PEDER ANKER

graphic language: HERBERT BAYER'S ENVIRONMENTAL DESIGN

ABSTRACT

Environmental debates are greatly indebted to artistic communication. This article discusses the work of the former faculty member of the German Bauhaus school, Herbert Bayer, who introduced modernist imagery in relation to globalization, conservation values, and maps dealing with environmental concerns in the United States. His Romantic defense of environmental design demonstrates that the humanist legacy of modernism has made more constructive contributions to the history of environmental debate than its critics have been willing to admit. Bayer's global humanism and environmental designs created a visual language of colors, images, symbols, and dynamic illustrations that aimed at harmonizing human relationships with the natural world.

THE WORK OF VISUAL artists, graphic designers, and cartographers has an enormous impact on popular perception of the environment, yet that work is rarely a topic for historians of the environment or environmentalism. The tendency has been to downgrade art, graphic design, and maps in favor of textual evidence. When admitted, such images usually play a fairly narrow role: Artwork often spices up an otherwise dry discussion, graphic design may provide the reader with an illustration, while maps typically answer factual questions with respect to topography. Though there are examples to the contrary, such as the "Gallery" section in *Environmental History*, the scholarly trend has nevertheless been to downplay the impact of design as too vague for serious historical investigation.

Fortunately, environmental historians recently have begun to explore the importance of photography and film for understandings of nature.[1] Thanks to historians of cartography, the rich layers of social power that maps embody have also been exposed.[2] Graphic design, however, has been largely ignored. This article will serve as a remedy by discussing the work of Herbert Bayer. As a former faculty

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member of the German Bauhaus school, he introduced modernist imagery in relation to globalization, conservation values, and maps dealing with environmental concerns in the United States. Measured in terms of dissemination, his work as a graphic designer became so widespread in environmental debates that few today question where and how this style emerged. The widely used recycle symbol may serve as an introductory example to which this article will return at its end.

The call to cross social, natural, or disciplinary boundaries has been one of the hallmarks of environmental history.[3] Yet it is also a field known for maintaining its own demarcations such as "preservation" versus "conservation," "Arcadian" versus "managerial," and "anthropocentric" versus "biocentric." These categories help to organize efficient narratives for readers and students, while at the same time leaving untold stories that do not fit into pre-established categories.[4] Bayer may serve as an example. His graphic work represented a neo-Romantic "Arcadian" attempt to reconcile managerial capitalism with humanistic values and protection of the environment as a whole. He sought to harmonize the humanist legacy of his European background with industrialization of the natural world in the United States. This modernist humanism—derogatorily labeled as "anthropocentrism" by some—has offered more to the history of environmental debate than the chauvinism toward nature that critics point out.[5]

The three dominating themes in Bayer's environmental design were images of globalization, nature, and cartography. This article proceeds in the same sequence, arguing first that Bayer's visual representation of the global environment rested on a Bauhaus vision of a new kind of industrial humanism that entailed a life in harmony with the social and natural world as a whole. The next section discusses his designs with nature, including his famous "Grass Mound" (1955), which came to inspire a whole generation of earthworks artists that, literally, broke the ground for ecological design and restoration projects of today.[6] I argue that Bayer's designs with nature were part of the program of corporate social responsibility of his chief patron, the Container Corporation of America. It is in the field of cartography, however, that Bayer's impact is perhaps most apparent. The last part of the article therefore discusses his *World Geo-Graphic Atlas* of 1953 at some length, arguing that Bayer, through this atlas, established a Bauhaus iconography addressing environmental issues. For historians of graphic design, the atlas represents "an important milestone in the visual presentation of data," though it has not received attention from historians or sociologists of cartography.[7] Environmentalists have so far used the atlas as evidence for what it claimed to be, namely a collection of facts. Historians of science have untangled the social constructions underlying its apparently objective images.[8] This article will draw on these scholarly approaches to understand the ways in which Bayer's environmental design came to claim the land.

A NEW HUMAN BEGINNING

ACCORDING TO HIS first biography (published in 1947), Herbert Bayer was born in a village near Salzburg in 1900 where he "grew up in the atmosphere of the

Austrian Youth Movement, which was a typical outgrowth of the Romantic search for freedom from an inherited mode of life. The 'new man' was supposed to reach a purer state of inner harmony and vigorous independence by developing his own creative powers."[9] Though such lofty language may sound unfamiliar to our contemporary ears, this was definitely the way Bayer wanted people to view his background. He saw himself as someone who early in his life and career had embraced a Romantic call for a more harmonious relationship between the social and natural worlds. It is necessary to review this calling in some detail to fully understand the role of nature and the environment in his designs and cartography of the 1950s.

The horrors of the First World War taught the young Bayer that national and cultural chauvinism had to yield to global understandings of human relationships. As the Austro-Hungarian Empire fell apart, he followed the cosmopolitan thinking of the avant-garde and participated in the legendary discussions that made Austrian cafés into centers of intellectual life.[10] These debates were dominated by the Vienna Circle of logical positivism and the eye-opening psychology of Sigmund Freud. Bayer was in the midst of this creative cultural upheaval, working first as an apprentice in graphic design and next in an architectural office from 1919 to 1921. During this period he came upon a flyer, "Bauhaus Manifest," written by the architect Walter Gropius to promote his school. Located in Goethe's Weimar, it called for a revival of the rich human relationship to nature that Goethe had once promoted. This was to be achieved through a unity of arts and crafts at workshops aiming at imbuing the decorative arts with a universal industrialism of the future.[11] Bayer arranged for an interview and was accepted by Gropius as a student in the four-year program.

Bayer believed that the full attainment of the human potential was to come in designs based on a union between the sciences and craftwork, and he laid special emphasis on the insights of Freudian psychology. He became a student of the artist Wassily Kandinsky, whose constructivist abstractions Bayer sought to apply to social problems and realities.[12] He also was stimulated by the bionic approach to design taught by László Moholy-Nagy, the professor of the metal workshop, who used the biological sciences to generate functional forms. Moholy-Nagy believed that the future held the possibility of a new harmony between humans and their earthly environment if forms in design followed biological functions. Nature's evolutionary development had its analogy with the development of an individual organism, he believed, and the phylogeny of species in nature thus recapitulated the ontogeny of human beings. It was consequently important to understand processes in nature to foresee human developments. Functionalist design was a matter of saving society from the degeneration that Adolf Loos and other modernist architects had associated with traditional ornamental arts.[13] As a consequence, Bayer tried "to overcome the traditional forms of pictorial presentation" by embracing "a functional vision," as this was expressed in the original meaning of the architect Louis Sullivan's motto "form follows function."[14] The standard Bauhaus interpretation of Sullivan was that functionalism should be understood in view of "phenomena occurring in nature" where every form

emerges from its proper function.[15] Graphic design would be functional, Bayer believed, if its form followed human conscious and subconscious reactions to light and structure. He would in his design strive toward a simplified graphic environment that could improve human functioning in a dramatically changing social and natural world.

The call for a universal and objective science-based design came to dominate Bayer's work after his final examinations in 1925. He then accepted a position as director of the printing and advertising workshop at the school's new location in Dessau. Here Bayer designed a new typography based on the "geometric foundation of each letter" that was meant to liberate the human mind from the burden of traditional ornamental typography.[16] To make the writing experience even more efficient he abandoned capital letters altogether. Thus, Bayer would type:

"bauhaus gave me a way of life."17

He called it the "universal type," since it was based on geometry, as if to reflect the positivist attempt to generate a universal scientific language of logic. The typography was adopted by most Bauhaus publications, and it soon became the trademark of the school. One visitor at the school was Otto Neurath, who lectured about his "International System of Typographic Picture Education" or "Isotype." This method for graphic representation of statistics, which Neurath used in his Viennese Museum for Economy and Society, later became important to Bayer's cartographic work.[18]

Bayer taught at the Bauhaus until 1928, after which he became the director of *Vogue* magazine in Berlin as well as editor of the influential avant-garde design journal *Die neue Linie.* Here Bayer enjoyed the company of the surrealist Romantic, Max Ernst, who sought to bring out the savage within by arranging "Walpurgis Nacht orgies with nude girls jumping over fires."[19]

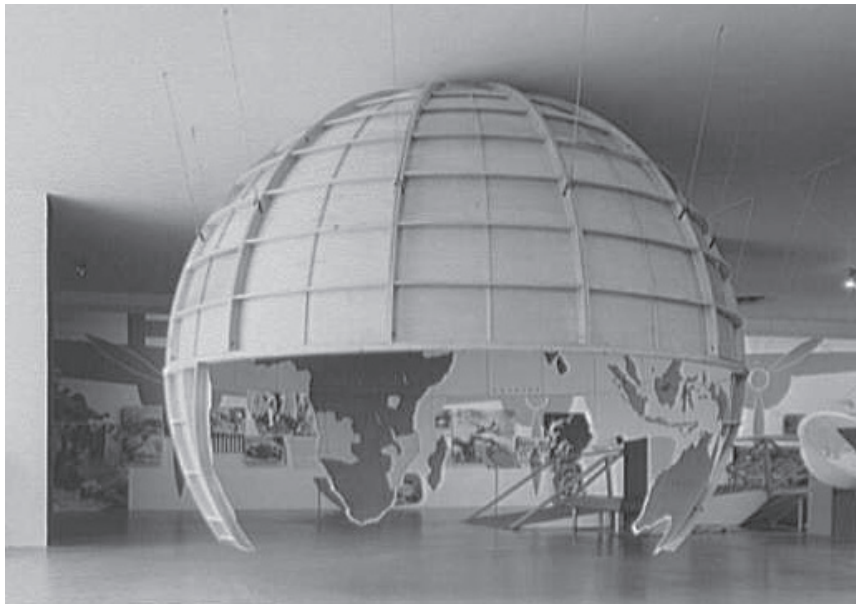
Many of the Bauhaus faculty who fled Nazi persecution came to see design as a tool for making the world better by mobilizing the physical, rational, and emotional aspects of the human condition. Both Moholy-Nagy and Gropius arrived in the United States in 1937. In the following year an inquiry from The Museum of Modern Art in New York about making a Bauhaus retrospective became an opportunity for Gropius to get Bayer out of Germany as the designer the show. What changed with their Nazi experience was a more urgent sense of the responsibility of the arts in modern society. Gropius would express this ethic in his plea for a design that had the ability of "evolving the 'complete being' ... from his biological centre" so that one could avoid "the rush and convulsion of our mechanical age."[20] Bayer agreed: A better world was possible by creating an environment that embraced all human abilities, while at the same time hindering things that could undermine this. For instance, he designed the book cover to the architect José Luis Sert's *Can Our Cities Survive?* (Harvard, 1942) because it addressed the problem of slums and overcrowding and saw urban planning and modernist architecture as the remedy.

If one were to pinpoint a time when "modernistic design" was introduced in the United States, then the Bauhaus retrospective of 1938 at The Museum of Modern Art might qualify as a good candidate.[21] In the catalog Moholy-Nagy wrote about the importance of blending science, art, and craftwork. He argued that since people were "biologically equipped to experience space," a building must reflect human biology.[22] Bayer made the ground plan of the show accordingly, by designing the walking direction parallel to the reading direction so that mind and body would function in biological coordination. He also introduced images and objects in line with Freudian ideas about human perception. The conscious and subconscious aspects of humanity were to be mobilized by displaying images on the floor, wall, and ceiling, a method he borrowed from the artist El Lissitzky.[23] The idea was to enrich graphic iconography by letting one main form dominate, to which one should add smaller illustrative forms to contribute psychological and compositional animation. In this way Bayer tried to activate physical, emotional, and rational experiences for visitors, and thus realize the Bauhaus ideal of designing for a "complete being."

Bayer promoted these ideas through "activities in a hundred-and-one fields" of design while living in New York, including two new exhibitions for The Museum of Modern Art: "Arts in Therapy" (1941) and "The Road to Victory" (1942). It was Bayer's ability to create a dynamic and integrated viewing experience that made these shows successful. The culmination came with "The Airways to Peace" exhibition of 1943 which, according to the museum's historian, was an "immense success" in terms of its visual communication as well as attendance.[24] It is worth discussing this show in some detail, as its focus on integrating mind, body, reason, and emotion in the viewer's experience of another world war stimulated Bayer's thinking about human relationships with the global environment.

"[G]lobal war teaches global cartography," claimed an article in *Life* which came to the attention of the Director of The Museum of Modern Art, Monroe Wheeler, who decided to produce a show about it. The likely author of the article was the *Life* journalist and designer Richard Buckminster Fuller. At the time he was occupied with gluing world maps on polyhedron sculptures, which were published in *Life* as a cutout-and-glue exercise for its readers. It was meant to capture the air and ocean power of the Allied forces, and he consequently called it "The Dymaxion Air-Ocean World Map."[25] This global understanding of the world should, as the historian Susan Schulten has argued, be understood in context of the growing use of the airplane. A series of innovative world maps designed by Richard E. Harrison reflected this shift toward "Air-Age Globalism." Published in *Fortune*, they emphasized the importance of aerial geographical perspectives in understanding the dynamics of the war.[26] The technological advances of airplanes meant that the world was shrinking in terms of travel time, argued the Consolidated Aircraft Corporation in advertisements claiming that "No Spot on Earth is More Than 60 Hours From Your Local Airport." In a similar vein American Airlines printed advertisements illustrating the space with the text "We exist *upon* one globe, and *inside* another globe."[27] As the patrons for "The Airways to Peace," these companies pushed for a show that associated globalization with a

Figure 1. Herbert Bayer's Globe.



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peaceful future. The coming of the "air age geography" was to bring a new age of intercontinental understanding between peoples of the earth.[28] Wheeler's plan was to present Allied forces in the different theaters of operation around the world followed by a geographical and ecological explanation of how airplanes and the war connected the world into one community. The audience was to leave with images of how the airplane kept people no more than a few hours apart. This idea of "a show of world geography and ecology has elicited such enthusiastic endorsement in all quarters," Wheeler told the Office of War Information.[29]

In order to link ecology of the earth with movement of airplanes in airspace Bayer turned, as the designer of the show, toward the meteorological sciences, as airplanes were dependent on weather. The meteorological representation of movement in weather became from now on a major element in his work. In the show he made posters indicating the movement of wind and airplanes, and the wind's relevance to different environments on Earth and its various battle scenes. The movement of wind and planes above land on which soldiers fought were represented in contrasting colors on maps or diagrams.[30] This intermixture of weather, geography, airplanes, and warfare constituted his understanding of the global ecology.

The central element of the show was a floor-to-ceiling globe in which the audience could stand and thus get a full panoramic view of the world as a whole (Figure 1). Using the technique developed in the Bauhaus retrospective of 1938, in which he mobilized the viewer's conscious and subconscious visual perspectives, the globe invited the audience to experience the world as one entity in which they were at the center. This was reinforced by the catalog text stating

that one was moving toward a global understanding of the world: Peace would come through a global organization such as the United Nations, imperialism abroad and at home would end, and all peoples of the world would strive together for the common good.[31]

The Romantic call for mobilizing the complete human being as this was understood in Bauhaus design was the setting for Bayer's construction of a global world in the unusually popular "Airways to Peace" show which went on tour to major cities of North America. It embodied "the global concept," as Wheeler put it.[32] It became Bayer's point of departure for his graphic, architectural, and artistic expressions of a harmonious relationship between humans and the natural world.

DESIGNING IN HARMONY IN ASPEN

WHILE LIVING IN New York Bayer felt that his life was not moving toward his ideal of a "complete human being." That full life came instead through an opportunity to work as designer in Aspen, Colorado. The Aspen experience came to focus his global perspective on local agendas, such as the recycling of natural resources and ecological design.

The patron who made the Aspen experience possible was Walter P. Paepcke, the chief owner and director of the highly successful Chicago-based Container Corporation of America, known for introducing cardboard boxes to the United States. He was an unusual business leader who in a spurt of postwar enthusiasm came upon the idea of building a nature and culture resort in Aspen. This project has been the object of an excellent study by the historian James S. Allen, who addressed the history of the Paepcke family and their "Chicago-Aspen crusade."[33] Allen shows how Walter and Elizabeth Paepcke championed a more responsible and educated form of capitalist modernization through a neo-Romantic interpretation of Goethe's philosophy and the German *Bildungsideal.* Using his company fortune, Walter bought a significant portion of the town of Aspen to pursue this end, while Elizabeth supported him with her social abilities and taste for the avant-garde. Together they tried to heal the wounds of the Second World War by organizing various conferences and cultural festivals in Aspen that aimed at educating the social and financial elite in the virtues of democratic values and love for nature. These programs evolved into the Aspen Institute for Humanistic Studies. As Allen documents, the Paepckes were among the most important patrons of literature, philosophy, fine art, and music in postwar America, and Bayer was only one of their many clients.

The Container Corporation wanted to be associated with high-quality design as well as social and environmental responsibility, as Paepcke believed this agenda could help "to 'break the ice' when our salesman calls on his prospect."[34] The program was managed by the chromatologist Egbert Jacobsen at the company's department of design. He engaged a host of avant-garde artists to build the Corporation's trademark, including (besides Bayer) Miro Carreño, David Hill, Willem de Kooning, Fernand Léger, Henry Moore, and Man Ray. They all made advertisements reflecting social or artistic topics of their choice. As a result, the company was hailed as having "the most creative program in today's advertising,"

thanks to its use of Bauhaus designs, which Paepcke nurtured as the principal patron of the New Bauhaus school launched by Moholy-Nagy in Chicago in 1938.[35] The famous Swiss art critic Sigfried Giedion looked with suspicion upon this willingness to serve commercialism and published a damaging review of Bayer.[36]

Figure 2. Advertisement, March 1942.



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Bayer saw his work for Paepcke in a different light. Working for a commercial company was for him a way in which an artist could most effectively engage society at large on important topics. One of his chief concerns was recycling and resource management. With this in mind he designed a series of eleven advertisements for the Container Corporation, nearly all of which focused on the importance of recycling. Here he followed Paepcke, who in the 1930s made the strategic mistake of underestimating the importance of owning vast timberlands to support his pulp mills. He tried to remedy the problem by producing cardboard from wastepaper, and the result was a highly successful recirculation program. By 1941 the Container Corporation produced 90 percent to 95 percent of its cardboard from wastepaper which, as a journalist in *Fortune* noted, meant that the company was living "over and over again upon its own waste."[37] They were also "in the thick of the war business," producing cardboard boxes for everything from boots to bombs. With the nationwide war effort, Paepcke pushed further for collecting wastepaper in a series of advertisements, and Bayer would put his work into the agenda by arguing that "paper that goes to war is paper that wasn't burned. Save waste paper! sell or give to local collectors." An elegant S-shape of objects emphasized the process of turning waste paper into cardboard boxes for bombs dropping from a plane (Figure 2).

Bayer's recycle advertisements were a success, at least if one is to judge from people's reactions to their appearance in magazines such as *Fortune*, *Time*, and *Business Week*. In the spring of 1945 Paepcke decided to make an exhibition at

the Art Institute of Chicago of the entire wartime advertisement campaign, and he hired Bayer to do the job.[38] The result was "Modern Art in Advertising," a traveling show that on its U.S. tour to major art museums attracted a record-breaking 200,000 visitors. To many of them the campaign was their first encounter with modernist imagery, a type of design that was already associated with United Nations ideals for rebuilding the world.

During the summer of 1945 Paepcke pushed Bayer to accept an offer of moving permanently to Aspen to become the town's architect, designer, and resident artist. His job would be to help transform "the old ghost town of Aspen in its material, social, and communal aspects."[39] Since the heyday of mining, Aspen had been in steady decline from seventeen thousand inhabitants to only eight thousand. Paepcke saw in the town's natural beauty a future vacation resort. By the fall a ski slope was under construction. Bayer was at the time contemplating leaving New York to move either back to Austria or to Mexico. Aspen, Paepcke argued, had "the best skiing conditions," and would almost be like moving back to his Tyrolean homeland.[40] As Bayer kept wondering about where to move, he fell seriously ill from exhaustion, and his friends, including Gropius, wondered if he would survive another year with Manhattan working hours. His wife, Joella, came to see the American Rockies as his remedy, to which Paepcke responded: "We will all have to gather around him and shout: 'Go west, young man!'"[41]

Aspen became in effect a place in which Bayer could nurture his ideal of living "in the most human way," which meant hiking, skiing, art making, writing, architectural work, graphic design jobs, family life, and appreciation of good wine.[42] His duties for the Container Corporation and Paepcke's Aspen Company included everything from town planning and architecture to graphic design of his hotel's stationary. He enjoyed a lucrative deal, he thought, "spiritually as well as physically" and his patron soon became a close friend.[43] Intellectual discussions at the Aspen Institute and attendance at the Aspen Music Festival were on Bayer's new agenda as well.

His decision "to seek his artistic sustenance in nature" was, according to Jacobsen, vital to understanding Bayer's work in Aspen.[44] "The participation in shaping an environment, in dealing with social problems [and] in building a community life," strongly appealed to him.[45] As a token of goodwill to Aspen's citizens Bayer offered to redesign houses and offices free of charge according to this agenda, to which *The Aspen Times* reported that it was "exceptionally good luck to have one of the world's great designers in our midst."[46] From Paepcke's perspective, Bayer became the living proof that Aspen had more to offer than unemployed miners. His activities bore fruit, and Aspen "came back" to life, Bauhaus-style.[47] In his artwork he used the natural sciences as a source of inspiration, especially geography and meteorology. He used environmental abstractions in maps and meteorological sciences to produce effective abstract landscape art, most famously his Sgraffito Mural at the Seminar Building at the Aspen Institute for Humanistic Studies.

As an architect Bayer tried to design buildings which "extend into the natural ecology."[48] At the Aspen meadows campus, the Institute for Humanistic Studies

Figure 3. Herbert Bayer, Grass Mound 1955, Aspen Meadows 1976.



Courtesy of the Artists Rights Society and the Herbert Bayer Collection and Archive, Denver Art Museum; PH.2.88. Gift of the Estate of Herbert Bayer. © 2006 Artists Rights Society (ARS), New York/Bild-Kunst, Bonn.

and the Aspen Art Institute were built according to Bauhaus principles, a form of design that such leading figures as Moholy-Nagy and Gropius thought natural and thus ecological.[49] Their views about ecological designs, however, were different from later attempts to design with nature. Unlike ecologically minded architects and artist of the 1970s, Bayer pursued a strictly anthropocentric approach. "[I]n respecting nature," he argued, "the artist will not imitate nature but create a spiritual world of itself side-by-side with nature, [since] both natural environment and man-made environment can exist with each other if their boundaries are understood."[50] In this respect, Bayer's architecture resembled the work of his compatriot and colleague, Richard Neutra, who visited him in Aspen where they would talk about architecture in relation to environmental psychology.

His famous "Grass Mound," built at the Aspen Institute in 1955, may serve as an example of the kind of spiritual world Bayer imagined (Figure 3). Placed in a scenic environment, it consists of a forty-foot diameter grass mound with a heap, a pit, and a rock of raw marble in its midst. It signifies a human space in nature upon which to reflect on the potentials of artistic agency. Agency was to Bayer an issue of mobilizing the full human potential, understood through the Freudian model of conscious and unconscious psychological drives. Humans could only see the world from a human perspective, and experiences of real or imagined agencies in nature were thus be analyzed according to the principles of psychology.[51] A photo manipulation from 1959 of birches with gazing eyes, for example, was to Bayer a depiction of the psychological condition of paranoia,

implying agency in every tree of a forest. The humanism of Bayer saw biocentric notions of agency as poor epistemological or psychological understandings of boundaries between humans and the environment. He placed human agency at the center for the world, a principle that was at the core of his cartography.

A NEW GRAPHIC REPRESENTATION OF THE WORLD

"GEOGRAPHY IS MAN-made stuff," Bayer would say, quoting the American geographer George Renner, "and therefore its basis must be resurveyed and re-evaluated over and over as times and the instruments of power change."[52] As a mapmaker designing a new graphic representation of the world, Bayer was well aware of the power of inclusion, exclusion, perspective, and emphasis. He therefore made explicit his artistic point of departure by entitling his *World Geographic Atlas* from 1953 as "geo-graphic," since the science of "geography" was to be given a "graphic" basis.

The atlas was Bayer's most ambitious project ever with a significant cost, even for a wealthy client, with whom he enjoyed "complete trust."[53] It was to be produced privately as a gift for customers of the Container Corporation, reflecting the fact that boxes tend to move over long distances. He began in 1947 and took five years to finish it, during which time he had hardly any other design activities. He was assisted by three designers, Martin Rosenzweig (1947-1949, 1952-1953), Henry Gardiner (1949-1953), and Masato Nakagawa (1952-1953), as well as by a secretary, a proofreader, and a copywriter. More time and money thus went into producing this atlas than any other atlas of the period. The production studio in Aspen was like a research laboratory aimed at making an atlas of the highest professional quality. The result was a 368-page book that included 120 full-page maps, 1,200 smaller maps, and 4,000-5,000 finished drawings (including separate ones for images with several colors).

In a lecture entitled "Goethe and the Contemporary Artist," delivered in 1949, Bayer sought to expound his humanistic view of nature by letting art take the lead in the production of scientific knowledge. The emergence of a visual language for the geological sciences originated historically with the Romantics, and it was therefore not accidental that Bayer evoked Goethe's authority.[54] The agenda of the atlas was to follow the advice of the philosopher, namely to nurture a fully integrated human life in harmony with the natural world.

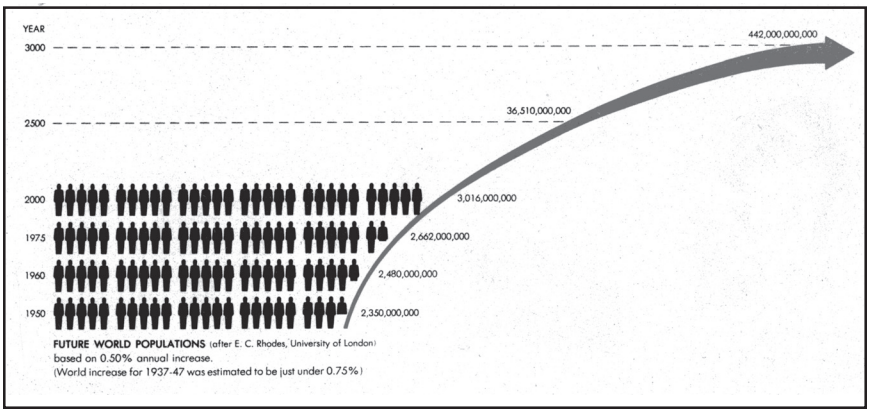
Harmony was to be restored through the conservation of energy and material resources, and the atlas's graphic design was to rouse its readers for the environmental cause. Bayer pointed to "unmistakable signs that the climate of the North Atlantic region is growing warmer" in view of "the progressing depletion of its [American] resource base." In the case of Germany "lack of essential raw materials and lack of 'lebensraum' for growing population led to disastrous attempts to secure these needs." He placed the issue of resources in a context of an environmental history from the cradles of civilization to its possible end. "Destruction of resources is as old as mankind," Bayer wrote, "but it is the special characteristic of the 19th and 20th centuries: no problem confronting the world today is more vital than conservation and wise utilization of natural wealth."[55]

He followed a neo-Malthusian line of argumentation: the dramatic growth of population made the problem vital. Bayer then devoted the final pages of the atlas to a call for action to solve the problem. Among the topics broached were the limited availability of land, the abuse of forests, the restricted reserves of minerals, the problem of soil erosion, and the vast abuse of energy. In addressing these global environmental problems, Bayer anticipated the concerns of contemporary environmentalists.[56]

Glancing through the atlas was to be an artistic therapy which could facilitate solutions to the environmental crisis. The dominance of textual discourse over imaginative art had made humans one-sided, Bayer argued: What was needed was a return to the primitive appreciation for images. This would bring forth a more balanced human being and consequently a society that would treat nature with respect. Bayer adapted an evolutionary view of language by arguing for a liberation and enrichment of the human potential through graphic design. Over thousands of years, he argued, humans had become "letter-poisoned" by textual communication. In a vein similar to Sibyl Moholy-Nagy's famous *Native Genius in Anonymous Architecture* (Horizon, 1957), Bayer sought a reevaluation of primitive sign language. The correlation of sound and visual signals was the origin of human language, he argued, and one should therefore appeal to the savage within.[57] This was his Freudian aspiration for uncovering unconscious communicative resources, but also a kind of romanticism. While living in scenic Aspen, Bayer met with visiting American nature writers and artists, including the photographer Ansel Adams. These people made a significant impression on Bayer who saw their desire for wilderness as a therapeutic resource for the discontents in Western civilization.[58] By evoking the wildness of primitive sign language the atlas aimed at a nobler mood of human communication about nature. The images were to concentrate the message and liberate the reader from the burden of textual information. Simple images had the potential of bringing out that Edenic human language that had been blurred by a Babel-like confusion of tongues. He saw, for example, an improvement in human relations if businesses could communicate their messages in subtle trademarks instead of an overwhelming flow of textual information. In the atlas Bayer drew on his experience with exhibition designs such as Airways to Peace in "the activation of the white areas, the principle of contrast as vitalizing element, the idea of visual continuity through the pages, the use of pictures, the influence of montage by fusing various elements into superimposed images, change of scale within the type faces, and so on."[59]

To facilitate this transition to a language of images Bayer developed a set of environmental symbols inspired by Otto Neurath's theory of pictorial representation of statistics. They were meant "to tell the story in the simplest terms" so that the reader would get an "immediate comprehension" just by a quick glance.[60] In creating the symbols Bayer would first try to strip a given problem down to the essentials by forming the symbol as a functional representation. In the case of metals, for example, Bayer used an ingot with abbreviations from the Periodic Table. With respect to aqua- and agricultural foodstuffs, as well as various

Figure 4. "Future World Populations."



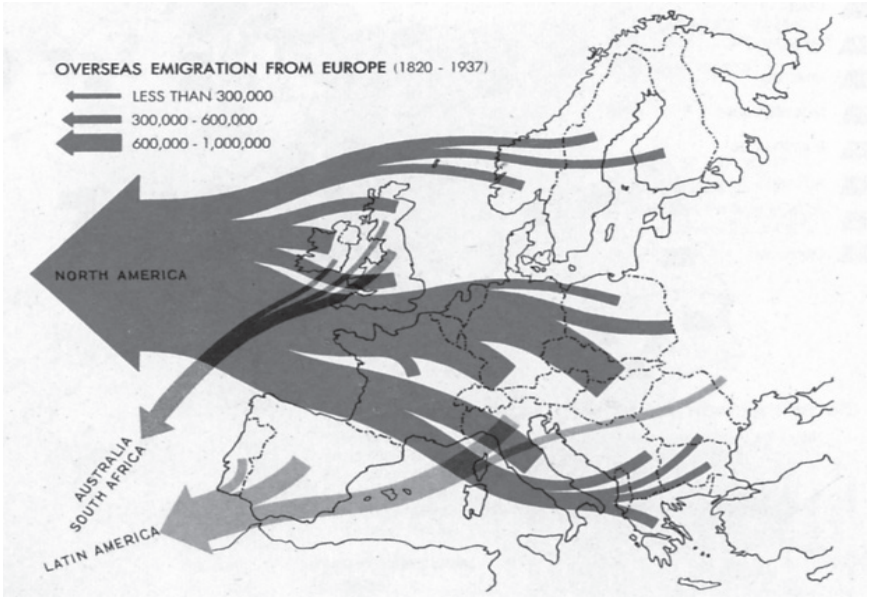
From Herbert Bayer, *World Geo-graphic Atlas* (Chicago: Container Corporation of America, 1953), 280. © 2006 Artists Rights Society (ARS), New York/Bild-Kunst, Bonn.

industrial and commercial products, he also tried to create symbols that could also be understood by illiterates. They were placed on the maps to indicate an important activity at a certain place, while rows of them beside the map represented related statistical information. In this way he made statistical information more easily available by complementing text and numbers with graphic symbols. The last page of the atlas has a graphic illustration of the future of world populations where Bayer used the image of a person to represent a body of hundred million people and its exponential growth over time with additional bodies and a dramatic thickening red arrow (Figure 4). He used the human body as an image of population throughout the atlas, and the final illustration was a graphic summary of the problem of population growth in relation to the problem of resource conservation. Both the symbol and the arrow were copied in later discussions of population growth, and Bayer's use of human bodies became a sort of trademark for overpopulation.

The symbols and the images in the atlas tried to capture minor and major environmental histories. As Bayer explained; "it was the story in the image which we looked for, not the image itself."[61] With this dynamic (as opposed to static) view of design, Bayer followed the artistic technique of László Moholy-Nagy, who under the patronage of Paepcke in 1944 started the Institute of Design in Chicago. In his photographic art, it is worth recalling, Moholy-Nagy tried to capture the forces of evolution in action. Similarly, Bayer saw, through "the study of the living shape," modern art as an expression of the dynamic forces in nature.[62] In the atlas these forces were expressed in the narrative of the earth's origin and possible end. Bayer brought the reader through the earth's beginning as a cloud of dust, its continuing astronomical, geological, atmospheric, and evolutionary history, and ended with discussions concerning the need for conservation of the world's resources in view of the dramatic growth of population. The shorter narratives within the atlas were to support this view through information about movement of goods and people from one region, land, or continent to another, to convey a story of a dynamic earth in constant social and natural evolution.

The colors of the atlas were based on a harmonized universal system of charts that had its precursors as far back as Goethe's chromatology, which sought to establish a harmony of colors. Bayer followed the Container Corporation's color policy developed by his colleague Jacobsen. In cooperation with Gropius, Jacobsen had worked out a system for the company published as *The Color Harmony Manual* in 1941 with new enlarged editions in 1946 and 1948. By 1953 over two thousand advertisers, printers, publishers, architects, artists, designers, industrialists, mechanists, paint manufacturers and dealers, schools, and textile producers owned the manual. It thus had a significant effect on colors used in postwar America.[63] At the Graduate School of Design at Harvard, for example, the manual was praised as a "much treasured and much used" tool.[64] Jacobsen sought a scientific basis for color analysis based on the hue-circle for differentiation of color sensations and relations instead of personal color preferences. "We need no longer wander in a chaos of conflicting color impressions composed of rainbows, Christmas ties, and ink swatches," he argued. "We now have an orderly concept which enables us to understand color relationships and, therefore, eventually to combine colors with some hope of producing harmony."[65] Jacobsen's notion of harmony was aiming at an experience of colors that induced a sense of order and completeness. He argued that a confusing use of colors often reflected a deeper sense of social discontent, and that an orderly use of colors was a way in which design and aesthetic expression could contribute to the betterment of the world. Bayer followed *The Color Harmony Manual* on every page of the atlas, thus making sure that the colors representing the environment would be in harmony. The uses of red, blue, green, yellow, etc. were all executed according to what would presumably have the best psychological effect on the reader. When Bayer presented the atlas in his lectures, he emphasized that he used both the "psychological properties *and* the esthetics of color harmony" in determining colors.[66] Bayer used a long ray of light composed of warm reddish hues to illustrate movement or high altitudes. By contrast, he used short rays of light composed of cold bluish hues to illustrate immobility, low altitudes, or water. Bayer would contrast these colors according to *The Color Harmony Manual* in order to construe a psychological sense of balance and order in the natural world, with green, yellow, and brown as in-between colors. The result was a design differentiating the physical attributes of nature through colors with increasing or decreasing intensity following geographical contour lines. "At a single glance one can see where mountains are highest and the sea deepest," Moholy-Nagy's wife Sibyl noted in her praise of the atlas.[67] The illustration of "Overseas Emigration from Europe (1820-1937)" in blue, green, and red may serve as an example of how his use of colors also could tell a dramatic history of movement of populations to the Australian and South African, Latin American, and North American regions (Figure 5). The color coding represented the bottom (blue), middle (green), and top (red) of the world, while the thickness of the arrows indicated the quantity of emigrants from the "severely overpopulated" European nations.[68] The illustration was one of many addressing population dynamics and their dramatic environmental impact.

Figure 5. "Overseas Emigration from Europe."



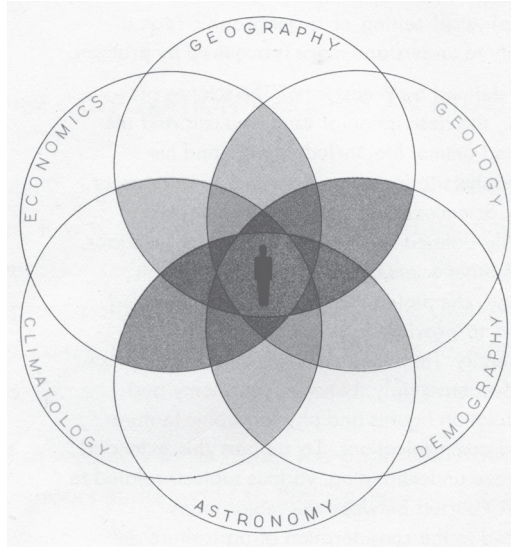
From Herbert Bayer, *World Geo-graphic Atlas* (Chicago: Container Corporation of America, 1953), 191. © 2006 Artists Rights Society (ARS), New York/Bild-Kunst, Bonn.

In the atlas different realms of knowledge were "to be fused into a coherent entity," thus creating interdisciplinary perspectives and understandings of the world. In this way Bauhaus ideals about designing for a complete human being were to bring forth an integrated view of the globe. "Swiftly spreading global communication and the increasing interdependence of all peoples compel us more than ever to consider the world as one," Bayer argued.[69] This social globalization was also relevant for adapting an integrated view of the sciences. The front page of the atlas has an image meant to capture the integration of astronomy, demography, geology, geography, economics, and climatology as "A Composite of Man's Environment" (the subtitle of the book). Each realm of knowledge is represented by a circle with colors overlapping each other and a human being at the center (Figure 6). The placement of humans at the center of the atlas was deliberate as Bayer saw human agency at the heart of both scientific and artistic practice.

Bayer was untrained in reading scientific texts, and it was thus a challenge for him to determine relevant data in different fields. "I felt heavy responsibilities all through the process of making the book," Bayer later confessed. He initially asked scientists of various disciplines to contribute to the volume, but discovered quickly that the information he received was useless, irrelevant, or at odds with his own vision of the world. He therefore did most of the research himself, a process he described as "a good adult education." The result was a synopsis of what he as a designer thought to be the most relevant information for readers. "A scientist would not think in terms in which I worked," he argued, since they tended to publish their research in "unimaginative textbooks, specialized papers and

journals."[70] Instead of specialization, Bayer took his ideals about living an integrated human life into practice by determining relevance of scientific evidence himself. He used a host of scientific sources, mostly from geographers whose work he used rather selectively. He would, for example, evoke the work of Ellsworth Huntington, and turn the geographer's environmental determinism into a possibilist perspective. Huntington argued that the distribution of human health and energy on the basis of climate could explain the social level of civilizations measured by the number of inventions, the power to lead, and, above all, the trading of goods and knowledge. Bayer used Huntington's framework of analysis, but emphasized that it was energy produced through human agency (not climate) that determined the fate of civilizations. Human production of energy was the chief source of various industrial productions, which could lead to different types of environmental degradation. North Americans, for example, were about to become "energy slaves" of their power-hungry machineries and were in urgent need of inventing more energy-efficient technologies.[71]

Figure 6. "A Composite of Man's Environment."



From Herbert Bayer, *World Geo-graphic Atlas* (Chicago: Container Corporation of America, 1953), 1. © 2006 Artists Rights Society (ARS), New York/Bild-Kunst, Bonn.

The *World-Geo-graphic Atlas* was published in 1953 in an edition of thirty thousand copies that were distributed exclusively through the Container Corporation. A change in environmental policy was to come from the industrial and political elite, Paepcke believed, and not from ordinary customers in bookstores. Indeed, he dismissed several offers from commercial publishers seeking to make a trade edition of the atlas.[72] The elite included, among a host of dignitaries, the 1952 Democratic Party presidential candidate Adlai Stevenson, who was a personal friend.[73] Most of the copies, however, were sent out as company gifts to the corporation's customers. The Paepcke Archive includes a significant volume of letters expressing excitement and gratitude. It also contains numerous letters from people explaining why they too should receive a copy. An investment officer at Yale University did not get one for a wedding gift, for example, nor did the dishwasher at the Jerome Hotel in Aspen, pleading in a moving letter for a copy for his daughter. A graduate student who was about to leave for India to teach geography was also rejected. On the other hand, a representative at the Great Book Foundation, a professor of geography at the University of Hawaii, and the American ambassador in Teheran all got complementary copies. In some

cases subtle and not so subtle gift-exchanges were involved, including hospitality, artwork, and introduction to VIPs. It was all done in accordance with Paepcke's belief that the Romantic harmonization of human relationships with the environment would have to start with the industrial and social elite.

The atlas was well received not only by its owners but also by the reviewers. According to the newspapers, it was "surely one of the most edifying and beautiful books ever printed," with images that "tell more in pictures than in words" the important "facts of conservation" and "the vital statistics of every man's essential needs."[74] In scholarly journals the atlas was judged to be "the handsomest and best atlas ever published in America," though Bayer was criticized for including too much "peculiar information."[75] Among designers, on the other hand, the atlas was hailed for its "direct visual communication," as "what a 20th-century atlas should be," with maps surpassing "any ever shown in an American atlas to a degree which is almost embarrassing; they are masterworks of the cartographer's art."[76] To a Swiss designer the atlas was an example of how Americans had adapted Bauhaus design principles to communicate "simply, directly, and with all possible forcefulness" and he could only regret "the pedantry and conservatism of the Old World."[77] Moholy-Nagy's wife Sibyl saw the atlas as part of a larger "powerful trend toward visualization" at the expense of the old-style authority of texts. The result was "the first integrated world picture" of the environment as a whole, she claimed.[78]

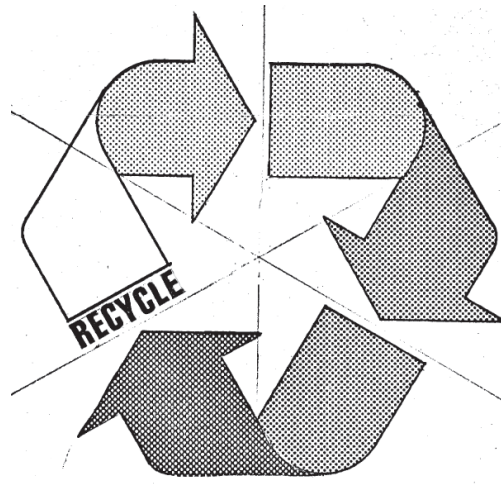
The *World Geo-graphic Atlas* had a lasting impact on environmental cartography. Atlases of world resources produced before Bayer's publication hardly utilized a modernist graphic language.[79] This would change with environmentally informed atlases of the 1970s that borrowed extensively from Bayer in their integration of color, graphics, and symbols.[80] Rand McNally's bestselling *The Earth and Man World Atlas* from 1972, for example, basically copied Bayer's graphic collage technique.[81] To plait images and maps together to evoke *Problems of Our Planet*, the title of a popular atlas of 1977, became the cartographer's way of weaving environmental concerns into a map.[82] The six editions of Ben Crow and Alan Thomas's *Third World Atlas*, produced in the 1980s by Ros Porter, owed much of its success to the graphic design of Bayer's atlas.[83] The technique was also used in the widely read *Gaia* atlases and the *New State of the World* atlases which in the 1980s and 1990s came to dominate the market for maps about the environmental crisis.[84] Yet unlike Bayer, the designers of these atlases did not have much faith in the industrial elite. As their historian, Jeremy Black, has pointed out, their graphic symbols were "employed to drive home points" about business culture and companies conducting "organized crime" against the environment and the poor.[85] Though Bayer introduced the graphic methodology for environmentalist cartography, he was largely ignored by a generation of mapmakers who placed their hope in a revolution from below.

GRAPHIC EMPOWERMENT OF ENVIRONMENTALISM

THE ADOPTION OF Bayer's graphic environmental design indicates that environmental debates are more indebted to artistic communication than their

followers have been willing to admit. His Romantic defense of a modernist environmental design may also illustrate the difficulty in sustaining linear histories of "Arcadian" versus "managerial," "biocentric" versus "anthropocentric," or "preservation" versus "conservation" traditions in environmental thinking. Instead of such false dichotomies, this article has investigated the importance of humanism to environmentalism as it was pursued in design by Bayer. The humanist legacy of modernism has made more constructive contributions to the history of environmental debate than its critics have been willing to admit.

Figure 7. Early Sketch of the Recycle Symbol.



Courtesy of Gary Anderson.

One of the environmental humanists who was empowered by Bayer's work was Elizabeth Paepcke who, after her husband's death in 1960, became a principal patron of the Thorne Ecological Foundation (from 1966), the Seminar on Environmental Arts and Sciences (from 1967), the Aspen Center for Environmental Studies (from 1968), and the Aspen Institute for Humanistic Studies. Through these institutions the relevance of humanism for the environmental debate became apparent for a new generation of ecological thinkers, including Oakleigh Thorne, Frank B. Golley, John McHale, and Donald Worster. This patronage in itself offers a rich history of resistance to the development of Aspen into the jet-set resort it has become today, and it deserves its own analysis.[86]

The likely reason graphic design has been largely ignored by historians of environmentalism and environmental historians alike may be the primacy of texts and natural sciences in the hierarchy of environmental historiography. Bayer's Bauhaus approach suggests ways to include the "complete being" in historical analysis. His Romantic call for designs functioning according to the needs of a "full human being" was also a plea for a greater emphasis on objects and images in historical investigations. His appeal for respecting the boundary between humans and nature was his way of caring for both. His graphic perspective on the environment established a primacy of imagery, harmony of colors, and proximity between the individual and the global that suggests a more inclusive way of doing historical research.

Bayer's global humanism and environmental designs created a visual language of colors, images, symbols, and dynamic illustrations that aimed at harmonizing human relationships with the natural world. The full influence of his work is yet to be entirely understood, though it is safe to conclude that he had a significant impact on environmental cartography. That he inspired others working with

environmental communication is evident in the case of the recycle symbol. In a response to the Earth Day of 1970, the Container Corporation announced a design competition for a trademark for recycling in the spirit of Bayer. The competition was won by a student at the University of Southern California presenting the symbol at the Design Conference in Aspen (Figure 7).[87] Now universally known, its history goes back to the Bauhaus ideal for living in harmony with the natural world.

Peder Anker *received his PhD in history of science from Harvard University in 1999. He is currently a research fellow at the Forum for University History at University of Oslo, Norway. His works are accessible at www.pederanker.net. They include* Imperial Ecology: Environmental Order in the British Empire, 1895-1945 *(Harvard, 2001).*

NOTES

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