The Genesis of Twentieth Century Design

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The turn of a century invites introspection. As one century closes and a new one begins, writers and artists begin to question conventional wisdom and speculate on new possibilities for changing the circumstances of culture. For example, the end of the eighteenth century gave birth to a new category of typeface design, which is still called the modern style (see Figs. 8–17, 8–18, and 8–19) two hundred years later. At that same time, the neoclassical revival of Greco-Roman forms in architecture, clothing, painting, and illustration (see Fig. 8–20) replaced baroque and rococo design. As the nineteenth century drew to a close and the twentieth century began, designers across the disciplines of architectural, fashion, graphic, and product design searched for new forms of expression. Technological and industrial advances fed these concerns. The new design vocabulary of art nouveau had challenged the conventions of Victorian design. Art nouveau proved that inventing new forms, rather than copying forms from nature or historical models, was a viable approach. The potential of abstract and reductive drawing and design was explored by designers in Scotland, Austria, and Germany who moved away from the serpentine beauty of organic drawing as they sought a new aesthetic philosophy to address the changing social, economic, and cultural conditions at the turn of a century.

Frank Lloyd Wright and the Glasgow School

During the final years of the nineteenth century, the work of the American architect Frank Lloyd Wright (1867–1959) was becoming known to European artists and designers. Clearly, he was an inspiration for the designers evolving from curvilinear art nouveau toward a rectilinear approach to spatial organization. In 1893 Wright began his independent practice. He rejected historicism in favor of a philosophy of “organic architecture,” with “the reality of the building” existing not in the design of the facade but in dynamic interior spaces where people lived and worked. Wright defined organic design as having *entity*, “something in which the part is to the whole as the whole is to the part, and which is all devoted to a purpose. . . . It seeks that completeness in idea in execution that is absolutely *true* to method, *true* to purpose, *true* to character.”

Wright saw *space* as the essence of design, and this emphasis was the wellspring of his profound influence upon all areas of twentieth-century design. He looked to Japanese architecture and design for a model of harmonious proportion and visual poetry; in pre-Columbian architecture and art he found lively ornament restrained by a mathematical repetition of horizontal and vertical spatial divisions. Wright's repetition of rectangular zones and use of asymmetrical spatial organization were adopted by other designers. In addition to architecture, his design interests included furniture, graphics, fabrics, wallpapers, and stained-glass windows (see Fig. 15–1). At the turn of the century he was at the forefront of the emerging modern movement.

As a young man, Wright operated a basement printing press with a close friend. This experience taught him to incorporate white or blank space as an element in his designs, to establish and work within parameters, and to combine varied materials into a unified whole. During his long career, Wright periodically turned his hand to graphic design. Throughout the winter of 1896–97, Wright collaborated with William H. Winslow in the production of *The House Beautiful* (Fig. 12–1), by Rev. William C. Gannett, printed on a handpress using handmade paper at the Auvergne Press in an edition of ninety copies. Wright's border designs were executed in a fragile freehand line describing a lacy pattern of stylized plant forms.

The Studio and its reproductions of work by Beardsley and Toorop had a strong influence on a group of young Scottish artists who became friends at the Glasgow School of Art in the early 1890s. Headmaster Francis H. Newbery pointed out affinities between the work of two architectural apprentices taking evening classes—Charles Rennie Mackintosh (1868–1928) and J. Herbert McNair (1868–1955)—and the work of two day students—sisters Margaret (1865–1933) and Frances Macdonald (1874–1921). The four students began to collaborate and were soon christened "The Four." Artistic collaboration and friendship led to matrimony, for in 1899 McNair married Frances Macdonald. The following year, Mackintosh and Margaret Macdonald married.

These young collaborators, more widely known as the Glasgow School, developed a unique style of lyrical originality and symbolic complexity. They innovated a geometric style of composition by tempering floral and curvilinear elements with strong rectilinear structure. The Macdonald sisters held strong religious beliefs and embraced symbolist and mystical ideas. The confluence of architectural structure with the sisters' world of fantasy and dreams produced an unprecedented transcendental style that has been variously described as feminine, a fairyland fantasy, and a melancholy disquietude.

Designs by The Four are distinguished by symbolic imagery (Fig. 12–2) and stylized form. Bold, simple lines define flat planes of color. A poster for the Glasgow Institute of the Fine Arts (Fig. 12–3), designed by Margaret and Frances Macdonald in collaboration with J. Herbert McNair, demonstrates the rising verticality and integration of flowing curves with rectangular structure that are hallmarks of their mature work. Abstract interpretations of the human figure, such as Mackintosh's Scottish Musical Review poster (Fig. 12–4), had not been seen in Scotland before; many observers were outraged. But the editor of *The Studio* was so impressed that he visited Glasgow and published two articles on the new group in 1897. He reminded *Studio* readers, "The purpose of a poster is to attract notice, and the mildest eccentricity would not be out of place provided it aroused curiosity and so riveted the attention of passers-by. . . . There is so much decorative method in his perversion of humanity that despite all the ridicule and abuse it has excited, it is possible to defend his treatment." German and Austrian artists learned of Glasgow's countermovement to mainstream art nouveau through these articles. The Four were celebrated on the continent, particularly in Vienna, but often ignored in the British Isles. In 1896 the organizers at the annual Arts and Crafts Exhibition in London invited them to participate. So dismayed were the hosts, however, that no further invitations were extended.

12–1. Frank Lloyd Wright, title page for The House Beautiful, 1896–97. An underlying geometric structure imposed a strong order upon the intricacy of Wright's textural design

12–2. Margaret Macdonald, bookplate design, 1896. Reproduced in Ver Sacrum in 1901 as part of an article on the Glasgow group, this design depicts Wisdom protecting her children within the leaflike shelter of her hair before a symbolic tree of knowledge, whose linear structure is based on Macdonald's metalwork.

12–3. Margaret and Frances Macdonald with J. Herbert McNair, poster for the Glasgow Institute of the Fine Arts, 1895. The symbolic figures have been assigned both religious and romantic interpretations.

12–4. Charles Rennie Mackintosh, poster for The Scottish Musical Review, 1896. In this towering image that rises 2.46 meters (over 8 feet) above the spectator, complex overlapping planes are unified by areas of flat color. The white ring and birds around the figure create a strong focal point.

12–5. Jessie Marion King, double title pages for William Morris's The Defence of Guenevere, 1904. Vigorous energy and fragile delicacy, seemingly contradictory qualities, characterize King's work.

12–6. Talwin Morris, bindings for the Red Letter Shakespeare series, c. 1908. A standardized format and subtle graphic lyricism were achieved in economical commercial editions.

12–7. Talwin Morris, page ornaments from the Red Letter Shakespeare series, c. 1908. The name for this small, modestly priced set derives from its two-color printing with character names in red. Between the introduction and the play, each volume had a graceful black ornament with a red oval.

12–8. Talwin Morris, pages from the Red Letter Shakespeare series, c. 1908. The standard format used rigorous linear structures and graceful ornamented capitals.

Mackintosh made notable contributions to the new century's architecture, and major accomplishments were realized in the design of objects, chairs, and interiors as total environments. The Four pioneered interior designs with white walls bathed in light and furnished with a few carefully placed pieces, in contrast to the complex interiors prevailing at the time. Mackintosh's main design theme is rising vertical lines, often with subtle curves at the ends to temper their junction with the horizontals. Tall and thin rectangular shapes and the counterpoint of right angles against ovals, circles, and arcs characterize his work. In his furniture, simple structure is accented with delicate decorative ornaments. In the interior designs, every small detail was carefully designed to be visually compatible with the whole. The work of The Four and their influence on the Continent became important transitions to the aesthetic of the twentieth century.

Among those who drew inspiration from The Four, Jessie Marion King (1876–1949) achieved a distinctive personal statement (Fig. 12–5) with medieval-style fantasy illustrations accompanied by stylized lettering. Her grace, fluidity, and romantic overtones widely influenced fiction illustration throughout the twentieth century. Newbery recognized the poetic nature of King's work; in lieu of conventional drawing courses, he wisely assigned her independent study to nurture her emerging individuality. After working in architectural offices and serving as assistant art director for *Black and White* magazine in London, Talwin Morris (1865–1911) became art director of the Glasgow publishing firm of Blackie's after answering an 1893 want ad in the *London Times*. Shortly after moving to Glasgow, Morris established contact with The Four and embraced their ideas. Blackie's—a volume printer of large editions of popular books for the mass market, including novels, reprints, and encyclopedias—provided Morris with a forum for applying the geometric spatial division and lyrical organic forms of the Glasgow group to mass communications.

Morris often developed formats for series that could be used over and over again with subtle variations (Figs. 12–6, 12–7, and 12–8). The sheer volume of his work was a major factor in introducing the English public to the emerging ideas and visual forms of modern architecture and design.

The Vienna Secession

In Austria, *Sezessionstil*, or the Vienna Secession, came into being on 3 April 1897, when the younger members of the Künstlerhaus, the Viennese Creative Artists' Association, resigned in stormy protest. Technically, the refusal to allow foreign artists to participate in Künstlerhaus exhibitions was the main issue, but the clash between tradition and new ideas emanating from France, England, and Germany lay at the heart of the conflict, and the young artists wanted to exhibit more frequently. Painter Gustav Klimt (1862–1918) was the guiding spirit who led the revolt; architects Joseph Maria Olbrich (1867–1908) and Josef Hoffmann (1870–1956) and artist-designer Koloman Moser (1868–1918) were key members. Like the Glasgow School, the Vienna Secession became a countermovement to the floral art nouveau that flourished in other parts of Europe.

Benchmark posters for the Vienna Secession's exhibitions demonstrate the group's rapid evolution from the illustrative allegorical style of symbolist painting (Fig. 12–9) to a French-inspired floral style (Fig. 12–10) to the mature Vienna Secession style (see Fig. 12–23), which drew inspiration from the Glasgow School. (Compare, for instance, Figure 12–3 and Figure 12–4 with Figure 12–23.) Figure 12–9 is the first Vienna Secession exhibition poster. Klimt referred to Greek mythology to show Athena, goddess of the arts, watching Theseus deliver the deathblow to the Minotaur. Athena and her shield, which depicts Medusa, form simultaneous profile and frontal symbolic images. This is an allegory of the struggle between the Secession and the Künstlerhaus. The trees were overprinted later after the male nude outraged the Vienna police, but this controversy only fueled public interest in the artists' revolt. Figure 12–10, by Moser, demonstrates how quickly the central idealized figures and swooping floral forms of French art nouveau were absorbed. A major difference is the Secession artists' love of clean, simple, sans serif lettering, ranging from flat, blocky slabs to fluidly calligraphic forms.

For a brief period, as the new century opened, Vienna was the center for creative innovation in the final blossoming of art nouveau, as represented by the Vienna Secession's elegant *Ver Sacrum* (Sacred Spring), published from 1898 until 1903. *Ver Sacrum* was more a design laboratory than a magazine. A continuously changing editorial staff, design responsibility handled by a rotating committee of artists, and unpaid contributions of art and design were all focused on experimentation and graphic excellence. In 1900 the journal had only three hundred subscribers and a press run of six hundred copies, but it enabled designers to develop innovative graphics as they explored the merger of text, illustration, and ornament into a lively unity.

The magazine had an unusual square format: The 1898–99 issues were 28 by 28.5 centimeters (11 by 11¼ inches) and the 1900–03 issues were reduced to 23 by 24.5 centimeters (9 by 9¾ inches). Secession artists preferred vigorous linear art, and *Ver Sacrum* covers often combined hand-lettering with bold line drawing (Figs. 12–11, 12–12, and 12–13) printed in color on a colored background. Decorative ornaments, borders, headpieces (Fig. 12–14 and Fig. 12–15), and tailpieces were used generously, but the overall page layouts (Fig. 12–16) were refined and concise, thanks to ample margins and careful horizontal and vertical alignment of elements into a unified whole.

12–9. Gustav Klimt, poster for the first Vienna Secession exhibition, 1898. The large open space in the center is unprecedented in Western graphic design.

12–10. Koloman Moser, fifth Vienna Secession exhibition poster, 1899. A metallic gold bronze figure and olive green background are printed on yellow tone paper that forms the contour lines.

12-11. Alfred Roller, cover design for Ver Sacrum, initial issue, 1898. Roller used an illustration of a tree whose growth destroyed its pot, allowing it to take root in firmer soil, to
symbolize the Secession.

12–12. Alfred Roller, cover design for Ver Sacrum, 1898. A stipple drawing of leaves becomes a frame for the lettering, which sits
in a square that gives the impression of a collage element.

Ver Sacrum's use of white space in page layouts, sleek-coated stock, and unusual production methods achieved an original visual elegance. Color plates were tipped in, and 55 original etchings and lithographs as well as 216 original woodcuts were bound into the issues during the magazine's six years of publication. Sometimes signatures were printed in color combinations, including muted brown and blue-gray, blue and green, brown with red-orange, and chocolate with gold. When signatures were bound together, four colors, instead of two, appeared on the double spreads. The Vienna Secession artists did not hesitate to experiment: A poem was printed in metallic gold ink on translucent paper; a photograph of an interior was printed in scarlet ink; and in one issue, a linear design by Koloman Moser was embossed on silky-smooth coated white stock in what may have been the first white-on-white embossed graphic design.

12–13. Koloman Moser, cover design for Ver Sacrum, 1899. A stencil-effect technique for creating images has an affinity, in its reduction of the subject to black and white planes, with high-contrast photography.

12–14. Josef Hoffmann, headpiece from the premiere issue of
Ver Sacrum, 1898. Berries, drawn in the free contour line favored by many Secession artists, flow around a plaque that proclaims "Association of Visual Artists of Austria. Secession."

12–15. Joseph Olbrich, frame for Ver Sacrum article title, 1899. The fluid repetition of forms and symmetry in this decorative botanical frame, with its dense black color, bring lively contrast to the typographic page.

12–16. Josef Hoffmann (border) and Koloman Moser (initial), page from Ver Sacrum, 1898. Hoffmann's modular berry motif and Moser's figurative initial combine to produce an elegant page.

Design aesthetics were so important that advertisers were required to commission their advertising designs (Fig. 12–17) from the artists and designers contributing to each issue to ensure a visual design unity. The exceptional linear and geometric design elements gracing *Ver Sacrum*'s pages became an important design resource as the Vienna Secession style evolved.

Editorial content included articles about artists and their work, poems contributed by leading writers of the day (Figs. 12–18 and 12–19), and an illustrated monthly calendar (Fig. 12–20). Critical essays were published, including a famous article entitled "Potemkin City" by the polemic Austrian architect Adolf Loos (1870–1933). Because Viennese building façades were cast-concrete fronts mimicking Renaissance and baroque palaces, Loos accused Vienna of being like the artificial towns of canvas and pasteboard erected in the Ukraine to deceive the Russian empress Catherine. All areas of design were challenged by Loos, whose other writings roundly condemned both historicism and *Sezessionstil* as he called for a functional simplicity that banished "useless decoration in any form." Standing alone at the turn of the century, Loos blasted the nineteenth-century love of decoration and abhorrence of empty spaces. To him, "organic" meant not curvilinear but the use of human needs as a standard for measuring utilitarian form.

12–17. Alfred Roller, Koloman Moser, and Frederick Koenig, inside front cover advertisements for Ver Sacrum, 1899. All of the ads and the makeup of the whole page are carefully designed to avoid the graphic clutter and clash usually present when small ads are clustered together.

12–18. Adolf Bohm, page from Ver Sacrum, 1898. The lyrical contours of trees reflected on a lake provide an appropriate environment for a poem about autumn trees.

12–19. Koloman Moser, illustration of a duchess and a page for R. M. Rilke's poem "Vorfrühling" (Early Spring) from Ver Sacrum, 1901. Elemental geometric forms are repeated, building complex kinetic patterns

12–20. Alfred Roller (designer and illustrator), Ver Sacrum calendar for November 1903. An exuberant border brackets a seasonal illustration, "Letzte Blätter" (Last Leaves), and hand-lettered, rectangular numbers and letters.

While the personal monograms by Secession artists convey a communal aesthetic (Fig. 12–21), various members specialized in one or more disciplines: architecture, crafts, graphic design, interior design, painting, printmaking, and sculpture. Moser played a major role in defining the approach to graphic design. His Fromme's Calendar poster (Fig. 12–22) combined mystical symbols with simplified two-dimensional space. The transcendental overtones of the Glasgow School yielded to a fascination

12–21. Various designers, personal monograms, 1902. Monograms designed by Secession artists were reproduced in a 1902 exhibition catalogue.

12–22. Koloman Moser, poster advertising Fromme's calendar, 1899. Used by the client with color changes for fifteen years, Moser's design depicts a goddess of personal destiny holding a snake ring and hourglass, symbols for the eternal circle of life and the passing of time.

12–23. Koloman Moser, poster for the thirteenth Vienna Secession exhibition, 1902. Mathematical patterns of squares and rectangles contrast with the circular forms of the figures and letterforms.

12–24. Walter Crane, diagram from Line and Form, 1900. Crane's widely read book foretold the evolution of form toward the geometric purity of the Vienna Secession and postcubism avant-garde.

12–25. Alfred Roller, design for a pocket watch cover, 1900. Night and day are symbolized by two snails with Asian yin and yang (positive and negative principles in nature) attributes.

with geometry. Moser's poster (Fig. 12–23) for the thirteenth Vienna Secession exhibition is a masterpiece of the mature phase. This evolution toward elemental geometric form was diagrammed by Walter Crane in his book *Line and Form* (Fig. 12–24). When Vienna Secession artists rejected the French floral style, they turned toward flat shapes and greater simplicity. Design and craft became increasingly important as this metamorphosis culminated in an emphasis on geometric patterning and modular design construction. The resulting design language used squares, rectangles, and circles in repetition and combination. Decoration and the application of ornament depended on similar elements used in parallel, nonrhythmic sequence. This geometry was not mechanical and rigid but subtly organic.

Alfred Roller (1864–1935) made significant innovations in graphic design with a masterly control of complex line, tone, and form (Fig. 12–25). A set designer and scene painter for theater, Roller's principal work as a graphic designer and illustrator was for *Ver Sacrum* and Secession exhibition posters. Cubism

and art deco are anticipated in his 1902 poster for the fourteenth Vienna Secession exhibition (Fig. 12–26). His poster for the sixteenth exhibition, later that same year (Fig. 12–27), sacrificed legibility in order to achieve an unprecedented textural density. Berthold Löffler (1874–1960) also anticipated later developments with his reductive symbolic images of thick contours and simple geometric features. Figures in his posters and illustrations became elemental significations rather than depictions (Fig. 12–28).

By the turn of the century, both Moser and Hoffmann had been appointed to the faculty of the Vienna School for Applied Art. Their ideas about clean, geometric design, formed when they stripped the Glasgow influence of its virgins, symbolic roses, and mystical overtones, captured the imagination of their students. With financing from the industrialist Fritz Wärndorfer, Hoffmann and Moser launched the Wiener Werkstätte (Vienna Workshops) in 1903 (Figs. 12–29 and 12–30). An outgrowth of Sezessionstil, this spiritual continuum of Morris's workshops sought a close union of the fine and applied arts in the design of lamps, fabrics, and similar objects for everyday use, including books, greeting cards, and other printed matter (Fig. 12–31). Originally formed to produce designs by Moser and Hoffmann, the Vienna Workshops flourished, and many other collaborators participated. The goal was to offer an alternative to poorly designed, mass-produced articles and trite historicism. Function, honesty to materials, and harmonious proportion were important concerns; decoration was used only when it served these goals and did not violate them. Master carpenters, bookbinders, metalsmiths, and leatherworkers were employed to work with the designers in the effort to elevate crafts to the standards of fine arts. Moser left the Vienna Workshops in 1907, and his death at age fifty in 1918 cut short the career of a major design innovator.

After 1910 the creative momentum in Vienna declined. But the gulf between nineteenth-century ornament and art nouveau on the one hand and the rational functionalism and geometric formalism of the twentieth century on the other had been bridged. The Vienna Workshops survived the chaos of World War I and flourished until the Depression era, when financial difficulties forced their closing in 1932.

Peter Behrens and the New Objectivity

The German artist, architect, and designer Peter Behrens played a major role in charting a course for design in the first decade of the new century. He sought typographic reform, was an early advocate of sans-serif typography, and used a grid system to structure space in his design layouts. He has been called "the first industrial designer" in recognition of his designs for such manufactured products as streetlamps and teapots. His work for the Allgemeine Elektrizitäts-Gesellschaft, or AEG, is considered the first comprehensive visual identification program. In architecture, his early buildings pioneered non-load-bearing glass curtain walls spanning the spaces between support girders.

Behrens was orphaned at age fourteen. The substantial inheritance from his father's estate provided financial autonomy, which assisted in the evolution of his work. He chose
art for his career and studied in Hamburg, then moved to Munich, where a renaissance in German arts and crafts was beginning. Although his early paintings were of the poor and the industrial landscape, Behrens later abandoned social realism and embraced the 1890s German Jugendstil movement.

In 1900 the grand duke of Hessen, who sought to "fuse art and life together," established a new Darmstadt artist's colony, hoping to encourage cultural and economic growth in light manufacturing, such as furniture and ceramics. The colony's seven artists, including Behrens and Vienna Secession architect 0lbrich, all had experience in the applied arts. Each was granted land to build a home; Behrens designed his own house and all its furnishings, from furniture to cutlery and china, an important experiment in total design.

German art critics of the period were interested in the relationship of art and design forms to social, technical, and cultural conditions. Behrens was concerned about these issues as well and believed that, after architecture, typography provided "the most characteristic picture of a period, and the strongest

testimonial of the spiritual progress" and "development of a people." His typographic experiments were a deliberate attempt to express the spirit of the new era. In 1900 Behrens set his twenty-five-page booklet, *Celebration of Life and Art: A Consideration of the Theater as the Highest Symbol of a Culture*, in sans-serif type (Fig. 12–32). According to German typographic historian Hans Loubier, this booklet may represent the first use of sans-serif type as running book text. Furthermore, all-capital sans-serif type is used in an unprecedented way on the title and dedication pages (Fig. 12–33). The following year Behrens explored formal geometric design motifs with modular sans-serif characters based on a square (Fig. 12–34).

12–32. Peter Behrens, text pages for Celebration of Life and Art: A Consideration of the Theater as the Highest Symbol of a Culture, 1900. Blue-gray borders and red initials surrounded by rust-colored decorations frame the unprecedented sans-serif running text.

12–33. Peter Behrens, title and dedication pages for Celebration of Life and Art, 1900. A sharp angularity characterizes the title page (left), framed by caryatids. On the right, a dedication to the Darmstadt artists' colony is ornamented with controlled curvilinear rhythms.

12–34. Peter Behrens, cover for Dokumente des Modernen Kunstgewerbes . . . (Documents of Modern Applied Arts . . .), 1901. This decorative geometric design and sans-serif lettering based on a square foreshadow art deco design of the 1920s and 1930s.

12–35. Berthold Foundry, Akzidenz Grotesk typefaces, 1898–1906. An elegant system of weight contrast is achieved in these pioneering letterforms.

12–36. Typefaces released by the Klingspor Type Foundry. Top to bottom: Otto Eckmann's Eckmannschrift, 1900; Peter Behrens's Behrensschrift, an attempt to innovate typographic forms for the new era, 1901; Behrens Kursiv, Behrens's italic version of Behrensschrift, 1907; Behrens Antiqua, his attempt to recapture the clarity and authority of Roman inscriptions, 1908; and Behrens Medieval, his personal interpretation of Renaissance forms, 1913.

Behrens was not alone in his interest in sans-serif typography at the turn of the century. The Berthold Foundry designed a family of ten sans serifs that were variations on one original font. This Akzidenz Grotesk (called Standard in the United States) type family (Fig. 12–35) had a major influence on twentieth-century typography. In addition to the four weights shown in Figure 12–35, Berthold released three expanded and three condensed versions. Akzidenz Grotesk permitted compositors to achieve contrast and emphasis within one family of typefaces. It was a major step in the evolution of the unified and systematized type family. The designers of Akzidenz Grotesk achieved a remarkable harmony and clarity, and inspired the sans-serif typefaces of the post–World War II era.

A sense of urgency existed in the German art and design community. A new century was at hand, and the need to create new forms for a new era seemed pressing. Typographic reform was one of Behrens's major interests. After struggling with a conservative typefounder in an effort to develop a new typeface, Behrens contacted thirty-two-year-old Dr. Karl Klingspor (b. 1868) of the Klingspor Foundry. He agreed to manufacture and release Behrens's first typeface, Behrensschrift (Fig. 12–36), in 1901. Klingspor had just enjoyed unexpected success with the wildly popular Eckmannschrift (Fig 12–36; see also Fig. 11–71). Behrensschrift was an attempt to reduce any poetic flourish marking the forms, and so to make them more universal.

Unlike the ornate Victorian, art nouveau, and medieval typefaces dominating new type design at the time, Behrens standardized the strokes used to construct his letterforms. He consciously sought to innovate a typographic image for the new century and to create a uniquely German type by combining the heavy, condensed feeling of black letter, the letter proportions of roman inscriptions, and his standardized

letterform construction. Horizontals and verticals are emphasized and diagonals replaced by curved strokes in letters such as *W* and *V*. Some typographic authorities were outraged by Behrensschrift, but its feather-stroke serifs and clarity, strikingly different from the dense black letter and ornate art nouveau typefaces used extensively in Germany at the time, made it a resounding success for both book (Fig. 12–37) and job-printing typography. In the promotional booklet for Behrensschrift, Behrens compared the act of reading text type to "watching a bird's flight or the gallop of a horse. Both seem graceful and pleasing, but the viewer does not observe details of their form or movement. Only the rhythm of the lines is seen by the viewer, and the same is true of a typeface."

In 1903 Behrens moved to Düsseldorf to become director of the Düsseldorf School of Arts and Crafts. There, innovative preparatory courses preceded study in specific disciplines, such as architectural, graphic, and interior design. Behrens's purpose was to go back to the fundamental intellectual principles of all form-creating work, allowing such principles to be rooted in the artistically spontaneous and their inner laws of perception rather than directly in the mechanical aspects of the work. Students drew and painted natural forms in different media, then made analytical studies to explore linear movement, pattern, and geometric structure. These introductory courses were precursors for the Bauhaus Preliminary Course, where two of Behrens's apprentices, Walter Gropius and Ludwig Mies van der Rohe, served as directors.

A dramatic transformation occurred in Behrens's work in 1904, after the Dutch architect J. L. Mathieu Lauweriks (1864–1932) joined the Düsseldorf faculty. Lauweriks was fascinated by geometric form and had developed an approach to teaching design based on geometric composition. His grids began with a square circumscribed around a circle; numerous permutations could be made by subdividing and duplicating this basic structure (Fig. 12–38). The geometric patterns thus developed could be used to determine proportions, dimensions, and spatial divisions in the design of everything from chairs to buildings (Fig. 12–39) and graphics (Fig. 12–40). Behrens's application of this theory proved catalytic in pushing twentieth-century architecture and design toward using rational geometry as an underlying system for visual organization. His work from this period is part of the tentative beginnings of constructivism in graphic design, where realistic or even stylized depictions are replaced by architectural and geometric structure. Sometimes Behrens used square formats, but more frequently he used rectangles in ratios such as 1 square wide by 1.5 or 2 squares high.

In 1907 Emil Rathenau, director of the AEG, appointed Behrens its artistic advisor. After Rathenau purchased European manufacturing rights to Thomas A. Edison's patents in 1883, the firm became one of the world's largest manufacturing concerns.

12–37. Peter Behrens, pages from Manfred, by Georg Fuchs, 1903. Behrensschrift is used systematically with headpieces, tailpieces, and folios.

12–38. These diagrams illustrate Dutch architect J. L. M. Lauweriks's compositional theory elaborating grid systems from a square circumscribed around a circle.

12–39. Peter Behrens, Anchor Linoleum exhibition pavilion, 1906. Classical forms and proportions are combined with mathematically derived geometric structure and pattern in
a search for a twentieth-century language of form.

12–40. Peter Behrens, poster for the Anchor Linoleum exhibition pavilion, 1906. Lauweriks's grid theory is applied to graphic design.

Rathenau was a visionary industrialist who sought to give a unified visual character to the company's products, environments, and communications. In 1907 the electrical industry was high technology; electric

teakettles were as advanced as digital electronics are today. As design adviser to the AEG, Behrens began to focus on the design needs of industry, with responsibilities ranging from large buildings to stationery and electric fans.

The year 1907 also marked the founding, in Munich, of the Deutsche Werkbund (German Association of Craftsmen), which advocated a marriage of art with technology. Behrens played a major role in this first organization created to inspire high-quality design in manufactured goods and architecture. The group's leaders, including Hermann Muthesius, Henry van de Velde, and Behrens, were influenced by William Morris and the English Arts and Crafts movement, but with significant differences: While Morris was repulsed by the products of the machine age and advocated a return to medieval craftsmanship in romantic protest against the industrial revolution, the Werkbund recognized the value of machines and advocated design as a way to give form and meaning to all machine-made things, including buildings.

With visionary zeal these designers advanced a philosophy of *Gesamkultur,* that is, a new universal culture existing in a totally reformed man-made environment. Design was seen as the engine that could propel society forward to achieve Gesamkultur. Soon after the Werkbund formed, two factions emerged. One, headed by Muthesius, argued for the maximum use of mechanical manufacturing and standardization of design for industrial efficiency. This group believed form should be determined solely by function and wanted to eliminate all ornament. Muthesius saw simplicity and exactness as being both functional demands of machine manufacture and symbolic aspects of twentieth-century industrial efficiency and power. A union of artists and craftsmen with industry, he believed, could elevate the functional and aesthetic qualities of mass production, particularly in low-cost consumer products. The other faction, led by Van de Velde, argued for the primacy of individual artistic expression. Behrens attempted to mediate the two extremes, but his work for AEG showed strong tendencies toward standardization. A design philosophy is merely an idle vision until someone creates artifacts that make it a real force in the world, and Werkbund members consciously sought a new design language to realize their goals. Behrens's work for AEG became an early manifestation of Werkbund ideals, and he was sometimes called "Mr. Werkbund."

Behrens's AEG designs represent a synthesis of two seemingly contradictory concepts: neoclassicism and *Sachlichkeit* (loosely translated, commonsense objectivity). His neoclassicism grew from a careful study of art and design from ancient Greece and Rome. Rather than merely copying the stylistic aspects of such work, he found in it the formal language of harmony and proportion needed to achieve a unity of the parts to the whole. Sachlichkeit was a pragmatic emphasis on technology, manufacturing processes, and function, in which artistic conceits and questions of style were subordinate to purpose. In concert, these two concepts guided Behrens in his quest for forms to achieve Gesamkultur.

On 31 January 1908, copyright application was made for Behrens's hexagonal AEG trademark (Fig. 12–41). This pictographic honeycomb design containing the firm's initials signifies mathematical order while functioning as a visual metaphor relating the complexity and organization of a twentieth-century corporation to a beehive. Behrens's guide booklet for the AEG pavilion for the 1908 German Shipbuilding Exhibition was an early application of the trademark and corporate typeface (Fig. 12–42). The AEG graphic identity program made consistent use of three linchpin elements that would be present in corporate identity programs as the genre evolved half a century later: a logo, a typeface, and a consistent layout of elements following standardized formats.

Behrens designed a typeface for AEG's exclusive use to bring unity to its printed materials. At a time when German graphic design was dominated by traditional black-letter and decorative Victorian and art nouveau styles, Behrens designed a roman-style letterform inspired by classical Roman inscriptions. Initially this was not available in type, so display type on all AEG printed graphics was hand-lettered. In 1908 a typeset variation named Behrens-Antiqua (see Fig. 12–36) was released by Klingspor Foundry, first

for the exclusive use of AEG, then later for general use. Behrens had three important goals in designing this new type: It differentiated AEG communications from all other printed matter; its forms were universal rather than individualized by the touch of a specific artist's hand; and it strove for a monumental character that could evoke positive connotations of quality and performance. Behrens-Antiqua has the solemn, monumental quality of roman letterforms. Behrens designed ornaments inspired by ancient Greek and Roman ceramic and brass craft objects, whose geometric properties satisfied his belief that geometry could make ornament universal and impersonal.

The consistent use of graphic devices gave AEG graphics a unified image (Fig. 12–43). These devices, in addition to modular divisions of space using Lauweriks's grid, included framing the space with a medium-weight rule; central placement of static elements; exclusive use of Behrens-Antiqua type; use of analogous colors (often two or three sequential colors on the color wheel); and simple, objective photographs and drawings with subjects isolated from their environments.

12–41. Peter Behrens, AEG trademark, 1907. The new mark was consistently applied to buildings, stationary, products, and graphics.

12–42. Peter Behrens, guidebook covers for the AEG pavilion at the German Shipbuilding Exhibition, 1908. A translation drawing reduces the architectural structure to flat planes. The lettering used here became a basis for the AEG visual identification system.

12–43. Peter Behrens, covers for Mitteilungen Der Berliner Elektricitaets Werke (Berlin Electric Works Magazine), 1908. Each issue used a different geometric pattern on the front cover, and the graphic theme was echoed by the back cover calendar design.

12–44. Peter Behrens, catalogue page for AEG teakettles, 1908. Permutations of the modular system of shapes, handles, materials, and textures are shown. Note the spatial division by rules to create zones of information.

12–45. Peter Behrens, AEG arc lamp catalogue page, 1907. Shape and proportion are inspired by ancient Greek vases.

12–46. Peter Behrens, AEG electric lamp poster, c. 1910. Geometric elements structure the space and signify the radiant energy of illumination.

12–47. Peter Behrens, AEG retail store in Berlin, 1910. Lettering inscribed on white marble, dark wooden framing echoing the geometric divisions of AEG graphics, and the door-glass trademark convey the corporate image. Posters were often hung on the three-panel screen behind the window display.

12–48. Peter Behrens (designer) and Karl Bernhard (structural engineer), AEG Turbine Hall, 1909. Except for the identifying logo and name on the end of the roof, there is neither ornament nor embellishment. The structure and proportions are designed to suggest its function—a massive industrial factory engineered for the assembly of giant steam turbines.

12–49. Peter Behrens, poster for a Deutsche Werkbund exhibition, 1914. The designer is an allegorical torchbearer, in keeping with the Werkbund view that design is an enlightening and humanizing social force. The subtitle reads, "Art in Craft, Industry, and Commerce—Architecture."

12–50. Edward Johnston, Johnston's Railway Type, 1916. These elemental letterforms were prototypes for reductive design.

12–51. The London Underground symbol, revised by Edward Johnston in 1918, is shown in the 1972 version used today.

The industrial products designed by Behrens ranged from electric household products, such as teakettles and fans, to streetlamps and industrial products such as electric motors. He brought the formal eye of the painter and the structural approach and professional ethics of the architect to product design. The combination of visual form, working method, and functional concern in his work for AEG products enabled him to produce the body of work that has led some to proclaim Behrens the first industrial designer. An innovative use of standardization is seen in the design of AEG teakettles with interchangeable parts (Fig. 12–44): three basic kettle forms, two lids, two handles, and two bases. These were made in three materials: brass, copperplate, and nickelplate; and three finishes: smooth, hammered, and rippled. All components were available for assembly in three sizes; all of these teakettles used the same heating elements and plugs. This system of interchangeable components made it theoretically possible to configure 216 different teakettles, but only about 30 were actually brought to market.

Beginning in early 1907 Behrens designed a large series of AEG arc lamps (Fig. 12–45) that produced intense light by passing an electrical current between two carbon electrodes. These were three hundred times brighter, more energy efficient, and safer than gas lamps of the time. Because the carbon rods had to be replaced every eight to twenty hours, convenient exterior clips were designed for quick dismantling. Their forms and proportions suggest Lauweriks's grid, while the overall shapes evoke the harmonious design and graceful curves of Greek vases. The arc lamps were widely used in factories, railway stations, and other public buildings.

Behrens sought neutrality and standardization in product designs for machine manufacture. His streetlamps and teakettles have simple forms shorn of decoration, with connotations of social class and wealth stripped away. His work pointed toward a new design sensibility that would mature in the 1920s. This rational approach announced the need for form to emerge from function rather than being an added embellishment.

An electric lamp poster (Fig. 12–46) designed by Behrens for AEG around 1910 demonstrates the typographic and spatial parameters of the mature AEG corporate identification program; it realizes Behrens's quest for a twentieth-century language of form. The AEG corporate design program included applications to architecture ranging from storefronts (Fig. 12–47) to his massive Turbine Hall (Fig. 12–48). This major architectural design—with its twenty-two giant exposed exterior steel girders along the sides, glass curtain walls, and form determined by function—became a prototype for future design evolution. In addition to Gropius and Mies van der Rohe, mentioned earlier, Behrens's apprentices during this period included Le Corbusier and Adolf Meyer. Given these designers' later importance, Behrens's philosophy and the studio shop talk were surely catalysts for future ideas.

At the 1914 Werkbund annual conference (Fig. 12–49), the debate between Muthesius's rationalism and standardization and Van de Velde's expressionism was soundly determined in

12–44. Peter Behrens, catalogue page for AEG teakettles, 1908. Permutations of the modular system of shapes, handles, materials, and textures are shown. Note the spatial division by rules to create zones of information.

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favor of Muthesius’s approach. Up until this 1914 meeting, Behrens played a key role among designers who revolted against Victorian historicism and art nouveau design and advocated a Spartan approach, stripped of decoration. The austere orthodoxy of the International style, discussed in chapters 18 and 20, was the evolutionary extension of these beliefs.

12–50. Edward Johnston, Johnston’s Railway Type, 1916. These elemental letterforms were prototypes for reductive design.

12–51. The London Underground symbol, revised by Edward Johnston in 1918, is shown in the 1972 version used today.

Behrens began to accept architectural commissions from other clients in 1911. Graphic and product design occupied less of his time. In 1914 Behrens’s contract with AEG was terminated, although he continued to work on AEG projects from time to time. Until his death in 1940, Behrens’s design practice centered upon architecture. His work during the opening decades of the century crystallized advanced thinking about design while planting seeds for future developments.

Design for the London Underground

In 1890 the world’s first underground electric railway system opened in London. During the first two decades of the twentieth century, the Underground Electric Railways of London, Ltd., consolidated much of London’s urban transportation system. Just as AEG director Emil Rathenau was the catalyst for that firm’s comprehensive design program, a statistician and attorney named Frank Pick (1878–1941) provided the vision necessary to lead the Underground Group to the forefront of innovative publicity and design.

Pick had been a vocal critic of his employer’s promotional efforts; publicity was added to his areas of responsibility around 1908. Although lacking artistic training, Pick had acquired a passion for art and design. He responded to the jumble of advertisers’ posters competing with transportation information and publicity by designating poster boards at station entrances for Underground posters and maps, then limited advertisers’ posters to gridded spaces inside stations and on platforms. Underground station signs introduced in 1908 had a solid red disk with a blue bar across the middle bearing the station name in white sans-serif letters. These bright, simple designs stood out against the urban clutter.

Underground publicity posters were eclectic, wide-ranging, and evolved over the decades. The focus was usually on destination rather than transportation. Urban transit by bus, streetcar, and subway was presented as the heartbeat of the city, providing access to movies and museums, sports and shops. To boost off-peak evening and weekend use, posters encouraged travel to leisure destinations, including theaters, the zoo, parks, and the countryside. Pick took personal responsibility for selecting artists and approving

designs. Designers were given little direction beyond a general theme or subject. Underground posters ranged in style from lyrical romanticism to the beginnings of mass-media modernism.

Dissatisfaction with the typography on Underground printed material prompted Pick to commission the eminent calligrapher Edward Johnston (1872–1944) to design an exclusive, patented typeface for the Underground in 1916. Pick requested a typeface possessing the bold simplicity shown by distinctive letters from preceding epochs, but with an indisputably twentieth-century quality. Johnston responded to this apparent contradiction by crafting a sans-serif typeface (Fig. 12–50) whose strokes have consistent weight; however, the letters have the basic proportions of classical Roman inscriptions. Johnston sought absolute functional clarity by reducing his characters to the simplest possible forms: the *M* is a perfect square whose forty-five-degree diagonal strokes meet in the exact center of the letter; the *O* is a perfect circle; all of the letters have a similar elemental design. The lowercase *l* has a tail to avoid confusion with the capital *I*.

Johnston designed a new version of the station signage and logo, using his new typeface on a blue bar in front of a red circle instead of a solid disk. This London Underground logo is still used today (Fig. 12–51), incorporating refinements made in 1972.

As Pick ascended within the Underground management, his design advocacy expanded to include signage, station architecture, and product design, including train and bus design. Station platforms and coach interiors were carefully planned for human use and design aesthetics. Over the first four decades of the Underground's existence, Pick's design patronage made a positive contribution to the environment and became an international model for corporate design responsibility.

In the late nineteenth and early twentieth centuries, pioneering designers in Germany, Scotland, and Austria broke with art nouveau to chart new directions in response to personal and societal needs. Their concern for spatial relationships, inventive form, and functionality formed the groundwork for design in the new century.