMA were conceived on the same scale, or communicated the same level of popular excitement, as the 1939 World's Fair. Nevertheless, the public was presented with a concept of good modern design that, they were told, would improve their lives significantly. The good-design campaign was managed not by the federal government but by the culture industry, which took on the task of helping manufacturers and retailers persuade consumers to shop with discretion.

Culture and commerce collaborated closely; one example is MoMA's work with the Merchandise Mart, a wholesale marketplace in Chicago. In 1950, as director of the Department of Industrial Design at MoMA, Kaufmann responded to a request from the Merchandise Mart to help it publicize good, modern design to manufacturers and consumers. The result was a series of six annual *Good Design* shows (plate 86), which

LEFT
86. **View of the *Good Design* exhibition at the Museum of Modern Art, New York**, 1953
Museum of Modern Art, New York

OPPOSITE
87. Charles Eames (1907–1978) and Ray Eames (1912–1988)
***DAR* (*Dining Armchair Rod*) chair**, 1948–50
Made by Herman Miller (U.S.)
Chrome-plated tubular steel, fiberglass-reinforced polyester
Museum of Modern Art, New York

proved very popular with the American public and provided an opportunity for the concept of good design to be debated in the press. These exhibitions were dominated by furniture and domestic items, a large fraction of which was either Scandinavian in origin or heavily influenced by the Scandinavian craft-based aesthetic.

Two cultures of design were clearly emerging in the postwar U.S.: one, destined for the living room, was strongly influenced by Europe and had a clear social cachet; the other, an indigenous movement with more popular origins and appeal, was visible in the street and in the kitchen, in the forms of automobiles and streamlined refrigerators. MoMA did try to bridge the cultural gap between these two schools of design by holding two exhibitions dedicated to the automobile, in 1951 and 1953. Its selection process, however, reflected its taste in furniture, as the cars on view all had a strong European flavor.

THE FURNITURE DESIGNERS

In 1941, the team of Charles Eames and Eero Saarinen was awarded first prize in a competition called Organic Furnishings in the Home, organized by MoMA. Eliot Noyes, the impetus behind the competition, had offered the following challenge: "A new way of living is developing, [which] requires a fresh approach to the design problems and a new expression." Eames valued natural materials, but, in seeking to give them new forms, he also pushed them to the edges of their naturalness. The organically shaped, molded plywood chair shells he developed with Saarinen for the 1941 competition represented one of the most significant technological breakthroughs in twentieth-century design, and the chairs, screens, and coffee tables he created with his wife Ray through the 1940s went on to become design classics.

A later MoMA project, the Low Cost Furniture Competition of 1948, saw the Eameses present their *DAR* chair to the world (plate 87). This molded fiberglass shell mounted on a metal frame was an important step toward the solution of a problem that occupied designers and manufacturers from the late 1940s through the 1960s, that of creating a one-piece plastic chair.

Working in the middle years of the century, Charles and Ray Eames were inspired by the innovations of the modernist architect-designers of the prewar era, in both Europe and the U.S. At the same time, they had the distinct advantage of being able to see where the ideals that drove modernist architecture and design had led and, more important, where they had failed. There can be no doubt that modernism underpinned the Eameses' oeuvre and determined its core values, however. Always their vision was inspired by the challenges of new technologies and forms and implemented to meet the needs of a lifestyle defined by modernity. Nowhere was this more evident than in their designs for furniture (plates 88, 89). From a background in architecture, Charles Eames had ventured into furniture design as means of testing new materials and production techniques, and of discovering new forms that would enable new ways of living.

The Eameses continued to pursue the formal challenges of new technologies in their furniture designs of the late 1940s and the 1950s. For example, their molded plywood chairs of 1946 with metal-rod legs exploited

BELOW
88. Charles Eames (1907–1978) and Ray Eames (1912–1988)
Three-legged side chair, c. 1944
Made by Evans Products Company (U.S.)
Molded plywood, lacquered metal, rubber
Museum of Modern Art, New York

OPPOSITE
89. Charles Eames (1907–1978) and Ray Eames (1912–1988)
***RAR* rocking armchair**, 1948–50
Made by Herman Miller (U.S.)
Fiberglass-reinforced polyester, metal, birch, rubber
Museum of Modern Art, New York

an innovative method of gluing metal to wood with the addition of rubber pads, while their fiberglass *DAR* chair of 1948 was well ahead of its time. It was, as Edgar Kauffmann Jr. explained in his *Introductions to Modern Design*, the "first one-piece plastic chair to feature the natural surface of its material, variegated and satiny." The modular storage cabinets of 1950 were, Kauffmann wrote, "the first . . . to forsake traditional furniture construction." Perhaps no single designed artifact expressed the idea of the modern lifestyle better than the Eameses' famous rosewood lounge chair of 1956, a compromise between contemporary style and comfort (plates 91, 92).

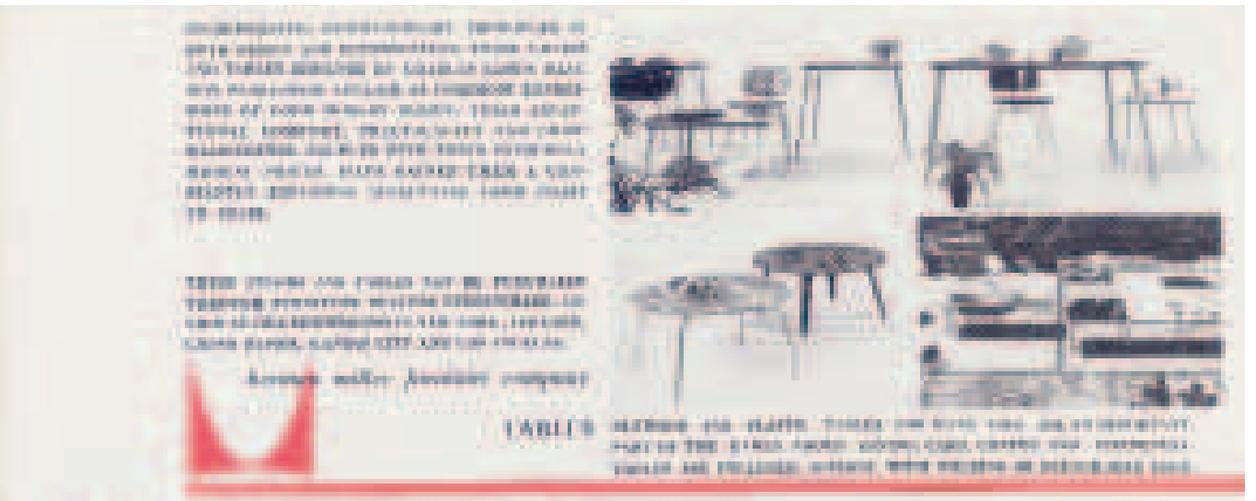
Through the late 1950s and the 1960s, the Eameses went on to create a series of designs in aluminum, from lounge chairs to secretaries' chairs and multiple seating (plate 90). They quickly became iconic objects in a range of modern public interiors, from offices to airports, transforming those spaces with the clean, rational lines of modernism but adding a significant level of lightness and comfort at the same time. The aluminum pieces were both aesthetically and technologically sophisticated. The 1958 lounge chair, for example, reclined and swiveled. It had a thin, flat profile, and the structural ribs of the continuous seat and back echoed those of the body that sat in it. These elegant, modern objects were at home in an executive office or a reception area but could, like the 1956 rosewood lounge chair, equally find a place in the domestic arena.

The Eameses also designed their own home in Pacific Palisades between 1946 and 1949. Throughout his career, Charles saw himself as an architect first and foremost. "I think of myself officially as an architect," he explained. "I can't help but look at the problems around us as problems of structure—and structure is architecture." Charles's love affair with new materials and production techniques underpinned the design of the Eameses' house, which was made entirely from prefabricated elements.

Throughout their working lives, the Eameses' commitment to modernism was absolute and uncompromising. Ray Eames had a background in avant-garde art—painting and sculpture—and before studying at Cranbrook in the late 1930s (where she met Charles, then head of the design department, and married him in 1941), she had worked with Hans Hofmann in New York. Ray had gravitated to graphic design, and her contribution to the couple's work lay in the application of her tasteful eye and her ability to "decorate." Thus, while Charles's interest in structure led him to create the shell of the Pacific Palisades house, Ray's eye for detail turned the house into a home and, in this way, made modernism acceptable.

The numerous photographs of the interior of the Eameses' house, in addition to the short film they made about it in 1955, entitled *House after Five Years of Living,* testify to the way in which they changed a static, technologically determined modernism into an organic, living process that embraced its participants (plate 93).

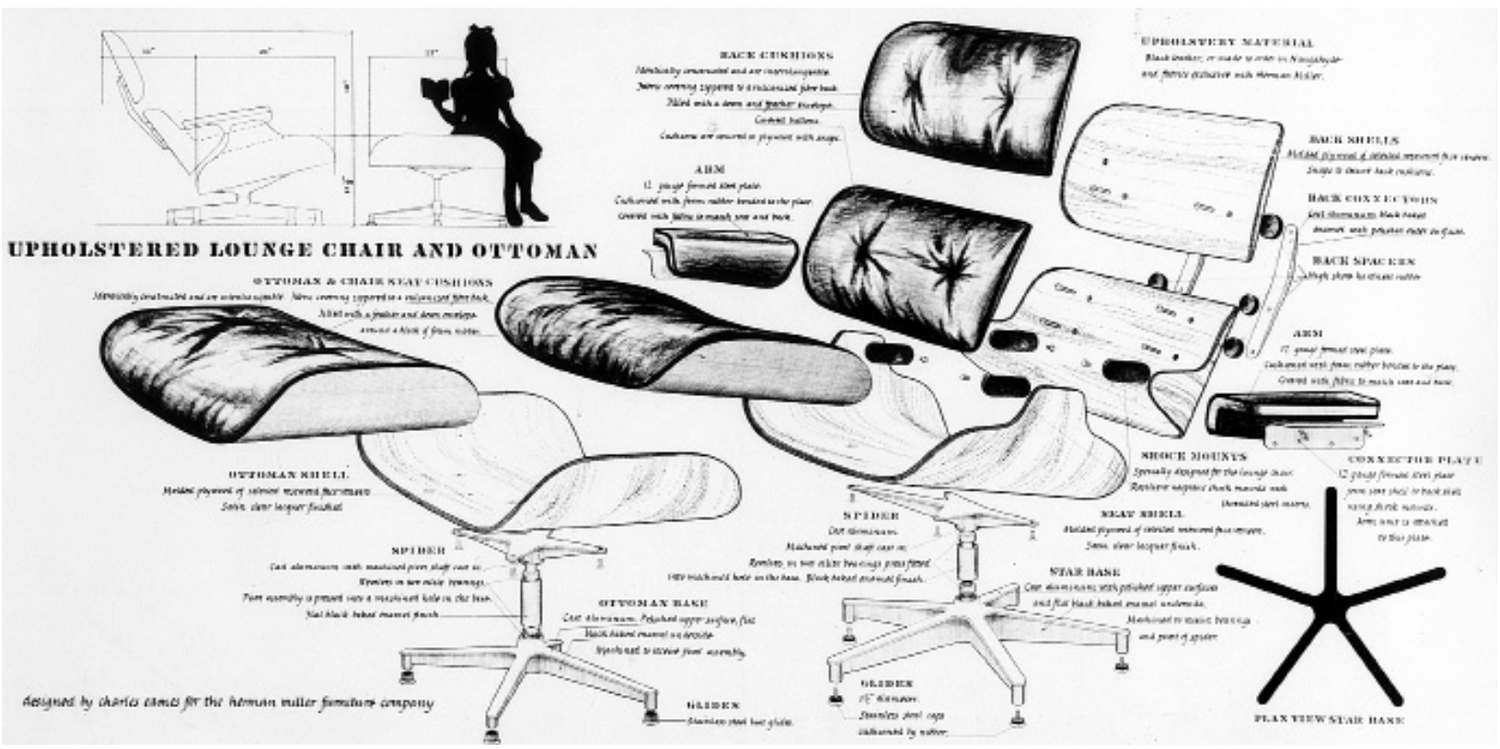
90. **Chairs by Charles and Ray Eames presented in a Herman Miller catalog**, c. 1955
Vitra Design Museum, Weil am Rhein, Germany



BELOW
91. **Exploded view of the *Lounge Chair 670* by Charles and Ray Eames**, 1956
Eames Office LLC, Santa Monica, California

BOTTOM
92. Charles Eames (1907–1978) and Ray Eames (1912–1988)
***Lounge Chair 670* with ottoman**, 1956
Made by Herman Miller (U.S.)
Polished aluminum, molded rosewood veneer, latex, down fill, leather, plastic
Museum of Modern Art, New York

OPPOSITE
93. **Charles and Ray Eames in their house in Pacific Palisades, Los Angeles**, 1958
Photograph by Julius Schulman
J. Paul Getty Trust Research Institute, Malibu



The countless "primitive" objects collected on trips abroad, the toys they loved so much, and the decorated textiles and historical artifacts that caught their eyes increasingly filled the interior spaces of the house and transformed a lifeless structure into an animated container filled by the lives of its inhabitants.

A move into exhibition design, multiple-screen communication, and film came in the 1950s, '60s, and '70s. Eames Demetrios, Charles Eames's grandson, has explained that the pair "applied the structure and discipline of architecture to filmmaking." Their film *Blacktop* of 1952, for example, focused on patterns made by soap bubbles. *A Communications Primer* of 1953 was one of the Eameses' first attempts to use film as an educational tool, in this instance to explain communications theory to architects.

Much of the Eameses' best work was created in collaboration with IBM. In 1961, they designed an exhibition called *Mathematica* for the company at the California Museum of Science and Industry. This project increased their interest in educating the public, and the interactive installations they created remained on display for thirty-seven years—a testament to their ability to communicate ideas to a mass audience. Demetrios has commented that "Ray . . . and Charles saw no distinction between education and fun and play." This approach lay at the very heart of their endeavors.

Charles and Ray Eames dominated American design in the middle years of the twentieth century and beyond. Their interiors became *the* idealized vision with which modern society defined and expressed itself, both at home and at work. The links the couple made with American corporate culture through their close association with companies such as IBM positioned them at the global center of things.

The Eameses' colleague Eero Saarinen, the son of the Finnish architect Eliel Saarinen, who had founded the Cranbrook Academy of Art, also took up the challenge of exploiting the properties of plastic, in his *Tulip*

BELOW
94. Eero Saarinen (1910–1961)
***Tulip* table and chairs**, 1956
Made by Knoll International (U.S.)

OPPOSITE
95. Eero Saarinen (1910–1961)
***Tulip* chair**, 1956
Made by Knoll International (U.S.)
Cast aluminum, polyester, latex foam, fiberglass, fabric
Musée National d'Art Moderne, Centre Georges Pompidou, Paris

chair of 1956. While the *Tulip* appeared to be a one-piece plastic chair, it actually consisted of a molded plastic shell mounted on a metal pedestal (plate 95). The practicalities of removing plastic objects from molds, combined with the limited structural strength of the plastics then available, made it impossible to produce a true all-plastic chair at that time.

Whereas the Eameses rose to fame in collaboration with the furniture manufacturer Herman Miller, Saarinen worked with his fellow Cranbrook graduate Florence (Schust) Knoll, who, along with her husband Hans, built the Knoll furniture company into one of the leading producers of progressive modern furniture in the U.S. Together Saarinen and Knoll oversaw the production of a range of chairs: the *Grasshopper* lounge chair and ottoman of 1946, the *Womb* chair and ottoman of 1948 (plate 97), the *Womb* settee of 1950, and several side chairs and armchairs between 1948 and 1950. The *Tulip* group, introduced in 1956, also included side chairs and armchairs, as well as dining, coffee, and side tables and a stool—all characterized by a modern simplicity and elegance and evoking a sophisticated modern lifestyle (plate 94).

Another Cranbrook alumnus, Harry Bertoia, also made a mark for himself in these years by collaborating with Knoll. Although a sculptor and a jewelry designer, among other things, he is best known for his series of wire chairs. Constructed from a lattice of welded steel,

RIGHT
96. Harry Bertoia (1915–1978)
***420A* chair**, 1952
Made by Knoll International (U.S.)
Steel, metal tubing, Rilsan, latex foam, polyvinyl chloride
Musée des Arts Décoratifs, Paris

BELOW
97. Eero Saarinen (1910–1961)
***Womb* chair and ottoman**, 1947–48
Made by Knoll International (U.S.)
Steel, polyester reinforced with fiberglass and wood inserts, lacquered tubular steel, foam, fabric
Musée National d'Art Moderne, Centre Georges Pompidou, Paris

these skeletal structures allowed the passage of light, and thus did not interrupt the flow of space in the rooms they occupied (plate 96). The most successful of the group was dubbed the *Diamond* chair because of the pointed form of its back (plate 98). These pieces were as near to being made of air as any seat could be and appealed greatly to the modern desire for a new simplicity in interiors. Its affinity with sculpture also gave the *Bertoia Collection* an appealing distinctiveness in that era of mass culture and mass consumption. In essence, Bertoia and his fellow Cranbrook graduates brought a sense of European style and sophistication to an American market that was, at the same time, enthralled by Harley Earl's monster automobiles.

Another American designer of the 1950s who understood the world of "good design" imported from across the Atlantic was George Nelson. Partly following the model of the interwar consultant designer and partly adhering to the new modern taste, Nelson made a name for himself with a range of products that included a clock with rays emanating from it (plate 100) and some innovative items of furniture (plates 99, 102). Nelson is perhaps best known for his book *Tomorrow's House*, coauthored with Henry Wright, in which he introduced a number of new concepts, among them the "family room" and the "storage wall." This book brought him to the notice of the chairman of Herman Miller, and Nelson served as the company's director of design from 1945 to 1972.

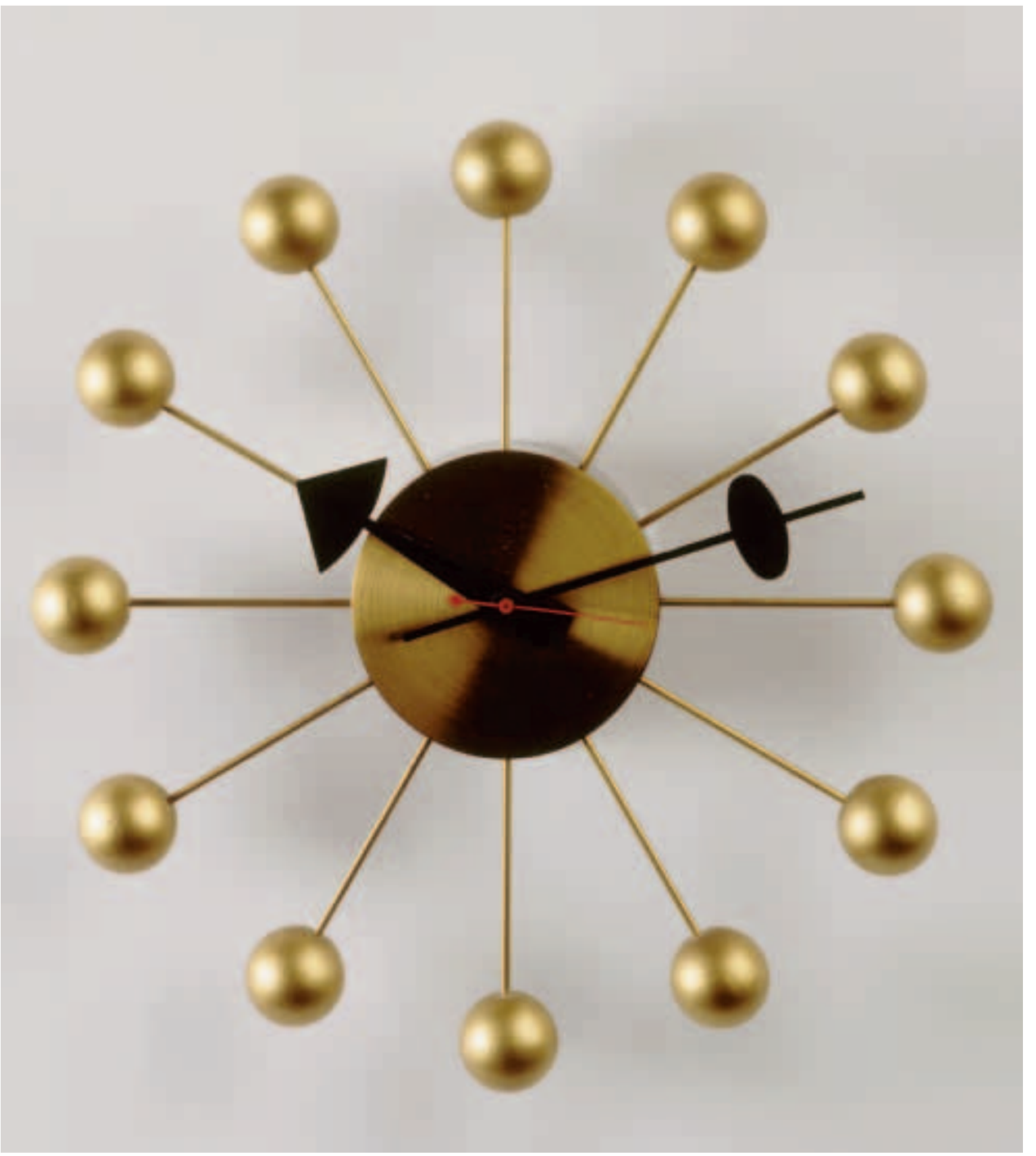
The decorative arts were also given the modern treatment in this period. Russel Wright had begun his career as an industrial designer in the interwar years, but in 1939 he created a set of colorful ceramic dinnerware, eventually known as *American Modern*, that became hugely popular and remained in production until 1959. Along with his aluminum pieces and furniture

items, Wright's ceramic designs brought modernism within the reach of the ordinary consumer. He also worked in plastics—melamine in particular—and injected a new modern aesthetic into items made from that material. Eva Zeisel, a Hungarian immigrant, was responsible for a number of modern ceramic designs that transformed the domestic landscape, beginning in the interwar years. Her style, which combined an organic aesthetic with a strong sense of color, continued to be hugely popular in the postwar era. In 1946, she was given the first one-woman show at MoMA.

98. Harry Bertoia (1915–1978)
***Diamond* chair**, 1952
Made by Knoll International (U.S.)
Soldered chrome-plated steel wire and tubing, latex, fabric
Musée des Arts Décoratifs, Paris

OPPOSITE
99. George Nelson (1908–1986)
***Coconut* armchairs**, 1955
Made by Herman Miller (U.S.)
Vitra Design Museum,
Weil am Rhein, Germany

BELOW
100. George Nelson
(1908–1986)
***Atomic* clock**, 1949
Made by Howard Miller
Clock Co. (U.S.)
Lacquered wood, brass
Musée National d'Art Moderne,
Centre Georges Pompidou,
Paris



BELOW
101. **Illustration for the AA armchair, or *Butterfly* chair, created in 1938 by Jorge Ferrari Hardoy, Juan Kurchan, and Antonio Bonet, and sold in the U.S. by Knoll**, 1951
Private collection

OPPOSITE
102. George Nelson (1908–1986)
***Marshmallow* sofa**, 1956
Made by Herman Miller (U.S.)
Lacquered steel, vinyl-upholstered cushions
Vitra Design Museum, Weil am Rhein, Germany

INTERIOR DESIGN

Founded in 1905 and based in Zeeland, Michigan, Herman Miller was one of the first American furniture manufacturers to enter the design field, beginning its collaboration with the modernist Gilbert Rohde in 1932. As noted, the company hired George Nelson as its director of design in 1945, and he enlisted the services of such figures as Eames, Saarinen, Bertoia, and Noguchi. Nelson continued to play a key role at Herman Miller into the 1970s; important projects initiated by him included *Action Office I* and *Action Office II*, thoroughgoing reconsiderations of the modern workspace that were designed by Robert Probst in the 1960s, on the basis of extensive research.

In the 1970s, Don Chadwick and Bill Stumpf became two of Herman Miller's key designers. Together they created the *Equa* office chair of 1984 and the highly successful *Aeron* chair of 1994, which became one of the most iconic office chairs of that decade and beyond, able to adapt naturally to most bodies and 94 percent recyclable. Following the earlier efforts of Henry Dreyfuss and others, the emphasis in these designs was on ergonomics, or the human-object interface.

From its ongoing commitment to rigorous research, which resulted in new approaches to the design of offices and office furniture, Herman Miller went on to address the highly topical issue of sustainability by eliminating harmful chemicals from its products, generating no hazardous waste, developing a zero air emissions policy, and using 100 percent green electrical energy. It also initiated a recycling program and ensured that its products could be easily disassembled at the end of their useful life. The company's present factory, designed by William McDonough + Partners and opened in 1995, incorporates green design principles and is known as the *Greenhouse*.

The other furniture and interior design company with a long history that has continued to be active and influential in the early twenty-first century is Knoll. Founded in 1938 by Hans and Florence Knoll and based in Greenville, Pennsylvania, this firm has always seen its task as that of selling innovative pieces by progressive designers, both by commissioning new designs (plates 103, 105) and by acquiring the rights to a number of seminal international designs, such as, in 1953, the furniture designs of Mies van der Rohe and, in 1968, Marcel Breuer's *Wassily* chair from the Bauhaus (plates 101, 104). Today Knoll's products—both its classic modern and its contemporary pieces—continue to be

103. Florence Knoll (b. 1917)
Credenza, 1950
Made by Knoll International (U.S.)
Solid varnished teak, chrome-plated metal legs
Musée d'Art Moderne, Saint-Étienne Métropole

popular with architects specifying furnishings for both residential and public interiors.

In the twenty-first century, the U.S. continues to distinguish itself in the field of furniture and interior design, especially office design. It still, for example, supports strong manufacturers of designed goods, such as Steelcase, a century-old producer of office furniture and systems, based in Grand Rapids, Michigan, that operates globally. While Steelcase does not engage with design in a particularly innovative way, it recognizes, nonetheless, that it needs to bring together marketing and design to maintain its existing markets and develop new ones.

As product design has become increasingly strategic—often abandoning the physical object to pursue the type of business consultancy known as "design thinking," discussed below—interior design has expanded to become big business and continues to fulfill one of the most important roles of American design since World War II, that of bridging the gap between style and social status. In 2009, for instance, the Californian Michael S. Smith was selected to design the private living areas of the Obama White House. Like many other interior designers of his generation, Smith has a talent for combining tradition with style, and thus was seen to be the right choice for this prestigious commission.

While the U.S. has continued to produce its own tastemakers in furnishings and interior design, it has continued to recognize the leadership of Europe in this context. In the 1980s and '90s, for example, the hotelier and entrepreneur Ian Schrager brought in a number of notable European designers—Philippe Starck and Andreé Putman among them—to create strikingly avant-garde interiors that would appeal to style-conscious customers. The first Schrager hotel, the Morgans in New York City, was designed by Putman and opened in 1984. It was followed by the Royalton and the Paramount, both Starck creations. Starting in 2005, Schrager worked with Julian Schnabel, the Swiss architects Herzog & de Meuron, and the British architect John Pawson on several other hotel and residential projects. Another acknowledgment of European dominance in furnishings and interiors came in the form of a large exhibition of contemporary European design at the Indianapolis Museum of Art in 2009.

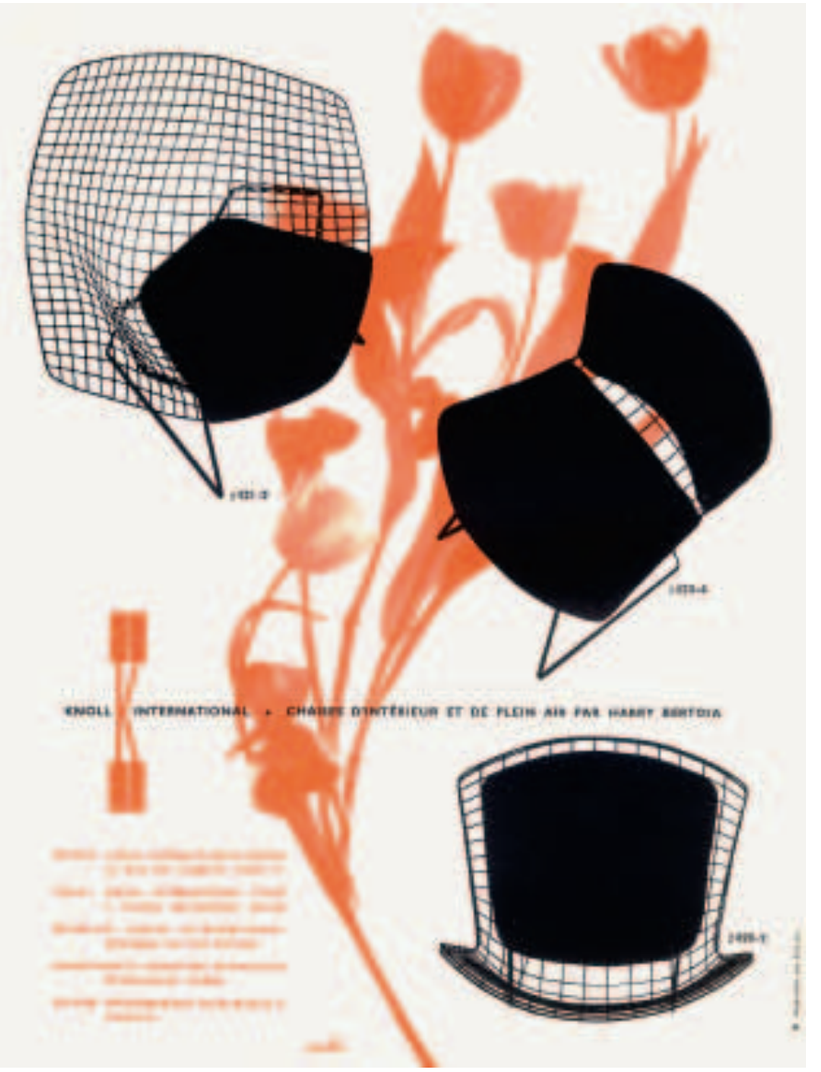
THE END OF CONSUMERISM

In the wake of the flamboyant consumerism and exuberant design of the 1950s, the 1960s in the U.S. looked a little more staid. Automobiles became more boxlike in shape, and consumers accepted a more sober aesthetic in their domestic lives. Refrigerators acquired sharper corners, and the color palette for the home became more restrained. This pendulum swing was largely in response to a number of wake-up calls about the waste that was being created through overconsumption and about the irresponsibility inherent in the materialism of the earlier postwar decades.

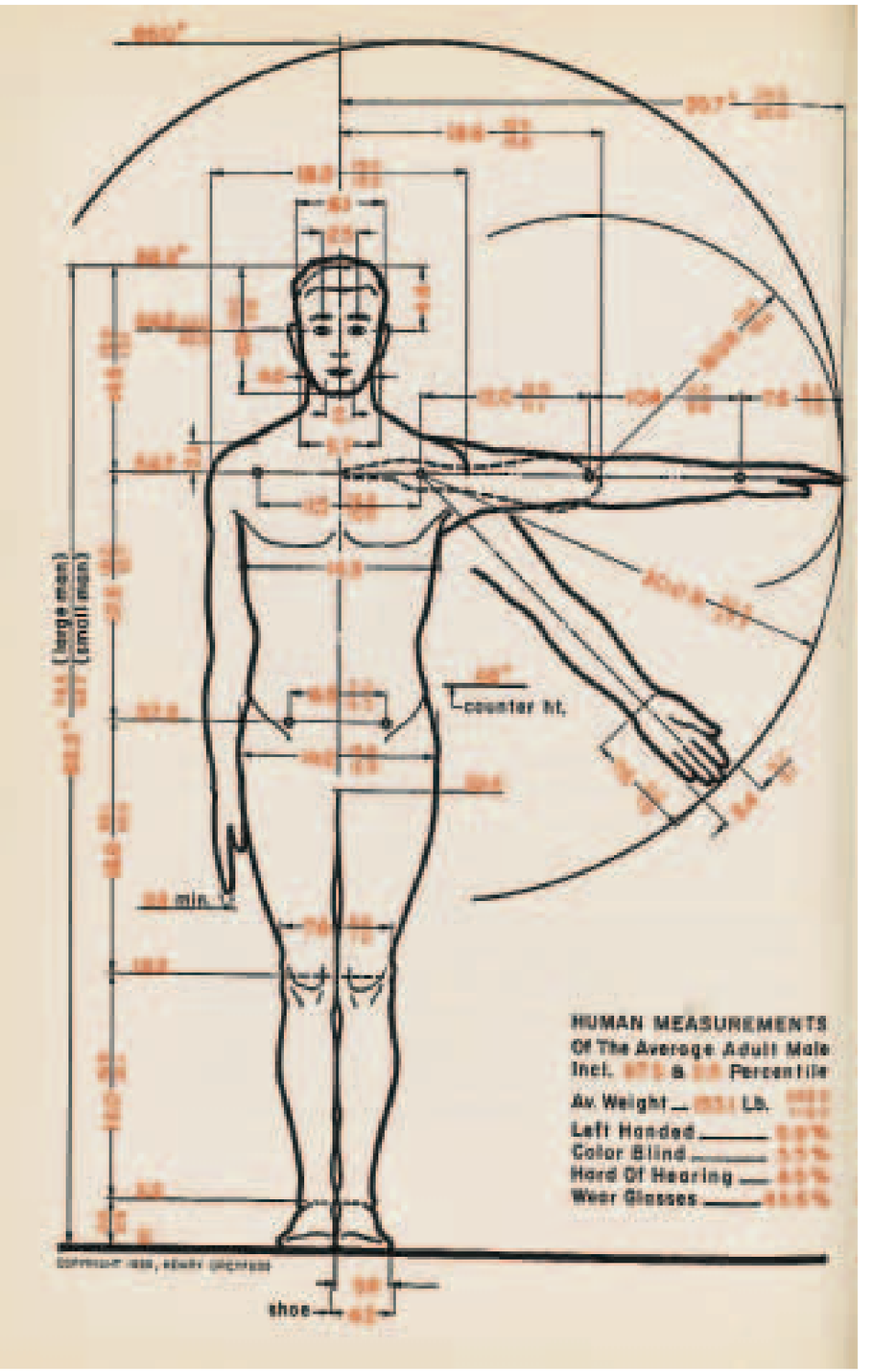
Two key writers need to be mentioned in this context. First, there is Vance Packard, who published a series of books that focused attention on the downside of the consumer society. *The Hidden Persuaders* of 1957 sought to expose the workings of American advertising and its subliminal methods. Two years later *The Status Seekers* appeared, while in 1960 *The Waste Makers* explained how the American economy depended on the concept of planned obsolescence. Nowhere was this

RIGHT
104. Herbert Matter
(1907–1984)
Advertisement for chairs by Harry Bertoia sold by Knoll International
L'oeil, No. 17, May 1956

BELOW
105. Warren Platner
(1919–2006)
***Platner* chairs, stool, and table**, 1966
Made by Knoll International
(U.S.)
Steel wire, cloth upholstery



106. Henry Dreyfuss (1904–1972)
"Human Measurements," from *Designing for People* (New York: Simon & Schuster, 1955)
Bibliothèque Forney, Paris



more apparent than in the automotive industry, whose products had a life span built into them. Packard's books were hugely influential in awakening the popular conscience, and the positive image of the consumer society went into a rapid decline. This trend was only reinforced by the writings of the political activist Ralph Nader, whose best-selling *Unsafe at Any Speed* (1965) pointed out the safety hazards of American cars in general and of the Chevrolet Corvair in particular. Through the course of the 1960s, it became increasingly obvious that the era of excess was over and that design had to reorient itself to a new context.

The careers of the pioneering industrial designers were also coming to an end, and a new generation was emerging that understood design in a new way. Henry Dreyfuss led the way in this regard: his 1955 book *Designing for People* explained that designed objects needed to fit into the lives of their users rather than serve as advertisements for manufacturers or symbols of consumer society. He invented two characters, Joe and Josephine, an everyman and everywoman who needed to be taken into account in the design process, especially in terms of their measurements and those of the objects with which they surrounded themselves (plate 106). His next book, *The Measure of Man* (1960), took Dreyfuss's interest in anthropometrics and ergonomics one step further.

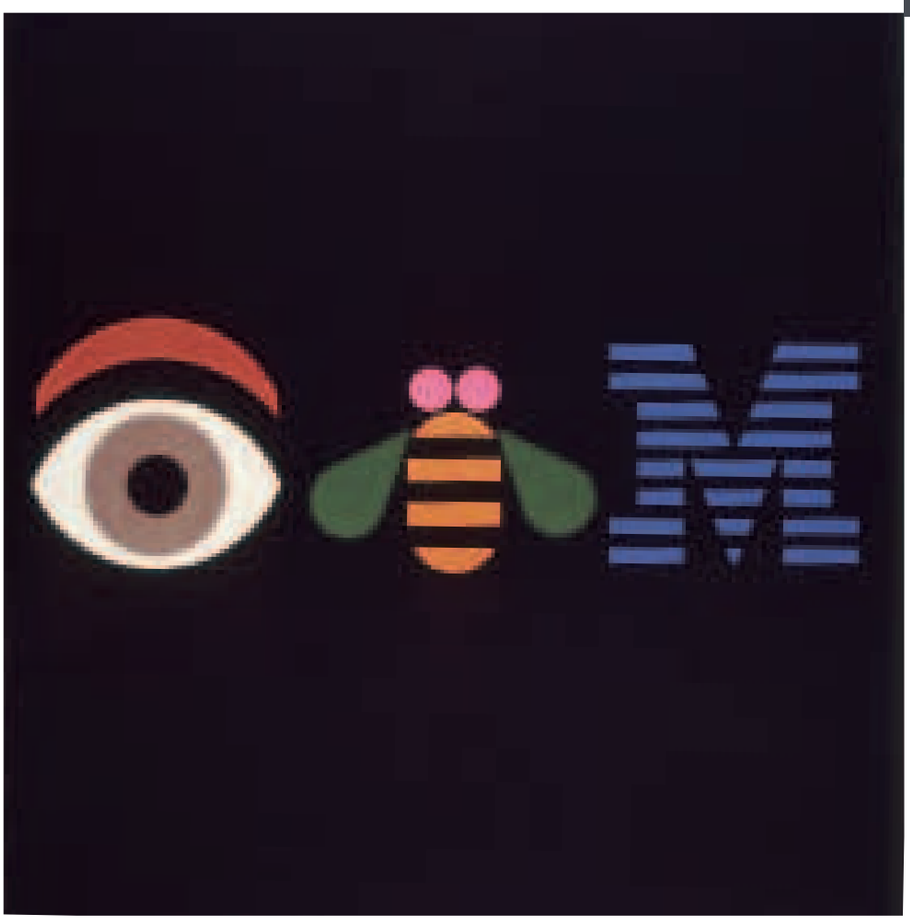
CORPORATE IDENTITY

One response to the shift away from consumer culture and the private individual was a new emphasis on the corporate world, for which design was seen as a means of creating a brand image and identity. The link between design and branding had long been part of American culture, but it took on a new life in the years after 1945.

At that time, a number of corporations began to define themselves as transnational entities. The most obvious case was that of Coca-Cola, which had continually expanded to embrace world markets since its founding in 1886. In fact, the term "coca-colonization" was frequently used to describe the impact of American culture in general on the rest of the world after World War II. Described as a megabrand, the Coca-Cola product—a sweet liquid, in essence—was highly dependent upon design for its identity, not only through packaging but also, more subtly, through the company's corporate image. Much effort had gone into advertising and promoting the product and the brand both before and during the war, but the pace quickened after 1945, with a new focus on the product's position within a lifestyle. As an advertisement explained, "Creative entertaining is part of today's good life . . . and you can count on Coca-Cola to make its own contribution to the good taste of your arrangements." Here was an example of design doing its work without objects, an evocation

BELOW
107. Paul Rand (1914–1966)
***Eye-Bee-M* (IBM) poster**, 1982
Museum of Modern Art, New York

RIGHT
108. Eliot Noyes (1910–1977)
***Selectric I* typewriter**, 1961
Made by IBM (U.S.)
Musée National d'Art Moderne, Centre Georges Pompidou, Paris



of the concept of good taste in the abstract, linked to a cold drink. As Stephen Bayley points out, "By 1969 Coca-Cola was very much more than a drink. It was a talisman." Although Coca-Cola was international, it was also, paradoxically, American (plate 109).

The idea of corporate identity also took hold among the manufacturers of new electrical and electronic machines. IBM, for instance, recruited the architect and product designer Eliot Noyes to breathe new life into its machines and its global image. Coming from a career that had involved working for Walter Gropius and Marcel Breuer, designing military gliders during the war, and serving as the first director of industrial design at MoMA, he was well prepared to set up one of the first corporate design departments at IBM (which he would also do at Mobil Oil and Westinghouse). Hired by IBM's Thomas J. Watson Jr. in 1956, Noyes also enlisted the services of the Eameses and Paul Rand (plate 107). Noyes personally designed several products and buildings for the company, including the 1961 *Selectric* typewriter, which proved a great success internationally (plate 108), and the 1964 IBM Aerospace Building in Los Angeles. His work at Mobil included a corporate rebranding project in 1964; his brief was for an instantly recognizable and aesthetically pleasing design, and the results encompassed color schemes, forms, and logos. The first rebranded Mobil station opened in 1966.

SPACE RACE SPIN-OFFS

One of the ways in which the U.S. achieved global technological superiority in the postwar years was through its space program, which was at its peak in the 1960s. Design, in tandem with technology, inevitably played an important role in the space program, in terms of both the equipment (from rockets to space suits) needed to support it directly and the products spun off from it for the commercial marketplace and, in some cases, even for the home. The Apollo program, initiated by President John F. Kennedy with the goal of putting a man on the moon, was particularly productive in this respect. Its spin-offs included scratch-resistant lenses, freeze-dried food, and cordless power tools, as well as athletic shoes, or "sneakers," which were associated with shock absorption, stability, and motion control. This use of spin-off technology to create consumer goods resulted in a new set of industries that capitalized on the novelty of these products. The sneakers produced by companies like Nike—originally established as Blue Ribbon Sports in 1964—filled a huge gap at a time when people were becoming increasingly involved in sports. Nike, which began opening its own retail stores in 1967, remains one of the country's most successful brands to this day. It created a new kind of product that commanded high prices from technologically conscious consumers.

BELOW
109. **Coca-Cola advertisement**, 1947

OPPOSITE
110. **Victor Papanek and James Hennessey, illustration from *Nomadic Furniture* (London: Studio Vista, 1974)**
Bibliothèque des Arts Décoratifs, Paris

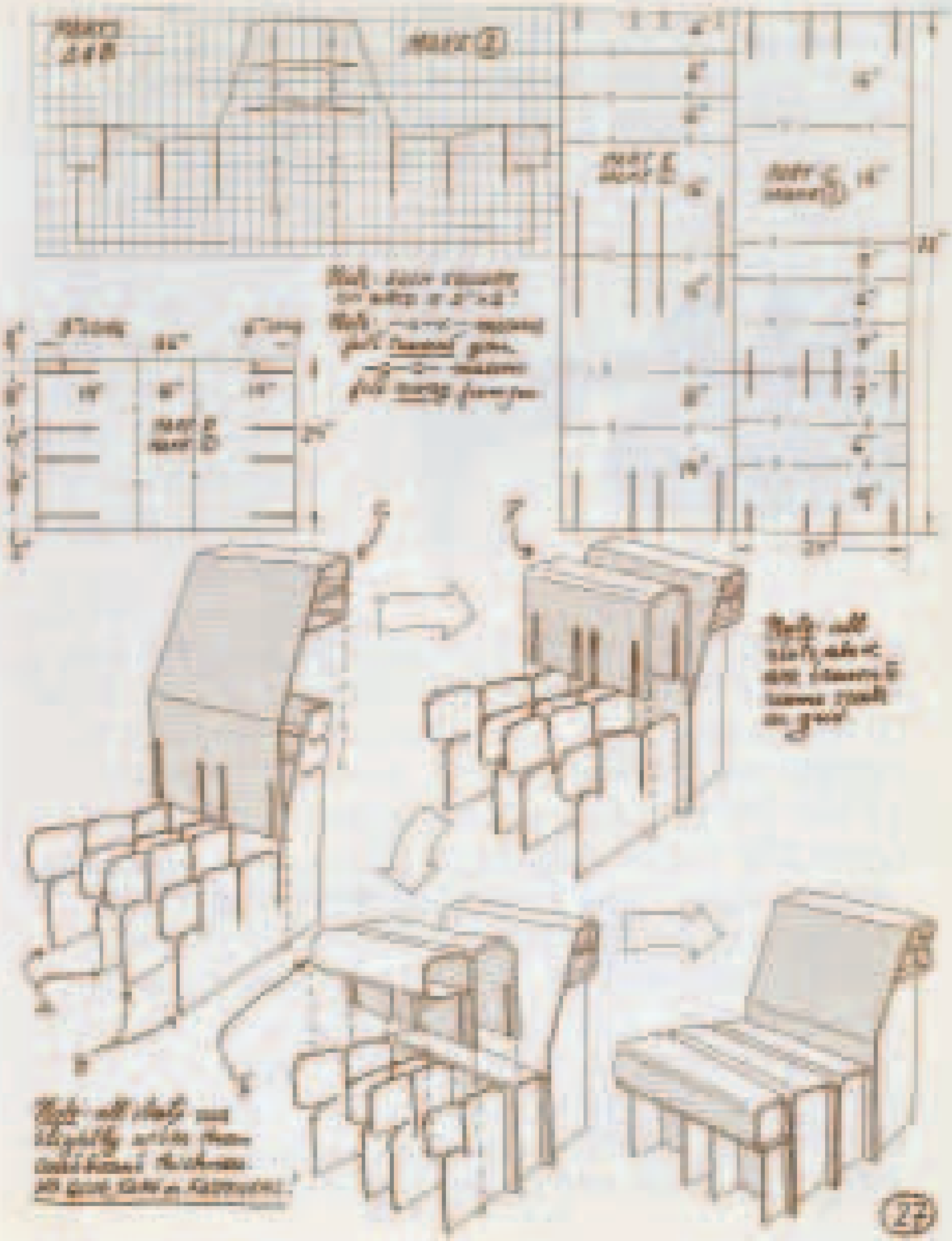
USEFUL DESIGN

The 1970s saw an even greater move away from the consumer society of the 1950s and its objects of mass luxury. As the economy declined and the student movements of the late 1960s called materialism even more into question, a new mood was established that required a new approach to design. By this time, the automobile industry had tamed its approach to styling, and a new generation of consultant designers was abandoning the old manufacturing sector for the software and electronics companies that were emerging on the West Coast.

In the early 1970s, Victor Papanek's book *Design for the Real World* established the idea that designers should develop a sense of social responsibility and distinguish between people's wants and needs. Papanek also proposed that they turn their attention to the needs of the developing world and consider the problem of dwindling natural resources (plate 110). In many ways, Papanek's arguments followed directly from Vance Packard's, but he voiced them at a moment when there was a receptive audience, and his book was hugely influential. It belonged to the new West Coast milieu that rejected advanced consumerism and sought to develop a lifestyle based on closeness to nature and making things by hand. The *Whole Earth Catalog*, also published at this time, showed that it was possible to avoid being part of the consumer society and to meet one's material needs by alternative means.

POSTMODERNISM

While Papanek's words were widely listened to, they were not to have a significant impact for more than three decades. Design became increasingly interchangeable with taste and lifestyle in the 1970s and '80s, and the boundary between design as a professional and an amateur practice was increasingly blurred. Recognizing the dramatic cultural shifts that were taking place, many architects and designers set out to challenge the assumptions that had guided their profession throughout the twentieth century. As a result, modernist design was replaced by a new movement that avoided judgments about good and bad, and which acknowledged the importance of consumption, market values, and popular taste.



OPPOSITE
111. Frank O. Gehry (b. 1929)
Wiggle Side Chair, 1972
Made by Jack Brogan
Laminated corrugated cardboard
Museum of Modern Art, New York

BELOW
112. Robert Venturi (b. 1925)
***Gothic* Revival chair** (painted by Michael Wommack), 1984
Made by Knoll International (U.S.)
Lacquered wood, plastic
Philadelphia Museum of Art

RIGHT
113. Robert Venturi (b. 1925)
***Queen Anne* side chair**, 1984
Made by Knoll International (U.S.)
Steel, plywood, and plastic
Museum of Modern Art, New York

Back in 1966, the American architect Robert Venturi had set the tone in his book *Complexity and Contradiction in Architecture*. This influential text had laid out the basic tenets of what, in the 1970s and '80s, came to be called the postmodern movement in architecture and design. "I prefer," explained Venturi, "both-and to either-or, black and white, and sometimes gray, to black or white." He called for an end to the distinction between high and popular culture, and for architecture and design to embrace popular values. His words suggested a definition of design that was rooted in consumption rather than production, that favored "form follows expression" over the modernist "form follows function," and that reflected a complex and pluralistic state of "post-modernity," in continual flux.

Venturi's approach required designed objects to be expressive as well as functional, and opened the floodgates to design that delighted in surface pattern, decoration, and references to the past (plate 111). Above all, it finally made sense of the challenges that had confronted designers in trying to apply the modernist principles of "form follows function" and "truth to materials" to technologically complex objects such as vacuum cleaners. Now they were free to inject meaning into those objects so that they looked outward to their users, rather than visually reflecting their internal components or their means of production.

Postmodernism made an enormous impact in the U.S., where it enabled a group of progressive architects to discover a new expressive language. Venturi turned his own words into practice through his collaboration with Knoll International in the early 1980s. The result was a set of plastic-laminated, bent-plywood furniture available in nine different styles, from Queen Anne to art nouveau (plates 112, 113). The coexistence of these varied styles, which were manufactured by a single production process with superficial variations, echoed the customized mass production pioneered by General Motors back in the 1920s, which had put an end to Henry Ford's "pure" mass production.

Other examples of American postmodern design in the 1980s included buildings by Richard Meier and by the former arch-modernist Philip Johnson. The latter's "Chippendale" building for AT&T in New York, which featured a cornice inspired by the back of a Chippendale chair, represented a dramatic change of direction from his earlier modernist designs, such as the ultraminimalist Glass House he built for himself in New Canaan, Connecticut. Several manufacturers besides Knoll embraced the postmodern style, including Swid Powell, which was founded in New York in 1983. The objects it produced were designed by the Italian Ettore Sottsass and the American architects Robert Venturi and Michael Graves, among others. Graves was a prolific designer in this context, responsible for many postmodern items from the mid-1970s onward, including furniture for Sunar Hauserman and Memphis (plate 115). His most famous design, however, is the *Bird-whistle* kettle he created for Alessi (plate 114). For Moller International, Graves designed two other kettles, one featuring Mickey Mouse; in fact, he also worked directly for the Walt Disney Company, thereby consolidating the inherent link between postmodernism and popular culture.

RIGHT
114. Michael Graves (b. 1934)
***Bird-whistle* kettle**, 1985
Made by Alessi (Italy)
Stainless steel, handle and bird-whistle in two-color polyamide
Centre National des Arts Plastiques/Fonds National d'Art Contemporain, Paris, on loan to the Musée des Arts Décoratifs, Lyon

OPPOSITE
115. Michael Graves (b. 1934)
***Plaza* dressing table**, 1981
Made by Memphis S.R.L. (Italy)
Painted wood, briar, mirror, lightbulbs
Centre National des Arts Plastiques/Fonds National d'Art Contemporain, Paris, on loan to the Musée des Arts Décoratifs, Paris

DESIGN THINKING

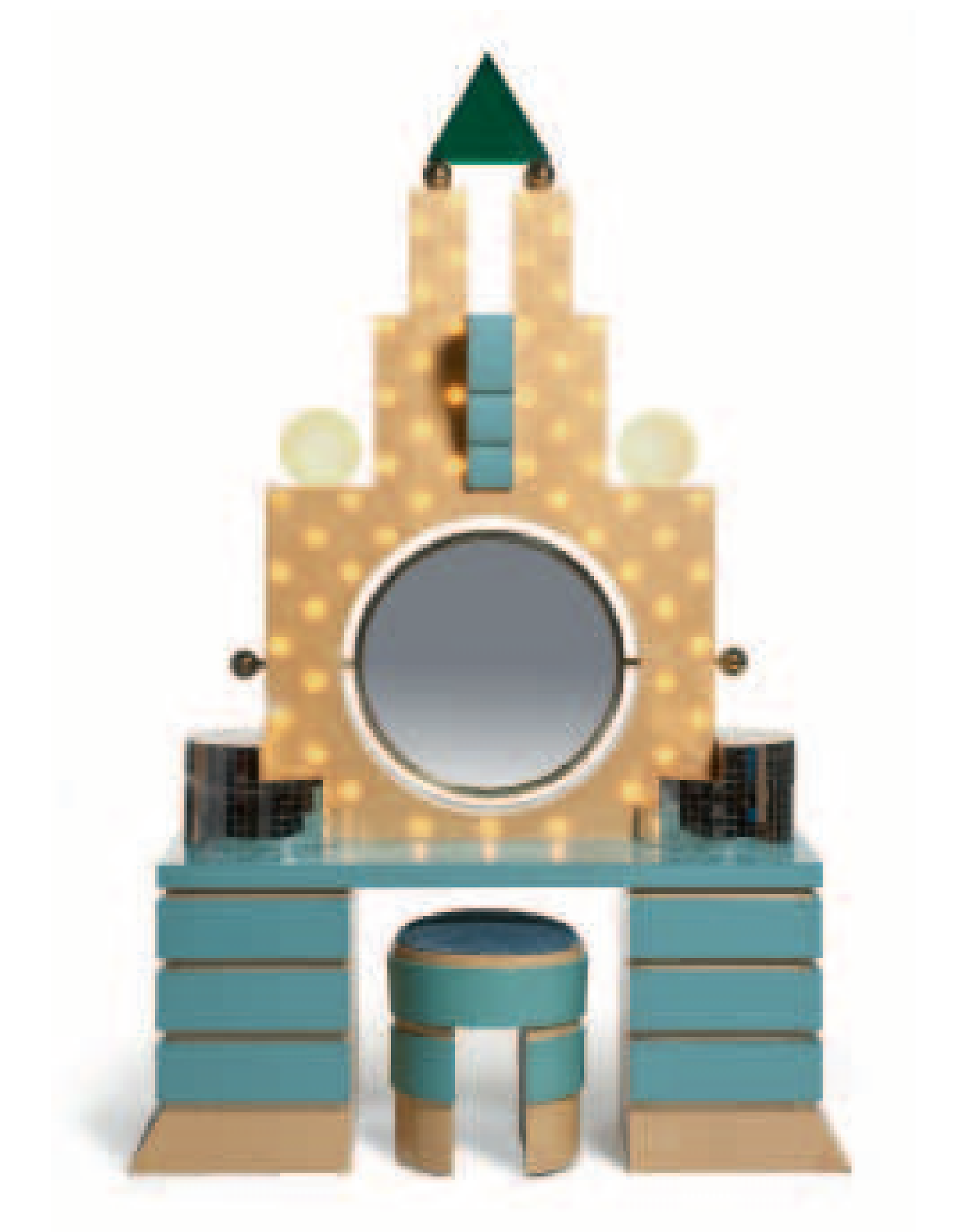
While one aspect of twentieth-century design was linked to the concept of lifestyle, another took a step back from the designed artifact and retreated into the world of the design process. This approach was pioneered by the West Coast design consultancy IDEO. Formed in 1991 through the merger of David Kelley Design and ID2, IDEO was run by British designer Bill Moggridge. In its early years, it concentrated on designing user-friendly high-tech goods, from computers to cameras, but it quickly became one of the first firms to move from designing objects to designing experiences. In this process, the idea of the named designer was much less relevant than an interdisciplinary team that included, in addition to designers, social scientists, architects, engineers, and others. A 2003 project undertaken for the health care organization Kaiser Permanente, for example, brought just such a group together to work with the client's nurses, doctors, and facility managers. The aim was to attract more patients and cut costs. The team discovered, among other things, that checking in was a nightmare for patients, waiting rooms were uncomfortable, and the doctors and medical assistants sat too far apart. The cognitive psychologists brought in by IDEO found that patients' friends and families were not allowed to talk to the doctors, and the sociologists noted that patients did not like the examination rooms, because they were left there half-naked for up to twenty minutes. The final conclusion was not that new buildings or products were required but that the patient experience needed changing. As one journalist put it, "Kaiser learned from IDEO that seeking medical care is much like shopping—it is a social experience shared with others."

The concept of "design thinking" was much discussed in the early years of the twenty-first century. IDEO's CEO Tim Brown explained that it involved the use of both consumer/user insights and rapid prototyping to get quick, innovative results that might or might not relate to product development. In his words, the aim was "to get beyond the assumptions that block effective solutions." The emphasis on prototyping showed how the design process, as it had been developed in collaboration with the manufacturing industry over two centuries, could be applied to a new context and provide a new way to reach innovative solutions to problems of all kinds.

Design thinking affected both practicing designers and design education. One of its earliest educational manifestations was at Stanford University's D. School, established in the 1980s and formally known as the Hasso Plattner Institute of Design. By the start of the twenty-first century, the D. School focused on the use of design thinking by multidisciplinary teams to solve problems in ways that did not necessarily result in new products or services, but which might produce new business, implementation, or strategic plans for companies or other stakeholders. While most projects were business-focused, some were more altruistic in nature, such as dealing with the aftermath of a disaster.

By 2006, 60 percent of IDEO's projects were strategic rather than design-focused. The firm used the technique of storytelling, employing filmmakers and writers for that purpose. It worked on the principle that designers have always had to combine their own know-how with a bit of everybody else's discipline. Moreover, its designers were encouraged to question briefs rather than merely fulfill them. Indeed, for Brown, "figuring out the right problem" was the most important part of the process. The work at both Stanford and IDEO was premised on the idea that designers should be leaders. Besides Apple Inc., one company frequently cited at that time for its innovative practices was the coffee retailer Starbucks, which had provided a completely new space for young adults that was not a bar, a school, or a home. Starbucks was also admired for the fact that it had redefined its customer base, rather than simply catering more effectively to its existing one.

In the first decade of the twenty-first century, a number of design consultancies followed the model of IDEO and engaged in multidisciplinary work. Other design groups used the D. School model, some of them adding the factor of culture (that is, the client's values) to the mix. All their activities were underpinned by the concept of innovation, which they defined as "invention with socioeconomic impact."



LEFT
116. ***iPhone 3G***, 2007
Made by Apple Inc. (U.S.)

BELOW
117. Jonathan Ive (b. 1967)
iPod, 2001
Made by Apple Inc. (U.S.)
Museum of Modern Art, New York

OPPOSITE
118. **Advertisement for the Apple *iMac G3* by Jonathan Ive**, 1998

SILICON VALLEY DESIGN

By far the most important developments in American design since 1980 have taken place on the West Coast, in the area south of San Francisco, around the town of Palo Alto, that became known as Silicon Valley. While the first phase of modern American design had been linked to the dominance of electrical power, this new phase was connected with important developments in electronics and information technology, and the consumer-oriented industries that grew up on their backs. Designers became important in both the hardware and software aspects of these industries, presenting advanced technologies to the consuming public in a way that made them accessible, usable, and desirable.

In this new context, an important shift occurred from the single object that performed a single function (and whose form was determined by that function, as modernism had decreed) to the complex, multifunctional object. For example, Apple's *iPad*—visually speaking, a simple neo-modern rectangular tablet—combined the functions of a television, radio, telephone, typewriter, hi-fi system, camera, photo album, and address book, among countless other things. Through its link to the Internet, this seemingly banal artifact in fact offered unprecedented possibilities for entertainment, information, and communication. The crucial fact is that its popularity was determined by what it did, not just what it looked like.

One of the first design companies to locate itself in Silicon Valley was frog design (now known simply as frog), led by Hartmut Esslinger. Founded in Germany in 1969, it moved first to Palo Alto and then to San Francisco, although it has branches all over the world. While its origins were in industrial design, it has expanded into the wider field of innovation. Its most renowned designs have been for computer and consumer electronics brands such as Sony and Apple.

Frog design's *Snow White* computer for Apple (1984) represented an important early attempt to design a neat little machine with a user-friendly appearance. Given the severe constraints of the brief—essentially, to create a box housing the computer's inner workings—close attention was paid to those areas in which a designer could make a contribution, namely, the curves, lines, and color of the shell. Apple also strove to make the computer interface itself user-friendly, conscious that the feel of the object was just as important as its performance in helping consumers make a purchasing decision. Later, in the 1990s, Apple pursued this principle even further, through its collaboration with the English designer Jonathan Ive, which resulted in the transformation of a series of electronic devices into lifestyle objects (plate 118). By 2010, the *iPhone*, the *iPod*, and the *iPad* had all joined the stable of Apple goods designed by Ive (plate 116, 117). By that time, the functionality of Apple's products had come to overshadow their user-friendliness. While Apple's sophisticated touch screens and the visual language of its operating system were designed to minimize user discomfort, it was the technological virtuosity of the machines' applications, and the increasingly novel combinations of them, that most impressed consumers. While, for example, the *iPad 2* (2011) came in a variety of colors,

0870 2410212

Collect all five.

The new iMac. Now in five flavours. Think different.

BELOW
119. Yves Béhar (b. 1967)/ Fuseproject and Issey Miyake (b. 1938)
***Vue* watch**, 2010
Made by Fuseproject (U.S.)

OPPOSITE
120. Yves Béhar (b. 1967)/ Fuseproject
***XO One Laptop per Child* computer**, 2005 (shown open and closed)
Made by Quanta (U.S.)
Museum of Modern Art, New York

thereby reemphasizing that such devices were still lifestyle choices, the visual and material considerations of traditional product design were far outweighed by the tablet's sophisticated systems and interface design.

Apple led, and continues to lead, the field in the design of consumer electronics. Ive's creation of a new, highly appealing minimalist language for Apple's products, as well as the fact that the company included him on its board and considered design to be a fundamental feature of its products, singled the company out from its Silicon Valley neighbors. However, while many of the giant companies that use the Internet to sell their services—including Google, Amazon, Microsoft, Facebook, and eBay—focused on engineering in their early days, they also came to realize that the user experience was key to their success, and required the input of designers. In the wake of Apple, several of them brought designers into their midst. By 2012, Microsoft, for example, had hired six hundred designers, among them Albert Shum, who had previously worked for Nike. In 2008, he became head of the Windows Phone design team. Microsoft used designers to distance itself gradually from its reputation as an old-fashioned software company. For instance, its development of Metro, a new "design language" for its products, was strongly influenced by Swiss modern typography.

Other giants, like Facebook and Google, also realized that they needed designers to bring their Web sites and apps to life, and the profession of interface design grew apace. In June 2011, Facebook bought the Dutch software design company Sofa, just one of the many examples of a huge company buying a small startup for its design talent. Then, in August 2011, Facebook went on to acquire Push Pop Press, a digital publishing company cofounded by interface designer Mike Matas. Similarly, Google brought in Daniel Burka, a former creative director at the design firm Digg. Both Apple and Google look for talent through an invite-only site called Dribbble, on which designers show off their work. As the interest in interface and user experience design has grown, its practitioners have been able to command increasingly high salaries.

The presence of so many new, increasingly design-conscious companies in Silicon Valley has encouraged many young designers to locate there. One frog design employee who broke away to set up on his own was the Swiss-born Yves Béhar, who established the firm fuseproject in San Francisco in 1999. Fuseproject, which currently employs around forty people, began by working for American giants like Hewlett Packard. Béhar quickly became one of the West Coast's best-known and most successful designers, working in fields ranging from furniture to watches (plate 119), consumer electronics, and online design, as well as social projects for the nonprofit sector. One of his most-discussed designs, initiated in 2005, was for the world's first hundred-dollar laptop computer, the *XO* (plate 120), developed for Nicholas Negroponte's One Laptop

BELOW
121. Yves Béhar (b. 1967)/ Fuseproject
***Jambox* wireless speaker**, 2012
Made by Jawbone (U.S.)

OPPOSITE
122. Yves Béhar (b. 1967)/ Fuseproject
***Up* digital wristband**, 2013
Made by Jawbone (U.S.)

per Child organization, which aims to bring technology to the poorest areas of the world.

Béhar has also done seminal work for the wearable technology company Jawbone, whose products address the need for increased awareness of health and well-being (plates 121, 122). In addition to creating the firm's brand identity, he has also been responsible for items including *Up*, a wristband that monitors its wearer's movements and can be programmed to give reminders, with a small vibrating motor, about when to exercise, go to sleep, and so forth. Wearers can also use *Up* to monitor how they react to certain foods. Designed to be worn at all times, the band is covered in a sweat- and waterproof thermoplastic rubber and works in conjunction with an app for *iPhones* and *iPods*.

Other Béhar designs to date include an identity and strategy for Google's home page, the NYC condom for the New York City Department of Health, a reflective red-lacquered laptop for Toshiba, and a recycling project for Coca-Cola. Many of his designs are highly progressive both technologically and socially, and all are characterized by a strong humanism.

CONCLUSION

In the years since 1945, the United States has seen design make several pendulum swings, adapting itself to changing circumstances in order to continue playing a key role in both the economic and the cultural life of the country. Most significantly, design helped create a modern consumer society that led the way out of the Great Depression, made new technological breakthroughs available to everybody, and eventually spread to the rest of the world. The U.S. has continued to respect Europe as the home of good modern design, but it has also made European design its own, aligning it to American capitalism by replacing ideology with style. While American design has repeatedly shifted its allegiance between mass production and consumption, playing a transformative role in both contexts, it has always remained close to commerce, the force that has driven it forward.

More recently, design in the U.S. has, at least partly, abandoned its earlier roles within industrial production and mass consumption and redefined itself as a key player in addressing the big questions of the day—economic, social, cultural, and political. In this new approach, which links design thinking with innovation, the U.S. is leading the way and showing Europe where to go.

SCANDINAVIA

ÁSDÍS ÓLAFSDÓTTIR

PRECEDING PAGE
123. Grete Jalk (1920–2006)
Chair, 1963
Made by Poul Jeppensen (Denmark)
See plate 139.

OPPOSITE
124. Carl Larsson (1853–1919)
The Kitchen, c. 1895
Watercolor on paper
Nationalmuseum, Stockholm

During the 1950s and '60s, Scandinavian design earned a reputation for fine, well-made objects, suited to modern lifestyles. Blond wood, Scandinavia's material of choice, corresponded to a society rebuilding itself on optimism and lightness. The sober and unadorned aesthetic of Nordic design was especially appealing to Americans, who shared with Scandinavians a somewhat puritanical vision of life. The fashion spread to Europe as well, where exhibitions and specialized boutiques offered the latest in Nordic design.

The quality of Scandinavian design relies a great deal on the proper balance between craft and well-considered industry. Quality craftsmanship had a long history in Scandinavia, where industrialization came late enough that manual skills were not lost. Nordic designers generally had a solid education in craft techniques, which led them to respect their materials and bring out their best properties. In northern regions, domestic interiors are important, and the quality of everyday objects is appreciated. Moreover, even before the World War II, the social-democrat societies of Scandinavia were concerned with equality and stability, and designers intended their products to be for the masses. Everyone was to have access to beauty and quality.

BEAUTY FOR ALL

The founding texts of Nordic modernism identify beauty as a human and social objective. The Swedish philosopher, feminist, and theorist Ellen Key included a text called "Beauty in the Home" in her 1899 book *Beauty for All*. According to her, the new aesthetic sensibility began with the home, where life and creativity took place, and where women played a dominant role. Beauty within the home transformed life and, in turn, society as a whole. Key's discourse was influenced by the English Arts and Crafts movement, whose principles were adopted by the Swedish Society of Arts and Crafts, but she also thought the Nordic countries had their own part to play in the dissemination of new ideas throughout the European continent. She believed that the residents of the North had a special sensitivity to nature—to its light, silence, and solitude—and therefore a particular aptitude for communicating the experience of it to others. This philosophy is illustrated in the watercolors of her friend Carl Larsson, who depicted the simple life of a family in a light and luminous environment, close to nature and to traditional crafts (plate 124). Larsson's book illustrations were very popular in their time and contributed significantly to the spread of new ideas.

Twenty years after Key's text appeared, Gregor Paulsson published a pamphlet entitled *Better Things for Everyday Life*. As an art historian and the director of the Swedish Society of Arts and Crafts, Paulsson was one of the most influential theorists of functionalism in Scandinavian architecture and design. He did not advocate the abandonment of industrial production in favor of old-fashioned craftsmanship, but rather sought to introduce beauty into manufactured products. As a result, ugliness would be eliminated from modern society, and mankind would be liberated from the historic styles that muddled contemporary architecture and decorative art. For Paulsson, beauty was an important sociopolitical tool, contributing to the idealistic reforms he longed for.

The Stockholm Exhibition of 1930, organized by Paulsson and the Swedish Society of Arts and Crafts, marked the advent of international modernism in Scandinavia. The event drew large crowds and triggered debate about modernist precepts. A year later, Paulsson and the architects Uno Ahrén, Gunnar Asplund, Wolter

125. Gunnar Asplund
(1885–1940)
***Senna* chair**, 1925
Reissued by Cassina (Italy), 1983
Leather, cherry wood
Private collection

Gahn, Sven Markelius, and Eskil Sundahl—all deeply involved in the Stockholm Exhibition—published the manifesto *Acceptera* (To Accept). This long illustrated text, intentionally confrontational, defended the modernist point of view: It claimed that the present standard of beauty was associated with the bygone aesthetics of a dominant class and prevented the discovery of new forms suitable for the times. A new form of beauty was needed, linked to function and the industrial age.

Despite this radical text, the industrial aesthetic of the Bauhaus did not really take root in Scandinavia, even among those who had penned the manifesto. The tubular furniture of Mart Stam and Marcel Breuer was well known in Scandinavia and could be ordered through the Thonet catalogs, but this austere look was generally softened, and steel quickly replaced by wood. Nevertheless, the formula "form follows function" could easily be applied to the Nordic penchant for simplicity and practical, well-made objects.

MODERNISTS OF THE 1920S AND '30S

One of the authors of the *Acceptera* manifesto, Gunnar Asplund, was the most important Swedish architect of the interwar period. In particular, he designed the steel and glass buildings at the 1930 Stockholm Exhibition. Asplund's furniture is a good illustration of Nordic design at the time, from his prestigious *Senna* chair in walnut and leather for the 1925 Paris International Exposition (plate 125) to the 1931 *Karmstol* chair in tubular steel and leather. For his addition to the Göteborg town hall (1931–34), Asplund again designed warm, streamlined furniture in wood and leather.

In Denmark, the extraordinary tradition of cabinetwork left almost no room for steel. Designer Kaare Klint made furniture based on existing models, often favoring maritime or colonial pieces because they were simple, folding, and functional. As an example, his *Safari* armchair (plate 126) and *Deck* chair from 1933 are elegant reinterpretations with references to England and the East. In 1924, Klint helped found the department of furniture and interior design at the Royal Danish Academy of Fine Arts in Copenhagen. His teaching and his research in anthropometrics greatly inspired the generation of designers who worked to revive Danish design after World War II. Klint also designed lamps with simple shades of folded paper (plate 127). Since the 1920s, another Dane, Poul Henningsen, had

BELOW
126. Kaare Klint (1888–1954)
***Safari* chair**, 1933
Made by Rud. Rasmussens Snedkerier (Denmark)
Leather, maple
Private collection

OVERLEAF
127. Kaare Klint (1888–1954)
***Klint 101* pendant lamp**, 1943
Made by Le Klint (Denmark)
Polycarbonate
Musée d'Art Moderne, Saint-Étienne Métropole

PAGE 119
128. Poul Henningsen (1894–1967)
Lamp, c. 1929
Made by Louis Poulsen (Denmark)
Chrome-plated metal, reflectors in lacquered metal
Musée National d'Art Moderne, Centre Georges Pompidou, Paris

BELOW
129. Alvar Aalto (1898–1976)
Stackable stools, 1932–33
Made by Oy Huonekalu-ja Rakennustyötehdas (Finland)
Cross-laminated birch
Museum of Modern Art, New York

OPPOSITE
130. Alvar Aalto (1898–1976)
***Savoy* vase**, 1937
Made by Iittala (Finland)
Mold-blown glass
Victoria and Albert Museum, London

been developing lamps intended to reduce the blinding brightness of electric light by precisely overlapping convex and concave pieces (plate 128). His timeless and elegant *PH* series continues to be manufactured by Louis Poulsen. Through the radical positions he took as a journalist and publisher, Henningsen also contributed to the discourse on Scandinavian design in the interwar period.

The Finn Alvar Aalto was close to the Swedish modernists and a friend of Henningsen, whose lamps he used in his first modern buildings. Along with his wife Aino Marsio-Aalto, also an architect and designer, he perfected furniture in bent, glue-laminated birch that met the same demands for solidity and hygiene as tubular steel, while being warmer and more human (plate 129). In 1935, the couple founded Artek, which is still responsible for the production and distribution of their work today. In 1937, Aalto designed the Finnish pavilion for the Paris Exposition and exhibited a few of his pieces there, notably the *Savoy* vase (plate 130). In this object, which became an icon of twentieth-century design, there emerged the curved and organic forms, inspired by both nature and modern art, that were so characteristic of Aalto's work.

After being one of the pioneers of Finnish art nouveau, the architect Eliel Saarinen emigrated to the U.S. in 1923. He designed the buildings for, and later taught at and directed, the Cranbrook Academy of Art near Detroit, a school that aimed to be the American equivalent of the Bauhaus. He and his wife, the textile artist Loja Saarinen, trained an entire generation of designers working after World War II, including Ray and Charles Eames, Harry Bertoia, Florence Knoll, and their own son Eero Saarinen.

BELOW
131. **Finnish pavilion at the 1951 Triennale di Milano**
Triennale di Milano, Milan

OPPOSITE
132. **Poster for *Design in Scandinavia: An Exhibition of Objects for the Home from Denmark, Finland, Norway, and Sweden*,** 1954
A. Remlov Éditeur, Oslo
Brooklyn Museum Libraries and Archives

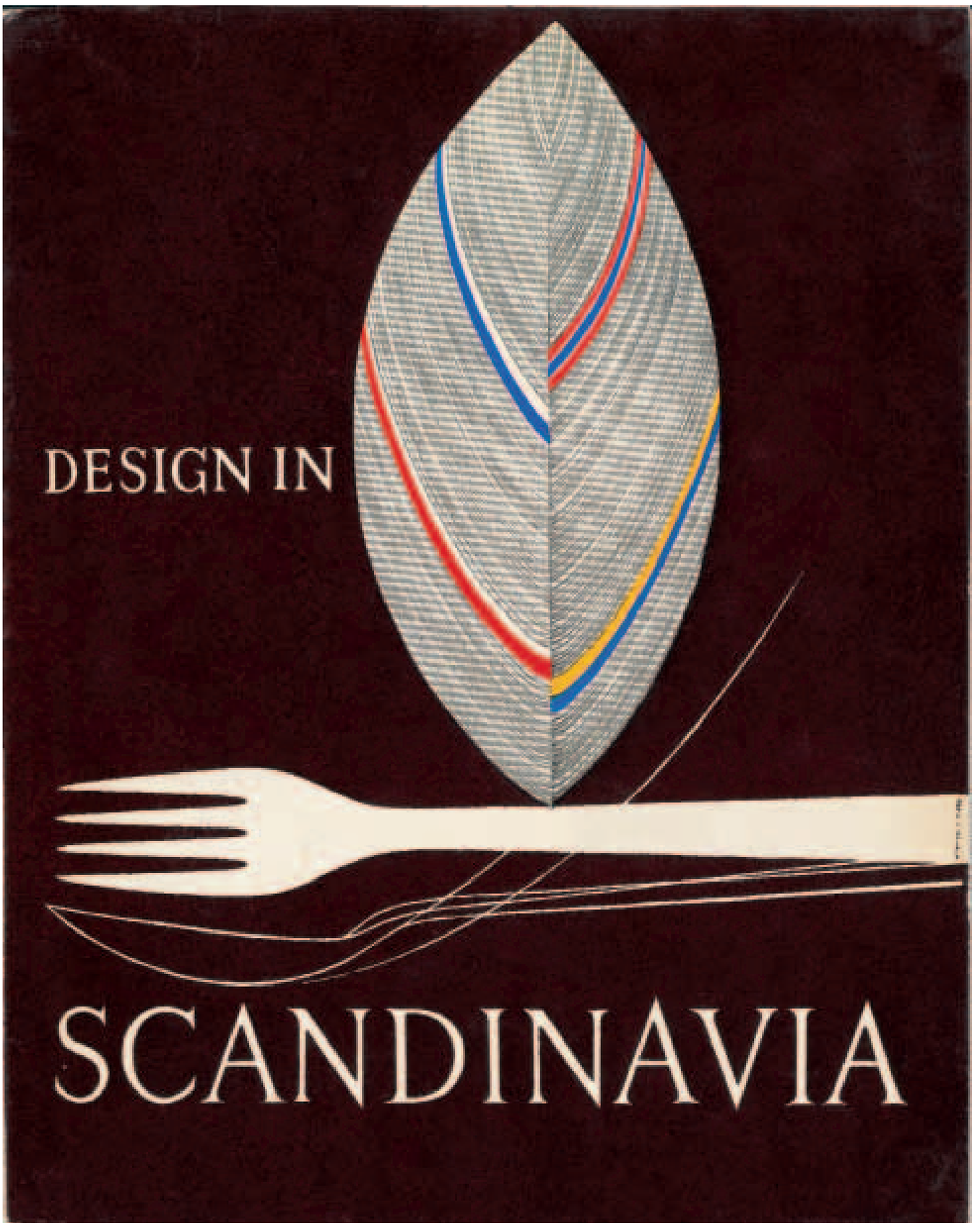
THE SPREAD OF SCANDINAVIAN MODERN

Since the 1930s, the Nordic countries—Sweden and Finland in particular—have participated in the Triennale di Milano, an important international exhibition of architecture and decorative art. Alvar Aalto notably exhibited his glue-laminated wood furniture abroad for the first time at the inaugural Triennale in 1933. Nevertheless, it was after World War II that Scandinavia received particular attention at these showcases of fine design. Denmark, Finland, Norway, and Sweden exhibited regularly at the postwar Triennales and received a good share of the medals awarded. With its award-winning pavilion designed by Tapio Wirkkala, Finland stood out among the exhibitors at the 1951 Triennale (plate 131).

Following that edition of the Triennale, the American magazine *House Beautiful* organized a traveling exhibition of Nordic design. *Design in Scandinavia* opened in 1954 in Richmond, Virginia, and went on to twenty-four other locations, in seventeen U.S. states and three Canadian provinces, over the next three and a half years (plate 132). The success of this exhibition was immense, and the popular notion of Scandinavian good taste took root. The 1958 exhibition *Formes Scandinaves* at the Musée des Arts Décoratifs presented Nordic design to the French public. On this occasion, Iceland joined the four other Scandinavian countries as a participant. A revamped version of *Design in Scandinavia* was presented in seven Australian cities in 1968. The triumph of the 1950s and '60s eventually faded, and the exhibition *Scandinavian Modern Design 1880–1980*, presented at three American museums in 1982 and 1983, emphasized artisanal crafts and the familiar work of the postwar period.

The Scandinavian countries efficiently organized the export of their products, and also held salons and fairs that attracted designers and manufacturers from other parts of the world. The workshops of the North became an important stop on the circuit traveled by French designers like Jean Royère, Pierre Paulin, Marc Held, and Olivier Mourgue. Scandinavian design thus served as a kind of school and was widely copied around the world.

In organizing common events and choosing to exhibit together, the Nordic countries consciously built a unified image and reputation. Effacing national differences, they deliberately promoted the idea of a sleek "Scandinavian" aesthetic, which concealed an output that was, in reality, rather more varied and at times iconoclastic. In analyzing the design of these Nordic countries, let us try to understand what unites them and also where their differences lie.


DESIGN IN
SCANDINAVIA

RIGHT
133. Hans Wegner (1914–2007)
***Peacock* chair**, 1947
Made by PP Møbler (Denmark)
Ash, teak, woven cord
Kunstmuseet Trapholt, Kolding

OPPOSITE
134. Børge Mogensen (1914–1972)
***Spanish* armchair**, 1959
Made by Fredericia (Denmark)
Oak, leather
Kunstmuseet Trapholt, Kolding

DENMARK

The smallest of the Nordic countries has always compensated for its size with navigation and trade, even colonialism. Consequently, foreign influences, from both the East and the West, have been naturally absorbed through the centuries. The late industrialization of the country meant that craft survived as one of the pillars of production. Danish design is characterized by both functionalism and a respect for tradition. In the vein of the pioneer Kaare Klint, postwar furniture designers drew their inspiration from the American Shakers, the English Arts and Crafts movement, and also Asian craftsmanship. Denmark was by far the largest manufacturer of furniture in Scandinavia: exports to Europe and especially the U.S. at one point accounted for about 80 percent of the country's total furniture production, which attests to the international influence of "Danish modern" in the 1950s and '60s.

Behind the seeming unity of Danish furniture can be distinguished two trends, which emerged as early as the 1940s. On the one hand, the Klint school worked on archetypes of traditional furniture—simplifying them, ridding them of all ornamentation, and seeking to attain their essence, while taking into consideration the user's needs and ergonomics. Børge Mogensen and Hans Wegner are the best representatives of this movement. On the other hand, designers like Finn Juhl sought to extricate themselves from this relatively conservative mode of thinking and bring innovation and fantasy to Danish design. Both movements shared the traditional bases of Danish furniture: craft knowledge and a respect for materials—wood in particular.

The powerful Copenhagen Cabinetmakers' Guild (Københavns Snedkerlaug), founded in 1554, brought together a number of small and medium-size workshops. From 1927 to 1966, the guild presented the furniture produced by its members at an annual exhibition. What made this exhibition unique is that a jury chose projects submitted by young designers to be manufactured and exhibited by a workshop of cabinetmakers. Before and after World War II, most Danish designers began their careers in this way. The exhibitions were much anticipated, and the subject of critical discussion and debate in the media, evidence of the influence that the decorative arts—and furniture in particular—enjoyed in Danish society in this period.

THE TRADITION OF CABINETWORK: BØRGE MOGENSEN AND HANS WEGNER

The direct heir of Kaare Klint was undoubtedly Børge Mogensen. After attending the School of Arts and Crafts (Kunsthåndværkerskolen) in Copenhagen, Mogensen studied under Klint at the Academy of Fine Art between 1938 and 1941 and became his assistant a few years later. From 1942 to 1950, Mogensen was also head of the bureau of furniture design at the Danish Cooperative Union (FDB). There his task was to create simple and reasonably priced furniture for small apartments. The characteristics of his design emerged in these unadorned and functional pieces, for example the *J-39 Shaker* chair of 1944, made from beechwood and woven cord, and inspired by the simplicity and solidity of American Shaker furniture. The following year, he exhibited his famous *Tremmesofa* couch, manufactured by Fritz Hansen, which can be expanded by lowering the sides. Inspired by a traditional model, it enjoyed great popular success and was reissued in 1963.

In the 1950s, Mogensen developed the *Øresund* and *Boligens* shelving systems in collaboration with Grethe

Meyer. These designs were based on in-depth studies of the housing and organizational needs of middle-class families. Mogensen also designed textiles with Lis Ahlmann and furniture for Søborg Møbelfabrik, Fredericia, and Karl Andersson & Søner; his pieces of this era include the *2213* leather sofa, in two widths, and the *Spanish* armchair of 1959 (plate 134). Inspired by a traditional model, the latter chair, with its solid construction and virile forms, represents the simplified and unadorned aesthetic of its maker. Mogensen sought to design honest furniture that was well made but also accessible to the masses. He favored local materials like beech, oak, and birch, remaining uninterested in the fashion for exotic woods. His designs enjoyed great popularity, and many of them continue to be manufactured today.

A love of wood led Hans Wegner to become a qualified cabinetmaker at the age of seventeen. Originally from Jutland like his friend Børge Mogensen, Wegner studied design in Copenhagen at the end of the 1930s. In 1940, he worked for Arne Jacobsen and Erik Møller on the construction of the Aarhus town hall, for which he headed the furniture program. During the war, he collaborated with Mogensen on simple furniture for the FDB. Wegner also developed furniture with the cabinetmaker Johannes Hansen. These pieces were presented at the exhibition of the Cabinetmakers' Guild (of which Hansen was the president starting in 1941) and set Wegner on his way to designing hundreds of models for several manufacturers. His first notably successful piece was the *Chinese* chair that he designed for Fritz Hansen in 1943. This reinterpretation of a traditional form, simplified and modernized, already presented certain characteristics of Wegner's design: a fluid line between back and arm, solid but elegant proportions, and, needless to say, perfect execution. In 1947 followed the *Peacock*, an expressive variation on the Windsor chair (plate 133). Wegner continued to develop variations of the *Chinese* chair and, in 1949, finally succeeded in reducing its form to its purest possible expression (plate 136). Dubbed *The Chair* by the Americans, this piece was a resounding success abroad. Presented in 1950 on the cover of *Interiors* as "the most beautiful chair in the world," it launched the international export of Wegner's furniture. In the famous televised debate between John F. Kennedy and Richard Nixon in 1960, the candidates and their moderators were comfortably seated on these chairs. Another great success was the *Y* chair of 1950, one of the most elegant dining-room chairs of the twentieth century. Winning the Lunning Prize (founded to recognize eminent Nordic designers) in 1951, Wegner was celebrated in Scandinavia, and also abroad. His furniture was sold by the Danish manufacturer Fritz Hansen and by the export company Salesco, which served several manufacturers. Today, PP Møbler is the largest manufacturer of his assembled furniture, while Carl Hansen & Søn are responsible for his more industrial pieces.

Wegner preferred to work with locally available wood, which in Denmark meant beech, oak, ash, maple, and birch. His training as a cabinetmaker taught him about manufacturing processes, and his designs always take the user into consideration: "A chair is only finished when someone is seated in it," he liked to say.

OPPOSITE, LEFT
135. Finn Juhl (1912–1989)
***45* chair**, 1945
Made by Niels Vodder (Denmark)
Walnut, cloth upholstery
Kunstmuseet Trapholt, Kolding

OPPOSITE, RIGHT
136. Hans Wegner (1914–2007)
Armchair, 1949
Made by Johannes Hansen (Denmark)
Oak, caning
Museum of Modern Art, New York

BELOW
137. Hans Wegner (1914–2007)
***Halyard* chair**, 1950
Made by Getama (Denmark)
Steel, wood, cord, cloth upholstery
Private collection

RIGHT
138. Finn Juhl (1912–1989)
***Chieftain* chair**, 1949
Made by Niels Vodder (Denmark)
Teak, leather
Musée des Arts Décoratifs, Paris

OPPOSITE
139. Grete Jalk (1920–2006)
Chair, 1963
Made by Poul Jeppensen (Denmark)
Bent teak plywood
Museum of Modern Art, New York

FINN JUHL, THE ARTIST

When Finn Juhl presented the designs he had developed in collaboration with cabinetmaker Niels Vodder at the Cabinetmakers' Guild exhibitions of 1937 and 1940, they were received with a certain incomprehension. His first armchairs and heavily stuffed sofas—sculptural in form—verged on the world of the abstract artists Juhl so admired: Jean Arp and the Dane Erik Thommesen. A critic called them, somewhat nastily, "tired walruses."

Juhl, who originally wanted to be an art historian, was trained as an architect but self-taught as a furniture designer. He did not adhere to Klint's school and approached furniture in a very different manner. Instead of reinterpreting existing models, he sought to create new forms, while still respecting the functionality of the object. In 1941 and 1942, he built his own house in Charlottenlund, near Copenhagen, and developed furniture to meet his personal needs and desires. Passionate about wood, Juhl conceived of chairs with a visible frame from which the seat and back could be detached. Consequently, his massive wooden chairs, as well as his tables, can appear to be very light. During the 1940s, Juhl designed his most famous pieces, the 45 chair (plate 135) and the *Chieftain* chair (plate 138).

Juhl's collaboration with Vodder was very fruitful, allowing him to experiment with new forms and assembly techniques. The complexity of Juhl's designs and the sophistication of his finishes did not seem to be practical for mass production, but in 1950, an American firm, Baker Furniture, began to manufacture his pieces successfully. Shortly after, production started in Denmark as well.

Juhl was a prolific interior designer; a notable example of his work in this field is the Trusteeship Council Chamber at the United Nations in New York. With a career that was both local and international, he taught at the Danish School of Interior Design and was its director from 1945 to 1955. His influence on designers and on Danish decorative art was considerable. During the 1950s, Juhl also designed several exhibitions, including *Good Design* for his friend Edgar Kaufmann Jr. at the Museum of Modern Art in New York and the Danish pavilion at the Triennale di Milano of 1954 and 1957.

Challenged and criticized when he began, Juhl quickly earned recognition from his peers and the public, forming a style and school of his own. Indeed, by the end of the 1950s, his furniture had been so widely copied that the production of his own designs stopped in certain cases. Juhl paved a new pathway in Danish and Scandinavian design, one characterized by sculptural form and the use of teak. An all-around designer, he also worked with glass and porcelain, and made fine wooden bowls for the manufacturer Bojesen.

Today Danish teak furniture from 1940s and '50s is sought out and appreciated for its formal and material qualities. When Juhl began using teak in 1945, it was mostly reserved for exterior use, but he was fond of it because it did not require varnish. It was also dense (allowing it to be precisely shaped), soft to the touch, and relatively light compared to other exotic woods. Circumstances favored its widespread use, as a large stock of teak was to be found in Denmark after the war. The furniture designer Grete Jalk made several pieces from this material, including an innovative set in plywood with a teak veneer (plate 139).

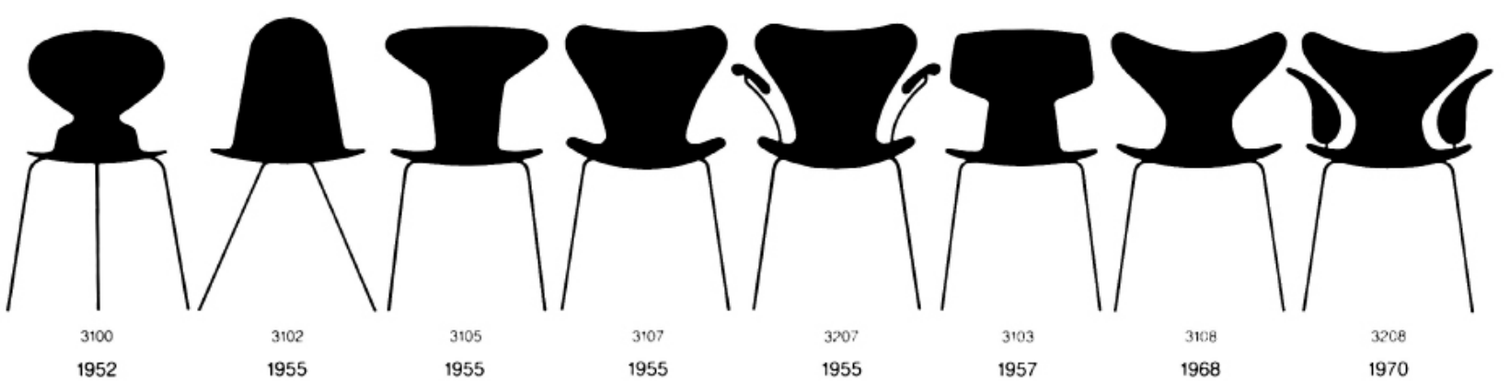
RIGHT
140. Arne Jacobsen (1902–1971)
***Ant* chair**, 1952
Made by Fritz Hansen
(Denmark)
Chrome-plated steel, molded
laminated teak
Musée des Arts Décoratifs,
Paris

THE MASTERS OF STEEL: ARNE JACOBSEN AND POUL KJÆRHOLM

The architect Arne Jacobsen also approached furniture as sculpture in space. Although his architecture is mostly rectilinear and functionalist, his design is organic and intuitive above all. The *Ant* chair, presented at an exhibition of his work at the Danish Museum of Decorative Art in January 1953, is made from a molded plywood seat placed atop three steel legs (plate 140). The curving forms of the back refer to the animal world, but also to the work of modern artists like Alexander Calder and Henry Moore. Employing the technique of molded plywood developed during the war and adopted by the American designers Charles and Ray Eames as early as 1946, Jacobsen's *Ant* and *Series 7* chairs are simple and very functional (plate 141). They respond to the need for light, stackable seating that is still comfortable and attractive. Manufactured by Fritz Hansen, they were sold by the millions, helping to make Scandinavia a world leader in furniture exports. Founded in 1872, Fritz Hansen has specialized in the production of steam-bent wooden chairs since the 1920s. Its collaborations with modern designers, and with Jacobsen in particular, gave it an international profile and turned it into the Danish leader it still is today (plates 142, 143).

With his *Egg* and *Swan* chairs of 1958, Jacobsen went further toward the sculptural. The prototypes were shaped and reshaped at actual size in plaster until the designer was satisfied. They were then manufactured in a single shell of styropor, a kind of polystyrene invented by the Norwegian designer Henry Klein. Covered in natural fabric or leather and placed on a central steel and aluminum pedestal, these armchairs perfectly contrast the straight lines of Copenhagen's Royal Hotel, of which Jacobsen was the architect (plate 144). He also made steel tableware, lamps, door handles, faucets, clocks, glass, and textiles, all with streamlined, rigorous forms. A student of Kaare Klint, Jacobsen was the inventor of organic modernism in Denmark, breaking from traditional cabinetmaking.

Poul Kjærholm's 1952 diploma exhibition at the School of Arts and Crafts included a chair in flat steel, with a seat and back in woven cord. This object already revealed the characteristics of the work of this designer, then twenty-three years old: perfect formal mastery, a minimalist simplification of structure, and the use of steel strips combined with natural materials. This chair, which would later take on the name *PK25*, was manufactured by the entrepreneur Kold Christensen, with whom Kjærholm would collaborate on all his major designs. Although he was an accomplished cabinetmaker, Kjærholm came to favor stainless steel after exploring its potential for industrial production. He followed Klint in the sense that he reinterpreted classical or existing models. For example, his *PK41* stool is inspired by a folding stool from antiquity; his *PK22* chair, by the Greek klismos and Mies van der Rohe's *Barcelona*; and his *PK24* chaise longue, by that of Le Corbusier (plate 145). Kjærholm's pieces have a great aesthetic purity and inscribe themselves into space like light, elegant signs.



TOP LEFT
141. Arne Jacobsen (1902–1971)
***Series 7* chair**, 1952
Made by Fritz Hansen
(Denmark)
Chrome-plated steel tube,
molded plywood
Musée d'Art Moderne,
Saint-Étienne Métropole

TOP RIGHT
142. Arne Jacobsen (1902–1971)
***Grand Prix* chair**, 1957
Made by Fritz Hansen
(Denmark)
Chrome-plated steel, molded
and laminated teak
Musée des Arts Décoratifs,
Paris

ABOVE
143. Arne Jacobsen (1902–1971)
**Silhouettes of chairs
designed between 1952
and 1970**

OPPOSITE
144. Arne Jacobsen (1902–1971)
***Egg* and *Swan* chairs in a room of the SAS Royal Hotel in Copenhagen**, 1958
Chairs made by Fritz Hansen (Denmark)
Cast aluminum, polyurethane foam, leather

BELOW
145. Poul Kjærholm (1929–1980)
***PK24* chaise longue**, 1965
Made by Kold Christensen (Denmark)
Flat chrome-plated steel, woven rattan, leather
Centre National des Arts Plastiques/Fonds National d'Art Contemporain, Paris, on loan to the Musée des Arts Décoratifs, Paris

BELOW
146. Arne Jacobsen (1902–1971)
***Cylinda Line Classics* tea and coffee service**, 1967
Made by Stelton (Denmark)
Satin-polish stainless steel
Musée des Arts Décoratifs, Paris

OPPOSITE, LEFT
147. Jacob Jensen for Sigvard Bernadotte (1907–2002) and Acton Bjørn (1910–1992)
***Margrethe* bowl**, 1950
Made by Rosti (Denmark)
Melamine
Designmuseum Danmark, Copenhagen

OPPOSITE, RIGHT
148. Erik Magnussen (b. 1940)
Thermos, 1977
Made by Stelton (Denmark)
ABS plastic, glass lining
Musée des Arts Décoratifs, Paris

FROM TABLEWARE TO TOYS

Danish manufacturers draw on a long tradition of fine work in silver and porcelain. The Georg Jensen company, founded in the nineteenth century, produces highly sophisticated modern silver, designed notably by Henning Koppel, Tias Eckhoff, Piet Hein, and Erik Herløw (plate 149). Its boutique on Fifth Avenue in New York is an important showcase of good Danish design overseas. The Royal Copenhagen porcelain manufactory, established under royal patronage in the eighteenth century, continues to produce classic models, including the *Flora Danica* and *Blue Fluted* services, while also collaborating with contemporary designers. In 1965, for example, Grethe Meyer created the *Blåkant* dishware line in white earthenware decorated with a thin blue line.

In 1950, the Swedish designer Sigvard Bernadotte founded an industrial design studio with the Dane Acton Bjørn. Their products notably include the *Margrethe* series of stackable plastic bowls, designed by Norwegian Jacob Jensen (plate 147). Stelton, established in 1960, began manufacturing modern yet timeless steel objects with Arne Jacobsen's 1967 *Cylinda Line* (plate 146). During the 1970s, Erik Magnussen developed a series of steel and plastic thermoses for Stelton that would become icons of Scandinavian design (plate 148). Magnussen, who was trained as a ceramicist, also designed pieces for the porcelain manufacturer Bing & Grøndahl, including original teapots. Wood, and in particular teak, was used in a variety of everyday objects—for example, the salad servers developed in Kay Bojesen's studio in 1949, or Jens Quistgaard's ice bucket (1960) for his company Dansk. Bojesen also designed toy animals in wood, which are very popular.

During the 1950s and '60s, Poul Henningsen continued to develop his modern lights with the manufacturer Louis Poulsen. His *PH Artichoke* lamp from 1957 is a sophisticated reinterpretation of the first *PH* lamps, with the metal leaves now split to add an organic dimension to the functional design (plate 150).

Children play an important role in Scandinavian society. The Danish company Lego, which began manufacturing wooden toys in 1932, diversified into plastic building blocks after the war. The famous Lego blocks have been only slightly modified since, and are still an excellent creative toy appreciated worldwide. Kompan has been manufacturing playground equipment since the 1970s and is now a world leader in this sector. Simple, whimsical, and colorful, its products are rigorously safe in both their materials and their construction.

OPPOSITE
149. Henning Koppel
(1918–1981)
Pitcher n° 992, 1952
Made by Georg Jensen
(Denmark)
Silver
Musée des Arts Décoratifs,
Paris

ABOVE
150. Poul Henningsen
(1894–1967)
***PH Artichoke* pendant lamp**, 1957
Made by Louis Poulsen
(Denmark)
Copper, steel
Museum of Modern Art,
New York

RIGHT
151. Verner Panton (1926–1998)
***Cone* chair**, 1958
Made for the Danish restaurant Kom-igen in Langeso
Made by Fritz Hansen (Denmark)
Chrome-plated steel, latex foam, cloth upholstery
Centre National des Arts Plastiques/Fonds National d'Art Contemporain, Paris, on loan to the Musée des Arts Décoratifs, Paris

OPPOSITE
152. Verner Panton (1926–1998)
***Panton* chair**, 1967
Made by Herman Miller (U.S.)
Polyester reinforced with fiberglass
Victoria and Albert Museum, London

THE COLORISTS: VERNER PANTON AND NANNA DITZEL

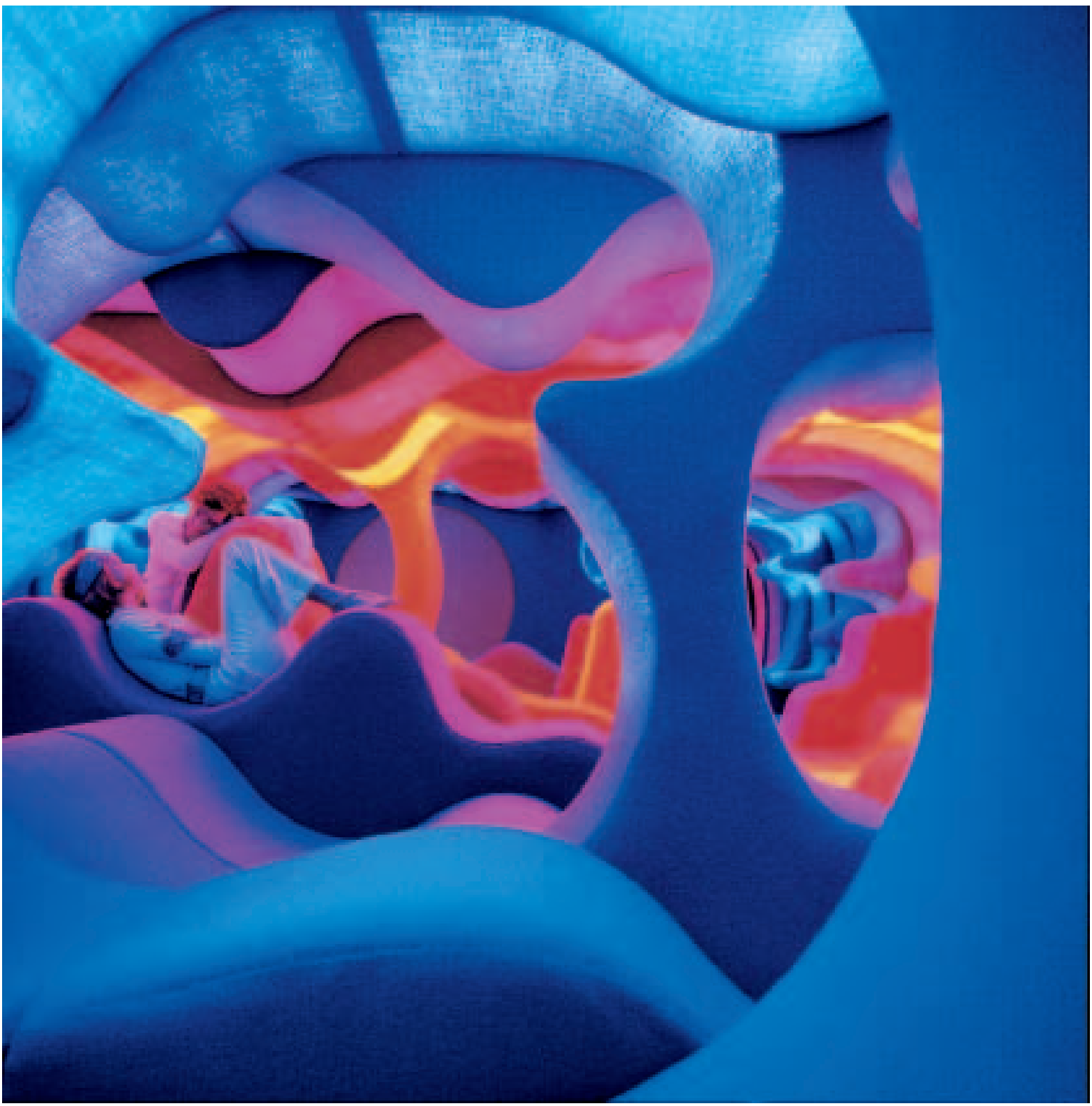
When the *Cone* chair—which looks like an ice-cream cone on a steel pedestal—was exhibited in a New York store window in 1959, it drew such crowds that the police ordered its removal (plate 151). This story attests to the originality and innovative—one might say provocative—spirit of the chair's Danish designer. After studying architecture, Verner Panton collaborated from 1950 to 1952 with Arne Jacobsen, among others, on the development of the *Ant* chair. In 1955, he opened his own design agency and joyfully explored furniture, lighting, textiles, new types of housing, and exhibition displays. The late 1950s marked the beginning of his collaboration with the young Plus-Linje company, with which he developed the *Cone* and *Heart* chairs, and also with Louis Poulsen, for which he designed lights. From 1957 to 1962, he worked on his design for the first chair made from a single piece of plastic, inspired by Gerrit Rietveld's *Zig-Zag* chair. After a brief period in Cannes, his research into manufacturing techniques led him to Basel in 1963, where he worked out the details of his plastic chair with Vitra and where he would stay from that point on. The *Panton* chair was finally ready in 1967 and immediately gained wide recognition (plates 152, 154). It set a technical standard that would endure until the appearance of new plastics in the 1990s.

Starting in the 1960s, Panton developed a number of interior designs that were strongly inspired by op art and by research into new ways of inhabiting and moving through space. His *Fantasy Landscape* for Bayer, presented at the *Visiona II* exhibition at the Cologne furniture fair in 1970, was a colorful environment whose sculptural forms, made from foam, blurred the boundaries between floor, wall, ceiling, and furniture in a rather psychedelic fashion (plate 153). With his joyful creative prowess, Panton contributed more than any Nordic designer to the transition from craft traditions to the modern world of synthetic materials.

The milieu of postwar Danish cabinetmakers and furniture designers was essentially male; Nanna Ditzel, along with Grete Jalk, was one of the rare women to break through. It was at the School of Arts and Crafts in Copenhagen, where she studied furniture design, that Nanna Hauberg met her future husband Jørgen Ditzel. They exhibited together at the Cabinetmakers' Guild exhibition as early as 1944, and then collaborated on furniture, textile, and jewelry projects, which earned

BELOW
153. Verner Panton (1926–1998) ***Fantasy Landscape*, in the *Visiona II* exhibition at the Cologne furniture fair**, 1970
Vitra Design Museum,
Weil am Rhein, Germany

OPPOSITE
154. **Herman Miller catalog presenting the *Panton* chair**
Vitra Design Museum,
Weil am Rhein, Germany



herman miller international collection

Panton Chair

OPPOSITE
155. Nanna Ditzel (1923–2005) and Jørgen Ditzel (1921–1961)
Hanging egg-shaped chair, 1957
Made by R. Wengler (Denmark)
Woven rattan

BELOW
156. Nanna Ditzel (1923–2005) and Jørgen Ditzel (1921–1961)
High chairs for children, 1955
Made by Kold Savværk, Kerteminde (Denmark)
Oregon pine

them numerous prizes and awards, notably the Lunning Prize in 1956. The preceding year, they designed the classic children's high chair manufactured by Kold (plate 156) and, in 1957, wicker furniture including a famous hanging seat shaped like an egg (plate 155). The couple's jewelry for Georg Jensen is highly sculptural. After the premature death of her husband in 1961, Nanna continued to operate their design studio, with a particular emphasis on textiles. She was interested in new materials and developed a system of geometric elements in foam that she used to create seats and colorful multilevel interiors. She then moved to London, where she remained for fifteen years, founding the Interspace International Furniture and Design Centre there.

In 1986, at age sixty-three, Ditzel returned to Copenhagen and began a second career. Her furniture made from ultrathin strips of plywood with silkscreened motifs, like the 1989 *Bench for Two* manufactured by Fredericia, once again attracted attention and awards. In her *Trinidad* chair from 1993, openwork rays in the plywood seat and back create a striking visual effect through simple means. Her *Hallingdal* upholstery fabric, distributed by Kvadrat since 1965, today is produced in more than one hundred colors.

BELOW
157. David Lewis (1939–2011)
***BeoSound 8* speakers**, 2010
Made by Bang & Olufsen (Denmark)

OPPOSITE
158. Hans Sandgren Jakobsen (b. 1963)
***Rockable/Unrockable* stool**, 1999
Made by Orebo Traeindustri A/S (Denmark)
Beech

TECHNOLOGICAL EXCELLENCE

The electronics company Bang & Olufsen was founded in 1925 by two young engineers, Peter Bang and Svend Olufsen. Having developed the first radio to work with alternating current, the company diversified into other audio products and then, in the 1950s, into television sets and hi-fi equipment. Since the mid-1950s, the brand has devoted itself to modern design and ease of use as a way of highlighting the advanced technology of its products.

After World War II, Bang & Olufsen worked with designers including Sigvard Bernadotte and Acton Bjørn, but it was Jacob Jensen in particular who would help the firm establish a sophisticated, minimalist aesthetic at the service of exceptional quality. In the face of competition from Asia, the Danish company was able to survive thanks to this high-tech image. Starting in the 1990s, David Lewis developed spectacular and innovative high-end products for Bang & Olufsen, like the *BeoSystem*, *BeoSound*, and *BeoVision* (plate 157). Placed like sculptures in an interior, these devices convey an aura of inventiveness and exclusivity to a demanding international clientele.

THE HEIRS OF DANISH MODERN

It is not easy for younger generations to stand out against such a legacy of furniture design. In 1981, the annual Cabinetmakers' Guild exhibition (Snedkerens Efterårsudstilling, or SE) was relaunched in order to encourage innovation and experimentation within the framework of quality craftsmanship. At the end of the 1990s, the *Walk the Plank* project and competition encouraged collaboration between designers and cabinetmakers. At the beginning of the twenty-first century, manufacturers like Gubi, Hay, and Muuto have been actively promoting contemporary Danish design, while also initiating Nordic and international collaborations. Hans Sandgren Jakobsen operates in the tradition of the designer-cabinetmakers. After studying the Shakers in the U.S. and collaborating with Nanna Ditzel, he began his own design practice in 1997. Well known for his *Gallery* stools of 1998, made from molded plywood, and the sculptural stool *Rockable/Unrockable* for the 1999 *Walk the Plank* (plate 158), he has since developed a more simple and functional style. Jakobsen works on the international level and has received numerous prizes and awards, the most recent being the prestigious Finn Juhl Prize in 2009.

Another recipient of the Finn Juhl Prize is Kasper Salto, the grandson of the Danish ceramicist Axel Salto. A cabinetmaker and industrial designer by training, he designed the *Runner* office chair in steel and plywood

LEFT
159. Cecilie Manz (b. 1972)
***Caravaggio P2* pendant lamp**, 2005
Made by Lightyears (Denmark)
Steel, high-gloss enamel

BELOW
160. Poul Christiansen (b. 1947) and Boris Berlin (b. 1953)
***Gubi* chair**, 2003
Made by Gubi (Denmark)
Plywood

OPPOSITE
161. Cecilie Manz (b. 1972)
***Essay* Table (with the *Series* chairs by Arne Jacobsen)**, 2009
Made by Fritz Hansen (Denmark)
Oak, beech, or walnut

for Peter Staerk in 1997. His collaboration with Fritz Hansen has resulted in such pieces as the *Ice* chair of 2002, the *Little Friend* adjustable table (2005), and the nylon *NAP* armchair (2010). *Ice* is made from aluminum and molded synthetic material and suited for indoor and outdoor use. Salto and his partner Thomas Sigsgaard won the contract to provide new furniture for the UN council chamber originally designed in 1952 by Finn Juhl.

Cecilie Manz, who studied in both Denmark and Finland, works in a minimalist vein, creating light, clever solutions. Her designs include furniture for Fritz Hansen (plate 161) and Fredericia; glass for Holmegaard; porcelain for Khler, inspired by Scandinavian designs of the 1950s; textiles for Georg Jensen; and the *Beolit 12* wireless speaker for Band & Olufsen. She has also designed several lamps for the Danish manufacturer Lightyears, including the *Caravaggio*, which has enjoyed great success ever since it was launched in 2005 (plate 159).

The duo from Komplot Design, the Dane Poul Christiansen and the Russian Boris Berlin, presented their innovative *Gubi* chair in 2003 (plate 160). This was the first piece of furniture to be produced by a new technique for molding plywood in three dimensions. Made from a sheet half the thickness of ordinary plywood, this chair, with its soft and "friendly" forms, is found in many restaurants in the Danish capital, making it the heir of Jacobsen's *Ant* and *Series 7* chairs.

Christian Flindt works in a vein that is even more experimental and futuristic, similar that of international designers like Marc Newson. Two of his chairs may serve to illustrate the variety of his work: On the one hand, the *Rainbow* chair of 2005, made from semitransparent Repsol glass and available in ten colors, employs rectangular forms and can be stacked to form a bench or wall. The *Orchid* armchair of 2008, on the other hand, has an organic form. Made from polished fiberglass, it is a kind of sculpture that is at once sensual and cold, because of its slick and shiny surface.

The Anglo-Danish Louise Campbell also breaks through the divide between design and sculpture. Her creativity and joyful irreverence are striking; witness her chairs in felt (*Bless you*, 1999), openwork wood (for *Walk the Plank*), laser-cut steel (*Veryround*, 2006, and *Spiderwoman*, 2009), and paper cord assembled in biomorphic shapes (*It's complicated*, 2011). Also designing lamps, glass, and porcelain, she has mastered Nordic minimalism as well as more decorative modes, playing with transparency and the integration of space.

BELOW
162. Alvar Aalto (1898–1976)
Door handle, 1950s
Bronze

OPPOSITE
163. Alvar Aalto (1898–1976)
Lamps for the dining room of the Maison Louis Carré, Bazoches-sur-Guyonne, France, 1956–59

FINLAND

The top producer of wood in Europe, Finland has a long tradition of architecture and everyday objects made from natural materials. With its vast forests, 180,000 lakes, and severe winters, the country has always been close to nature, and has developed a particular minimalism drawn from a sense of the essential. Remaining for a long time under foreign domination—Swedish until 1809 and Russian until 1917—the Finnish sought their own cultural identity in their vernacular tradition and their national epic, the *Kalevala*. Art nouveau, imprinted with a romantic nationalism, flourished there, in the work of the architects and designers Eliel Saarinen, Herman Gesellius, and Armas Lindgren as well as the painter Akseli Gallén-Kallela. Weak at its borders and much impacted by World War II, Finland rebuilt itself not only through architecture but also through the decorative arts and design.

ALVAR AALTO, THE HUMANIST

Alvar Aalto was an active participant in the reconstruction of Finland and endowed his country with many administrative, cultural, educational, and religious facilities. Although his career as an architect—in Finland and internationally—preceded his work as a designer, he completed several pieces of furniture and a number of light fixtures during the 1940s and '50s. His 45 chair, with a laminated birch frame, met the need for light and comfortable seating in his public buildings (plate 165). While simple, this armchair is meticulous in its detail, with armrests wrapped in rattan or leather for comfort. Aalto developed his prototypes with the help of loyal collaborators at Artek, which continues to manufacture his designs. In 1946, he perfected a new furniture leg, the *Y* leg, which he would employ in stools, chairs, and tables. In the mid-1950s followed another, even more sophisticated leg, the *X* or fan-shaped leg, its form practically plantlike. These legs were both based on the *L* leg, patented in 1933, which was made from solid wood reinforced by laminates on the curve of the foot. The *H* leg, or sleeve leg, from 1956, allowed for the assembly of tables and beds. This furniture was generally framed in birch, with seats or surfaces in wood or other natural materials, like rattan, leather, linen, or glass.

In addition to designing pieces for mass production, Aalto continued to create custom furniture and interiors for his various buildings, both in Finland and abroad. For example, he made successive variations of his bronze door handles and light fixtures, each time inventing new configurations (plates 162, 163). The 1950s

were a rich period for his lighting design: he developed his prewar models, with their indirect illumination, into ceiling fixtures, pendant lamps, and floor lamps. Made in painted metal, they often had brass shades or openwork brass covers in order to diffuse a warmer glow. Lighting was an integral component of his interiors, and his pendant lamps, which hang rather low, helped to articulate the space (plate 164).

Aalto and his second wife, the architect Elissa Aalto, also designed textiles with geometric motifs in primary colors, which are still distributed by Artek. Employing natural materials, Aalto's design work takes the user as its starting point and contributes to a humanist and organic vision of the built environment.

TAPIO WIRKKALA, THE POET OF MATERIALS

When the *Chanterelle* vases were introduced by the Iittala glassworks in 1946, the Finnish discovered the talent of the thirty-one-year-old designer Tapio Wirkkala. After studying sculpture at the Central School of Industrial Arts in Helsinki and working as a commercial artist in an advertising agency, Wirkkala won a competition sponsored by Iittala and began a collaboration that would last his whole life. The *Chanterelles*, with their very thin walls and fine engraved lines, are an abstract and poetic transposition of Finnish wild mushrooms into glass (plate 167). Wirkkala would continue to draw on the inspiration of nature to create modern objects that retain the capacity to transmit emotion and magic. Whether working in glass, wood, ceramic, or metal, Wirkkala greatly respected and truly understood his materials. He knew every technique and developed his designs in collaboration with craftspeople and workers.

In 1951, Wirkkala designed the Finnish pavilion at the Triennale di Milano. It was a great success and marked both the recognition of Finnish design abroad and Wirkkala's own fame. His leaf dish, made of laminated wood and silver, was named "the most beautiful object of the year" by the American magazine *House Beautiful* (plate 166). Danish and Swedish furniture and decorative art were already enjoying international respect, but because of its difficult postwar years, during which means and materials were scarce, Finaland was not yet part of the Scandinavian style in the minds of Europeans and Americans. The exhibition of Finnish art and design that traveled the U.S. in 1952 and the Finnish pavilion at the 1954 Triennale di Milano, again designed by Wirkkala, consolidated the country's reputation.

A versatile designer, Wirkkala also created silverware and ceramics for the German firm Rosenthal and glass for the Italian firm Venini (plate 168). In Finland, he collaborated with the manufacturer Asko to make sophisticated pieces in laminated wood and created his own version of the traditional hunting knife, *Puukko*. But it was in glass that he especially excelled and in which he expressed his purist, poetic vision of nature. Through the 1960s and '70s, the objects he designed for Iittala often seemed to evoke the ice of Lapland winters, as does the bottle he created for Finlandia vodka. With his full beard, his pipe, and the hands of a craftsman, Wirkkala himself symbolized the creative genius linked to the spirit of natural materials.

OPPOSITE
164. Alvar Aalto (1898–1976)
Furniture and lamps in the living room of the Maison Louis Carré, Bazoches-sur-Guyonne, France, 1956–59

LEFT
165. Alvar Aalto (1898–1976)
***n° 45/73W* Armchair**, 1946–47
Made by Artek (Finland)
Lacquered birch, rattan, black webbing
Musée d'Art Moderne, Saint-Étienne Métropole

BELOW
166. Tapio Wirkkala (1915–1985)
***Leaf* dish**, 1951
Laminated wood, silver
Museum of Modern Art, New York

BELOW
167. Tapio Wirkkala
(1915–1985)
***Chanterelle* vases**, 1948–54
Made by Karhula-Iittala
glassworks (Finland)
Blown glass with wheel
engraving
Musée des Arts Décoratifs,
Paris

OPPOSITE
168. Tapio Wirkkala
(1915–1985)
***Bolle* bottles**, 1966
Made by Venini (Italy), 1995–96
Blown glass, incalmo technique
Musée des Arts Décoratifs,
Paris

BELOW
169. Kaj Franck (1911–1989)
***Kartio* carafe and glasses**, 1958
Made by Nuutajärvi glassworks (Finland)
Colored mold-blown glass
Museum of Modern Art, New York

OPPOSITE
170. Gunnel Nyman (1909–1948)
Vase, 1947
Made by Nuutajärvi glassworks (Finland)
Glass with bubbles, blown in a spiked mold
Victoria and Albert Museum, London

FUNCTIONAL AND ELEGANT TABLEWARE

There is a long tradition of glassmaking in Finland. In the mid-twentieth century, the country had three large glassworks: Iittala, Nuutajärvi, and Riihimäki. Along with the Arabia ceramics manufactory, these glassworks invited young designers into their modern plants, both to create everyday objects and to experiment with artistic processes.

Like Tapio Wirkkala, Kaj Franck was a multidisciplinary designer. Trained in furniture design, he first worked on interiors and textiles. After the war, it was in ceramics and glass that he made the greatest contributions, leaving a mark on daily life in Finland that still endures. His best-known service for Arabia is the earthenware *Kilta* collection, designed between 1948 and 1952. He conceived of it as a durable, multipurpose dish set, with geometric elements in four colors that could be combined in different ways. (In the early 1980s, he reworked this service, which enjoyed a renewed popularity under the name *Teema*.) At the same time, Franck designed glass objects for Iittala, which he left in 1950 to become the artistic director of Nuutajärvi. There he continued to make simple objects in pressed glass, including the handsome *Kartio* carafe and glasses (1958)—still manufactured today by Iittala (plate 169). Convinced that designers have a social responsibility, Franck adopted functionalist precepts to meet the needs of everyday life in the postwar era. He also made art glass in delicate colors, and at the end of his life, surrendered to the allure of Pop.

The career of the glass, furniture, and lighting designer Gunnel Nyman was short but influential, particularly in the area of Finnish glass. Starting in 1932, she worked for the Riihimäki glass company, where she perfected a technique that releases bubbles to the surface of the glass (plate 170). Her vases of the 1940s represent the first examples of glass sculpture in Finnish design. Nyman also worked briefly for Iittala and Nuutajärvi, from 1946 to her premature death in 1948, at the age of thirty-nine. Her vases, in particular the *Serpentini* and *Calla*, anticipated the evolution of Finnish glass toward the sculptural and organic forms of the 1950s.

Timo Sarpaneva designed everyday objects, but his work is primarily artistic. A precocious talent, he joined Iittala in 1950, at the age of twenty-four. He invented the steam-blowing technique, which he used to create

BELOW
171. Timo Sarpaneva
(1926–2006)
Casserole dish, 1959
Made by W. Rosenlew and Co.
(Finland)
Cast iron, teak
Museum of Modern Art,
New York

OPPOSITE
172. Timo Sarpaneva
(1926–2006)
***Lancette* vase**, 1952
Made by Iittala (Finland)
Transparent and white
opaline glass
Museum of Modern Art,
New York

his sculptural *Lancette*, *Kayak*, and *Orchidée* vases in the vein of Nyman (plate 172). Honored at the Triennale di Milano in 1954, these remarkable pieces propelled him onto the international scene. His delicately tinted *i-Glass* series of the mid-1950s was situated between housewares and art glass. In 1964, he presented his *Finlandia* vases, blown in wooden molds that were gradually charred by the molten glass. Rawer in facture, each of these objects is slightly different and bears the trace of nature, recalling wood but also ice. A pioneer in this domain, Sarpaneva influenced the "frosted" aesthetic of the 1970s, which others including Wirkkala drew on. The starting point of Sarpaneva's *Festivo* (1966) and *Archipelago* (1981) candlesticks is transparent and expressive glass.

A multifaceted designer, Sarpaneva also designed textiles, porcelain for Rosenthal, and a famous cast-iron casserole dish for W. Rosenlew & Co. (plate 171). Introduced in 1960 and reissued by Iittala in 2003, this piece revisits the traditional casserole dish, giving it a wooden handle that can be detached to allow the removal of the lid. Until his death in 2006, Sarpaneva also created many glass pieces that were either unique or issued in limited editions. The forms of these pieces are pure and geometric, attesting to both his great technical mastery and his artistic talent. In 2011, Design House Stockholm reissued his *Timo* glasses in an edition called *Timo Termo*, made of thermally resistant glass decorated with thin strips of colored silicone, so as to lessen the feeling of heat or cold.

173. Ilmari Tapiovaara (1914–1999)
***Domus* chairs**, 1946
Made by Keravan Puuteollisuus (Finland)
Solid wood and plywood
Private collection

FURNITURE IN WOOD AND STEEL

The interior designer Ilmari Tapiovaara worked for Finmar, the London-based branch of Artek, in the mid-1930s. In 1946, he designed his famous *Domus* stackable chair, made of solid wood and plywood, for Keravan Puuteollisuus (plate 173). From the start, Tapiovaara was concerned with the functional and pragmatic side of design. He used local materials and sought to rationalize manufacturing techniques for the purpose of large-scale production. His furniture is easily disassembled, stackable, and inexpensive to transport. The 1950s were a fertile period, in which he created a wide range of furniture in wood, metal, and plastic. Tapiovaara also concerned himself with interiors (for the home, airliners, and exhibitions), products, and graphics; he designed lights, silverware, toys, textiles, and wallpaper. Between 1951 and 1964, he won six gold medals at the Triennale di Milano for his work.

Tapiovaara's aesthetic draws on that of Alvar Aalto in its use of bent wood and plywood, as well as in its research into function. But Tapiovaara quickly developed his own style, characterized by the continuous line between the short armrests and the back legs of his chairs, a structural detail that lends them lightness and elegance. Applied for the first time in the *Domus* armchair of 1946, this principle was one he drew on throughout his career. The *Pirkka* chairs (1954) are based on traditional wood furniture, and the stool version, with its thick seat and thin legs, has furnished countless saunas. A great traveler, Tapiovaara was also receptive to influences from outside Finland, and he sometimes recalls the Danish designer-cabinetmakers in his elegant detail and use of exotic woods (see, for example, the *Tale* stool of 1953; plate 174). Through his teaching at the University of Industrial Art in Helsinki as well as through his designs, Tapiovaara played an important role in the history of forms and materials in Finland, bringing to it a vision at once pragmatic and poetic.

Antti Nurmesniemi earned his degree in interior design in 1950. His first piece to attract attention was a sauna stool (1952) for the Palace Hotel in Helsinki. Shaped like a horseshoe and made in birch and teak, this stool reinterprets the traditional Finnish sauna chair (plate 175). Nurmesniemi worked in a modernist vein and was open to foreign influences, especially Italian; he spent six months with a design firm in Milan. In 1957, he designed for Wärtsilä the classic *Fidel* coffeepot in enameled steel, whose bright colors were chosen by his wife, the ceramicist and textile designer Vuokko Eskolin-Nurmesniemi (plate 176).

Winner of the Lunning Prize in 1959, Nurmesniemi designed the Finnish pavilions at the Triennale di Milano in 1960 and 1964, which earned him the *gran premio*. For the first one, he designed the *Triennale* chair, an elegant object with a black leather shell atop two T-shaped steel legs. He developed the steel-legged *001* chaise longue of 1968 in collaboration with his wife, who was responsible for the various striped and colored fabrics in which it can be upholstered. Nurmesniemi created a variety of other furniture for Artek, Tecta, and Cassina, as well as numerous interior and exhibition designs. He also worked on kitchen utensils, doorknobs, the carriages of the Helsinki metro (in collaboration with Börje Rajalin), and the *Antti* telephones in colored plastic for the Japanese company Fujitsu. Nurmesniemi was an industrial designer in the modern sense of the word, with a pragmatic and international spirit, who nevertheless remained loyal to the values of Nordic living.

TOP LEFT
174. Ilmari Tapiovaara (1914–1999)
***Tale* stool**, 1953
Made by Aero (Finland)
Solid wood and plywood
Private collection

TOP RIGHT
175. Antti Nurmesniemi (1927–2003)
Sauna stool, 1952
Made by G. Soderstrom (Finland)
Birch, teak
Museum of Modern Art, New York

ABOVE
176. Antti Nurmesniemi (1927–2003)
***Fidel* coffeepots**, 1957
Made by Arabia, Wärtsilä Ab (Finland)
Enameled steel
Museum of Modern Art, New York

BELOW
177. **Bedroom with furniture by Eero Aarnio**, 1971

OPPOSITE
178. Maija Isola (1927–2001)
***Citrus* fabric**, 1956
Made by Printex Oy (Finland)
Cotton
Victoria and Albert Museum, London

EXPRESSIVE TEXTILES AND POP ENVIRONMENTS

To address the scarcity of fabric and clothing at the end of the war, Viljo and Armi Ratia founded the print fabric company Printex in 1949. Two years later, they also established the retail brand Marimekko with the aim of encouraging the use of Printex textiles in interior design. Armi Ratia wanted different motifs than those available at the time and hired as a designer Maija Isola, a young artist who had studied painting at Helsinki's Central School of Industrial Arts. Isola created abstract, African-inspired motifs in bright colors, which were silkscreened on simple cotton canvas. In 1953, Vuokko Eskolin-Nurmesniemi joined the firm and designed several patterns, including the *Everybody* for men's shirts, which became a kind of national uniform. Despite a positive reception, Marimekko's beginnings were difficult. However, with the brand's participation in fairs abroad—notably Expo '58 in Brussels—it started to gain international attention. It obtained its first representation in the U.S. a year later, and in 1960 Jacqueline Kennedy advertised the brand by making a purchase—heavily reported—of several Marimekko dresses. That same year, Annika Rimala replaced Eskolin-Nurmesniemi, who left the company to found her own, called Vuokko.

During the 1960s, Isola designed her best-known patterns for Marimekko, including *Unikko* (poppy), *Melon*, and *Kaivo*. These oversize motifs in bursting colors, which emit an energy and joie de vivre approaching the realm of the visual arts, were revolutionary in that epoch of textile design (plate 178). Rimala also created geometric patterns and introduced broad stripes on jersey fabric. The style of Marimekko clothing—simple,

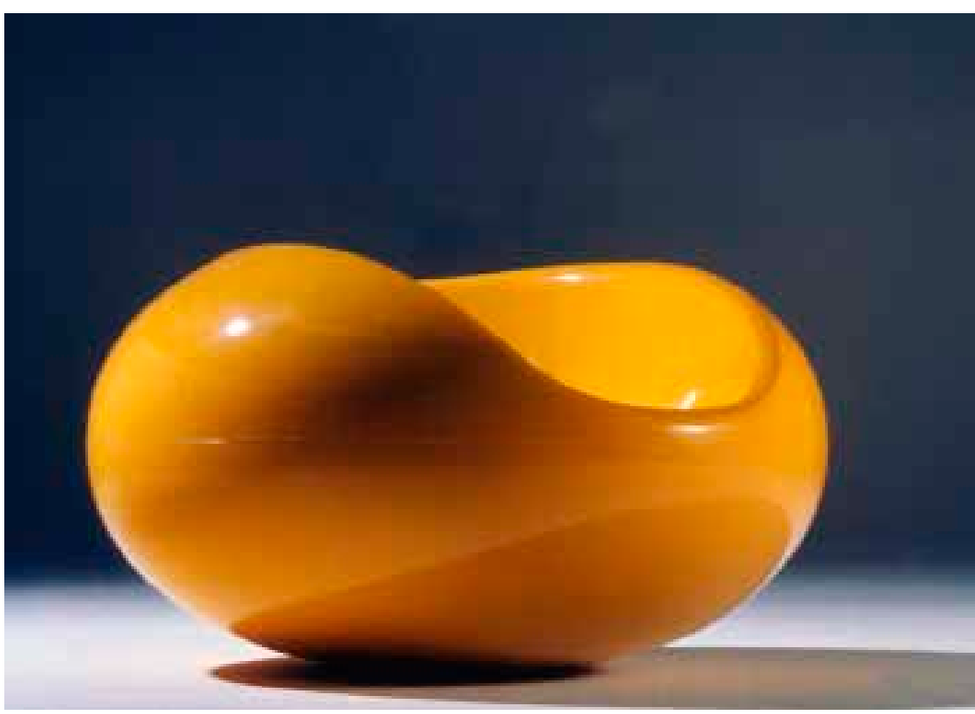
BELOW
179. Eero Aarnio (b. 1932)
***Pastil* chair**, 1967
Made by Asko International, later Adelta International (Germany)
Molded polyester reinforced with fiberglass
Centre National des Arts Plastiques/Fonds National d'Art Contemporain, Paris

OPPOSITE
180. **Young woman in Eero Aarnio's *Balloon* chair**, 1968

full, and unisex—promoted an image of liberation and freedom. (The brand also produces linens and accessories.) After some difficult years in the 1980s, Marimekko has returned to the spotlight with the reissue of iconic patterns from the 1960s and the production of derivative products. One of the latest uses of the *Unikko* flowers is on the outer hull of Finnair planes, as a symbol of the national culture.

Most Finnish furniture designers chose not to adopt synthetic materials, and Eero Aarnio also began by designing wood pieces in the 1950s. However, at the beginning of the 1950s, when he established his own studio, he became interested in fiberglass (plate 177). His first chair in this material was the *Balloon* of 1962 (plate 180). An offspring of Jacobsen's *Egg* and the Ditzels' hanging chair, the *Balloon* takes the concept further by creating a space within a space. Its spherical shell of white fiberglass has an orange-upholstered interior, and Aarnio even installed a telephone in the first prototype. Asko, the producer of his wood pieces, worked with him to develop this chair and presented it in 1966 at the Cologne furniture fair, where it garnered a great deal of attention. Aarnio also designed a hanging version in transparent acrylic called the *Bubble*, launched in 1968.

At the 1968 Cologne furniture fair, Aarnio showed another design, the *Pastil* rocking chair, made in several colors of fiberglass (plate 179). Slightly smaller than the opening of the *Balloon*, it can therefore be shipped inside it. A winner of the American Industrial Award, the *Pastil* can be used outside or in and lends itself to playful activity, like floating on water or sliding on snow. Aarnio's designs belong to the pop culture and share the optimistic, playful spirit of the 1960s. In 1973, he designed further synthetic chairs, including the *Tomato* and the *Pony*, shaped like its namesake(plate 181).



These were complemented by other chairs and tables during the 1990s and 2000s. Aarnio's pieces, now manufactured by Adelta, have sparked renewed interest, and a Norwegian telephone company has even placed *Bubble* chairs in its offices to allow its clients to use their cell phones more privately. The prototype of 1962 has thus found a new application a half-century later.

Yrjö Kukkapuro opened his design studio around the same time as Aarnio, at the end of the 1950s. A

BELOW
181. Eero Aarnio (b. 1932)
***Pony* chair**, 1973
Made by Adelta International (Germany), 2001
Steel, molded polyurethane foam, stretch fabric (89% polyester and 11% Lycra)
Centre National des Arts Plastiques/Fonds National d'Art Contemporain, Paris, on loan to the Musée des Arts Décoratifs, Paris

BOTTOM
182. Olof Bäckström (b. 1922)
***O* series scissors**, 1967
Made by Fiskars (Finland)

OPPOSITE
183. Yrjö Kukkapuro (b. 1933)
***Karuselli* (Carousel) armchair**, 1965
Fiberglass, leather, chrome-plated steel
Distributed by Avarte (Finland)
Private collection

student of Tapiovaara, he remained loyal to functionalist precepts throughout his career. After making furniture in plywood and steel, Kukkapuro drew attention in 1965 for his imposing *Karuselli* (Carousel) armchair (plate 183). Molded on his own body, the fiberglass shell is upholstered in leather and stands on a steel base. The following year, this chair was handsomely enshrined on the cover of *Domus* magazine. Accompanied by a footrest, the *Karuselli*, a Nordic reinterpretation of the Eameses' celebrated 1956 lounge chair, is a coveted classic today. During the 1970s, Kukkapuro took an interest in ergonomics and developed innovative office chairs. A teacher at and director of the Central School of Industrial Arts in Helsinki, he went through a brief postmodern period is the 1980s. First manufactured by Haimi, his pieces are now produced by Avarte.

In was in 1967 that the famous *O* series of scissors was introduced by Fiskars (plate 182). The industrial designer Olof Bäckström drew inspiration from tailor's scissors in developing the series. Perfectly ergonomic, the orange handles in ABS are meant for right-handed users, and the red, for left-handed ones. Fiskars, one of the oldest companies in Finland, was founded in 1649 in the village of the same name, near the country's southern coast. Traditionally a manufacturer of cutlery and kitchenware, Fiskars also manufactures a full range of tools for gardening and forestry and has become a leader in dependability and ease of use.

BELOW
184. Frank Nuovo (b. 1961)
***GS 10* mobile phone**, 2002
Made by Nokia (Finland)

OPPOSITE, TOP
185. Ilkka Suppanen (b. 1968)
***Flying Carpet* sofa**, 1997
Made by Cappellini (Italy)
Flexible steel, aluminum finish, felt
Centre National des Arts Plastiques/Fonds National d'Art Contemporain, Paris

OPPOSITE, MIDDLE
186. Harri Koskinen (b. 1970)
***Block* lamp**, 1996
Made by Design House Stockholm (Sweden)
Glass block in two parts
Museum of Modern Art, New York

OPPOSITE, BOTTOM
187. Terhi Tuominen (b. 1979)
***Fold* chairs**, 2008
Made by Dayground (Finland)
Ash

NOKIA PHONES

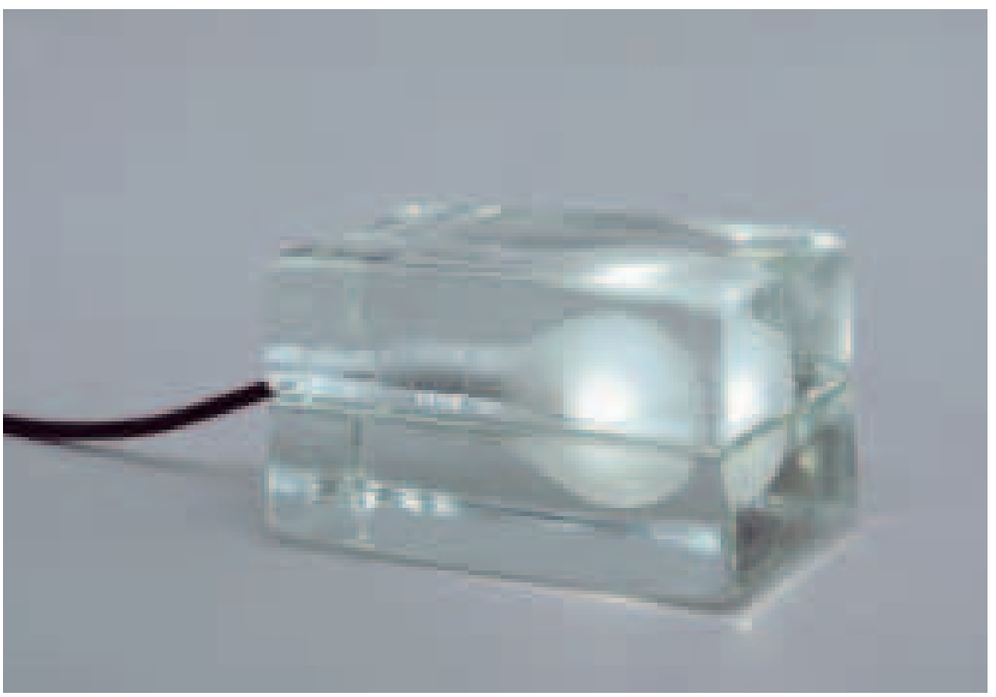
The Nokia company, originally a paper pulp mill, was founded in 1865. In 1966, it merged with two other companies, one a producer of rubber and the other, of telephone cable. After having launched the first mobile car telephone in the 1980s—weighing more than twenty-two pounds (10 kg)—the group began to focus exclusively on mobile phones in 1992. A pioneer in the sector, Nokia remained the top manufacturer of cell phones worldwide until 2012, the year when competition from Asia took the lead. The American Frank Nuovo, head of Nokia's design team from 1995 to 2006, emphasized simple and solid design, but without strong styling (plate 184). His successor Alastair Curtis attempted to contend with the smartphones being introduced by other brands. In 2011, the Finn Marko Ahtisaari took the helm of the design department and developed models with colorful and sleek cases. A major player in the "Finnish economic miracle" of the 2000s, the Nokia group has wagered on design in its attempt to take back leadership in the cell phone industry.

BETWEEN TRADITION AND GLOBALISM

During the 1980s, Finnish design stood on the sidelines. It did not find a place of its own in postmodernism, and a number of companies focused on reissuing classics. The early 1990s was marked by the economic crisis resulting from the fall of the Soviet Union and the consequent collapse of many Finnish manufacturers' main market. Around 1995, initiatives promoting education and creativity began to bear fruit, while international trends turned again toward simplicity and authenticity. The generation of designers born at the end of the 1960s and the beginning of the 1970s was freed from the weight of past glory; they placed themselves on an international stage and used every technique at their disposal.

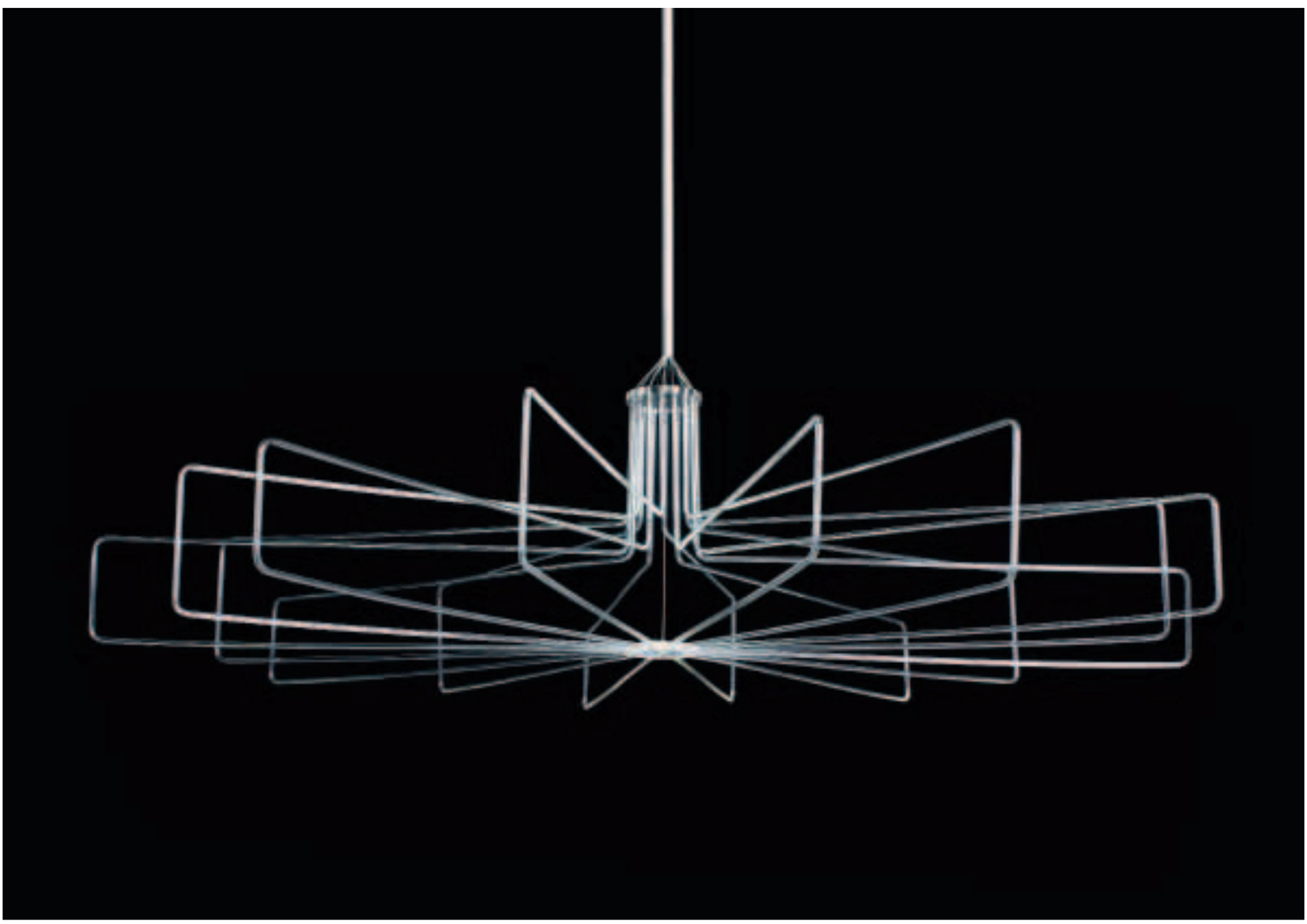
Ilkka Suppanen, who now belongs to the Valvomo collective, was a founding member of the Snowcrash cooperative in 1997. At the Milan furniture fair, he drew notice for his *Flying Carpet* sofa, which was subsequently distributed by Cappellini (plate 185). The thick felt seat seems to float since it is held up only by thin steel rods. His *Catherine* armchair of 2009 for Vivero adds a free and asymmetrical note to lounge furniture. Suppanen has designed for many companies in Finland and abroad. His work is light and forward-looking, while remaining anchored in the Scandinavian heritage.

In 1996, Harri Koskinen attracted attention with his *Block* lamp for Design House Stockholm (plate 186). The bulb is simply inserted between two blocks of glass, recalling Sarpaneva's or Wirkkala's frosted sculptures. Koskinen has gone on to design glass for Iittala and Venini; speakers for the Finnish company Genelec; watches for Issey Miyake; wood and steel furniture for Artek, Montina, Cassina, and Woodnotes; textiles for



BELOW
188. Timo Salli (b. 1963)
***Helsinki Lighthouse* pendant lamp**, 2006
Made by Saas Instruments (Finland)
Acrylic tubing and fiber optics

OPPOSITE
189. Seppo Koho (b. 1967)
***Secto* pendant lamps**, 1999
Made by Secto Design (Finland)
Laminated birch



Marimekko; lights for Muuto; and tableware for Hackman, Arabia, and Alessi. He is a direct descendant of Nordic functionalism, with a remarkable sense of proportion and materials.

Named young designer of the year in 2009, Terhi Tuominen has a fresh approach to the objects she makes. In her *Blackbird* chair of 2006, a very thin metal mesh rests on a steel frame painted white or black. Its originality lies in its angular forms, reminiscent of a bird's beak. The stackable *Fold* chair of 2008 displays folds in the blond plywood, creating the effect of a three-dimensional surface (plate 187). Tuominen's structures readily combine an apparent fragility with true compositional strength.

In the technological vein, there is Timo Salli's *Helsinki Lighthouse* lamp (2006; plate 188), distributed by Saas Instruments and made of acrylic tubes and fiber optics that generate a soft halo of light. Many designers have attempted to work with LED technology. The *Tunto* lamp by Mikko Kärkkäinen (2009) integrates LEDs into an elegant plywood structure; it can be turned on by a touch. Since 1999, Seppo Koho has designed the fine *Secto* lamps in laminated birch, handmade by Finnish craftspeople and exported throughout the world (plate 189). In 2012, Secto Design presented its *Aspiro* pendant lamp, with a birch spiral illuminated by an LED. These lamps illustrate the trend among young Finnish designers of combining traditional Nordic materials and forms with the newest technologies, or, in other words, of marrying the local and the global.

RIGHT
190. Sveinn Kjarval (1919–1981)
***Horseshoe* chair**, 1960
Made by Nyvirki (Iceland)
Steam-bent and laminated wood, hide

OPPOSITE
191. Halldór Hjálmarsson (1927–2010)
Interior design of Café Mokka in central Reykjavik, 1958
Reykjavik Museum of Photography

ICELAND

A rocky volcanic island, Iceland is poor in natural resources such as wood. For centuries, Icelandic interiors were characterized by the economy of their furnishings, which were generally immobile and made of driftwood or imported wood. Craft traditions focused on wool—abundant and of good quality—as well as silver. Linked to the other Nordic countries through history and trade (and being a Danish colony until 1944), Iceland gradually adopted their lifestyle in the nineteenth and twentieth centuries by importing the necessary materials. In 1930, on the occasion of the Icelandic parliament's millennial celebration, a romantic national awakening was expressed in literature and products inspired by the golden age of the Vikings. At the same time, Scandinavian functionalism became the norm in architecture, accompanied by the production of simple and practical furniture. Occupied by the British and then the Americans during World War II, Iceland emerged from the conflict prosperous and independent. Sheltered by restrictions on furniture imports, the local market saw the emergence of partially automated workshops and some rather fine products in the 1950s and '60s.

After World War II, the majority of Icelandic architects and designers continued to study in Copenhagen, as they had before. There they worked under the direction of the leading Danish designers and cabinetmakers and learned their methods. Icelandic design after the war was therefore naturally influenced by the Danish school. Limited means and a limited market often ended up stifling the ambition of young designers who returned to Iceland. The first to come home was Sveinn Kjarval, following an apprenticeship with a cabinetmaker and a diploma from the School of Arts and Crafts in Copenhagen. In 1955, he founded the small company and workshop Nývirki, partnering with the carpenter Gísli Ásmundsson. During the 1960s, they produced small batches of several of Kjarval's designs, including the *Horseshoe* chairs (1960; plate 190). Made in laminated, steam-bent oak, it recalls the other chairs with spindle backs, inspired by Windsor chairs, that were popular in postwar Scandinavia for their light weight and low cost. The peculiarity of the *Horseshoe* is that the upper part of the back is steeply angled and widens to form the armrests. The seat is covered in Icelandic wool or hide. Kjarval also designed a lighter version to accompany a dining room table. His rocking armchair of the same period, in beech or oak with a horsehide seat, recalls a design by his teacher Hans Wegner and enjoyed great popularity in Iceland.

Kjarval's peroba chairs were included in the exhibition *Formes Scandinaves* in Paris in 1958. He also designed furniture in steel and plastic for Sindrasmiðjan, starting in 1957. At the beginning of the 1970s, Kjarval once again left Iceland to live in Denmark. Today his furniture is counted among the classics of Icelandic design and greatly sought after.

Halldór Hjálmarsson returned from Copenhagen in 1956 with a degree in furniture design. He developed several chairs in plywood on a steel base and gave them names drawn from Icelandic culture. The *Skata* (Ray) chair, an Icelandic version of Arne Jacobsen's *Ant*, has been reissued by the Museum of Design and Applied Art in Iceland. Like a number of his colleagues, Hjálmarsson also designed interiors. In 1958, he created the interior of the little Mokka café in the center of Reykjavik (plate 191). A beloved destination for artists and intellectuals in the capital ever since it opened, the café has kept its decor of banquettes, fixed tables, and pendant lamps almost fully intact.

Hjalti Geir Kristjánsson did not study in Copenhagen, but rather in Zurich, Stockholm, and New York. When he returned to Iceland in 1951, he worked with his father Kristján Siggeirsson, a carpenter who had founded a furniture factory in 1919. Kristjánsson modernized production and introduced contemporary Scandinavian design. His *ST114* chair of 1958 in teak and leather, designed for mass production, furnished many homes in Iceland. Commissioned by the University of

BELOW
192. Gunnar Magnússon
(b. 1933)
***Milan* armchair**, 1964
Made by Skeifan (Iceland)
Teak, wool upholstery

Iceland to make a sofa for its ceremonial hall in 1965, he designed a simple seat, upholstered in light-colored leather. When Iceland joined the European Free Trade Association (EFTA) in the early 1970s and taxes on imports gradually disappeared, competition with imported furniture became quite a bit harsher, and the company began to focus on office furniture.

GUNNAR MAGNÚSSON, THE GEOMETER

The son of a shipowner from northern Iceland, Gunnar Magnússon learned cabinetmaking under Guðmundur Guðmundsson, known as the "Blind Man," in his Víðir furniture factory in Reykjavik. From 1959 to 1963, he studied furniture design at the School of Arts and Crafts in Copenhagen. During those years, he was selected to participate in the Cabinetmakers' Guild exhibition on several occasions, and his pieces were manufactured by the cabinetmakers Søren Horn, Christensen & Larsen, and Anders Svendsen, and by the Skalma company. Magnússon quickly distinguished himself with the clean lines of his geometric designs. At the time, Finn Juhl and Hans Wegner's organic forms dominated the Danish scene, but Magnússon tended increasingly toward the style of Børge Mogensen.

His first pieces included an innovative set of nesting tables, allowing for the assembly of three tables of the same height. He also designed a teak bed called the *Rockefeller,* since Nelson Rockefeller bought one at the famous Den Permanente boutique in Copenhagen. The legs and armrests of his oak *Inka* armchair are formed by two rectangles, joined by an outer frame that supports the back. A sofa and coffee table complete the set. Magnússon's designs were very well received by the public and critics alike. In 1963, he was one of the winners of an important international competition sponsored by the London *Daily Mirror*, and his bedroom furniture was produced by the Archie Shine company.

Despite this success, Magnússon decided to return to Iceland upon finishing his studies. Beginning in 1963, he adapted some of his Danish pieces for the Icelandic company Skeifan and the Meiður carpentry workshop. The *Milan* sofas and armchairs, with their clean lines and upholstery in bright blue Icelandic wool, are a variation of his *Blanca* series (plate 192). In 1968, he created the *Apollo* series in Oregon-pine plywood, inspired by the circular forms of a traditional butter churn (plate 194). Magnússon designed numerous interiors, notably those of the Holt Hotel in Reykjavik between 1963 and 1992, parts of which can still be seen. In 1972, he designed the impressive table in mahogany, leather, and marble that was used for the famous chess match between Boris Spassky and Bobby Fischer. Starting in the early 1980s, he focused on office furniture for Kristján Siggeirsson. Today, some of Magnússon's models are being reissued, and he is recognized as the most original Icelandic designer of the postwar period, bringing together vernacular inspiration and Scandinavian refinement (plate 193).

RIGHT
193. Gunnar Magnússon
(b. 1933)
Pendant lamp, 1975
Made by Málmsteypa Ámunda
(Iceland)
Painted metal

BOTTOM
194. Gunnar Magnússon
(b. 1933)
***Apollo* sitting room**, 1968
Made by Kristján Siggeirsson
(Iceland)
Oregon pine, wool upholstery

RIGHT
195. Einar Þorsteinn Ásgeirsson (b. 1942)
***Bucky* stool**, 1980
Made by the designer
Plywood with metal fasteners

BOTTOM
196. Dieter Roth (1930–1998) and Manfreð Vilhjálmsson (b. 1928)
Kúlan (The Ball) boutique in Reykjavik, 1962
Reykjavik Museum of Photography

OPPOSITE
197. Högna Sigurðardóttir-Anspach (b. 1929)
Interior in Gardabær, Iceland, 1965

BRUTALIST AND EXPERIMENTAL FURNITURE

An interesting interlude took place in Reykjavik when Swiss artist Dieter Roth moved there with his Icelandic wife between 1957 and 1964. He became friends with the architect Manfreð Vilhjálmsson, and showed him his way of making furniture from salvaged materials. In 1962, they and some fellow artists founded a boutique called Kúlan (The Ball), where Roth presented furniture in raw wood and metal, jewelry, books, and toys. Vilhjálmsson contributed chairs, stools, and tables that he made from painted metal tubes and sailcloth. The experiment, which lasted only three months, in some ways anticipated today's inexpensive furniture that is sold disassembled (plate 196). Vilhjálmsson, who was one of the leading Icelandic architects of the twentieth century, continued to use repurposed materials—notably rake handles for shelves and racks in his own house. In 1969, for the interior of a nightclub, he designed some thirty stools made from red buoys encased in painted metal frames.

Another architect, Högna Sigurðardóttir-Anspach, designed a few houses in Iceland in the 1960s before moving to France (plate 197). All the furniture—including the beds, shelving, and tables—was conceived in raw, unfinished concrete, and the light fixtures were built into the walls. This approach reflected a new conception of the home in a brutalist aesthetic, as a sculpture to live in.

The *Bucky* stool, designed by the architect and mathematician Einar Þorsteinn Ásgeirsson in the early 1980s, is an investigation into geometric forms (plate 195). In an homage to Buckminster Fuller, it is made from four hexagonal sheets of plywood, assembled with metal fasteners. Ásgeirsson later moved to Berlin, where he continued to study and construct geometric forms, often on behalf of the Icelandic-Danish artist Ólafur Elíasson.

BELOW
198–99. Pétur B. Lúthersson (b. 1936)
***Stacco* stackable chairs**, 1980
Made by Labofa (Denmark)
Steel, upholstered seat

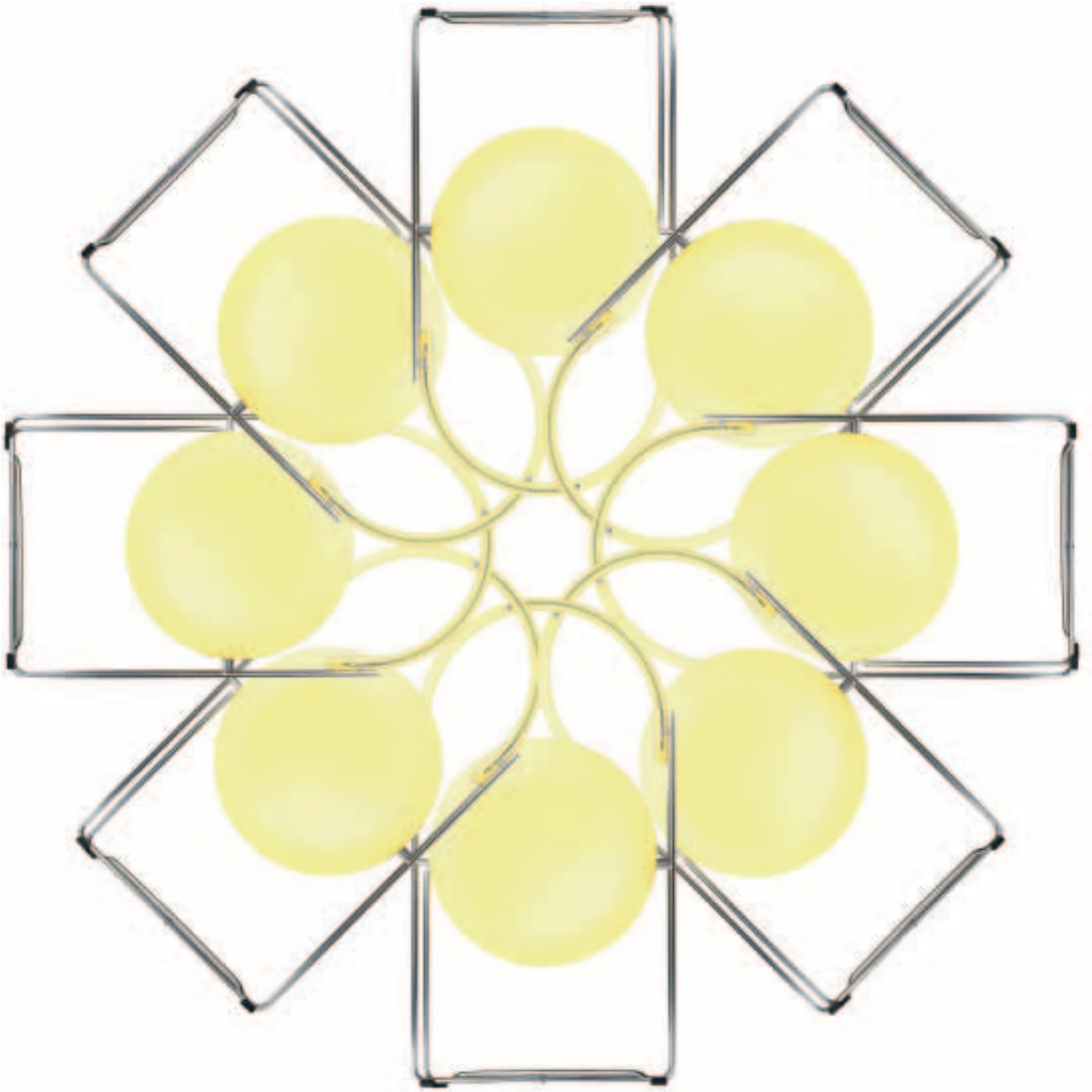
OPPOSITE
200. Valdimar Harðarson (b. 1951)
***Sóley* folding chairs**, 1982
Made by Kusch & Co (Germany)
Steel, lacquered wood

FURNITURE FOR EXPORT

After Iceland joined the EFTA, there was an attempt to encourage the export of Icelandic design. The models presented at international fairs often piqued interest but generally were not backed by production capacity or marketing. In a market as small as Iceland—where the population was not even three hundred thousand at the time—designers nevertheless had to look abroad to make a living for their work. According to Pétur B. Lúthersson, if the Icelandic people had invested the same energy in selling furniture as they did in selling fish, their furniture industry would be in much better shape today. A furniture designer since 1964, Lúthersson established his own relationships with foreign distributers, and his office furniture is produced in Denmark, Germany, Italy, Great Britain, the Netherlands, and the U.S. The Danish distributor Labofa sold several hundred thousand units of his stackable *Stacco* chair of 1980 (plates 198, 199).

The architect Valdimar Harðarson offered his folding *Sóley* armchair (named after an Icelandic flower) to the German firm Kusch & Co. in 1982 (plate 200). Unique in that it could be folded in a single motion and hung on the wall, *Sóley* was named "furniture of the year" in 1984 and also produced in Japan until 2003. In 2012, it was reissued in a wide variety of colors and finishes.

Erla Sólveig Óskarsdóttir studied in Denmark and collaborated with several distributers there and abroad. Onecollection, the company that reissued Finn Juhl's furniture, has distributed her chairs since 1997. The folding *Ames Einn* chair from 2001 is a good example of her style, at once rigorous and fluid. Óskarsdóttir is today one of Iceland's most prolific furniture designers.



BELOW
201. Dögg Guðmundsdóttir (b. 1970) and Rikke Rützou Arnved (b. 1973)
***Fifty* chair**, 2012
Made by Ligne Roset (France)
Steel, cord

BOTTOM
202. Dögg Guðmundsdóttir (b. 1970)
***Stjaka* candelabra**, 2011
Made by Epal (Iceland)
Aluminum

OPPOSITE
203. Katrín Ólína (b. 1967) and Michael Young (b. 1966)
***Tree* coatrack**, 2001
Made by Swedese (Sweden)
Lacquered MDF

INNOVATIVE TECHNOLOGY

At the 2012 Olympic Games in London, the disabled South African sprinter Oscar Pistorius competed against able-bodied athletes for the first time in an official competition. His prosthetic legs were developed by the Icelandic company Össur, founded in 1971 and today a global leader in orthopedics. Design contributes not only to the performance but also to the high-tech, even stylish image of these prostheses that some must wear on a daily basis.

Perhaps more predictably, Icelanders are at the technological forefront of the fishing industry. Since its founding in 1983, Marel, originally a small manufacturer of fish scales, has grown to become the top supplier of high-tech equipment and solutions for the food processing industry. Vaki, founded in 1986, is also a leader in the development, manufacturing, and marketing of high-tech equipment for fish farming and environmental monitoring. While design is not a top concern for these companies, their products have an entirely Nordic simplicity and efficiency.

FEMININE ENERGY

While the design profession in Iceland has remained essentially male for decades, the generation born around 1970 includes several women who are distinguishing themselves through their work. Dögg Guðmundsdóttir studied in Milan and Copenhagen before moving to the latter city, where she opened Dögg Design. Guðmundsdóttir's work stems from Scandinavian functionalism but introduces a dose of humor and playfulness. Her *Kite* lamp (1998), designed with Carlo Volf and produced by Bsweden, is made from a sheet of polycarbonate attached to a metal plate with magnets, allowing for various configurations. The *Rocky Tre* rocking chair in laminated wood is inspired by the work of Alvar Aalto and has been manufactured by the Icelandic company Sólóhúsgögn since 2009. Her *Stjaka* candelabras in aluminum for Epal (2011) also have a fine organic quality in the Nordic tradition (plate 202). Guðmundsdóttir works with international distributers and has designed a number of objects for Ligne Roset, Cinna, Christofle, Finn Frogne, and Elimenti. Her most recent piece for Ligne Roset is the *Fifty* armchair, designed in collaboration with Rikke Rützou Arnved (plate 201). Inspired by a metal and rope chair by Hans Wegner from the 1950s, *Fifty* is a contemporary object with a sculptural appearance, both light and imposing.

After studying in Milan and England, Tinna Gunnarsdóttir opened her design studio in Reykjavik in 1993. The daughter of designer Gunnar Magnússon, she has a poetic approach to product design. Her work is characterized by a minimalism that draws from the cultural heritage of her country. Her garden gnome of 2002 is a simple ball of Icelandic lava, evoking fairies and nature myths. She also designed a system of lava tiles in which can be inserted garden tables or cubical stools whose chrome finish reflects the surrounding environment. Gunnarsdóttir often incorporates ornamental motifs into her geometric structures, for example in the openwork of her rubber place mats and doormats.

The *Tree* coatrack by Katrín Ólína and the Briton Michael Young has inspired several designers since its introduction by Swedese in 2001 (plate 203). Ólína—a graduate of the ESDI in Paris—has gone on to develop a very personal universe, populated with characters dear to her imagination, in a nature magical and sublimated. Her unique graphic designs are incorporated in her interiors—for example, in her *Cristal Bar* in Hong Kong (2008)—and have also decorated products such as snowboards for Elan-Colorsurf System, figurines and dishware for Rosenthal, and area rugs for Ege. In 2012, she designed *Friends of Steel*, a line of furniture and housewares made in painted steel.

Since the economic crisis struck Iceland in 2008, design has undergone a resurgence in the country. Tradition and the vernacular often serve as a source of inspiration, combined with a healthy dose of humor and self-mockery. Contemporary Icelandic design is both sophisticated, drawing on the latest technology, and anchored in the material and tactile, with a lively creativity.

BELOW
204. Gerhard Berg (b. 1927)
***Berg* lamp**, 1967
Made by Northern Lighting (Norway), reissued 2006
Acrylic, aluminum

OPPOSITE, LEFT
205. Hans Brattrud (b. 1933)
***Scandia* stackable chair**, 1957
Made by Norge, Stordal (Norway)
Made by Hove Mobler
Bent laminated wood, steel
Nasjonalmuseet for Kunst, Arkitektur og Design, Oslo

OPPOSITE, RIGHT
206. Gerhard Berg (b. 1927)
***Nor* chair**, 1955
Made by Tynes Møbelfabbrikk (Norway)
Mahogany, pine, brass, wool upholstery
Nasjonalmuseet for Kunst, Arkitektur og Design, Oslo

NORWAY

With its deep fjords and villages nestled in breathtaking nature, Norway has a rich tradition of artistic craftsmanship that varies from one region to the next. After a period of romantic nationalism characterized by the "dragon style"—Viking in inspiration—the Norwegians adopted international art nouveau starting in 1905, the year the country celebrated its independence. During the 1920s and '30s, functionalism gained ground, in tandem with a gradual industrialization. In 1937, the engineer Jacob Jacobsen adapted the design of an English office lamp, the *Anglepoise* by George Carwardine, and manufactured it through his own company, Luxo. More than twenty-five million of these articulated office lamps have been sold worldwide under the name *Luxo L-1*, and they have notably served as a model for Pixar Animation Studios' mascot, a little hopping desk lamp. After World War II, Norway benefited from the "Scandinavian design" label, distinguishing itself above all in tableware.

ORGANIC FURNITURE

During the 1950s and '60s, Norwegian furniture designers adopted the soft forms and exotic woods of the Danish cabinetmakers. Hans Brattrud's *Scandia* stackable chair (1957), in bent laminated wood and steel, is among the classics of Norwegian design (plate 205). But the country's greatest contribution to organic Scandinavian design came from the interior designer Henry Klein. After studying in Denmark under Finn Juhl, Klein returned to Norway in 1953 to experiment with polystyrene chair shells. He produced his first chair using this technique in 1955, and the following year he sold licenses and several designs to Nordic manufacturers including the NK stores in Sweden, Asko in Finland, and Fritz Hansen in Denmark. His *1007* armchair probably served as the model for Arne Jacobsen's *Egg*, distributed by Fritz Hansen in 1958. In 1960, Klein began a fruitful collaboration with the Danish company Bramin.

Gerhard Berg studied at the Oslo National Academy of the Arts with the architect and modernist designer Arne Korsmo. As early as 1955, he was designing teak and metal furniture for Langlos, Stokke, and Vatne Lenestolfabrikk. He also explored fiberglass shells, for example in his *Giska* armchair, which was distributed by Hareid Bruk starting in 1958. Instead of pairing a synthetic seat with a metal base, Berg often used an exotic wood base, thereby connecting traditional cabinetmaking practices with new materials (plate 206). In 1967, he designed the sculptural *Berg* lamp, made from rectangular acrylic elements assembled in an irregular, organic fashion (plate 204).

BELOW
207. Grete Prytz (1917–2010)
Casserole dish, 1962
Made by Cathrineholm (Norway)
Enameled metal
Norsk Folkemuseum, Oslo

OPPOSITE, TOP LEFT
208. Tias Eckhoff (b. 1926)
***Maya* cutlery**, 1962
Made by Norsk Stålpress (Norway)
Stainless steel

OPPOSITE, RIGHT
209. Arne Jon Jutrem (1929–2005)
***Arne Jon* glass**, 1954
Made by Hadeland glassworks (Norway)
Glass
Nasjonalmuseet for Kunst, Arkitektur og Design, Oslo

OPPOSITE, BOTTOM LEFT
210. Willy Johansson (1921–1993)
***Multe* salad bowl**, 1965
Made by Hadeland glassworks (Norway)
Glass
Nasjonalmuseet for Kunst, Arkitektur og Design, Oslo

TABLEWARE

The winner of the second Lunning Prize, in 1952, was Grete Prytz. Having studied silversmithing, she worked in the family business, J. Tostrup, where she perfected the technique of enameling, a Norwegian specialty since the beginning of the twentieth century, both for jewelry and for large silver dishes. She also worked with her husband, the architect and modernist designer Arne Korsmo, and with him formed the iconic design duo of postwar Norway. At the 1954 Triennale di Milano, both won awards, she for her enamel work, he for his silver cutlery. Prytz also designed textiles, ceramics, and glass for Hegeland. After Korsmo passed away, she took the name of her second husband, Kittelsen. In the 1960s, she made a set of enameled metal kitchenware that was distributed by Cathrineholm. Decorated with a lotus motif designed by Arne Clausen, these inexpensive objects, simple in shape and cheerful in color, were hugely popular in Norway (plate 207). In 2008, the National Museum of Art, Architecture and Design mounted a retrospective of the work of the woman who is often referred to as the queen of Scandinavian design.

Tias Eckhoff was one of the most influential figures of postwar Norwegian design. A ceramicist by training, he began working with the Porsgrund porcelain manufactory in 1949, while still a student at the Oslo National Academy of the Arts. From 1953 to 1960, he served as the artistic director of this porcelain works, the country's principal one, which had begun making modern products in the 1920s, under the aegis of his predecessor Nora Gulbrandsen. Among Eckhoff's best-known designs are the white tea and coffee set *Det riflete* (The Fluted), designed in 1949 and introduced in 1952, and the *Regent* service of 1962, which bears no decoration whatsoever. Eckhoff's work, which possesses a refined elegance expressed in soft, delicate lines, won several awards at the Triennale di Milano, in 1954, 1957, and 1960.

Eckhoff also designed the *Cypress* silver cutlery set for Georg Jensen, which won the Lunning Prize in 1953. His best-known set of flatware is *Maya*, designed in 1962 for Norsk Stålpress (later Norstaal, then acquired by Stelton). Composed of geometric forms in stainless steel, it was developed for mass production and enjoyed considerable success (plate 208). A true industrial designer, Eckhoff also made glassware, doorknobs, and furniture. His stackable *Tomi* chairs of the early 1980s consist of a plastic shell atop a steel base; the last version to date, the *Bella* of 1995, has a seat in bent laminated wood.

Hadeland, founded in 1762, is the largest glassworks in Norway. It produces both utilitarian glassware and a limited number of artistic designs. In 1936, the young Willy Johansson joined the company as an apprentice. The son and grandson of glassblowers, he quickly learned the trade and complemented his training with academic studies in the 1940s. In 1947, he became the director of the Hadeland design team and, along with Herman Bongard and Arne Jon Jutrem, built a solid reputation for Norwegian glass, which was honored at the Triennale di Milano and awarded the Lunning Prize. During the 1950s and '60s, they made everyday pieces in thin glass with simple shapes (plates 209, 210), as well as art glass in sophisticated colors and patterns.

OPPOSITE, TOP LEFT
211. Peter Opsvik (b. 1939)
***Tripp Trapp* chair**, 1972
Made by Stokke (now Variér) (Norway)
Ash

OPPOSITE, MIDDLE LEFT
213. Peter Opsvik (b. 1939) and Hans Christian Mengshoel (b. 1946)
***Variable Balans* chair**, 1979
Made by Stokke (now Variér) (Norway)
Ash, cloth or leather upholstery
Stiftinga Sunnmøre Museum, Ålesund

OPPOSITE, BOTTOM LEFT
215. Andreas Engesvik (b. 1970)
***Break* sofa**, 2004
Made by Norway Says (Norway)
Steel, cloth upholstery

OPPOSITE, TOP RIGHT
212. Terje Ekstrøm (b. 1944)
***Ekstrem* chair**, 1973
Made by Stokke (now Variér) (Norway)
Metal, cloth upholstery
Stiftinga Sunnmøre Museum, Ålesund

OPPOSITE, MIDDLE RIGHT
214. Bjorn Refsum, Hilde Angelfoss, and Bard Eker
***Xplory* stroller**, 2005
Made by Stokke (today Variér) (Norway)
Aluminum and polyester

OPPOSITE, BOTTOM RIGHT
216. Andreas Engesvik (b. 1970)
***I'm Boo* carafe,** 2006
Made by Norway Says (Norway)
Glass

ERGONOMIC AND SOCIALLY CONSCIOUS DESIGN

Although its design generally followed the pattern of the other Scandinavian countries in the postwar era, in the 1970s Norway stepped into the international spotlight with original ergonomic solutions to the problems of modern society. In 1972, the furniture manufacturer Stokke introduced the *Tripp Trapp* high chair, designed by Peter Opsvik (plate 211). Stable and adjustable, the *Tripp Trapp* follows the growth of the child from six months to adolescence, and even into adulthood. First made in polished birch, this symbol of a humanistic and pragmatic approach to childhood is now offered in various woods and colors. More than three million have been sold, and the design has been widely copied. At the Copenhagen furniture fair of 1979 there appeared another innovative design by Opsvik, the *Variable Balans* chair (plate 213). Developed in collaboration with Hans Christian Mengshoel, it is the fruit of in-depth research into seating ergonomics. Meant to relieve the back by transferring part of the body's weight onto the knees, *Variable Balans* revolutionized the way we sit. Produced by Stokke, it underwent many variations and has also been much copied.

Stokke, which has always been willing to explore types of seating, launched the *Ekstrem* chair by Terje Ekstrøm in 1973 (plate 212). With a metal frame covered in foam and fabric, it is a kind of sculpture that accommodates a variety of postures. Recalling the work of Verner Panton or Olivier Mourgue, the *Ekstrem* is a Norwegian nod to the 1970s and postmodernism.

A focus on childhood, the disabled, safety, and social responsibility is apparent in Norwegian industrial design, notably in the work of the K8 studio. Established in 1998, K8 drew attention with its *Xplory* stroller, winner of an international competition on the theme of city-friendly baby transportation, sponsored by Stokke (plate 214). A bit like the *Tripp Trapp* chair, the *Xplory* grows with the child and allows for multiple configurations. K8 members Marius Andresen, Rolf Blomvågnes, Olivier Butstraen, and Erik Lanuza have also designed solar chargers, an innovative stretcher, a wheelchair, and water bottles. The serious aspects of their work do not bar a playful and ecologically conscious spirit.

NEW PATHWAYS

In the early 2000s, Norwegian architecture attracted international attention with the design of the Bibliotheca Alexandrina by the young firm Snøhetta. At the same time, design seemed to revive in the wake of the success of the Norway Says collective at the 2000 Milan furniture fair. Since oil drilling began in the 1970s, Norwegian authorities had somewhat neglected design as a source of revenue and exports. Aware that they were lagging behind neighboring countries, they began encouraging and supporting the creative initiatives and marketing efforts of designers and studios. Norway Says developed furniture, light fixtures, and tableware in a neo-modernist minimal style with playful and sensuous touches (plate 216). With its asymmetry and cutout seat, the *Break* sofa from 2004 creates a level of intimacy in public places (plate 215). When Norway Says disbanded in 2009, two of its members, Torbjørn Anderssen and Espen Voll, founded the Anderssen & Voll studio. The third, Andreas Engesvik, pursued his own career in collaboration with distributors in Norway and abroad.

Johan Verde's design possesses a sculptural quality that distinguishes him from his neo-modernist colleagues. His 2002 *Loop* and *Peel* sofas, designed with

BELOW
217. Johan Verde (b. 1964), Olav Eldøy (b. 1948), and Ole Petter Wullum (b. 1965)
***Loop* chair**, 2002
Made by Fora Form (Norway)
Chrome-plated steel or polished aluminum, elastic fabric

OPPOSITE
218. Johan Verde (b. 1964)
Gravy boat from the *Opera Verde* service, 2008
Made by Porsgrund Porselen (Norway)
Porcelain
Nasjonalmuseet for Kunst, Arkitektur og Design, Oslo

BELOW
219. Cathrine Kullberg (b. 1971)
***Norwegian Forest* pendant lamp**, 2007
Made by Northern Lighting (Norway)
Birch

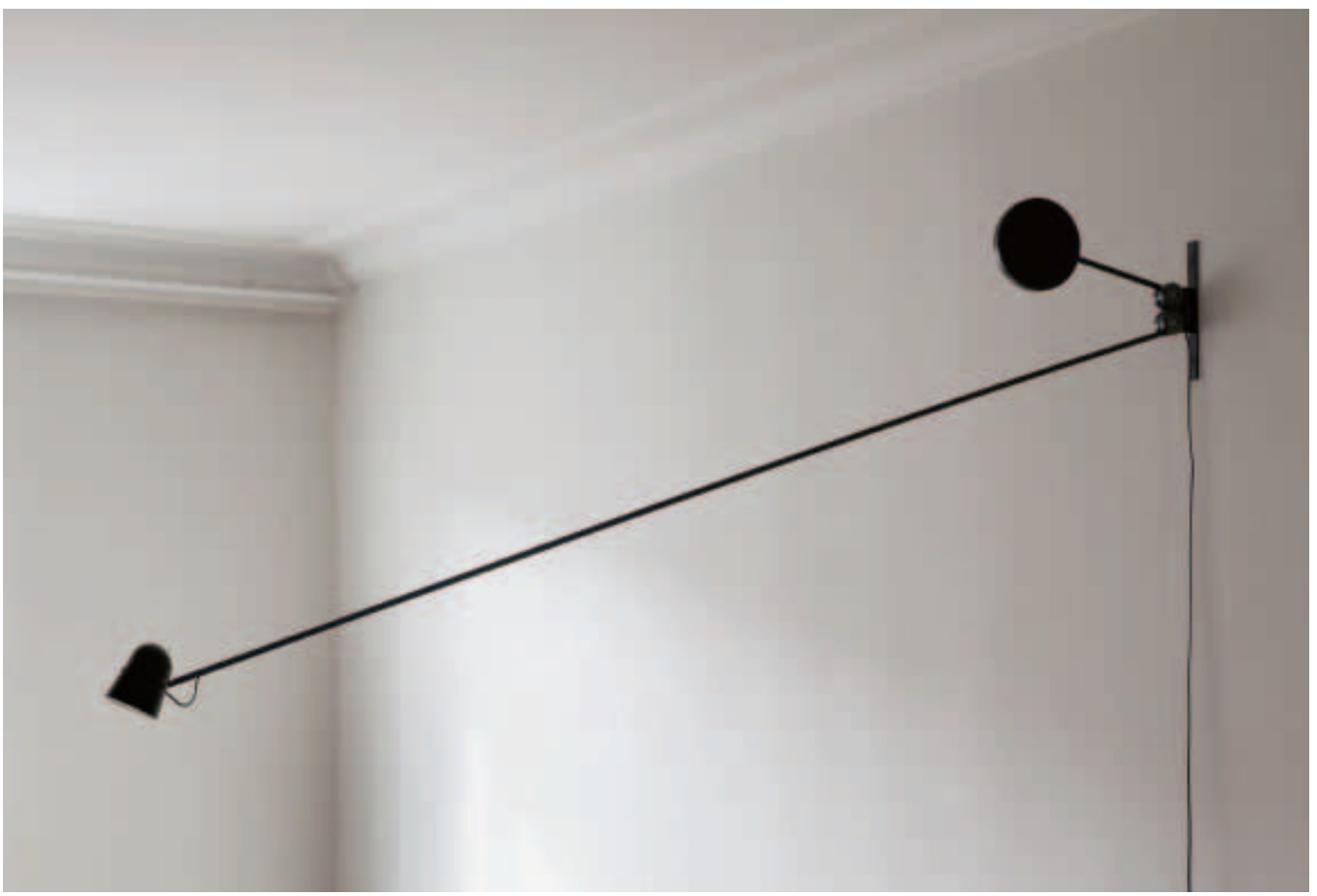
OPPOSITE, TOP
220. Daniel Rybakken (b. 1984)
***Daylight Entrance* installation**, 2010
Commissioned by Vasakronan AB, Stockholm
Corian, LED

OPPOSITE, BOTTOM
221. Daniel Rybakken (b. 1984)
***Counterbalance* lamp**, 2012
Made by Luceplan (Italy)
Steel, aluminum, LED

Olav Eldøy and Ole Petter Wullum, present themselves as objects in space, inviting the human body to place itself differently (plate 217). The series of dishes and objects he designed for Oslo's new opera house revives Scandinavian tradition with new materials and with more expressive forms (plate 218).

Tradition reasserts itself in Cathrine Kullberg's *Norwegian Forest* lamps (plate 219). Inspired by Scandinavian lampshades in openwork birch from the 1960s, these pieces are decorated with laser-cut forest and animal motifs. The birch shade is assembled by hand and sewn to the lamp using leather strips. In this way Kullberg brings together vernacular materials, craft processes, and images of Nordic nature with high technology and very contemporary design.

Among young Norwegian designers there is a trend toward poetry and immateriality. In 2011, the two founders of SHE Design, Silje Søfting and Eva Marit Tøftum, launched the *Myk* clock, a circle of stretched white canvas that presents the time in a peaceful, minimalist fashion. Daniel Rybakken, one of the most promising Norwegian designers, works mostly with light. In 2007, at the age of twenty-three, he drew attention with his *Daylight Comes Sideways* lamp, which creates the illusion of natural light with an array of LEDs behind a semitransparent screen. In 2010, he designed an installation for an office building in Stockholm that simulates sunlight in a windowless stairwell (plate 220). Rybakken also works with mirror effects for Ligne Roset and Galerie Kreo, among others. His *Counterbalance* lamp, presented in Milan in 2011 and distributed by Luceplan in 2012, is a clever rendition of Jean Prouvé's sconce (plate 221). A gear and magnet mechanism allows for the position of its lightweight LED to be precisely contralled. Rybakken's work proves that design, at its highest level, has the ability to introduce poetry and joy into daily life.



BELOW
222. Josef Frank (1885–1967)
***Bow* textile**, circa 1960
Made by Svenskt Tenn (Sweden)
Cotton, linen
Cooper-Hewitt, National Design Museum, New York

OPPOSITE
223. Bruno Mathsson (1907–1988)
Chaise longue and footrest, 1944
Made by Karl Mathsson (Sweden)
Bent birch, jute
Saint Louis Art Museum

SWEDEN

Situated in the heart of Scandinavia and having close political contact with the European continent, Sweden has always absorbed and assimilated international influences. The Gustavian style of the eighteenth century was in fact a lighter, "Nordic" reinterpretation of the Louis XV style. After the adaptation of the English Arts and Crafts style by Carl and Karin Larsson and a dalliance with the organic art nouveau of the continent, the Swedish decorative arts—glassmaking in particular—were distinguished by an elegant classicism. At the 1925 Paris International Exposition, the English critic P. Morton Shand coined the phrase "Swedish grace," widely adopted thereafter. The most influential furniture designer and teacher in this vein was Carl Malmsten, who drew his inspiration from the vernacular and the Gustavian style. He opposed the international functionalism of the 1920s and '30s, which was represented by Gunnar Asplund and Sven Markelius in particular. Nevertheless, they each in their own way put into practice the concept of "beauty for all" promoted by Ellen Key and Gregor Paulsson, and sought to create attractive, functional objects that were accessible to the greatest number of people.

As the only neutral and unoccupied country in Scandinavia during World War II, Sweden was much better off than its neighbors at the outcome of the conflict. The welfare state launched a massive housing construction program, requiring all kinds of fixtures and furnishings. The *H55* exhibition in Helsingborg in 1955 presented the best of Scandinavian design at the time and offered an attractive showcase for Sweden's own productions.

A SOFTER FUNCTIONALISM

Bruno Mathsson is one of the best representatives of Swedish organic modernism. His "lounge," "easy," and "work" chairs (the last known as the *Eva*) of 1934–35 are made from laminated wood and webbing. The production techniques and soft curves recall the work of Mathsson's colleague Alvar Aalto. During the 1940s, Mathsson developed variations of these chairs, including some with armrests and a chaise longue called *Pernilla*. The son of a cabinetmaker, he worked in, and produced his first models for, the family business, Karl Mathsson, which later became Mathsson International (plate 223). He studied in the U.S. for six months in 1948 and on his return set out to build glass homes that were innovative in terms of energy efficiency. His growing interest in metal in the 1960s is exemplified by his *Jetson* armchair. A collaboration with the Dane Piet Hein yielded the *Superellipse* tables, with novel metal legs, distributed by Fritz Hansen.

Voted the best Swedish furniture design of the twentieth century, the *Lamino* armchair, designed by Yngve Ekström in 1956, also showcased organic lines. Its ergonomic back conforms to the curve of the spine and draws an elegant line in space. Originally from Hagafors, in the south of Sweden, Ekström began working in the country's oldest furniture factory at age thirteen. In 1945, he founded his own company with his brothers, which was initially called ESE, and later Swedese. Today one of the main distributors of Swedish furniture, Swedese put *Lamino* back in production in 2003. As opposed to their Danish colleagues, the Swedish designers of the 1950s and '60s generally preferred blond wood to exotic wood and simple forms to the technical feats of the cabinetmakers.

An atypical figure who nevertheless had a certain influence on Scandinavian design was the Austrian Josef Frank. Fleeing Nazism, he settled in Sweden in 1934 and worked closely with the interior design company Svenskt Tenn, founded by Estrid Ericson ten years earlier. Frank had been involved with the Wiener Werkstätte and participated in the exhibition of modern architecture at Stuttgart in 1927. He brought a softness and refinement to Swedish functionalism, often going against prevailing trends. His textiles in particular, with their exotic colors and motifs, would have a lasting influence on the Scandinavian aesthetic (plate 222). In the end, his work accorded well with the natural and somewhat romantic spirit of the country that took him in.

LEFT
224. Stig Lindberg (1916–1982)
Pitcher from the *Berså* service, 1960
Made by Gustavsberg (Sweden)
Porcelain
Victoria and Albert Museum, London

BELOW
225. Ingeborg Lundin (1921–1992)
***Äpple* vase**, 1957
Made by Orrefors (Sweden)
Glass
Private collection

OPPOSITE
226. Nils Landberg (1907–1991)
***Tulip* glasses**, 1956
Made by Orrefors (Sweden)
Glass
Private collection

GLASS AND CERAMICS

However, postwar Swedish design distinguished itself less in the area of furniture than in that of tableware, particularly glass. Since the 1910s, Simon Gate and Edward Hald had been developing sophisticated techniques at the Orrefors glassworks. In 1954, Sven Palmqvist presented his series of *Fuga* bowls, created by an innovative centrifuging method. Ingeborg Lundin was the first woman to join Orrefors as a glass designer, in 1947. Winner of the Lunning Prize in 1954, she exhibited her *Äpple* vases at *H55* (plate 225). These very fine glass objects, simple in form and delicate in color, have become classics of Nordic design. Lundin also created thicker pieces with colorful and artistic patterns, drawing on the *Ariel* and *Graal* techniques perfected by her predecessors. Her colleague Nils Landberg was known above all for his *Tulip* glasses, which were blown in a single piece—proof of his technical virtuosity (plate 226). Symbolizing "Swedish grace," they received the gold medal at the Triennale di Milano in 1957 and remained in production at Orrefors until 1981.

The Kosta glassworks, founded in 1742, concentrated on utilitarian glassware before recruiting designer Vicke Lindstrand in 1950. Lindstrand, who had worked at Orrefors, introduced art-glass techniques at Kosta and developed sculptural pieces there in the 1950s and '60s. A former illustrator, he readily employed line as a decorative motif. In the 1970s, he designed monumental glass sculptures, including the thirty foot (9 m) tall *Green Fire* for the city of Umeå. Following a merger, Kosta took on the name Kosta Boda in 1976, and then was bought by Orrefors in 1989.

The best-known ceramics manufactory in Sweden is Gustavsberg, founded in 1825. Wilhelm Kåge, its artistic director from 1917 to 1949, set the company on a modern path, particularly with the *Praktika* and *Grey Stripes* services. During the 1950s, he made stoneware with geometric motifs and art brut accents. His successor, Stig Lindberg, designed both organically shaped pieces, like the *Pungo* vase of 1953, and everyday services. His *Terma* service in black stoneware was long a staple in Swedish kitchens, and his *Berså* service in white porcelain decorated with a leaf pattern continues to be very popular (plate 224). Also a textile designer and an illustrator, Lindberg left a mark on his times with his joyful and colorful visual universe. Gustavsberg manufactured plastic objects as well, designed by Lindberg, Carl-Arne Breger, and Sven-Eric Juhlin, the founder of Ergonomidesign, among others. One of the primary Scandinavian producers of sanitary equipment since the 1950s, the company today belongs to the Villeroy & Boch group and focuses on that sector.

BELOW
227. Hugo Blomberg (1897–1994), Ralph Lysell (1907–1987), and Gösta Thames (1916–2006)
Ericophone, 1954
Made by Ericsson (Sweden)
Museum of Modern Art, New York

OPPOSITE, TOP
228. Sixten Sason (1912–1967)
Saab 92, 1947
Made by Saab (Sweden)

OPPOSITE, BOTTOM
229. Nils Bohlin (1920–2002)
Three-point seat belt, 1959
Made by Volvo (Sweden)

DESIGN FOR GROWING INDUSTRIES

Although it industrialized relatively late, in the twentieth century Sweden led the other Scandinavian countries in manufacturing. As early as the 1920s, the industrial sector contributed to Sweden's economic expansion and rising standard of living. The electrical appliance manufacturer Electrolux has been at the forefront of innovation since it was founded in 1919. Electrolux was the first company to offer households a lightweight, portable vacuum cleaner (the *Model V*, on metal runners, in 1921) and a refrigerator (1925), and in the 1930s it employed the pioneering American designer Raymond Loewy. World War II marked the beginning of a collaboration with the Swedish designer Sixten Sason, who created many aerodynamically shaped devices for the firm. Today the owner of brands like AEG, Zanussi, Arthur Martin, Husqvarna, Faure, and Frigidaire, the Electrolux group is the global leader in electrical appliances, with a strong interest in ecological materials and energy efficiency.

Sason was one of the first Scandinavian industrial consultants. A silversmith and pilot by training, he collaborated with numerous Swedish companies, notably Saab, for which he was artistic director from 1945 to his death in 1967. A manufacturer of military airplanes when it was founded in 1937, Saab turned to automobiles after World War II. The aerodynamic *Saab 92*, introduced in 1947, presented numerous innovations, including an aerodynamic monocoque body (plate 228). It was Sweden's first small car. Sason also designed the world's first single-lens reflex camera with interchangeable parts, the *1600F*, for Hasselblad. During the 1950s, he created several products for Husqvarna, including a drill and a sewing machine. Husqvarna is also known for its bicycles and motorcycles, and its chain saws, which are much appreciated by professional foresters.

Volvo put its first series of cars on the market in 1927. Making safety a top priority, the brand introduced the three-point seat belt, designed by Nils Bohlin, in 1959 (plate 229); it was the first carmaker in the world to make this belt a standard feature. In the decades that followed, Volvo's innovative safety measures and solid bodywork entailed robust, square designs. In 2004, the *YCC* concept car, designed by a team of eight women, reimagined the automobile from a female perspective. The Volvo Car Group was part of the Ford Motor Company from 1999 to 2008, when it was sold to the Chinese automaker Geely.

The telecommunications company Ericsson was founded in 1876 and was at the cutting edge of the European telephone industry by the early twentieth century. In 1954, Hugo Blomberg, Ralph Lysell, and Gösta Thames designed the original *Ericophone*, taking advantage of new materials that had been used in the war, like plastic and nylon (plate 227). Originally intended for bedridden patients, it was the first telephone to combine the dial and the handset in a single unit. In the 1980s, Ericsson entered the mobile phone market, operating a joint venture with Sony in this sector from 2001 to 2012.

BELOW
230. Ergonomidesign (now Veryday)
***Speedglas* welding helmet**, 1996
Made by 3M (U.S.), reissued 2005

OPPOSITE, LEFT
231. Gillis Lundgren (b. 1929)
***Billy* bookcase**, 1979
Made by Ikea (Sweden)

OPPOSITE, TOP RIGHT
232. Nicholai Wiig Hansen
Storage unit from the *PS* collection, 1999
Made by Ikea (Sweden)

OPPOSITE, BOTTOM RIGHT
233. **Bowls, cups, and utensils for children**
Made by Ikea (Sweden)
Plastic

ERGONOMICS AND SAFETY

During the 1970s and '80s, ergonomics and the needs of social or medical minorities were among the primary concerns of Swedish design. In a country that prioritizes safety and equality, public authorities and private companies have worked together to develop policies and products that accommodate the disabled. In fact, the familiar blue and white wheelchair icon, the International Symbol of Access, was designed during a conference of design students in Stockholm in 1968.

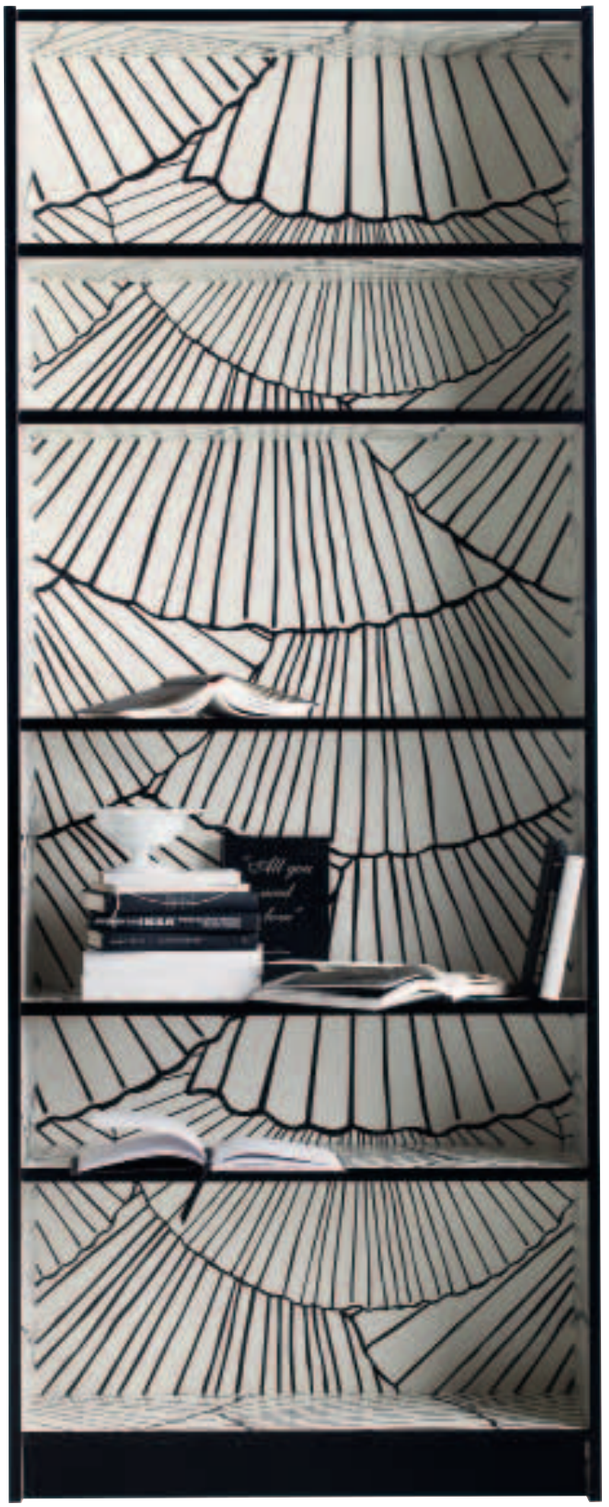
The design studio Ergonomidesign, which was founded in 1971 and merged with Designgruppen in 1979, worked with the Swedish Handicap Institute and the health care industry to develop products adapted to their specific needs. Over time, the studio has expanded its practice to other aspects of life, including childhood, work, sports, sustainable development, and biomimetics. In 1984, two of its members, Maria Benktzon and Sven-Eric Juhlin, designed a new coffeepot for the airline SAS. To replace the old steel pots, which had caused muscle strain among flight crews, they created a light and ergonomic object with a perfectly calculated center of gravity. Today this coffeepot is used by more than thirty airlines worldwide. The *Speedglas* welding helmet, introduced in 1996, offers unprecedented comfort for professional welders with its light weight, its auto-darkening lens available in several thicknesses, and its safety features (plate 230). Ergonomidesign also takes into account less sophisticated needs and in 2010 designed the *EzyStove* cookstove for developing countries. It draws the maximum heat from firewood, limits carbon dioxide emissions, and can be manufactured on-site and transported flat. In 2013, the company changed its name to Veryday.

IKEA'S GLOBAL REACH

The Ikea company was founded in 1943 by seventeen-year-old entrepreneur Ingvar Kamprad. Its name is composed of Kamprad's initials and those of his family farm (Elmtaryd) and native village (Agunnaryd), and is therefore solidly anchored in his personal history. After having sold various products through catalogs, Kamprad began offering furniture in 1953, and introduced original designs two years later. His first designers were Gillis Lundgren and Bengt Ruda for furniture, and Viola Gråsten and Göta Trägårdh for textiles. Seeking to produce modern and attractive objects at a low price, Ikea adopted flat packaging and home assembly in the late 1950s. In the 1960s and '70s, the Ikea style adapted to changes in society and lifestyles, and made greater use of plastic and chipboard panels (plate 231). (In terms of the brand's relation to Scandinavian design, the line between inspiration and copying has sometimes seemed hazy.) Success came quickly: stores opened in Scandinavia in the 1950s and '60s, in Switzerland in 1973, and then across the world; the first U.S. Ikea opened in Philadelphia in 1985.

Aside from lamps designed by the Finn Tapio Wirkkala in 1963 and the Italian Vico Magistretti in 1970s, Ikea's designers long remained in the shadows. However, the company's *PS* (Post-Scriptum) project, conceived by the entrepreneur Stefan Ytterborn and the designers Thomas Eriksson and Thomas Sandell, was intended to promote the up-and-coming generation of Scandinavian designers (plate 232). The first *PS* collection, launched at the 1995 Milan Furniture Fair, took as its title an Ikea slogan, "democratic design," which reflects the company's mission of making design affordable to the masses.

Today Ikea is the top furniture manufacturer in the world, and every year its stores are visited by hundreds of millions of people. Its approach, relying on the mass production of relatively ephemeral products, contributes to the globalization of design and to the export of "Scandinavian good taste" (plate 233).



BELOW
234. Mårten Claesson (b. 1970), Eero Koivisto (b. 1958), and Ola Rune (b. 1963)
***Isola* chair,** 2012
Made by Tacchini (Italy)
Steel, marble, cloth upholstery

OPPOSITE, TOP
235. Thomas Eriksson (b. 1959)
***Red Cross* medicine cabinet**, 1992
Made by Cappellini (Italy)
Metal

OPPOSITE, BOTTOM
236. Thomas Sandell (b. 1959)
***TS* chair**, designed for the Museum of Modern Art in Stockholm, 1990
Made by Asplund (Sweden)
Birch

MINIMALISM AND THE OFFBEAT

In response to the morose ambience that followed the extravagance of the 1980s, Stefan Ytterborn presented the work of twelve young Swedes at the 1992 Milan Furniture Fair. This immediately drew attention to contemporary Swedish design, whose light and simple objects in blond wood broke with Latin postmodernism. Two years later, Ytterborn founded the company Swecode, which collaborated with young distributors like Asplund and David Design to bring Swedish design to an international stage. Other producers, including Lammhults, Källemo, Swedese, Offecct, and Design House Stockholm, followed suit, creating a favorable climate for designers and studios.

Thomas Sandell is emblematic of this generation. His *TS* chair, distributed by Asplund for the Museum of Modern Art in Stockholm in 1990, is simple and stackable, and seems to float atop its natural wood feet (plate 236). Sandell founded the Sandellsandberg company in 1995 and focused increasingly on architectural projects. Thomas Eriksson, who like Sandell worked for Ikea and other Swedish and international retailers, designed the *Red Cross* medicine cabinet for Cappellini in 1992 (plate 235). Conceived as a sign, this small cabinet literally embodies the first-responder symbol. Pia Wallén also uses the cross form in her textiles and jewelry in a very contemporary manner. The architecture and design studio opened by Mårten Claesson, Eero Koivisto, and Ola Rune in 1995 brought a streamlined neo-minimalism to Scandinavia. Their recent *Isola* armchair, soft and organic in form, incorporates a small table that can hold work, a glass, or a book (plate 234).

The milieu of Swedish design today is as much female as it is male. Gunilla Allard came to notice in 1994 with her *Cinema* armchair, developed with Lammhults. *Cinema Sport*, introduced in 1999, is a lighter version, inspired by 1950s sports cars. Carina Seth-Andersson uses very minimalist forms for her glass and tableware (plate 238). The cylindrical bowls she designed for the Finnish retailer Hackman in 1998 have a double wall

237. Jonas Bohlin (b. 1953)
***Concrete* (*Béton*) chair,** 1981
Made by Källemo (Sweden)
Concrete, metal

of stainless steel to maintain the temperature of the contents, whether hot or cold. Seth-Andersson may be compared to the grande dame of Swedish ceramics and glass, Ingegerd Råman. The latter, who has been creating timeless forms with simple decoration since the 1960s, launched a beautiful collection of glass for Orrefors in 2000.

However, contemporary Swedish design goes beyond minimalist objects. A playful and unique touch has been introduced, blurring the line between design and art. Jonas Bohlin turned heads when he exhibited his *Concrete* armchair, made of concrete and metal, in 1981 (plate 237). He first produced it himself before Källemo began distributing it as a limited edition. A provocative postmodernist, Bohlin has also designed porcelain for Rörstrand and several restaurant interiors, and has taught at Beckmans Academy. His sculptural and emotional approach has added a certain levity to Swedish design.

The Front collective, founded by Sofia Lagerkvist, Charlotte von der Lancken, Anna Lindgren, and Katja Sävström in 2003, caused a sensation with its animal-made collection, which included wallpaper gnawed by rats and a table decorated with the flight paths of insects. Sävström has left the group, but Front continues its playful and offbeat work with, for example, the *Surface Tension* lamp, presented by the Dutch company Booo at the 2012 Milan Furniture Fair (plate 239). Fueled by an LED light source, the lamp makes soap bubbles that grow and pop, before starting again. This poetic and living light contrasts the long duration of the LED with the ephemeral and fragile quality of the bubbles.

The Scandinavian countries share a Protestant, democratic, humanist, and egalitarian culture. The climate favors the development of domestic interiors and inspires the search for what is essential. A proximity to nature encourages a knowlege of, and respect for, materials, while a late industrialization enabled the preservation of craft skills. All these commonalities justify the discussion of Scandinavian design as a single entity. However, as the preceding pages indicate, each of the five countries has its own specific qualities, tied to its geography and history.

By the end of the twentieth century, borders were no longer what they had been, particularly when it came to business. In the face of globalization, multinational corporations have been formed, and the flagship companies of one nation or another have passed under the control of groups headquartered in a neighboring country. For example, Artek, founded by Alvar Aalto in Finland, now belongs to the Swedish investment company Proventus; the Swedish glassworks Orrefors and Kosta Boda were part of the Danish group Royal Scandinavia before being resold to the New Wave Group based in Stockholm; Volvo's car division was bought successively by Ford and Geely; and Ericsson partnered with Sony. Even Ikea is controlled by a Dutch foundation. Young Nordic designers are also very mobile, often working with international retailers. In this context, can we still speak of Scandinavian design? I believe so. Designers today draw on the heritage of Scandinavian modernism in creating their own contemporary forms, which stem also from globalization and ecological awareness, and are supplemented by a dose of humor and poetry that is decidedly "Nordic."

RIGHT
238. Carina Seth-Andersson
(b. 1965)
Bowls, 1998
Made by Iittala (Finland)
Glass, stainless steel

BELOW
239. Front collective
***Surface Tension* lamp**, 2012
Made by Booo (Netherlands)
LED, soap bubbles