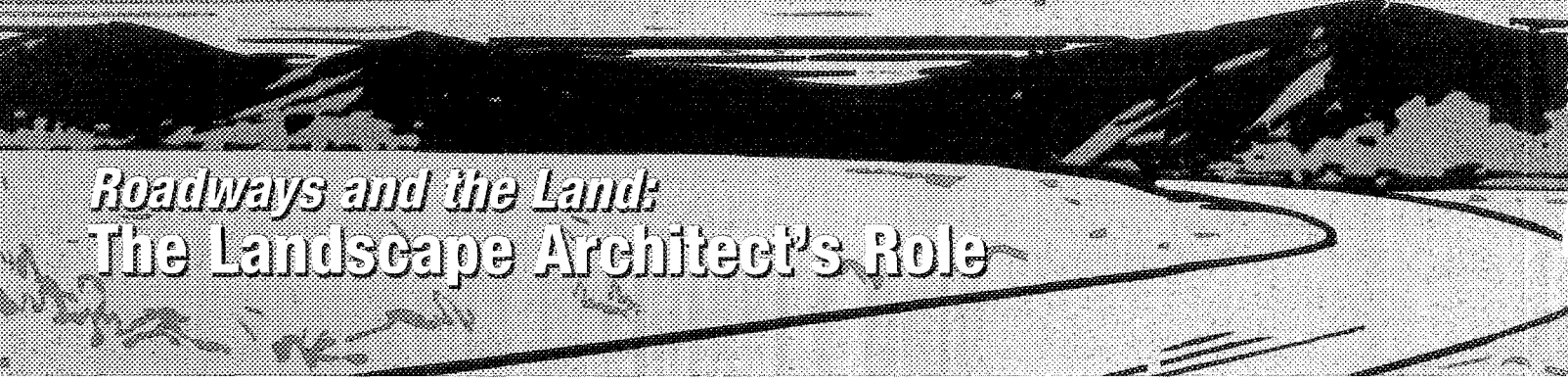
March 1, 2000

Roadways and the Land: The Landscape Architect's Role

Elizabeth E. Fischer
Heidi M Hohmann
P. Daniel Marriott



Roadways and the Land: The Landscape Architect's Role

by Elizabeth E. Fischer, Heidi Hohmann, and P. Daniel Marriott

Introduction

This country has a rich history of roadway development. From early overland routes, such as the Boston Post Road in New England and the El Camino Reals in the Southwest, to the first federally funded interstate in 1806 (the National Road) and the innovative parkways of the early 20th century, we have been striving in creative ways to link our people, resources, and communities.

Whether country lanes, urban boulevards, or prototypical freeways, the 20th century roadways of this nation are a part of a precious legacy of the opening up of a continent. The innovations that aided this development are a response to the constant striving for improvement, and their aesthetic sensibilities represent the diverse regions and traditions of the United States.

Landscape design of the 19th century brought the country to the people, as can be seen in places such as Frederick Law Olmsted's Central Park in New York City. But in the early 20th century, with the horseless carriage and better roads, people were able to take to the country, and the landscape of America was forever changed, as were people's perceptions of the landscape.

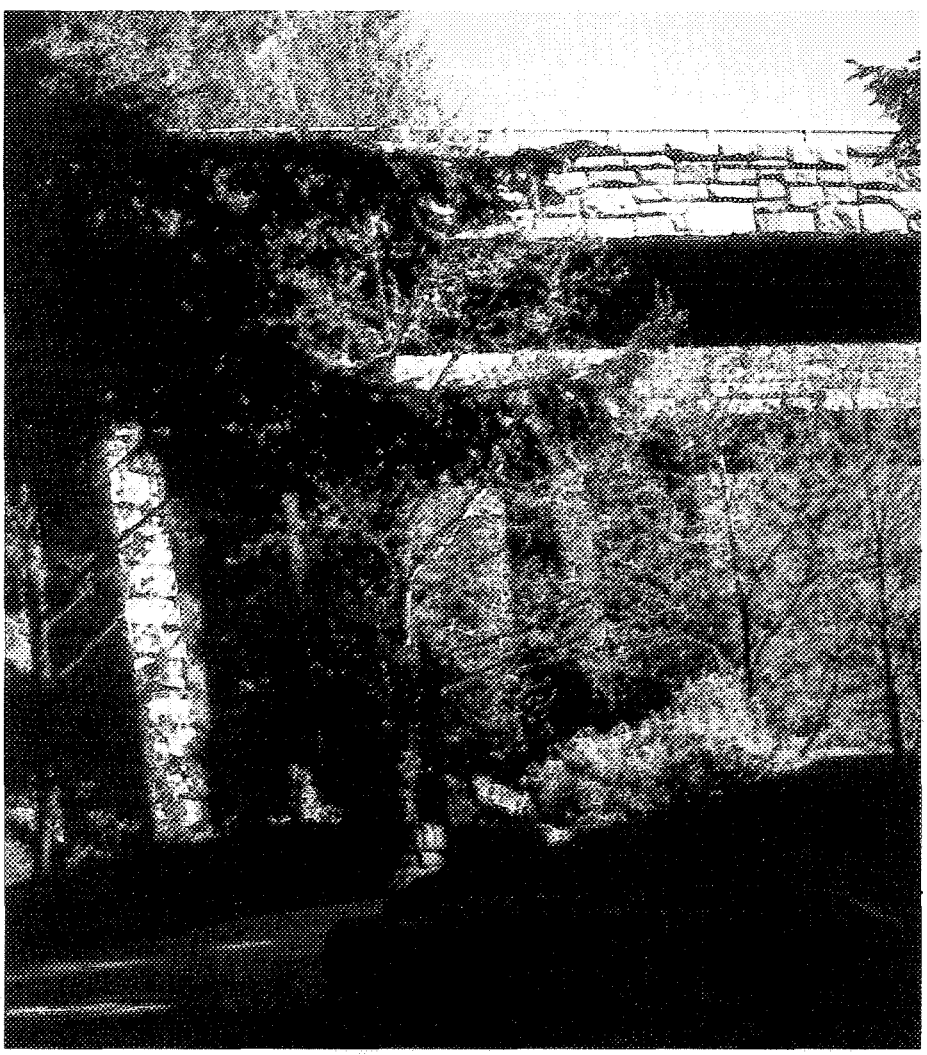
Landscape architects have had a critical role in the development of the nation's highways and parkways. Landscape architects were integrally involved with the planning and design of these roadways. Sometimes they were in the forefront of design innovation; other times they were not. However, the influence of the profession on 20th century highways is clearly documented.

The Early Years

The New Century

The origins of modern roadways are found in late 19th-century park and city planning. As parks were pushed to the outskirts of urban growth, an obvious way to connect people to parks was through the use of streets, boulevards, or carriageways with some park-like characteristics. These new streets, intended to be pleasant travel corridors, were called "parkways." Because of their relationship to parks, landscape architects played a key role in the design of these roadways in contrast to the design of streets and highways, which were designed primarily by engineers.

As the profession of landscape architecture evolved in scope and



Elizabeth E. Fischer

Like the carriage roads in New York City's Central Park, the Biltmore House's Long Drive in Asheville, N.C., was designed by landscape architect Frederick Law Olmsted to provide opportunities for leisurely driving. Olmsted and his successors designed roads to follow the terrain and to respect the existing landscape. Long Drive is shown as it passes under I-26.

content, early parkways also rapidly evolved from wide, straight lanes established by a pre-existing urban grid to roadways that wound sinuously through the landscape in response to natural features. Parkways became a means for structuring urban growth rather than simply a means for responding to it. For example, in Minneapolis, a 42-kilometer system of parkways (designed by H.W.S. Cleveland and Theodore Wirth) constructed around a string of marshy lakes defined key residential areas for the growing city.

This also was true of the Boston Park System, in which an urban infrastructure of roads, public transportation, and drainage were designed to reclaim the Muddy River watershed. In 1895, Boston built the Fenway, Jamaicaway, and Arborway parkways to preserve and protect scenery and property values.

Parkways evolved in response to the faster speeds (40 to 55 kilometers per hour) of automobiles. The first parkways included New York's Bronx River, Westchester County, and Long Island parkways and Virginia's Mount Vernon Memorial Parkway. These parkways combined features of 19th-century park roads with innovations such as passing lanes and paired opposing lanes for greater traffic flow, grade separations and wide medians, and horizontal and vertical alignments based on wide circular curves and straight tangents.

Another major development concerned the ownership of parkway rights of way by a park, parkway, or roadway commission. Owners of adjacent lands had no right of direct access to the roadway, and at-grade crossings were eliminated to allow unimpeded traffic flow on the parkways. Limited access also permitted separate fast- and slow-moving traffic through the use of bridges, which represented a major evolution in design and use.

Landscape architects played as key a role in early 20th-century parkway design as they had in the late 1800s because of park commission jurisdiction over the new roadways and their recreational function. However, the landscape architect's role in the process was also one of orchestrating a multidisciplinary team. The combination of roadway, park, and bridge design that was required to create a parkway necessitated the collaboration of engineers, landscape architects, and architects. This collaboration became a hallmark of parkway design and was eventually transferred directly to highway design.

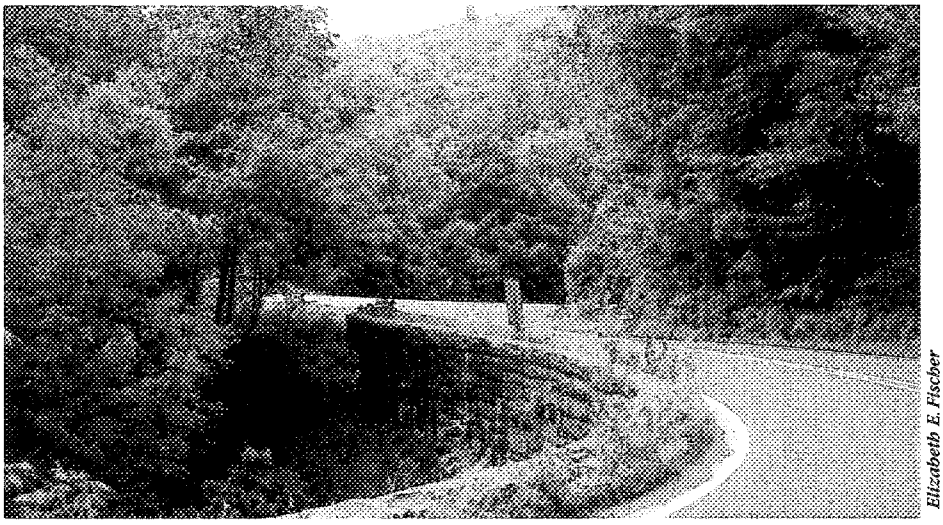
Elizabeth E. Fischer

The historic Columbia River Highway was constructed between 1913 and 1922 on the Oregon bluffs above the river. This highway was designed and built by a multidisciplinary team of architects, engineers, and landscape architects to provide recreational opportunities in the natural environment.

Perhaps because the design of the roadway created a landscape, rather than a simple object, landscape architects clearly had a primary role in the process. This is further indicated by the fact that landscape architects played a key role in publicizing the advantages of the new roadway types to their colleagues and to the public. For example, while noted parkway engineer Jay Downer published only one or two articles on parkway projects during his lengthy career, his collaborating landscape architect, Gilmore Clarke, published more than a dozen. In general, landscape architects were published more often than their engineering counterparts.

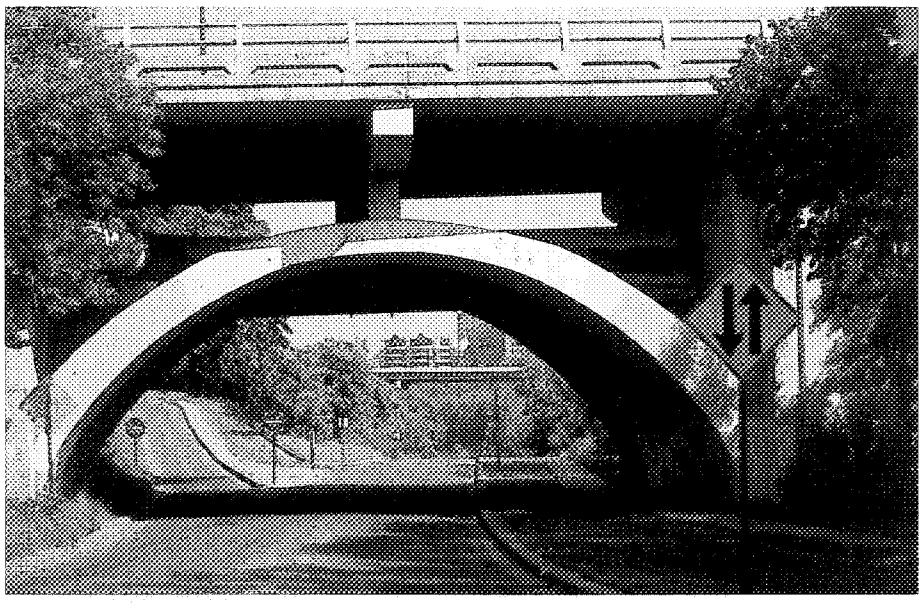
The Depression Era

As automobile travel increased, the rising numbers and the higher travel speeds of cars on the nation's roads and parkways illuminated the deficiencies in early road design. New roads solved these problems with further technical refinements, such as



Elizabeth E. Fischer

The Blue Ridge Parkway in North Carolina and Virginia is one of many parkways constructed during the Great Depression to provide jobs. The chief landscape architect, Stanley Abbott, laid out the entire length of the parkway and is credited with saying that it was important to have the road lie lightly on the land like a ribbon. This part of the parkway is near Linnville, N.C. Note the use of local stone for the culvert and retaining wall.



Elizabeth E. Fischer

The Grand Rounds Parkway in Minneapolis, Minn., was constructed as part of the city's park system.

spiral transition curves and superelevations — solutions grounded in the realm of engineering rather than aesthetics. Such innovations emphasized the importance of engineering and foreshadowed the fact that the functional aspects of roadway design (the realm of the engineer) would assume primacy over the aesthetic aspects (the realm of the landscape architect).

At the same time, however, parkways in the 1930s, such as the Merritt, Taconic, and Arroyo Seco parkways, linked cities to recreational and residential areas farther and farther away from the city core. Robert Moses, a New York businessman, developed parkways on Long Island that served his ulterior motive to provided access to his planned suburban developments.

In addition, new concepts were introduced in the 1930s, and some of these concepts are represented by roads constructed by the National Park Service (NPS). These NPS roads had an almost exclusively recreational, conservation, and tourism focus. NPS parkways of this period, which included the Colonial, Blue Ridge, and Natchez Trace parkways, pioneered the concept of the conservation easement. Although this is an idea that is now taken for granted in rural development programs, at the time it was developed by Stanley Abbott, the landscape architect for the Blue Ridge Parkway, it was considered revolutionary. The NPS parkways also featured larger rights of way than urban and regional parkways to allow the maximum preservation of land, cultural features, and scenery. This concept foreshadowed future efforts to use roadway projects as a means to preserve local and regional character.

Because of their large size and the vagaries of federal funding, the construction of NPS parkways took an exceptional number of years, and they were not completed until much later in the century. Despite the long construction times, they were not overly influenced by the changes and technological advances in highway design that occurred in the years between design and completion.

The distinctive 1930s characteristics of the NPS parkways primarily hung on two facts. First, the design and construction were governed by a strict procedure of collaboration between engineers, architects, and landscape architects. Second, the roads were designed primarily for tourists. These conditions ensured that the parkway designs were structurally complete and aesthetically pleasing.

The Modern Era

World War II and the Cold War

Roadways constructed after World War II are vastly different in purpose than those built before the war. The crucial difference was that the new highways were designed for fast and efficient transportation, as indicated by some of the names applied to these roads — freeway, thruway, and expressway. The new highways enhanced traffic movement by using longer and flatter curves for faster navigation and flattened vertical alignments to permit military convoys to maintain uphill velocity.

Until the early 1950s, engineers typically understood how to incorporate the highway into the landscape because they had worked on multidisciplinary teams with landscape architects or had training in sympathetic layout and construction. However, the 1944 Defense Highways Act initiated the decline of collaborative highway design in favor of urgent, rapid construction of military highways, which provided mass employment and met national security needs.

Furthermore, highway-related legislation and policies on roadway design and development increased. In 1956, the American Association of State Highway Officials, which is now the American Association of State Highway and Transportation Officials (AASHTO), published the first national standards for all kinds of roadways — the standards by which all roads in the nation are designed and constructed — with seemingly little room for design creativity or flexibility.

One of the first of these new highways was the Pennsylvania Turnpike, designed with wide, flat pavement and limited access for high-speed travel and with add-on plantings to soften the edges of a road as it traverses the state, passing anonymous towns along the way.

Parkways built in this period included the Baltimore-Washington Parkway, built by the Bureau of Public Roads (BPR), predecessor of the Federal Highway Administration (FHWA). The Baltimore-Washington Parkway follows the early design principles, but it is much less attuned to the landscape than its predecessors. The great distinction between the new parkways and other highways is primarily the parkway's exclusion of all but passenger-vehicle traffic.

The call for landscape architects to be part of multidisciplinary teams for highway design and construction was sounded very early in this period. "The complete highway is the prod-

uct of the combination of good engineering design and good landscape design applied in balanced agreement," said Wilbur H. Simonson, a BPR landscape architect, in a speech at the Stevens Institute of Technology, March 10, 1953.

By the late 1950s, the BPR; the American Society of Landscape Architects; and the Highway Research Board, which is now the Transportation Research Board, emphasized that basic highway design, layout, planning and construction were as important aesthetically as the added details, minor structures, and landscape planting and that the road should be integrated into the land it crossed. However, concern about aesthetics was pushed aside in favor of function, utility, and national security.

As a result, highway structures were improved with aesthetic treatments, but highway alignment was not affected. Engineers and policymakers were slow to incorporate or understand the design principle of respecting local conditions and human needs in coordination with the engineering needs. This principle was well understood by landscape architects.

Late Century

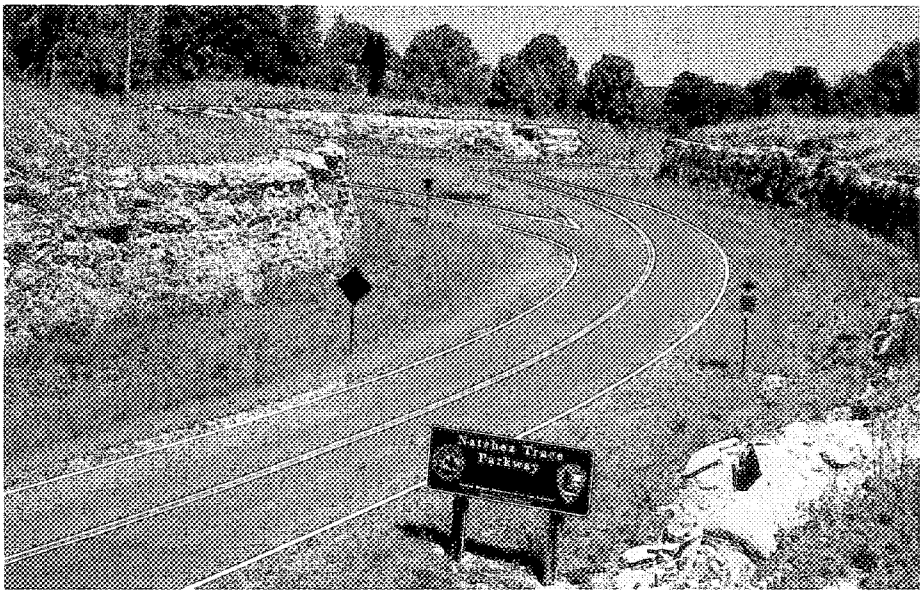
By the 1960s, the even more rapid increase in travel speeds and larger scale highways and highway facilities reduced people's views of land and ultimately led to a loss of their relationship with and connection to the land. "Urban renewal" was the catch phrase to provide easy access to urban cores using inexpensive land while displacing numerous established communities. Safety, utility, and efficiency were the key components of highway design. However, the tide began to change as people demanded respect for the environment and their communities.

The pleasing quality of the newly constructed George Washington Parkway and its respectful integration into the landscape of the Potomac River shoreline and bluffs across from Washington, D.C., provided the final incentive for President Johnson to sign the Highway Beautification Act of 1965. This act, in conjunction with the National Environmental Protection Act and the Historic Preservation Act, subsequently brought landscape architects back into the "team" to ensure the integration of roads with the landscape and communities.

The newly formed FHWA established its first landscape architecture office, which provided the lead for state highway agencies to do the same. In 1967, FHWA funded the first multidisciplinary team led by landscape architects to design I-83 in Baltimore. This became a model for comparable teams across the country. Other successful projects involving such teams included Freeway Park over I-5 in Seattle and the Glenwood Canyon project on I-70 in Colorado.

However, the legislative language was still limited in its focus. Only upon the passage of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Transportation Equity Act for the 21st Century (TEA-21) in 1998 did legislative language support going beyond applied beauty to the systemic integration of aesthetics, place-making, and providing comprehensive planning and design opportunities in transportation facilities.

Landscape architects are constantly developing new tools and techniques to make roadways more compatible with the landscape and communities. Recent developments include widely used computer-based visualization techniques; visual quality and visual preference assessment methodologies; and the development and enforcement of legislation, policy, and guidance. Currently, numerous multidisciplinary teams, interagency collaborations, and public-private partnerships are being guided by landscape architects nationwide, including those implementing highway projects designed to respect their context or place.



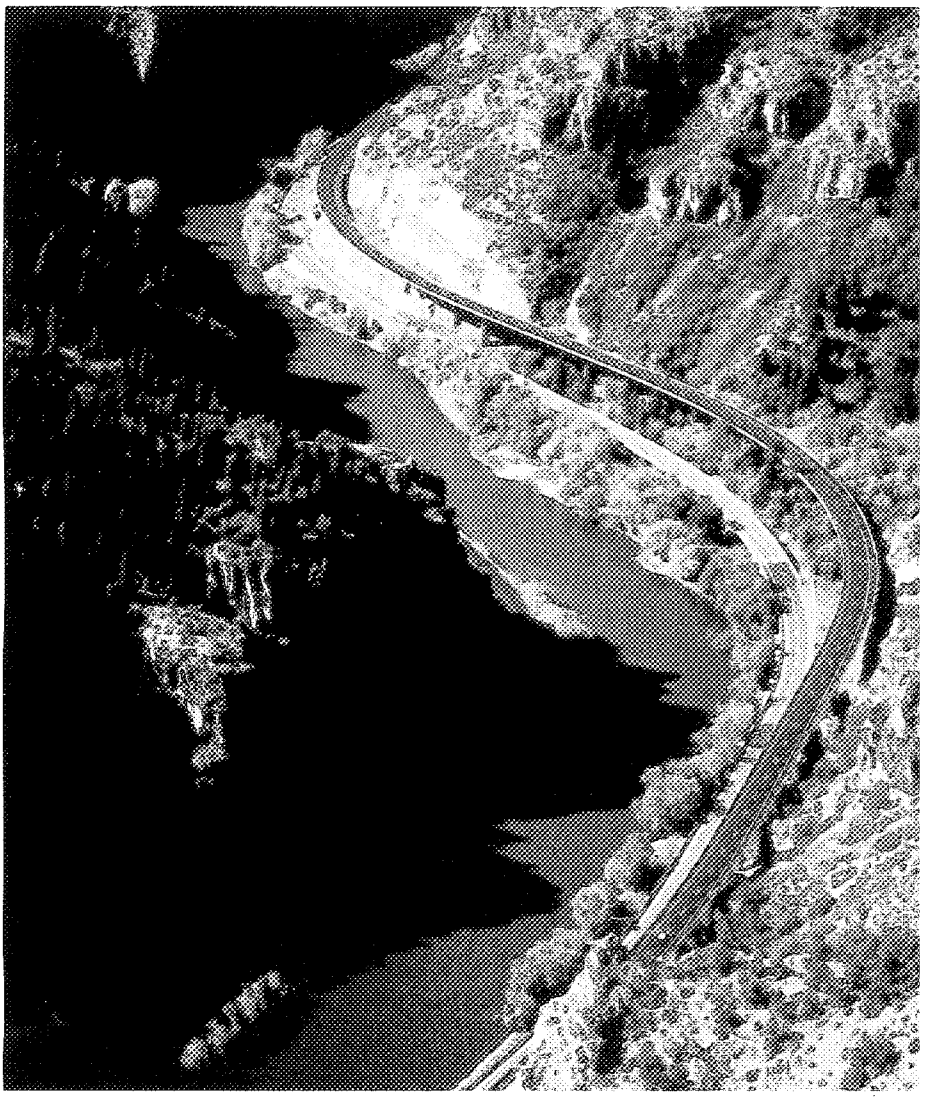
The Natchez Trace Parkway is a historic route that generally follows the old Indian trace, or trail, between Nashville, Tenn., and Natchez, Miss., cutting across a corner of Alabama. The first construction contract was awarded in 1937, and now of the approximately 720 kilometers of the parkway, about 685 kilometers are completed.

Conclusions

The development of the nation's highways and parkways is the largest public works effort ever undertaken in this country, and it has resulted in the greatest change to the nation's landscape. Landscape architects played a definitive role in ensuring that transportation corridors (parkways, freeways, and city streets) respected the land and the communities through which they passed.

Today, we are constrained by time and space in which to construct new roads. This situation calls for landscape architects to play a greater role, even take the lead, on multidisciplinary teams challenged with redesigning roadways. Landscape architects provide the creative interaction needed between engineers and communities. Landscape architects know more than aesthetics; they understand how the human and natural environment can coexist harmoniously, especially along roadways.

Landscape architects also have the



The opening of the I-70 segment through Glenwood Canyon in Colorado in October 1992 completed the entire 3,500-kilometer length of the interstate highway from Baltimore, Md., to Cove Fort, Utah. Former FHWA Administrator Thomas Larson described the 19-kilometer Glenwood Canyon segment as "a world-class piece of environmentally sensitive engineering" and "a scenic byway that is one of the wonders of the interstate system."

skills to assist in the preservation of historic roads and parkways. Many of our historic roads are threatened by changing land use and development pressures, and others are threatened because they have become major commuting routes, carrying a volume of traffic far beyond their design capacity. With support from current law, landscape architects can assist in incorporating modern intermodal capabilities and community needs into the historic landscape while conserving the character-defining elements and resources.

In the 21st century, landscape architects will continue to provide the link between hard engineering and community needs. However, landscape architects must develop well-defined aesthetic rules to complement the very well-defined structural and engineering rules, recognizing the challenge that aesthetics are quite subjective. As a profession and as individuals, we must market ourselves better, as Stan Abbott and Gilmore Clarke did so well early on, to ensure that policy-makers understand "what we bring to the drawing board." The end result will be a universal acceptance of the philosophy of award-winning Italian bridge engineer Fabrizio de Miranda, who said in 1991: "Three mentalities should be gathered around the drawing board. ... One should be creative and aesthetic, the second analytical, and the third technical and practical. ... If these three mentalities do not exist in a single mind, they must always be present on terms of absolute equality in the group or team responsible for design."

Elizabeth E. Fischer, RLA, is a landscape architect in FHWA's Office of Human Environment, which is a part of the Planning and Environment Core Business Unit. While at FHWA, she has worked on the National Scenic Byways and TCSP programs in addition to overseeing visual quality and aesthetics issues and coordinating the agency's livability activities. Prior to joining FHWA in 1992, she worked for the North Carolina Department of Transportation, where she developed and oversaw the state's scenic byways program. Fischer is a member of the Transportation Research Board committees on Landscape and Design (A2A05) and Historic and Archaeological Preservation (A1F05). She is also a member of the American Society of Landscape Architects, in which she has held several positions of national leadership. She has a master's degree in landscape architecture from North Carolina State University. Her bachelor's degree from Randolph Macon College is in history and biology. She is a registered landscape architect in North Carolina.

Heidi Hohmann is a practicing landscape architect with BRW Inc. in Minneapolis, Minn. She has worked on a number of historic parkway research and planning projects for federal and state government clients. Her experience includes working as a historical landscape architect in both the public and private sectors. She is an associate member of the American Society of Landscape Architects.

P. Daniel Marriott is the director of the Rural Heritage Program for the National Trust for Historic Preservation. He is a member of the Transportation Research Board committees on Landscape and Design (A2A05) and Historic and Archaeological Preservation (A1F05). He received his bachelor's degree in landscape architecture from Pennsylvania State University and his master's degree in city and regional planning from Cornell University.