During the 1920s in the United States, many people who had once described themselves as involved in the graphic arts, the industrial arts, the craft arts, or the arts allied to architecture, and even architects themselves, began to be referred to as designers. They were seen as serving industry. They could take any object or product—a shoe, a chair, a book, a poster, an automobile, or a building—and make it appealing, and thereby persuade the public to buy it or a client to build it. In fact, design is so intimately tied to industry that its origins as a profession can be traced back only to the beginnings of the industrial age, especially in the Arts and Crafts Movement, in opposition to mass production.

**THE ARTS AND CRAFTS MOVEMENT**

While it would be possible to approach design by analyzing individual media—graphic design, furniture design, transportation design, and so on—beginning with the Arts and Crafts Movement, the profession has been defined more by a series of successive movements and styles than by the characteristic properties of any given medium.

The Arts and Crafts Movement was itself a reaction to the fact that, during the first half of the nineteenth century, as mass production increasingly became the norm in England, the quality and aesthetic value of mass-produced goods declined. In order to demonstrate to the English the sorry state of modern design in their country, Henry Cole, a British civil servant who was himself a designer, organized the Great Exposition of 1851. The industrial production on exhibit showed, once and for all, just how bad...
the situation was. Almost everyone agreed with the assessment of Owen Jones: “We have no principles, no unity; the architect, the upholsterer, the weaver, the calico-painter, and the potter, run each their independent course; each struggles fruitlessly, each produces in art novelty without beauty, or beauty without intelligence.”

The building that housed the exhibition in Hyde Park was an altogether different proposition. A totally new type of building, which became known as the Crystal Palace (Figs. 515 and 516), was designed by Joseph Paxton, who had once served as gardener to the Duke of Devonshire and had no formal training as an architect. Constructed of more than 900,000 square feet of glass set in prefabricated wood and cast iron, it was three stories tall and measured 1,848 by 408 feet. It required only nine months to build, and it ushered in a new age in construction. As one architect wrote at the time, “From such beginnings what glories may be in reserve....We may trust ourselves to dream, but we dare not predict.”

Not everyone agreed. A. W. N. Pugin, who had collaborated on the new Gothic-style Houses of Parliament, called the Crystal Palace a “glass monster,” and the essayist and reformer John Ruskin, who likewise had championed a return to a preindustrial Gothic style in his book The Stones of Venice, called it a “cucumber frame.” Under their influence, William Morris, a poet, artist, and ardent socialist, dedicated himself to the renewal of English design through the renewal of medieval craft traditions. In his own words: “At this time, the revival of Gothic architecture was making great progress in England....I threw myself into these movements with all my heart; got a friend [Philip Webb] to build me a house very medieval in spirit...and set myself to decorating it.” Built of traditional red brick, the house was called the Red House (Fig. 517), and nothing could be further in style from the Crystal Palace. Where the latter reveals itself to be the product of manufacture—engineered out of prefabricated, factory-made parts and assembled, with minimal cost, by unspecialized workers in a matter of a few months—the former is a purposefully rural—even archaic—building that rejects the industrial spirit of Paxton’s Palace. It signaled, Morris hoped, a return to craft traditions in which workers were intimately tied, from start to finish, to the design and manufacture of their products.

Fig. 516 Joseph Paxton, Crystal Palace, interior, Great Exposition, London, 1851.
Institute für Theorie der Architektur an der ETH, Zurich. Historical Picture Archive © Historical Picture Archive / Corbis.

Fig. 517 Philip Webb, The Red House, Bexley Heath, UK, 1859. Photo: Charlotte Wood.
Morris longed to return to a hand-made craft tradition for two related reasons. He felt that the mass-manufacturing process alienated workers from their labor, and he also missed the quality of hand-made items. Industrial laborers had no stake in what they made, and thus no pride in their work. The result, he felt, was both shoddy workmanship and unhappy workers.

As a result of the experience of building the Red House and attempting to furnish it with objects of a medieval, hand-crafted nature, a project that was frustrated at every turn, Morris decided to take matters into his own hands. In 1861, he founded the firm that would become Morris and Company. It was dedicated “to undertake any species of decoration, mural or otherwise, from pictures, properly so-called, down to the consideration of the smallest work susceptible of art beauty.” To this end, the company was soon producing stained glass, painted tiles, furniture, embroidery, table glass, metalwork, chintzes, wallpaper, woven hangings, tapestries, and carpets.

In his designs, Morris constantly emphasized two principles: simplicity and utility. Desire for simplicity—“simplicity of life,” as he put it, “begetting simplicity of taste”—soon led him to create what he called “workaday furniture,” the best examples of which are the company’s line of Sussex rush-seated chairs (Fig. 518). Such furniture was meant to be “simple to the last degree” and to appeal to the common man. As Wedgwood had done 100 years earlier (see Chapter 14), Morris quickly came to distinguish this “workaday” furniture from his more costly “state furniture,” for which, he wrote, “we need not spare ornament . . . but [may] make them as elaborate and elegant as we can with carving or inlaying or paintings; these are the blossoms of the art of furniture.”

A sofa designed by Morris’s friend, the painter Dante Gabriel Rossetti, and displayed by Morris and Company at the International Exhibition of 1862 (Fig. 519), is the “state” version of the Sussex settee. Covered in rich, dark-green velvet, each of the three panels in the back contains a personification of Love, hand-painted by Rossetti. As Morris’s colleague Walter Crane put it: “The great advantage . . . of the Morrisian method is that it leads itself to either simplicity or splendor. You might be almost plain enough to please Thoreau, with a rush-bottomed chair, piece of matting, and oaken trestle-table; or you might have gold and luster gleaming from the side-board, and jeweled light in your windows, and walls hung with rich arras tapestry.”


Perhaps nothing more under-
scores Morris’s aesthetic taste than
his work as bookmaker and typog-
rapher at the Kelmscott Press,
which he founded in 1888. His edi-
tion of Chaucer’s works (Fig. 520)
is a direct expression of his belief in
the values and practices of the
Middle Ages. Morris commissioned
hand-made, wire-molded, linen
paper similar to that used in
fifteenth-century Bologna. He
designed a font, appropriately
called “Chaucer,” which was based
on Gothic script. In order to make
it more legible, he widened most
letterforms, increased the differ-
ences between similar characters,
and made curved characters
rounder. “Books should be beauti-
ful,” he argued, “by force of mere
typography.” But he stopped at
nothing to make the Chaucer
beautiful in every detail. He set his
type by hand, insisting upon a stan-
dard spacing between letters,
words, and lines. He positioned
material on the page in the manner
of medieval bookmakers, designed
14 large borders, 18 different frames for the illustrations,
and 26 large initial words for the text. Finally, he com-
missioned 87 illustrations from the English painter Sir
Edward Burne-Jones. The book, he felt, should be like
architecture, every detail—paper, ink, type, spacing, mar-
gins, illustrations, and ornament—all working together
as a single design unit.

Morris claimed that his chief purpose as a designer
was to elevate the circumstances of the common man.
“Every man’s house will be fair and decent,” he wrote,
“all the works of man that we live amongst will be in
harmony with nature . . . and every man will have his
share of the best.” But common people were in no
position to afford the elegant creations of Morris
and Company. Unlike Wedgwood (see Chapter 14),
whose common, “useful” ware made the most money
for the firm, it was the more expensive productions—
the state furniture, tapestries, and embroideries—
that kept Morris and Company financially afloat.
Inevitably, Morris was forced to confront the
inescapable conclusion that to hand-craft an object
made it prohibitively expensive. With resignation and
probably no small regret, he came to accept the necessity
of mass-manufacture.

Fig. 520 William Morris (design) and
Edward Burne-Jones (illustration), page
opening Geoffrey Chaucer, The Works of
Geoffrey Chaucer Newly Augmented, Kelmscott
Press, 1896.
Edition of 425 copies on paper, sheet 16⅝ ×
11⅝ in. Designed by William Morris (CT36648).
Victoria and Albert Museum, London.
Art Resource, NY.
In the United States, Gustav Stickley’s magazine *The Craftsman*, first published in 1901 in Syracuse, New York, was the most important supporter of the Arts and Crafts tradition. The magazine’s self-proclaimed mission was “to promote and to extend the principles established by [William] Morris,” and its first issue was dedicated exclusively to Morris. Likewise, the inaugural issue of *House Beautiful* magazine, published in Chicago in 1896, included articles on Morris and the English Arts and Crafts movement. Stickley, recognizing the expense of Morris’s handcrafted furniture and the philosophical dilemma that Morris faced in continuing to make it, accepted the necessity of machine-manufacturing his own work. Massive in appearance, lacking ornamentation, its aesthetic appeal depended, instead, on the beauty of its wood, usually oak (Fig. 521).

By the turn of the century, architect Frank Lloyd Wright was also deeply involved in furniture design. Like Morris before him, Wright felt compelled to design furniture for the interiors of his Prairie Houses that matched the design of the building as a whole (see Fig. 483). “It is quite impossible,” Wright wrote, “to consider the building as one thing, its furnishings another, and its setting and environment still another. The Spirit in which these buildings are conceived sees these all together at work as one thing.” The table lamp designed for the Lawrence Dana House in Springfield, Illinois (Fig. 522) is meant to reflect the dominant decorative feature of the house—a geometric rendering of the sumac plant that is found abundantly in the neighboring Illinois countryside, chosen because the site of the house itself was particularly lacking in vegetation. Given a very large budget, Wright designed 450 glass panels and 200 light fixtures for the house that are variations on the basic sumac theme. Each piece is unique and individually crafted.

The furniture designs of Morris, Stickley, and Wright point out the basic issues that design faced in the twentieth century. The first dilemma, to which we have been paying particular attention, was whether the product should be hand-crafted or mass-manufactured. But formal issues have arisen as well. If we compare Wright’s designs to Morris’s, we can see that they use line completely differently. Even though both find the source of their forms in nature, Wright’s forms are rectilinear and geometric, Morris’s curvilinear and organic. Both believed in “simplicity,” but the word meant different things to the two men. Morris, as we have seen, equated simplicity with the natural. Wright, on the other hand, designed furniture for his houses because, he said, “simple things . . . were nowhere at hand. A piece of wood without a moulding was an anomaly, plain fabrics were nowhere to be found in stock.” To Wright, simplicity meant plainness. The history of design continually confronts the choice between the geometric and the organic. The major design movement at the turn of the century, Art Nouveau, chose the latter.
ART NOUVEAU

The day after Christmas in 1895, a shop opened in Paris named the Galeries de l’Art Nouveau. It was operated by one S. Bing, whose first name was Siegfried, though art history has almost universally referred to him as Samuel, perpetuating a mistake made in his obituary in 1905. Bing’s new gallery was a success, and in 1900, at the International Exposition in Paris, he opened his own pavilion, Art Nouveau Bing. By the time the Exposition ended, the name Art Nouveau had come to designate not merely the work he displayed but a decorative arts movement of international dimension.

Bing had visited the United States in 1894. The result was a short book titled Artistic Culture in America, in which he praised America’s architecture, painting, and sculpture, but most of all its arts and crafts. The American who fascinated him most was the glassmaker Louis Comfort Tiffany, son of the founder of the famous New York jewelry firm Tiffany and Co. The younger Tiffany’s work inspired Bing to create his new design movement, and Bing contracted with the American to produce a series of stained-glass windows designed by such French artists as Henri de Toulouse-Lautrec and Pierre Bonnard. Because oil lamps were at that very moment being replaced by electric lights—

Thomas Edison had startled the French public with his demonstration of electricity at the 1889 International Exhibition—Bing placed considerable emphasis on new, modern modes of lighting. From his point of view, a new light and a new art went hand in hand. And Tiffany’s stained-glass lamps (Fig. 523), backlit by electric light, brought a completely new sense of vibrant color to interior space.

Even more than his stained glass, Bing admired Tiffany’s iridescent Favrile glassware, which was named after the obsolete English word for hand-made, “fabrile.” The distinctive feature of this type of glassware is that nothing of the design is painted, etched, or burned into the surface. Instead, every detail is built up by the craftsperson out of what Tiffany liked to call “genuine glass.” In the vase illustrated here (Fig. 524), we can see many of the design characteristics most often associated
with Art Nouveau, from the wavelike line of the peacock feathers to the self-conscious asymmetry of the whole. In fact, the formal vocabulary of Art Nouveau could be said to consist of young saplings and shoots, willow trees, buds, vines—anything organic and undulating, including snakes and, especially, women's hair. The Dutch artist Jan Toorop's advertising poster for a peanut-based salad oil (Fig. 525) flattens the long, spiraling hair of the two women preparing salad into a pattern very like the elaborate wrought-iron grillwork also characteristic of Art Nouveau design. Writing about Bing's installation at the 1900 Universal Exposition, one writer described Art Nouveau's use of line this way: “[In] the encounter of the two lines . . . the ornamenting art is born—an indescribable curving and whirling ornament, which laces and winds itself with almost convulsive energy across the surface of the [design]!”

Yet, for many, Art Nouveau seemed excessively subjective and personal, especially for public forms such as architecture. Through the example of posters like Toorop’s, Art Nouveau became associated with an interior world of aristocratic wealth, refinement, and even emotional and sexual abandon. It seemed the very opposite of the geometric and rectilinear design practiced by the likes of Frank Lloyd Wright, and a new geometric design gradually replaced it. By the Exposition Internationale des Arts Décoratifs et Industriels Modernes—the International Exposition of Modern Decorative and Industrial Arts—in Paris in 1925, geometric design held sway.

Fig. 525 Jan Toorop, Poster for Delftsche Slaolie (Salad Oil), 1894. Dutch advertisement poster. Scala / Art Resource, NY.
**ART DECO**

The Exposition Internationale des Arts Décoratifs et Industriels Modernes was planned as early as 1907, during the height of Art Nouveau, but logistical problems—especially the outbreak of World War I—postponed it for almost 20 years. A very influential event, the exposition was the most extensive international showcase of the style of design then called *Art Moderne* and, since 1968, better known as *Art Deco*.

Art Deco designers tended to prefer more up-to-date materials—chrome, steel, and Bakelite plastic—and sought to give expression to everyday “moderne” life. The Skyscraper Bookcase by the American designer Paul T. Frankl (Fig. 526), made of maple wood and Bakelite, is all sharp angles that rise into the air, like the brand-new skyscrapers that were beginning to dominate America’s urban landscape.

This movement toward the geometric is perhaps the defining characteristic of Art Deco. Even the leading fashion magazines of the day reflect this in their covers and layouts. In Edouardo Benito’s *Vogue* magazine cover (Fig. 527), we can see an impulse toward simplicity and rectilinearity comparable to Frankl’s bookcase. The world of fashion embraced the new geometric look. During the 1920s, the boyish silhouette became increasingly fashionable. The curves of the female body were suppressed (Fig. 528), and the waistline disappeared in tubular, “barrel”-line skirts. Even long, wavy hair, one of the defining features of Art Nouveau style, was abandoned, and the schoolboyish “Eton crop” became the hairstyle of the day.

**THE AVANT-GARDES**

At the 1925 Paris Exposition, one designer’s pavilion stood apart from all the rest, not because it was better than the others, but because it was so different. As early as 1920, the architect Le Corbusier (see Figs. 485 and 486) had written in his new magazine *L’Esprit Nouveau* (The New Spirit) that “decorative art, as opposed to the machine phenomenon, is the final twitch of the old manual modes; a dying thing.” He proposed a “Pavillon de l’Esprit Nouveau” (Pavilion of the New Spirit) for the exposition that would contain “only standard things created by industry in factories and mass-produced; objects truly of the style of today.”

For Le Corbusier, making expensive, hand-crafted objects amounted to making antiques in a contemporary world. From his point of view, the other designers at the 1925 exposition were out of step with the times. The modern world was dominated by the machine, and though designers had shown disgust for machine-manufacture ever since the time of Morris and Company, they did so at the risk of living forever in the past. “The house,” as Le Corbusier had declared, “is a machine for living.”

---


**Fig. 527** Edouardo Garcia Benito, *Vogue*, May 25, 1929 cover. © *Vogue* / Condé Nast Publications, Inc.

**Fig. 528** Unidentified illustrator, corset, *Vogue*, October 25, 1924. © *Vogue* / Condé Nast Publications, Inc.
Le Corbusier’s “new spirit” horrified the exposition’s organizers, and, accordingly, they gave him a parcel of ground for his pavilion between two wings of the Grand Palais, with a tree, which could not be removed, growing right in the middle of it. Undaunted, Le Corbusier built a modular version of his Domino Housing Project design (see Fig. 485) right around the tree, cutting a hole in the roof to accommodate it (Fig. 529). So distressed were Exposition officials that they ordered a high fence to be built completely around the site in order to hide it from public view. Le Corbusier appealed to the Ministry of Fine Arts, and, finally, the fence was removed. “Right now,” Le Corbusier announced in triumph, “one thing is sure: 1925 marks the decisive turning point in the quarrel between the old and the new. After 1925, the antique lovers will have virtually ended their lives, and productive industrial effort will be based on the ‘new.’”

The geometric starkness of Le Corbusier’s design had been anticipated by developments in the arts that began to take place in Europe before World War I. A number of new avant-garde (from the French, meaning “advance guard”) groups had sprung up, often with radical political agendas, and dedicated to overturning the traditional and established means of art-making through experimental techniques and styles.

One of the most important was the De Stijl movement in Holland. De Stijl, which is Dutch for “The Style,” took its lead, like all the avant-garde styles, from the painting of Picasso and Braque, in which the elements of the real world were simplified into a vocabulary of geometric forms. The De Stijl artists, chief among them Mondrian (see Fig. 701), simplified the vocabulary of art and design even further, employing only the primary colors—red, blue, and yellow—plus black and white. Their design relied on a vertical and horizontal grid, often dynamically broken by a curve, circle, or diagonal line. Rather than enclosing forms, their compositions seemed to open out into the space surrounding them.

Gerrit Rietveld’s famous chair (Fig. 530) is a summation of these De Stijl design principles. The chair is designed against, as it were, the traditional elements of the armchair. Both the arms and the base of the chair are insistently locked in a vertical and horizontal grid.


But the two planes that function as the seat and the back seem almost to float free from the closed-in structure of the frame. Rietveld dramatized their separate-ness from the black grid of frame by painting the seat blue and the back red.

Rietveld’s Schröder House, built in 1925, is an extension of the principles guiding his chair design. The interior of the box-shaped house is completely open in plan. The view represented here (Fig. 531) is from the living and dining area toward a bedroom. Sliding walls can shut off the space for privacy, but it is the sense of openness that is most important to Rietveld. Space implies movement. The more open the space, the more possibility for movement in it. Rietveld’s design, in other words, is meant to immerse its occupants in a dynamic situation that might, idealistically, release their own creative energies.

This notion of dynamic space can also be found in Russian Constructivism, a movement in the new postrevolutionary Soviet state that dreamed of uniting art and everyday life through mass-production and industry. The artists, the Constructivists believed, should “go into the factory, where the real body of life is made.” They believed, especially, in employing nonobjective formal elements in functional ways. El Lissitzky’s design for the poster Beat the Whites with the Red Wedge (Fig. 532), for instance, is a formal design with propagandistic aims. It presents the “Red” Bolshevik cause as an aggressive red triangle attacking a defensive and static “White” Russian circle. Although the elements employed are starkly simple, the implications are disturbingly sexual—as if the Reds are male and active, while the Whites are female and passive—and the sense of aggressive action, originating both literally and figuratively from “the left,” is unmistakable.
This same sense of geometrical simplification can be found in Alexander Rodchenko’s design for a catalog cover for the Russian exhibition at the 1925 Paris Exposition (Fig. 533). Rodchenko had designed the interiors and furnishings of the Workers’ Club, which was included in the Soviet exhibit at the Exposition, and the cover design echoes and embodies his design for the Club. The furniture, as Rodchenko described it, emphasized “simplicity of use, standardization, and the necessity of being able to expand or contract the numbers of its parts.” It was painted in only four colors—white, red, gray, and black—alone or in combination, and employed only rectilinear geometric forms. Chairs could be stacked and folded, tables could serve as screens and display boards if turned on their sides, and everything was moveable and interchangeable.

Typography, too, reflected this emphasis on standardization and simplicity. Gone were the ornamental effects of serif type styles—that is, letterforms, such as the font used in this text, which have small lines at the end of the letter’s main stroke—and in their place plain and geometric sans serif (“without serif”) fonts came to the fore. One of the great proponents of this new typography was the French poster designer Cassandre. “The poster is not meant to be a unique specimen conceived to satisfy a single art lover,” Cassandre wrote, “but a mass-produced object that must have a commercial function. Designing a poster means solving a technical and commercial problem . . . in a language that can be understood by the common man.” The poster campaign Cassandre created for the aperitif Dubonnet (Fig. 534) is conceived entirely as a play on words, but one any Frenchman would understand and appreciate. A man

---


**Fig. 534** Cassandre, poster for *Dubonnet*, 1932. © MOURON. CASSANDRE. All rights reserved. License number 2003-20-11-01.
sits at a café table gazing at a glass of wine in his hand. The copy reads simply DUBO, or “du beau” (“something beautiful”). Next, we read DUBON, “du bon” (“something good”), and the color that was evident only in the glass, arm, and face in the first scene now extends to his stomach. Finally, above the full brand name, the fully colored, and apparently content, gentleman pours himself another glass. The geometrical letterforms of the sans-serif capitals echo the forms of the man himself—the “D” in his hat, the “B” in his elbow, the “N” in his leg’s relation to the chair, and the “T” in the table. In another version of the campaign, Cassandre split the image into three separate posters, to be seen consecutively from the window of a train. His typographic style, thus viewed by millions, helped to popularize the geometric simplicity championed by the avant-gardes.

THE BAUHAUS

At the German pavilion at the 1925 Paris Exposition, one could see a variety of new machines designed to make the trials of everyday life easier, such as an electric washing machine and an electric armoire in which clothes could be tumble-dried. When asked who could afford such things, Walter Gropius, who in 1919 had founded a school of arts and crafts in Weimar, Germany known as the Bauhaus, replied, “To begin with, royalty. Later on, everybody.”

Like Le Corbusier, Gropius saw in the machine the salvation of humanity. And he thoroughly sympathized with Le Corbusier, whose major difficulty in putting together his Pavillon de l’Esprit Nouveau had been the unavailability of furniture that would satisfy his desire for “standard things created by industry in factories and mass-produced; objects truly of the style of today.” Ironically, at almost exactly that moment, Marcel Breuer, a furniture designer working at Gropius’s Bauhaus, was doing just that.

In the spring of 1925, Breuer purchased a new bicycle, manufactured out of tubular steel by the Adler company. Impressed by the bicycle’s strength—it could easily support the weight of two riders—its lightness, and its apparent indestructibility, Breuer envisioned furniture made of this most modern of materials. “In fact,” Breuer later recalled, speaking of the armchair that he began to design soon after his purchase (Fig. 535), “I took the pipe dimensions from my bicycle. I didn’t know where else to get it or how to figure it out.”
The chair is clearly related to Rietveld’s *Red and Blue Chair* (see Fig. 530), consisting of two diagonals for seat and back set in a cubic frame. It is easily mass-produced—and, in fact, is still in production today. But its appeal was due, perhaps most of all, to the fact that it looked absolutely new, and it soon became an icon of the machine age. Gropius quickly saw how appropriate Breuer’s design would be for the new Bauhaus building in Dessau. By early 1926, Breuer was at work designing modular tubular-steel seating for the school’s auditorium, as well as stools and side chairs to be used throughout the educational complex. As a result, Breuer’s furniture became identified with the Bauhaus.

But the Bauhaus was much more. In 1919, Gropius was determined to break down the barriers between the crafts and the fine arts and to rescue each from its isolation by training craftsmen, painters, and sculptors to work on cooperative ventures. There was, Gropius said, “no essential difference” between the crafts and the fine arts. There were no “teachers,” either; there were only “masters, journeymen, and apprentices.” All of this led to what Gropius believed was the one place where all of the media could interact and all of the arts work cooperatively together. “The ultimate aim of all creative activity,” Gropius declared, “is the building,” and the name itself is derived from the German words for building (*Bau*) and house (*Haus*).

We can understand Gropius’s goals if we look at Herbert Bayer’s design for the cover of the first issue of *Bauhaus* magazine, which was published in 1928 (Fig. 536). Each of the three-dimensional forms—cube, sphere, and cone—casts a two-dimensional shadow. The design is marked by the letterforms Bayer employs in the masthead. This is Bayer’s Universal Alphabet, which he created to eliminate what he believed to be needless typographical flourishes, including capital letters. Bayer, furthermore, constructed the image in the studio and then photographed it, relying on mechanical reproduction instead of the hand-crafted, highly individualistic medium of drawing. The pencil and triangle suggest that any drawing to be done is mechanical drawing, governed by geometry and mathematics. Finally, the story on the cover of the first issue of *Bauhaus* is concerned with architecture, to Gropius the ultimate creative activity.

**STREAMLINING**

Even as the geometry of the machine began to dominate design, finding particular favor among the architects of the International Style (see Chapter 15), in the ebb and flow between the organic and the geometric that
dominates design history, the organic began to flow back into the scene as a result of advances in scientific knowledge. In 1926, the Daniel Guggenheim Fund for the Promotion of Aeronautics granted $2.5 million to the Massachusetts Institute of Technology, the California Institute of Technology, the University of Michigan, and New York University to build wind tunnels. Designers quickly discovered that by eliminating extraneous detail on the surface of a plane, boat, automobile, or train, and by rounding its edges so that each subform merged into the next by means of smooth transitional curves, air would flow smoothly across the surface of the machine. Drag would thereby be dramatically reduced, and the machine could move faster with less expenditure of energy. “Streamlining” became the transportation cry of the day.

The nation’s railroads were quickly redesigned to take advantage of this new technological information. Since a standard train engine would expend 350 horsepower more than a streamlined one operating at top speed, at 70 to 110 mph, streamlining would increase pulling capacity by 12 percent. It was clearly economical for the railroads to streamline.

At just after 5 o’clock on the morning of May 26, 1934, a brand new streamlined train called the Burlington Zephyr (Fig. 537) departed Union Station in Denver bound for Chicago. Normally, the 1,015-mile trip took 26 hours, but this day, averaging 77.61 miles per hour and reaching a top speed of 112 miles per hour, the Zephyr arrived in Chicago in a mere 13 hours and 5 minutes. The total fuel cost for the haul, at 5¢ per gallon, was only $14.64. When the train arrived later that same evening at the Century of Progress Exposition on the Chicago lakefront, it was mobbed by a wildly enthusiastic public. If the railroad was enthralled by the streamlined train’s efficiency, the public was captivated by its speed. It was, in fact, through the mystique of speed that the Burlington Railroad meant to recapture dwindling passenger revenues. Ralph Budd, president of the railroad, deliberately chose not to paint the Zephyr’s stainless steel sheath. To him it signified “the motif of speed” itself.

But the Zephyr was more than its sheath. It weighed one-third less than a conventional train, and its center of gravity was so much lower that it could take curves at 60 miles per hour that a normal train could only negotiate at 40. Because regular welding techniques severely damaged stainless steel, engineers had invented and patented an electric welding process to join its stainless steel parts. All in all, the train became the symbol of a new age. After its trips to Chicago, it traveled more than 30,000 miles, visiting 222 cities. Well over 2 million people paid a dime each to tour it, and millions more viewed it from the outside. Late in the year, it became the feature attraction of a new film, The Silver Streak, a somewhat improbable drama about a high-speed train commandeered to deliver iron lungs to a disease-stricken Nevada town.

Fig. 537 Burlington Northern Co., Burlington Zephyr #9900, 1934.
Photo courtesy of The Burlington Northern & Santa Fe Railway Co.
Wind-tunnel testing had revealed that the ideal streamlined form most closely resembled a teardrop. A long train could hardly achieve such a shape—at best it resembled a snake. But the automobile offered other possibilities. The first production-model streamlined car was the Chrysler Airflow (Fig. 538), which abandoned the teardrop ideal and adopted the look of the new streamlined trains. (It is pictured here with the 1934 Union Pacific Streamliner.) The man who inspired Chrysler to develop the automobile was Norman Bel Geddes. Bel Geddes was a poster and theatrical designer when he began experimenting, in the late 1920s, with the design of planes, boats, automobiles, and trains—things he thought of as “more vitally akin to life today than the theatre.” After the stock market crash in 1929, his staff of 20 engineers, architects, and draftsmen found themselves with little or nothing to do, so Bel Geddes turned them loose on a series of imaginative projects, including the challenge to dream up some way to transport “a thousand luxury lovers from New York to Paris fast. Forget the limitations.” The specific result was his Air Liner Number 4 (Fig. 539), designed with the assistance of Dr. Otto Koller, a veteran airplane designer. With a wingspan of 528 feet, Bel Geddes estimated that it could carry 451 passengers and 115 crew members from Chicago to London in 42 hours. Its passenger decks included a dining room, game deck, solarium, barber shop and beauty salon, nursery, and private suites for all on board. Among the crew were a nursemaid, a physician, a masseuse and a masseur, wine stewards, waiters, and an orchestra.

Although Bel Geddes insisted that the plane could be built, it was the theatricality and daring of the proposal that really captured the imagination of the American public. Bel Geddes was something of a showman. In November 1932, he published a book entitled Horizons that included most of the experimental designs he and his staff had been working on since the stock market collapse. It was wildly popular. And its popularity prompted Chrysler to go forward with the Airflow. Walter P. Chrysler hired Bel Geddes to coordinate publicity for the new automobile. In one ad, Bel Geddes himself, tabbed “America’s foremost industrial designer,” was the spokesman, calling the Airflow “the first sincere and authentic streamlined car...the first real motor car.” Despite this, the car was not a success. Though it drew record orders after its introduction in January 1934, the company failed to reach full production before April, by which time many orders had been withdrawn, and serious production defects were evident in those cars the company did manage to get off the line. The Airflow attracted more than 11,000 buyers in 1934, but by 1937 only 4,600 were sold, and Chrysler dropped the model.
However, streamlining had caught on, and other designers quickly joined the rush. One of the most successful American designers, Raymond Loewy, declared that streamlining was “the perfect interpretation of the modern beat.” To Russel Wright, the designer of the tableware illustrated here (Fig. 540), streamlining captured the “American character.” It was the essence of a “distinct American design.” Almost overnight, European designers began employing streamlining in their own product design, as evidenced by a Dutch chromium-plated vacuum cleaner from the late 1930s (Fig. 541). Suddenly, to be modern, a thing had to be streamlined. Even more important, to be streamlined was to be distinctly American in style. Thus, to be modern was to be American, an equation that dominated industrial and product design worldwide through at least the 1960s.
THE FORTIES AND FIFTEENS

The fully organic forms of Russel Wright’s “American Modern” dinnerware announced a major shift in direction away from design dominated by the right angle and toward a looser, more curvilinear style. This direction was further highlighted when, in 1940, the Museum of Modern Art held a competition titled “Organic Design in Home Furnishings.” The first prize in that competition was awarded jointly to Charles Eames and Eero Saarinen, both young instructors at the Cranbrook Academy of Art in Michigan. Under the direction of the architect Eliel Saarinen, Eero’s father, Cranbrook was similar in many respects to the Bauhaus, especially in terms of its emphasis on interdisciplinary work on architectural environments. It was, however, considerably more open to experiment and innovation than the Bauhaus, and the Eames-Saarinen entry in the Museum of Modern Art competition was the direct result of the elder Saarinen encouraging his young staff to rethink entirely just what furniture should be.

All of the furniture submitted to the show by Eames and Saarinen used molded plywood shells in which the wood veneers were laminated to layers of glue. The resulting forms almost demand to be seen from more than a single point of view. The problem, as Eames wrote, “becomes a sculptural one.” The furniture was very strong, comfortable, and reasonably priced. Because of the war, production and distribution were necessarily limited, but in 1946, the Herman Miller Company made 5,000 units of a chair Eames designed with his wife, Ray Eames, also a Cranbrook graduate (Fig. 542). Instantly popular and still in production today, the chair consists of two molded-plywood forms that float on elegantly simple steel rods. The effect is amazingly dynamic: The back panel has been described as “a rectangle about to turn into an oval,” and the seat almost seems to have molded itself to the sitter in advance.

Eero Saarinen, who would later design the TWA terminal at John F. Kennedy International Airport (see Figs. 492 and 493), took the innovations he and Eames had made in the “Organic Design in Home Furnishings” competition in a somewhat different direction. Unlike Eames, who in his 1946 chair had clearly abandoned the notion of the one-piece unit as impractical, Saarinen continued to seek a more unified design approach, feeling that it was more economical to stamp furniture from a single piece of material in a machine. His Tulip Pedestal Furniture (Fig. 543) is one of his most successful solutions.

Saarinen had planned to make the pedestal chair entirely out of plastic, in keeping with his unified approach, but he discovered that a plastic stem would not take the necessary strain. Forced, as a result, to make the base out of cast aluminum, he nevertheless painted it the same color as the plastic in order to make the chair appear of a piece.

The end of World War II heralded an explosion of new American design, particularly attributable to the rapid expansion of the economy, as 12 million military men and women were demobilized. New home starts rose from about 200,000 in 1945 to 1,154,000 in 1950. These homes had to be furnished, and new products were needed to do the job. Passenger car production soared from 70,000 a year in 1945 to 6,665,000 in 1950, and in the following 10 years, Americans built and sold more than 58 million automobiles. In tune
with the organic look of the new furniture design, these cars soon sported fins, suggesting both that they moved as gracefully as fish and that their speed was so great that they needed stabilizers. The fins were inspired by the tail fins on the U.S. Air Force’s P-38 “Lightning” fighter plane (Fig. 544), which Harley Earl, chief stylist at General Motors, had seen during the war. He designed them into the 1948 Cadillac as an aerodynamic symbol. But by 1959, when the craze hit its peak, fins no longer had anything to do with aerodynamics. As the Cadillac (Fig. 545) made clear, it had simply become a matter of “the bigger, the better.” And, in many ways, the Cadillac’s excess defines American style in the 1950s. This was the decade that brought the world fast food (both the McDonald’s hamburger and the TV dinner), Las Vegas, Playboy magazine, and a TV in almost every home.
phone, by the fax machine and the copier, email, and the Internet, and especially by increasingly interdependent economies, we are learning to accept, perhaps faster than we realize, a plurality of styles. This describes the societal condition that we have come to call postmodernism.

What we mean when we speak of the stylistic pluralism of postmodern design is clear if we compare a traditional corporate identity package with a conspicuously postmodern one. From the Macintosh computer to the iPod, the “look” of Apple products is simple and consistent, a consistency that has been reinforced by a logo design that has remained remarkably constant over the years. The company’s very first logo, designed by founders Steve Jobs and Ronald Wayne in 1971, depicted Sir Isaac Newton sitting under an apple tree, an apple about to fall on

**POSTMODERN DESIGN**

One way to view the evolution of design since 1960 is to recognize a growing tendency to accept the splits between the organic and the geometric, and the natural and the mechanical, that dominate its history as not so much an either/or situation but as a question of both/and. In its unification of competing and contrasting elements, the Eames chair, with its contrasting steel-support structure and molded-plywood seat and back, is the forerunner of this trend.

The contemporary has been marked by a willingness to incorporate anything and everything into a given design. This is not simply a question of the organic versus the geometric. It is, even more, a question of the collisions of competing cultures of an almost incomprehensible diversity and range. On our shrinking globe, united by television and the telephone, by the fax machine and the copier, email, and the Internet, and especially by increasingly interdependent economies, we are learning to accept, perhaps faster than we realize, a plurality of styles. This describes the societal condition that we have come to call postmodernism.

What we mean when we speak of the stylistic pluralism of postmodern design is clear if we compare a traditional corporate identity package with a conspicuously postmodern one. From the Macintosh computer to the iPod, the “look” of Apple products is simple and consistent, a consistency that has been reinforced by a logo design that has remained remarkably consistent over the years. The company’s very first logo, designed by founders Steve Jobs and Ronald Wayne in 1971, depicted Sir Isaac Newton sitting under an apple tree, an apple about to fall on
his head. It was replaced by one designed by Rob Janoff in 1976, the famous “rainbow Apple,” with a bite—or a pun on “byte,” the basic unit of measurement in computer information systems—taken out of its side. The image also suggested the moment in the biblical account in Genesis of Eve taking a bite out of the apple, which for better or worse resulted in humankind acquiring knowledge itself. The shape of the Apple logo has remained almost identical ever since, although, beginning in 1998, the company switched to a monochromatic look that is meant to convey a more “high-tech” feel. This shift is reflected in an illustration from the San Jose Mercury News (Fig. 546).

Where Apple’s appeal to individual tastes lies in the variety of technological features and innovations available to each individual user, by way of contrast, the designers of Swatch watches, the Swiss husband and wife team Jean Robert and Käti Durrer, conceive of their design identities as kinetic, ever-changing variations on a basic theme (Fig. 547). In recent years, both the television and music industries have increasingly turned from producing shows and recordings designed to appeal to the widest possible audience to a concentration on appealing to more narrowly defined, specialized audiences. Television learned this lesson with the series St. Elsewhere, which had very low overall ratings, but which attracted large numbers of married, young, upper-middle-class professionals—yuppies—with enough disposable income to attract, in turn, major advertising accounts.

In light of this situation, it is no longer necessary to standardize a corporate identity. It may not even be desirable. Illustrated here are 8 of the approximately 300 watch designs produced by Robert and Durrer between 1983 and 1988, which were inspired by a variety of styles and cultures—from Japanese to Native American. Each watch is designed to allow the wearer’s individuality to assert itself. “In 1984,” Robert and Durrer recall, “we saw a gentleman sitting in the back of his Rolls Royce. We couldn’t help noticing a Swatch on his wrist. That showed us how great the breakthrough had been.”

Robert and Durrer cater to an increasingly individualistic taste, a challenge to corporate identity systems, which must, simultaneously, cater to these tastes and create a recognizable corporate image. Swatch manages this by being recognizably eclectic—bright colors, outrageous designs and patterns, and so on. The interchangeability of plastic faceplates for cellular telephones imitates the Swatch model.

But perhaps nothing transformed the design profession more than the computer itself (see Works in Progress, pp. 404–405, for a discussion of the work of April Greiman, a graphic designer who led the way in the computer revolution). Before 1990, most graphic
The design career of April Greiman might best be looked at as a continual work in progress. Perhaps no other designer has more consistently recognized and utilized the possibilities offered by computer technologies for innovation in design, and, as these technologies have developed over the past 30 or 35 years, her design has developed with them.

Among her earliest works is a groundbreaking 1985 project comprising an entire issue of Design Quarterly entitled Does It Make Sense? (Fig. 548). The piece was composed and assembled as a single document on MacDraw—if not the first use in magazine production of this early vector-based drawing program, meaning that an object’s properties and placement could be changed at any time, then certainly in 1985 by far the largest. The magazine unfolded into a life-size single page self-portrait of a digitalized nude Greiman measuring some 2 feet by 6 feet, surrounded by images of a dinosaur and Stonehenge (on each side of pubis), the earth rising over a lunar horizon and a cirrus cloud (on her legs), a prehistoric cave painting (floating over her breast), a brain above her head, a spiral galaxy below it, across the top, mudra-like hand gestures, and across the bottom astrological symbols. A timetable runs the length of the poster, marking the dates of such events as the invention of electricity, Greiman’s birthday, and, at the bottom right, her poster/magazine issue itself, reproduced in miniature. All deeply personal images, they announced Greiman’s belief that design should “think with the heart” and reach its audience on an emotional level.

In 1985, working with MacDraw was a cumbersome process. The files were so large, and the equipment so slow, that when she quit work each evening she would send her file to the printer, and when she returned in the morning they would just be finishing up. A decade later, when she was commissioned to design a commemorative stamp for the United States Postal Service celebrating...
the 75th anniversary of the 19th Amendment to the Constitution, giving women the right to vote (Fig. 549), digital technologies had advanced significantly—among other things, color had become far easier to work with. The size of Greiman’s stamp is almost diametrically opposed to the Design Quarterly project, but its scale is larger—larger, that is, than life-size. Time, and the eternal concepts of equality, freedom, and progress, are embedded not in a linear fashion to be read from left to right, but in layers of transparent color and light. In front of the Capitol and the Supreme Court are images of two great marches for equal rights, the first on February 28, 1913, in Washington, D.C., during the inauguration of President Woodrow Wilson, the second on May 16, 1976, when thousands of supporters of the proposed Equal Rights Amendment marched on the Illinois State Capitol.

As digital technologies have advanced into increasingly interactive modes of communication, Greiman’s work has moved with them. For an example of her innovative Web design, visit the Web site of her design team, Made in Space, at http://aprilgreiman.com. Her innovative approach to book design is displayed in her 2001 Something from Nothing. Her fascination with digital photography and masterful sense of exhibition design were evident in a 2006 exhibition, Drive-by Shooting, at the Pasadena Museum of California Art, in which low-resolution digital images were blown up to large scale, creating extraordinarily rich images and color palettes that were cantilevered from the wall (Figs. 550 and 551), involving the viewer in their almost dizzying sense of speed and motion (see the text-and-image video of the work at http://drive-byshooting.com). “With technology today,” Greiman says, “we can float ideas, text, and images in time and space.”
design curricula emphasized the importance of craftsmanship and traditional drawing skills. Computer-generated design began among a generation of younger designers who worked in almost open defiance of mainstream design itself. The personal computer, Microsoft Word, Adobe’s Photoshop and Font Manager, QuarkXPress, and the scanner and printer quickly supplanted the ruler, the Exacto knife, hand-drawn calligraphy, the drafting table, and the light box. The laborious pace of hand-crafted design was replaced by the speed of electronic media. Speed, in turn, allowed for greater experimentation and freedom. And within a generation, computer-literate students had revolutionized the design processes that they had inherited from their professors, who in turn were forced to catch up with the students who were fast leaving them behind.

The new computer-based design makes it possible to create imagery that might be used in a variety of media contexts. English graphic designer Chris Ede’s illustration for the iTunes App store of Clear Channel (Fig. 552) digitally blends hand-drawn and photographic representations of sports and music—the two main focuses of his client. The piece works both as a still, one-frame image, as illustrated here, and as an animated Web banner (for the iheartradio section of their Web site), in which music flows from the speaker flower with iPhone petals in abstract colorful waves carrying the various graphic elements of the design. The desire of Ede’s client for an image that can, as it were, transform itself, from still into movement, speaks to a change not only in design but in the very way we conceive of the human imagination. As the image increasingly manifests itself as no longer static but moving—in the video and film arts as well as Web design—perhaps the ways in which we think and create are changing as well.

**THE CRITICAL PROCESS**

Thinking about Design

In 1999, architect Cameron Sinclair and documentary filmmaker and journalist Kate Stohr founded Architecture for Humanity, a charitable organization dedicated to seeking architectural solutions to humanitarian crises and design services to communities in need. Through competitions, workshops, and partnerships with aid organizations, they have created design opportunities around the world for those socially conscious designers and architects who wished, in the words of the title to their 2006 book surveying the work they have accomplished thus far, to “design like you give a damn.”

An example of their innovative approach to design is the PlayPump, designed by Ronnie Stuiver to bring clean water to South Africa’s rural communities (Fig. 553). In spinning the merry-go-round apparatus, children pump 318 gallons of water per hour from a well belowground up into a 568-gallon storage tank,
enough to meet the daily household needs of a small community. Graphic designer Trevor Field conceived of the idea of placing advertising on the storage tanks. In rural South Africa, where there is no TV and rarely even radio, advertisers quickly understood the value of promoting their products on these tanks, and revenues from advertising easily pay for the pump and its maintenance. Public health and HIV/AIDS awareness posters generally occupy two of the four billboards on the water tower.

Perhaps one of the most useful ways to think about the difference between art and design is, in fact, to consider their relative relationships to their audiences. How does the audience for art differ from the audience for design? How does the “art market” differ from the “marketplace”? What demands are placed on the designer that are not necessarily placed on the artist? How, finally, do designers like those working for Architecture for Humanity differ from the design profession as a whole?