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The Road that Made Mountains: Highway Design and the Production of Landscape in Vail, Colorado

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ABSTRACT

Constructed between 1972 and 1978, Vail Pass is a 16-mile section of Interstate-70 that crosses the continental divide in the Central Mountains of Colorado. It connects the ski resort communities of Copper Mountain and Vail and has played a significant role in the development of tourism in the Colorado High Country. The design and planning of Vail Pass occurred at a time of increased public concern over environmental issues, and was built following a series of significant pieces of federal environmental legislation. Within this context, highway designers and engineers sought to harmoniously integrate the highway into its natural setting.

This thesis tells the story of Vail Pass through the perspectives of environmental legislation and politics, roadway design, and human-nature relations in Colorado. A personal bicycle journey over Vail Pass serves to introduce the central questions of this project. Chapter one discusses scholarly work within environmental history and landscape studies in order to contextualize this project within broader academic debates. Chapter two addresses the environmental politics and legislation that arose around the Vail Pass project and considers the impact of federal legislation on a single landscape. In Chapters three and four, Vail Pass is placed within broader histories of road and landscape design, providing a deeper understanding of the meaning and significance of the Vail Pass landscape. In the concluding chapter, Vail Pass is used to discuss broader questions of infrastructure, tourism, and the environment in Colorado as climate change alters the landscape.

The Road that Made Mountains:
Highway Design and the Production of Landscape in Vail, Colorado

By

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A CYCLING JOURNEY OVER VAIL PASS

As I pedal my bicycle through the gate that marks the official starting point of the Vail Pass Recreational Trail, the slope increases slightly and I shift into a lower gear. Behind me are the outskirts of East Vail—suburban-style homes built around a golf course. In front of me stretches a paved bicycle path that runs adjacent to Interstate-70 for ten miles to the top of the Continental Divide in the central mountains of Colorado.

For the first three miles, the path follows the old roadbed of Highway 6, Interstate-70's predecessor. Above the path are red-faced cliffs silhouetted against the sky. Below is Gore Creek, and beyond that the highway. While the highway is only a few hundred yards from the path, the trees and stream act as a barrier between the two, and the highway feels a world apart from the tranquility of rustling aspen trees and the gurgling stream. Indeed, one of the first things I notice is that I cannot hear the traffic. When the forest thins, I look down to see a blur of trucks and cars rushing in either direction, and it appears that I am watching a film montage with the sound on mute.

Cycling on a bike path that is adjacent to a major interstate highway would not seem to be the safest or most scenic route choice. Yet my cycling guidebook promised that the ride was not only safe but also provided breathtaking views of the mountain scenery.[1] Confident of the route's safety but still skeptical about how much I would enjoy riding along the interstate, I set out on a

[1] Jason Summer, "Copper Triangle," in *75 Best Rides in Colorado: The Best Road Biking Routes* (Seattle, WA: Mountaineer Books, 2015): 38-39.

route known as the ‘Copper Triangle,’ which connects Copper to Vail via State Highways 91 and 24, with the Vail Pass bike path as the final section.

To my surprise, riding over Vail Pass turned out to be the most interesting and enjoyable segment of the ride. Despite its proximity to I-70, the path is well situated within the mountain environment. It curves to border the highway and then diverts away from it, creating variations in atmosphere and scenery. Just as remarkable as the views of the Gore mountain range in the distance, the highway itself is a striking feature within the landscape. Riding over the pass, I discovered a fascinating relationship between the road and the surrounding environment. It turned out that rather than being a nuisance, riding along the interstate provided a fascinating exhibit of roadway engineering and landscape design.

Figure 1.1. Bicycle and pedestrian bridge under highway, west side of Vail Pass. Photo by author.

After the initial straight section outside of East Vail, the path turns and momentarily descends, going underneath the highway and crossing Gore Creek on a picturesque footbridge (figure 1.1). The east and west-leading roadways are split and held high above the ground by slender concrete

columns. One can look up to see a crescent-shaped section of sky between the gently curving contours of the road, while the lush foliage along Gore Creek grows undisturbed.

Further up, the valley narrows, and the path and highway are built side-by-side. While the serene atmosphere of the first section of the ride gives way to a harsher one, the path's proximity to the highway allows me to see how highway engineers cut rocks to mimic natural geologic formations. The natural and man-made features of the landscape are difficult to discern, a surprising feature of a landscape adjacent to a major interstate (figure 1.2).

Figure 1.2. Rock cuts mimic natural formations, west side of Vail Pass. Photo by author.

Near the top of the pass the bike path traces the shores of Lower Black Lake and Upper Black Lake. A small group of fishermen cast their lines into the dark glassy surface of the water, which reflects the billowing storm clouds that have started to gather in the sky. I would later learn that just below the lakes, sections of Gore Creek were re-channeled in order to create more pools for

fish—especially trout. Here, too, the line between the natural and man-made environment is blurred.[2]

On the east side of Vail Pass, the landscape opens up and the terrain is less steep. The highway splits, with west and eastbound traffic tracing the contours of the hills on either side of the valley. The bike path follows Tenmile Creek, which meanders gentle through the valley between each roadway. At some points, groupings of trees conceal the highway, and it feels as if one is riding through a tranquil, undeveloped meadow. At other points, bridges emerge from the trees and cross small streams that flow down the hillside into Tenmile Creek. Many of these bridges are built directly into the hillsides, using the natural topography as support. From the bike path, they appear like giant pencils hovering in space (figure 1.3).

Figure 1.3. Bridge as seen from bike path, east side of Vail Pass. Photo by author.

As I let my bike coast down the path into Copper, I begin to realize that the design of the highway has determined how the natural landscape along Vail Pass is viewed and experienced.

[2] Colorado Department of Highways, *I-70 in a Mountain Environment: Vail Pass, Colorado* (United States Department of Transportation, 1978): 76-81.

On the drive back to Denver, I notice sections of Interstate-70 east of Vail Pass where the road and landscape clash—where cut and fill construction methods have created denuded hillsides or where retaining walls and signage posts obscure views of the landscape. In comparison to these sections of roadway, Vail Pass stands out as an example of how an interstate highway can enhance rather than degrade the experience of landscape.

* * *

Rides such as these kindled my interest in the development of the Vail Pass landscape and the history of road building and landscape design more generally. As I reflected on my cycling experience, I began to formulate a set of research questions about the Vail Pass project. First, what were the political and cultural circumstances that compelled designers and engineers to seriously consider aesthetic experience and ecological preservation along the Vail Pass section of I-70? Second, how can Vail Pass be understood within the history of roadway and landscape design? Finally, how has Vail Pass shaped the relationship between landscape, infrastructure, and the environment more generally?

This thesis is an attempt to answer these questions. It is an environmental history of Vail Pass that tells the story of how the highway came to be designed and constructed to provide new ways of experiencing the landscape of Colorado's central mountains. As this project will illustrate, the story of Vail Pass is a story of environmental politics, road design and construction, and environment-society relations in Colorado during the 1960s and 1970s.

Research for this project was conducted in libraries and archives in Colorado. The Colorado Department of Transportation Library and the Denver Public Library's Western History and Genealogy Collection provided the majority of primary source material, including environmental

impact studies and design documents. The Conservation Collection at the Denver Public Library—which documents the history of the environmental movement in the United State from the early 20th century to the present—proved to be a particularly useful source of information on the environmental politics that emerged around the Vail Pass project. Sources were also gathered at the Eagle County Library and through the Associated Studios of the Frank Lloyd Wright Foundation. Additionally, a series of interviews were carried out with architects and historians who have worked on the Vail Pass project and its subsequent preservation.

Following a literature review in Chapter One, this study is organized into three body sections. Chapter Two is dedicated to a discussion of the environmental policies and politics that shaped the planning of Vail Pass. Chapters Three and Four contextualize Vail Pass within the history of road and landscape design. In the concluding chapter, the legacy of Vail Pass is examined within the context of contemporary environmental challenges. As these different perspectives on Vail Pass are explored and placed in conversation with each other, a holistic portrayal of landscape emerges.

Vail Pass was constructed between 1972 and 1978, following the passage of a series of significant pieces of federal environmental legislation, including the Wilderness Act in 1964, the Department of Transportation Act (DOT Act) in 1966, and the National Environmental Policy Act (NEPA) in 1969. Vail Pass was the first federally-funded infrastructure project in Colorado following NEPA's passage and is therefore an important case study for understanding how federal environmental policies shaped conditions at a local scale. One of NEPA's central components is the requirement that environmental impact studies be written before proceeding

with a project in which the federal government is involved.[3] On the Vail Pass project, these environmental impact studies illustrate how federal and state agencies began to re-consider the influence of their work on natural systems. Additionally, NEPA created a framework for inter-agency cooperation that yielded new ways of thinking about the environment within agencies such as the Colorado Department of Transportation and the National Forest Service.[4]

Yet environmental legislation is only part of the story. The 1960s and 1970s were a time of increased public awareness of environmental issues, both in Colorado and across the United States.[5] In Colorado, I-70's route location and design played a key role in shaping the State's environmental politics, as many citizens became concerned about the highway's impact on prominent wilderness areas.[6] The federal environmental policies that were passed in Congress shaped the character of these local debates in important ways, but did not completely define the outcome of the Vail Pass project.

Within this context of environmental legislation and politics, I argue that the National Forest Service played an especially important role in establishing the environmental ethic that arose around the construction of Vail Pass. As a federal agency tasked with both conserving the natural

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[3] The National Environmental Policy Act of 1969, Public Law 91-190, 42nd Cong. (January 1, 1970), § 4332.

[4] Ibid. See also Paul Gobster, "An Ecological Aesthetic for Forest Landscape Management," *Landscape Journal* 18, no. 1 (Spring 1999): 54-64; Marc J. Stern, Andrew Predmore, Michael J. Mortimer, and David N. Seesholtz, "The Meaning of the National Environmental Policy Act within the U.S. Forest Service, *Journal of Environmental Management* 91 (2010): 1371-1379.

[5] Samuel P. Hays, *Beauty, Health, and Permanence: Environmental Politics in the United States, 1955-1985* (Cambridge: Cambridge University Press, 1987). See also: Robert Gottlieb, *Forcing the Spring: The Transformation of the American Environmental Movement,* rev. ed. (Washington, DC: Island Press, 2005).

[6] William Philpott, *Vacationland: Tourism and Environment in the Colorado High Country* (Seattle: University of Washington Press, 2013), 239-297.

environment as well as rendering it useful for economic development, the Forest Service was positioned to facilitate a project in which road and nature were not seen as opposing elements but could rather be imagined in harmony with each other.[7] At the time, the White River National Forest—through which Vail Pass is built—was the third highest-ranking National Forest for recreational use and therefore conserving the scenic qualities of the area was understood as a central value from the outset of the Vail Pass project.[8]

The Vail Pass project can also be seen as an expression of a particular set of environmental values that had come to shape popular attitudes towards nature in Colorado in the years following the Second World War. In many ways, these values can be understood through the ideas of Arthur Carhart, who worked as the director of wildlife research for the Colorado Game and Fish Department beginning in 1919 and promoted a vision of environmentalism that was based on the preservation of public lands for recreational use. Carhart's approach to wilderness preservation focused on protecting scenic areas for recreational use through large-scale zoning and planning.[9] This conservation agenda appealed to many Coloradans, whose relationship with the natural environment was fundamentally shaped by outdoor recreation.[10]

Federal environmental legislation and broader cultural values towards nature shaped the design of Vail Pass. The alignment of the road within the natural topography, the preservation and re-

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[7] S.R.J. Sheppard and H.W. Harshaw, eds, *Forests and Landscapes: Linking Ecology, Sustainability, and Aesthetics* (New York: Cabi Publishing, 2001).
[8] Colorado Department of Highways, *I-70 in a Mountain Environment: Vail Pass Colorado* (United States Department of Transportation, 1978), 3.
[9] Philpott, *Vacationland,* 190-191. See also: Donald N. Baldwin, *The Quite Revolution: Grass Roots of Today's Wilderness Preservation Movement* (Boulder, CO: Pruett Publishing Company, 1972), and Tom Wolf, *Arthur Carhart: Wilderness Prophet* (Boulder, CO: University of Colorado Press, 2008).
[10] Brent Olson, "Recreation Capital: Natural Resources, Amenity Development, and Outdoor Recreation in Bend, Oregon" (PhD diss., Syracuse University, 2012).

planting of vegetation, and the cutting of rocks to mimic natural forms were features meant to preserve the scenic beauties of the area from the perspective of a car's windshield. Additionally, the preservation of hydrological resources was pursued not only to conserve the drinking water resources for the town of Vail, but also to enhance recreational opportunities for fishing.[11] Cultural ideas of recreation thus had material consequences on the ecology of the Vail Pass landscape. In many ways, this thesis is concerned with discussing the blurred boundaries between the human and natural world that define the Vail Pass landscape.

While the story of Vail Pass must be understood in the context of post-World War II environmentalism, a comprehensive discussion of the road's significance also involves a broader contextualization within the history of landscape and roadway design. An analysis of Vail Pass's design points to two traditions: the parkway movement of the early twentieth century and an environmentally-conscious modernism—what I term "environmental modernism"—that arose in the 1960s and 1970s. By establishing connections between Vail Pass and these historical precedents, this project uncovers a set of ideas about landscape that deepens an understanding of nature-society relations in Colorado in the post-World War Two era.

Telling the story of Vail Pass today is a timely endeavor, for in June of 2019, the Federal Highway Administration nominated the Vail Pass segment of I-70 for designation as a National Historic landmark.[12] The historic context report that supported this nomination argued that Vail Pass is an "innovative highway that complemented its natural surroundings and coincided with

[11] Colorado Department of Highways, *I-70 in a Mountain Environment,* 76-80.
[12] Colorado Department of Transportation and Mead and Hunt, Inc., "Historic Context: Vail Pass Segment of Interstate Highway 70 (Colorado Department of Transportation, 2019).

the establishment and expansion of tourism and communities in the Colorado high country."[13] While the expansion of tourism and outdoor recreation inspired many people to care more deeply about the natural environment, resort development in the High Country has also caused significant degradation to the very places that are valued for their natural beauty.[14] This paradox raises tough questions about the relationship between tourism and environmentalism, and these questions become especially complicated as climate change irrevocably alters the places that have shaped people's affection for the Colorado landscape. In the concluding chapter, the history and significance of Vail Pass is used to think about contemporary environmental challenges.

While my initial interest in studying Vail Pass was sparked by a personal bicycle journey, my curiosity has been maintained through engagement with the work of other scholars who have also found the relationship between landscape, infrastructure, and nature to be a worthy topic of research. In particular, environmental historians have written about the relationship between roads, driving, and conservation, while cultural geographers have offered perspectives on the history and meaning of landscape. Before engaging directly with the Vail Pass story, it is important to situate this research project within the literature of environmental history and landscape studies.

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[13] Ibid., 1.

[14] Hal Rothman, *Devil's Bargain: Tourism in the Twentieth-Century American West* (Lawrence: University of Kansas Press, 1998), 202-251.

CHAPTER 1

A SCENIC DRIVE THROUGH ENVIRONMENTAL HISTORY AND LANDSCAPE STUDIES

Since the mid 1970s, the field of environmental history has examined the role of nature in human history, and in doing so has carved out a prominent place for itself within the humanities and social sciences.[15] Within the field of geography, the concept of landscape has shaped key debates about the relationship between people and the environments they inhabit.[16] On a fundamental level, both environmental historians and scholars of landscape examine the interactions between human society and non-human nature. Further, important contributions to both of these fields have focused on human-nature relations through studies of roads and driving. Yet environmental historians and geographers have not always acknowledged these commonalities.[17] By applying some of the methodological tools and theoretical insights of both environmental history and landscape studies to the study of a single road landscape, this project endeavors to revitalize some of the intellectual connections between environmental history and geography.

ROADS AND DRIVING IN ENVIRONMENTAL HISTORY

Some of the most prominent studies of roads and driving within environmental history analyze how key features of the modern wilderness movement were shaped by attitudes towards roads. In *Driven Wild: How the Fight Against Automobiles Launched the Modern Wilderness Movement,* Paul Sutter examines the founding of the Wilderness Society, and argues that the organization's

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[15] Paul Sutter, "The World With Us: The State of American Environmental History," 94-95. For an overview of the field of environmental history, see Douglas Cazaux Sackman, ed., *A Companion to American Environmental History* (Malden, 2010).
[16] Thomas Lekan and Thomas Zeller, "Region, Scenery, and Power: Cultural Landscapes in Environmental History," in *The Oxford Handbook of Environmental History,* ed. by Andrew Isenberg (Oxford: Oxford University Press, 2014), 332-333. For an overview of the field of landscape studies, see John Wylie, *Landscape* (New York: Routledge, 2007).
[17] Ibid., 332.

establishment was based upon a desire to protect certain areas from road construction projects that were meant to facilitate outdoor recreation.[18] Rather than an ecologically based idea of pristine nature, Sutter argues that the notion of wilderness emerged as part of a "broader discomfort with consumerism, tourism, mechanization, advertising, landscape architecture, and the various other forces that remade outdoor recreation during the interwar period."[19] Ideas of wilderness were shaped by the political, economic, and intellectual contexts of a period in which more Americans were beginning to drive.

In *Windshield Wilderness: Cars, Roads, and Nature in Washington's National Parks,* David Louter also sees the idea of wilderness as a response to the country-wide decline in roadless places.[20] Yet instead of focusing on the areas where roads were prohibited, Louter turns his attention to road building projects in three of Washington State's national parks, and in so doing, illustrates how automobiles "became a very real vehicle of educating the nation's citizens about the beauty and power of their national landscape."[21] By investigating the construction of roads in the three parks of Mount Rainier, Olympic, and North Cascades, Louter shows how national parks have been "spaces, both real and imagined, for machines in nature."[22] Given that so many people base their perception of the natural world on experiences in national parks, and because so many of these experiences occur within automobiles, cars and roads can be seen as a central tool through which people have come to view, understand, and relate to the non-human world. At the same time, attitudes towards cars have shaped efforts to protect wild places from new road

[18] Paul Sutter, *Driven Wild: How the Fight against Automobiles Launched the Modern Wilderness Movement* (Seattle: University of Washington Press, 2002), 10.
[19] Ibid., 16.
[20] David Louter, *Windshield Wilderness: Cars, Roads, and Nature in Washington's National Parks* (Seattle: University of Washington Press, 2006).
[21] William Cronon, "Foreword," *Windshield Wilderness,* xii.
[22] Louter, *Windshield Wilderness,* 164-165.

building. Cars, roads, and driving are one of the nodes where American's conflicted relationship with the natural world coalesces.[23]

The idea that American's relationship to the environment has been dramatically shaped by cars is expanded upon by Christopher Wells in *Car Country: An Environmental History.*[24] Wells examines the almost countless features of an automobile dependent society, from gravel and asphalt types to the engineering of highways, from urban zoning codes to the refining of gasoline. By illustrating the pervasiveness of cars in so many aspects of American life, Wells argues that efforts to imagine and create a way of life *not* dependent on the automobile requires confronting vast and complex technological, economic, and political systems that have been built up for over a century.[25]

These studies demonstrate that roads and driving are central to understanding questions of wilderness preservation, cultural conceptions of nature, and efforts to shape a more sustainable world. This thesis contributes to this scholarship by focusing on similar questions as they relate to interstate highways rather than national parks or other iconic places. By discussing the effort to re-make the vernacular, utilitarian landscape of an interstate highway into a spectacular place for scenic enjoyment, this project discusses both the possibilities and contradictions inherent in efforts to address environmental challenges through an embrace rather than an antipathy towards roads.

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[23] Ibid., 105-107.
[24] Christopher Wells, *Car Country: An Environmental History* (Seattle: University of Washington Press, 2012).
[25] Ibid., xxxiv.

While the studies of roads and driving offered by environmental historians are deeply perceptive of the relationship between human technology and the natural world, they have not always begun with a study of road landscapes themselves. Rather, environmental historians have often taking a circuitous route to the study of roads and driving, realizing their importance after thinking through broader environmental questions.[26]

ORDINARY LANDSCAPES

Geographers, on the other hand, have often started with the landscape itself, where a close reading of landscape leads to broader historical, cultural, and economic questions.[27] But how does one 'read' a landscape? Debating this question has allowed geographers to contemplate some of the central theories and methods of their discipline. As this thesis project approaches the environmental history of Vail Pass based upon an on-the-ground study and documentation of the road and its environment, it is important to engage in a discussion of some of the approaches to landscape within geography.

The field of landscape studies can be traced back to 1951, when John Brinckerhoff Jackson founded the journal *Landscape.* Jackson was not a geographer, but rather a writer, historian, publisher, and instructor whose diverse intellectual pursuits defy easy characterization. Jackson distinguished the term "landscape" from related terms such as nature, scenery, environment, and place, and celebrated the everyday qualities inscribed in landscape by writing, "we adorn the face of the earth with a living design which changes and is eventually replaced by that of a future generation. How can one tire of looking at this variety, or of marveling at the forces within man

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[26] Ibid., 10-11.
[27] Pierce Lewis, "Axioms for Reading the Landscape: Some Guides to the American Scene," in *The Interpretation of Ordinary Landscapes: Geographical Essays,* ed. by Donald Meinig (New York: Oxford University Press, 1979), 11-32.

and nature that brought it about?"[28] Jackson advocated a method of studying and writing about landscape based upon first-hand observations, and often utilized a motorcycle, sketchbook, and camera to access and document diverse places across the United States.

Jackson influenced scholarship in geography as well as disciplines such as architectural history. Within the field of geography, his work was central to *The Interpretation of Ordinary Landscapes*, a collection of essays by prominent geographers in the 1970s that argued for the value of studying ordinary, vernacular settings. In his introduction to the collection, Donald Meinig suggests that landscape is an important concept for two main reasons. First, landscape acts as a reflection of human society and therefore offers the possibility of building a critical self-awareness. Secondly, landscape is related to but not identical to the concept of 'nature.' Meinig writes that, "Nature is a part of every landscape, but is no more than a part of any landscape which has felt the impact of man. In this view landscape is always inclusive of man and nature…"[29] This follows the definition of landscape that Jackson presents in *Discovering the Vernacular Landscape,* where he writes that, "the formula *landscape as a composition of man-made spaces on the land* is more significant than it first appears, for if it does not provide us with a definition it throws a revealing light on the origin of the concept. For it says that a landscape is not a natural feature of the environment but a *synthetic* space, a man-made system of spaces superimposed on the face of the land…"[30] Landscape offers the possibility of simultaneously studying both human and physical geography, and thus better understanding the relationship between humans and nature. Following Meinig's introduction, the essays in *The Interpretation of*

[28] J.B. Jackson, "The Word Itself," in *Discovering the Vernacular Landscape* (New Haven: Yale University Press, 1984), 2-8.
[29] D.W. Meinig, "Introduction," in *The Interpretation of Ordinary Landscapes,* 2.
[30] J.B. Jackson, *Discovering the Vernacular Landscape* (New Haven: Yale University Press, 1984), 7-8.

Ordinary Landscapes deal with subjects such as landscape and history, the meaning of home, and the ways religious belief shape place. Landscape is thus presented as a compelling and useful term with which to study human relations to and constructions of place, space, and nature.

The contributions of scholars such as Jackson and Meinig had influence beyond the field of geography, and their impact was especially significant within the field of architectural history and theory. Beginning in the 1960s, as part of a general interest in vernacular landscapes, scholars of the built environment turned their focus away from monumental buildings and spaces and towards vernacular, workaday structures and places. Two especially prominent works in this tradition are *Los Angeles: The Architecture of Four Ecologies,* by Reyner Banham, and *Learning from Las Vegas,* by Robert Venturi, Denise Scott Brown, and Steven Izenour. Banham, a British art historian, analyzes Los Angeles from the perspective of the places and spaces that make it unique rather than from the perspective of well-known buildings and public spaces. Banham's four 'ecologies' thus include the beach, the highway, the flatland, and the foothills. Instead of decrying the traffic and sprawl of Los Angeles, Banham delights in the mobility of the personal automobile, and by celebrating the manifestations of popular taste and industrial ingenuity, offers an insightful and original interpretation of the city of angels.[31] In a similar vein, Robert Venturi, Denise Scott Brown, and Stephen Izenour provide a celebratory portrait of the Las Vegas strip that takes the kitsch billboards and ugly buildings as signs architects should pay attention to in order to adequately comprehend how contemporary landscapes reflect social relations and culture.[32]

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[31] Reyner Banham, *Los Angeles: The Architecture of Four Ecologies* (Middlesex: Pelican Press, 1971).
[32] Robert Venturi, Denise Scott Brown, and Stephen Izenour, *Learning from Las Vegas* (Cambridge, MA: The MIT Press, 1972).

Together, scholars such as J. B. Jackson and Donald Meinig, as well as architectural historians such as Reynor Banham, guided many to appreciate the vernacular qualities of the places in which everyday life occurred. In contrast to earlier conceptions of landscape that were confined to painted scenes of idealized rural life, landscape was now considered as an all-encompassing conceptual tool that could be used to understand the wide-ranging set of processes and interactions that shaped the relationship between people and their environments.[33]

POWER AND POLITICS

While the work of these cultural geographers and architectural historians was defined by an infectious enthusiasm for closely observing the details of everyday landscapes, these scholars did not always approach their subject with a critical understanding of how landscape represented relations of economic and political power. Jackson and Meinig were not unaware of how social and economic inequality was expressed within a landscape, or how the concept of landscape itself acted to re-enforce these inequalities. For instance, in an essay on the mobile home, Jackson pays close attention to the landscapes shaped by those left behind by economic growth.[34] Yet beyond detailed description, these scholars did not systematically study the relationship between the mode of economic production and the formation of the visual landscape. Labor, wealth, and stylistic preferences were considered in detail, but there was no in-depth questioning of their origins. Thus, the work of cultural landscape scholars has been influential in providing tools with which to observe vernacular settings and identify patterns within buildings, material

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[33] Denis Cosgrove, "Prospect, Persepctive and the Evolution of the Landscape Idea," *Transactions of the Institute of British Geographers* 10, no. 1 (1985), 55-56.
[34] J.B. Jackson, "The Moveable Dwelling and How it Came to America," in *Discovering the Vernacular Landscape,* 89-102.

culture, and land use practices.[35] Yet this work also risks essentializing the culture it seeks to describe, and leaves out considerations of the relations of power that produce landscape.

Marxist-inspired scholars have delved into the social and economic questions that were left unresolved by the likes of Jackson and Meinig. They have done so by connecting the study of a specific landscape to broader patterns such as uneven regional development, urban inequality, and imperialist expansion. An important example of this approach is found in the work of British literary historian Raymond Williams. In his book *The City and the Country,* Williams demonstrated how new ways of knowing the natural world underwent important shifts in the nineteenth-century during a time of significant change within economic and political structures.[36] In his discussion of the changing landscape of Britain in the context of nineteenth century industrialization, Williams wrote, "As the exploitation of nature continued…the people who drew most profit from it went back, where they could find it, to an unspoilt nature, to the purchased estates and the country retreats."[37] Industrialization, in other words, not only reshaped how the landscapes of cities and mining sites look, but also how previously agrarian landscapes were seen through shifting cultural lenses, lenses that were intimately connected to class relations.

In *Social Formation and Symbolic Landscape,* Denis Cosgrove presented a historical study of landscape that focused on the relationship between the growth of capitalism and changes in how

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[35] Pierce Lewis, "Axioms for Reading the Landscape: Some Guides to the American Scene," in *The Interpretation of Ordinary Landscapes: Geographical Essays,* ed. by D.W. Meinig (New York: Oxford University Press, 1979), 11-32 and J.B. Jackson, *Discovering the Vernacular Landscape.*
[36] Raymond Williams, *The City and the Country* (New York: Oxford University Press, 1973), and Raymond Williams, "Ideas of Nature," in *Problems in Materialism and Culture* (London: Verso, 1980).
[37] Williams, "Ideas of Nature," 80-81.

land and nature were operationalized under new modes of production. Cosgrove showed how changes in land use became intertwined with new technologies of vision and thus new ways of seeing and relating to landscape. Landscape, Cosgrove argued, "represents an historically specific way of experiencing the world developed by, and meaningful to, certain social groups."[38] For Consgrove, landscape was an ideological concept that described how social relations were communicated through external nature.[39] For Cosgrove, the study of landscape required an understanding of the relationship between economic structures and cultural production. The social relations created through an economic structure are expressed artistically, and landscape becomes central in shaping interactions between society and nature.

While Cosgrove's approach to landscape focused on the cultural expressions of capitalism, scholars such as Don Mitchell have offered a more explicitly materialist reading of landscape. In *The Lie of the Land,* Don Mitchell examined how labor relations inscribed themselves on the agricultural landscapes in California. Here, the way the landscape looked can only be described adequately as the product of years of struggle between labor and agribusiness.[40]

The contributions of Marxist-inspired scholars to the field of landscape studies can be summarized through three basic insights about landscape. First, landscapes are produced as commodities. Therefore, relations of production, including labor relations, exist in the landscape itself. Secondly, the landscape is a form of power, as it allows for some activities to occur, and discourages others. Finally, the history of a given landscape is being defined continuously in the

[38] Ibid., 15.
[39] Ibid.
[40] Don Mitchell, *The Lie of the Land: Migrant Workers and the Californian Landscape* (Minneapolis: University of Minnesota Press, 1996), 180-183.

present. Conceptions of history are used to support arguments about what natural features should be protected and where new developments can be built. For scholars such as Williams, Cosgrove, and Mitchell, landscape remains just as important and all-encompassing a term as it was for scholars such as Jackson and Meinig. With a keener sense of how economic production and re-production are inscribed on the land, Marxist scholars have built upon earlier work within cultural geography in crucial ways. Ultimately, the work of this diverse group of scholars suggests that landscape is a fundamental concept for exploring the "social totality within which we live."[41]

TOWARDS A RENEWED ODOLOGY

The approach to landscape in this thesis seeks to combine the detailed morphological study exemplified by cultural geographers and architectural historians with the critical lens of Marxist geographers. I seek to revive the appreciation of everyday landscapes exemplified by the likes of J. B. Jackson and Donald Meinig, while at the same time connecting morphological patterns of place to broader processes of economic and cultural production. What is interesting to consider in the case of Vail Pass is that before the construction of the highway, Vail Pass was a remote, uninhabited valley.[42] Therefore, questions of displacement and struggle that often characterize Marxist approaches are not as immediately relevant. At the same time, broader forces of economic development and political power—in this case the rise of a middle class embrace of 'recreational consumerism'—can still be identified within the material features of the landscape. Hence, I seek to connect cultural landscape studies, Marxist geography, and environmental

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[41] Mitchell, "New Axioms for Reading the Landscape: Paying Attention to Political Economy and Social Justice" in *Political Economies of Landscape Change: Places of Integrative Power,* edited by J.L Wescoate, Jr. and D.M. Johnston, (Dordrecht: Springer, 2008), 47.

[42] Colorado Department of Transportation, *Vail Pass Environmental Study,* prepared by Barton, Stoddar, Milhollin, and Higgins in Cooperation with Taliesin Associated Architects of the Frank Lloyd Wright Foundation (May 1972), 7.

history in the study of a single landscape. I do this by paying close attention to both the material features of the landscape, and how those features are viewed through a specific cultural lens. Ultimately, I hope that this effort contributes in a small way to a renewed study of roads, or what J. B. Jackson termed "odology."[43]

[43] Jordi Ballesta, "J.B. Jackson: Photographic Notes on the Road," *Photo Landscape Exhibitions,* accessed June 7, 2020. https://unmphotolandscapeexhibits.wordpress.com/gph/.

CHAPTER 2

LANDSCAPES OF ENVIRONMENTALISM AND ENVIRONMENTAL LEGISLATION

The 1960s and 1970s were a time of dramatic change to the landscape of Colorado. Denver and other Front Range cities along the eastern slope of the Rocky Mountains grew in population through suburban development that extended out to the plains and into the foothills.[44] Many of the residents of these new suburbs were middle class folk eager to experience the natural environmental of Colorado through activities such as skiing, hiking, and fishing.[45] This enthusiasm for the outdoors was in many ways forged by the extension of Interstate-70 west of Denver. I-70 facilitated easy access to previously remote parts of the state, and in doing so fostered the popular sense of the Colorado High Country as a "great place to enjoy the great outdoors."[46] Yet as more Coloradans began to experience first-hand the remarkable mountain environments of their state, they also became increasingly concerned about the preservation of the mountains, forests, and waterways where they enjoyed recreating. The design and construction of I-70 thus emerged as a central issue of environmental politics in Colorado. Highway engineers were focused on cost effectiveness and transport efficiency, while environmental groups advocated for route location and design decisions that mitigated environmental damage and framed scenic views of the mountain landscape. The Vail Pass section of I-70 was a turning point in these debates and is representative of an attempt to reconcile the tensions inherent to the relationship between tourism and conservation.

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[44] Owen Gutfreund, *Twentieth-Century Sprawl: Highways and the Reshaping of the American Landscape* (Oxford: Oxford University Press, 2004), 102-109.
[45] William Philpott, *Vacationland: Tourism and Environment in the Colorado High Country* (Seattle: University of Washington Press, 2013), 6-9.
[46] Ibid., 79.

In order to understand the decisions that shaped the Vail Pass project, it is necessary to consider the role played by federal environmental legislation. The Vail Pass project was shaped by key federal environmental laws, including the Wilderness Act of 1964, the U.S. Department of Transportation Act of 1966, and the National Environmental Policy Act (NEPA) of 1969. These laws all impacted the decisions that went into the ultimate design of the highway. Yet this interaction between federal legislation and local decision making did not play out in a straightforward manner. By analyzing the relationship between federal environmental legislation and local environmental politics, this chapter illustrates the importance of studying environmental policy within the specific social and political contexts that emerge around it.

BRINGING THE INTERSTATE TO COLORADO

In 1940, the Public Roads Administration (PRA) created a map of a proposed national interstate highway system. The map was of great disappointment in Colorado, for it showed the route across the Great Plains stopping in Denver, portraying The Centennial State as the "cul-de-sac of the nation."[47] Over the following decades, Colorado politicians and business people lobbied the federal government to alter the plan and extend Interstate-70 over the Rocky Mountains. Yet by 1956, when Congress passed the Interstate Highway Act, a Colorado section remained absent. To highway engineers working in the federal government, interstate planning was seen as a technocratic endeavor based upon an analysis of topography, demographic data, and economic statistics. From the federal government's perspective, the financial cost and technical challenge of constructing a highway across some of the nation's highest peaks seemed illogical. Even in

[47] William Philpott, *Vacationland: Tourism and Environment in the Colorado High Country* (Seattle: University of Washington Press), 97.

the technologically brazen post-war moment, the Colorado landscape was not a challenge highway engineers were willing to confront.[48]

Yet Coloradan politicians, particularly Governor Edwin C. Johnson, did not relent in their efforts to have Interstate-70 routed west of Denver. Johnson assembled a team of highway engineers to devise plans for a tunnel underneath the Continental Divide. Johnson believed that if he could convince federal officials of the tunnel's feasibility, the rest of the highway would follow.[49] This was no small task: the interstate had to meet design standards of at least four lanes, each twelve feet wide, with curves and slopes that allowed for comfortable cruising at fifty miles per hour.[50] With the audacious proposal in hand, Johnson went back to the feds. He portrayed the project as part of Colorado's "frontier heritage," and belittled highway engineers as not being courageous enough to take on the "man-sized project."[51]

The advocacy of Governor Johnson ultimately paid off, for in October of 1957 the newly formed Bureau of Public Roads (BPR) amended the original plan and allotted an additional 547 miles to Interstate-70, connecting Denver to Fort Cove, Utah.[52] Yet in many ways, this was only the beginning of the story of how I-70 came to shape the post-war landscape of Colorado. While the plan specified beginning and ending points for I-70's extension, the exact route through the

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[48] Philpott, *Vacationland,* 99-101.
[49] Ibid., 105.
[50] Richard Weingroff, "The 1956 Standards," in *The Interstate Highway System,* Federal Highway Administration, last modified January 1, 2017, accessed March 3, 2020, https://www.fhwa.dot.gov/infrastructure/target.cfm.
[51] Quoted in Philpott, *Vacationland,* 106-107.
[52] Ibid., 108-109. There is debate as to whether it was Johnson's political strategy or the army's desire for a direct route between Southern California and the Midwest that ultimately convinced planners to route I-70 across Colorado. See: Richard Weingroff, "Why Does I-70 End in Cove Fort, Utah?" in *Highway History,* Federal Highway Administration, last modified June, 27, 2017, accessed March 3, 2020, https://www.fhwa.dot.gov/infrastructure/covefort.cfm.

mountains was left undetermined. Deciding where and how to build I-70 across the Continental Divide became the subject of intense debate.

THE RED BUFFALO CONTROVERSY

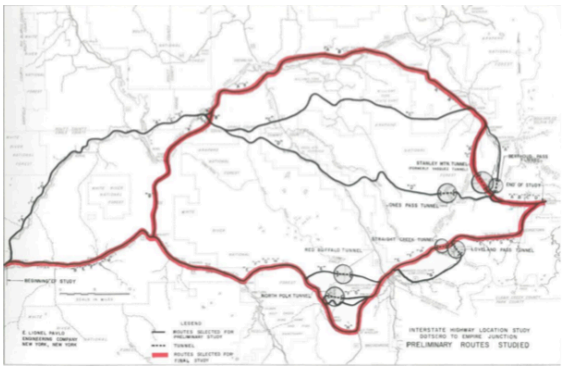

Figure 2.1. Excerpt from the Pavlo Report, showing routes considered for I-70, 1968.[53]

In 1959, Colorado Governor Stephen McNichols commissioned the New York City-based Pavlo Engineering Company to assess route options for I-70 over the Continental Divide. The "Pavlo Report," completed in 1960, identified seven possible locations for the interstate, and ultimately recommended the road follow the path of US Highway 6 over Vail Pass, with a tunnel located just north of Loveland Pass (figure 2.1).[54] Despite the findings of the Pavlo Report, the Colorado Department of Highways (CDOH) favored one of the alternatives, known as the "Red Buffalo" route, which they saw as the most direct path across the state. This route would tunnel through the Gore Range and cross the Gore Range-Eagle's Nest Primitive Area. When Congress designated the area as wilderness through the 1964 Wilderness Act, highway lobbyists had succeeded in writing an exemption into the law that, if approved by the Secretary of Agriculture, would allow for highway construction.[55] Highway engineers were confident that the secretary

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[53] E. Lionel Pavlo Engineering Co. *Interstate Highway Location Study, Dotsero to Empire Junction: State Project No. HPS-I-(20).* Prepared for the Colorado Department of Highways. New York, 1960.
[54] Ibid. Completed in 1937, US 6 was one of the earliest continuous highways to cross the continental divide. In Mead and Hunt, Inc., and Colorado Department of Transportation, "Historic Context: Vail Pass Segment of Interstate Highway 70 (Colorado Department of Transportation, 2019), section 2.
[55] The Wilderness Act of 1964, Public Law 88-577, 88th Congr. (July 30, 1964) § 3.

would grant the exemption and proceeded to create engineering documents for the Red Buffalo route. Seeing the danger to the Gore Range-Eagle's Nest Primitive Area, environmental groups began to advocate for the Vail Pass route. The controversy over the route location illustrates broader tensions between conservation and development that defined Colorado's environmental politics.

If CDOH had been planning the highway ten years earlier, there would likely have been little opposition to the Red Buffalo route. In the 1950s, when the idea of a superhighway coming to Colorado was being discussed, there was a "nearly universal assumption that highway improvements could do only good, never harm."[56] Yet by the 1960s, attitudes towards highways had begun to shift. The negative impacts of road construction on the natural environment caused some to question the technological exuberance that had developed around highway building. Protests against the construction of highways across the United States became increasingly common.[57]

These changing attitudes towards highways reflected broader concerns about environmental issues. In contrast to earlier eras of conservation, the 1960s saw 'environmentalism' become a mainstream political issue. A catalyst for sparking the environmental movement was the publication of Rachel Carson's *Silent Spring* in 1962. Carson, a marine biologist and author, provided a sharp critique of human-environment relations.[58] Carson began *Silent Spring* with a short fable about a "small town in the heart of America where all life seemed to live in harmony

[56] Philpott, *Vacationland,* 116.
[57] Dianna Litvak, "Freeway Fighters in Denver, 1948-1975," (BA thesis, Colorado College, 1991).
[58] Rachel Carson, *Silent Spring* (Cambridge, MA: The Riverside Press, 1962).

with its surroundings." She painted a brief but vivid picture of a picturesque rural scene overtaken by "some evil spell" causing livestock to perish, birds to disappear, and people to become sick. Carson explained that this "grim specter" was the result of industrial pollution and pesticide use.[59] *Silent Spring* helped many Americans to understand that the "environment" was not confined to places such as national parks, but also included city parks, backyards, and fields that were all impacted by societal structures and individual choices.[60]

This general concern over pollution and pesticide use arose at a time when outdoor recreation was also becoming increasingly popular, especially in Colorado. Growing enthusiasm for activities such as skiing, hiking, and fishing began to shape how many people experienced and thought about the Colorado landscape, and the values that grew out of these activities shaped Colorado's environmental movement in general and had an especially significant influence on the construction of Vail Pass. In many ways, the roots of this recreation-conservation ethic can be found in the ideas of Arthur Carhart. Carhart worked for the U.S. Forest Service as a recreational engineer, and later as the director of wildlife research for the Colorado Game and Fish Department. These professional appointments were closely connected to Carhart's own recreational pursuits, and in addition to his work within land and wildlife management, Carhart wrote prolifically on topics such as fly fishing and camping.[61] These writings exemplified a broader set of ideas about protecting wilderness for the purpose of outdoor recreation. By the

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[59] Ibid., 1-3.
[60] Philpott, *Vacationland,* 192. See also: Richard Weingroff, "Addressing the Quiet Crisis," in *Highway History,* Federal Highway Administration,, last modified June 27, 2017, accessed February 7, 2020, https://www.fhwa.dot.gov/highwayhistory/nepa/01.cfm#a.
[61] Philpott, *Vacationland,* 189.

1960s, environmental advocacy groups were formed with the goal of preserving lands for recreational purposes.[62]

Historian Samuel Hays places the values connected to outdoor recreation into a broader history of the American environmental movement. Hays distinguishes between the pre-World War II conservation movement and the post-war environmental movement. Conservation was focused on developing natural resources more efficiently, while the environmental movement addressed a wider range of topics such as air pollution and pesticide use—issues that were often connected to concerns for human health and recreation. As Hays writes, "Conservation was an aspect of the history of production that stressed efficiency, whereas environment was a part of the history of consumption that stressed new aspects of the American standard of living."[63] The conservation movement involved the idea of a "commons" or public domain in which resources were managed with a primary focus on commodities. This notion of the commons shifted in the post-war years, as it became a place filled with "amenities that could enhance the quality of life."[64] Hays identifies the rise of this post-war environmentalism along a timeline of evolving levels of consumption. Rising income and education allowed the growing white, middle class to consider the quality of their experiences in addition to their material goods. With more money, more time, and a newly built interstate system, many Americans took to the road to visit mountains, forests, and beaches that had become popularized through the prevalence of color photography and tourist marketing.[65]

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[62] Ibid., 193.
[63] Samuel P. Hays, *Beauty, Health, and Permanence: Environmental Politics in the United States, 1955-1985,* (Cambridge: Cambridge University Press, 1987), 13.
[64] Ibid., 22.
[65] Hays, *Beauty, Health and Permanence,* 35-37.

These features of the post-war environmental movement manifested themselves in the Vail Pass-Red Buffalo route debate. One of the groups that worked to preserve areas for recreation was the Colorado Open Space Coordinating Council (COSCC), which took a lead role in organizing opposition to the Red Buffalo route. The actions of COSCC mirrored the growing concern for environmental issues across the country. The COSCC Executive Committee argued in both aesthetic and economic terms for why Vail Pass would be a better route choice than Red Buffalo. If the Red Buffalo route was chosen, they argued, "The natural beauty and fishing in South Willow Creek and the headwaters of the main Gore Creek would be ruined…while the valleys would be forever scarred by huge cuts and fills."[66] Roger Morrison, a geologist and member of COSCC, wrote in a letter to the Colorado Division of Public Roads that the Red Buffalo route would "Ruin the wilderness values of one of the choicest and unspoiled mountain wildernesses left in Colorado."[67] COSCC also disputed CDOH's cost estimates for the Red Buffalo route, arguing that the steepness of grades would require additional time, funds, and engineering expertise that had not been factored into the original plans.[68] While environmentalists connected to COSCC's campaign against the Red Buffalo route acknowledged that disruptions to the natural environment would also occur along the Vail Pass route, they wrote that, "Improvement of this route would pose no threat to wilderness."[69] Here we see that the status of 'wilderness'

[66] Colorado Open Space Coordinating Council (COSCC) Board, letter to Charles Schumate, 1966, Conservation Collection, Western History and Genealogy Department, Denver Public Library.
[67] Roger Morrison, letter to Chief Engineer, Colorado Division, U.S. Bureau of Public Roads, 1966, Conservation Collection, Western History and Genealogy Department, Denver Public Library.
[68] COSCC, letter to Colorado Department of Highways, Conservation Collection, Western History and Genealogy Department, Denver Public Library.
[69] COSCC, letter to Maurice Arnold, Colorado Bureau of Outdoor Recreation, 1966, Conservation Collection, Western History and Genealogy Department, Denver Public Library.

given to the Gore Range-Eagle's Nest primitive area fundamentally shaped environmentalist's attitudes towards the project.

In addition to public advocacy campaigns, COSCC sought to play a mediating role between environmentalists and highway engineers. During the summer of 1966, COSCC organized an overnight camping trip along the proposed Red Buffalo route. Representatives from several environmental groups accompanied members of the Bureau of Public Roads and the Colorado Department of Highways, and the two groups sought to reconcile the different ways that they viewed the high mountain environment.[70] Sitting around a campfire on the first night of the expedition, Richard Prosense, a chief engineer for CDOH, recalls that, "highway engineers heard the definition of 'ecology' perhaps for the first time, while environmentalists learned what it would be like to build a multi-lane freeway through those rugged mountains."[71] Yet later on in his account of the trip, Prosense admits that both highway engineers and environmentalists viewed the excursion mainly as a publicity exercise, and afterward each side remained firmly committed to their own opinion on where the highway should go.[72]

It thus came as a surprise when in May of 1968, the United States Secretary of Agriculture Orville Freeman denied the CDOH the easement through the Gore Range-Eagles Nest Primitive Area, maintaining the area's protection under the Wilderness Act. CDOH engineers were shocked, and initially preceeded with plans to build the road along the Red Buffalo route despite

[70] Mead and Hunt, Section 3, Red Buffalo controversy.
[71] Richard Prosence, *Building I-70: The Story of the Development of Interstate Route 70 between the Utah-Colorado State Line and the Continental Divide* (Denver: Colorado Department of Transportation, n.d.), 34.
[72] Ibid., 34-35.

the denial of easement.[73] Up until this point, these engineers had experienced little opposition to their work, and had been taken off guard by the intensity of opposition to the Red Buffalo route. Adolf Zulian, a leading engineer at CDOH, was overheard to say, "How can these flower-sniffers tell us where we can build a road."[74] Despite this sentiment, Secretary Orville's decision put the nail in the coffin of the Red Buffalo route and highway engineers had to turn their attention to designing Interstate-70 over Vail Pass.

THE IMAPACT OF FEDERDAL LEGISLATION: A HIGHWAY IN HARMONY WITH ITS ENVIRONMENT

The resolution of the Red Buffalo-Vail Pass debate marked a new era of highway construction in Colorado. This new era reflected the changing environmental values of the post-war years and was defined by the notion that human technology and the forces of nature could be harmoniously blended to create more holistic landscapes. Before the Vail Pass project, engineers at CDOH approached road building with a crude understanding of and appreciation for the natural environment's aesthetic qualities.[75] Yet by the time the Vail Pass project was nearing completion in 1978, engineers looked back and described the project as exemplary of, "how the benefits provided us by nature cannot only be preserved but also enhanced by modern design and construction methods."[76]

This shift in thinking within the highway department can be observed from the windshield of a

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[73] Mead and Hunt, "Historic Context," Section 4.
[74] Prosence, *Building I-70,* 38.
[75] Colorado Division of Highways, *I-70 in a Mountain Environment: Vail Pass, Colorado*, Prepared for the United States Department of Transportation in Cooperation with the United States Forest Service and United States Department of Agriculture, FHWA-TS-78-208 (Denver, 1978), 7-8. See also: Philpott, *Vacationland,* 124.
[76] International Engineering Company, Inc., Colorado Division of Highways and the Frank Lloyd Wright Foundation, *Vail Pass: A Highway in Harmony with its Environment*, DVD-ROM (Colorado Division of Highways, 1978), 23:24.

car while driving on I-70 west of Denver. Just before the highway passes the town of Idaho Springs, the rock formations along the side of the road look amputated, and drill marks are visibly etched into the rock face. Further along the road, as one emerges from the Eisenhower Tunnel into Summit Country, the eroded hillsides distract drivers from the views of the spectacular peaks in the distance (figure 2.2). In contrast, the drive along Vail Pass is defined by gentle curves, bridges that blend into the natural topography, and retaining walls designed to mimic the natural rock formations. Even though Vail Pass traverses a high-altitude environment prone to inclement weather and defined by steep slopes, the highway is integrated into the natural landscape in a more harmonious manner than compared to many other sections of I-70.[77]

Figure 2.2. Eroded hillsides, west side of Eisenhower Tunnel. Photo by author.

The decision to construct I-70 over Vail Pass rather than through the Gore Range-Eagle's Nest wilderness was the result of the growing clout of environmentalists, who had become important

[77] The next chapter of this thesis project discusses the specific design elements of Vail Pass in detail. On one important illustration of the connection between landscape design and the preservation of natural spaces, see Anne W. Sprin, "Constructing Nature: The Legacy of Frederick Law Olmstead," in *Uncommon Ground: Rethinking the Human Place in Nature,* ed. by William Cronon (New York: W.W. Norton and Co., 1996) 91-113.

players in Colorado politics by the early 1970s. Yet the efforts of environmental groups such as the COSCC were given power and legitimacy through the environmental policies that were emerging from the federal government. In order to fully comprehend the political context of the Vail Pass project, we must assess the relationship between local politics and federal policies.

On New Year's Day, 1970, President Richard Nixon signed the National Environmental Policy Act into law, a year after the resolution of the Red Buffalo-Vail Pass route debate. The law recognized the "profound impact" that human activity had on the natural environment, and sought to "create conditions in which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans."[78] To accomplish these broad objectives, NEPA sought to establish a framework within which federal and local governments could address environmental issues. This framework had two central components. First was the development of an "interdisciplinary approach" to federal projects that sought to integrate the "natural and social sciences and the environmental design arts" in order to mitigate potential environmental damage caused by large-scale projects.[79] The second component was the requirement to produce a detailed Environmental Impact Statement (EIS) that identified potential environmental impacts of a project, and presented alternatives that might avoid or mitigate those impacts. Federal agencies were required to consult with each other and with local stakeholders on all federal projects. Mandatory public hearings—where concerned citizens could assess the project and any alternatives—were also included in EIS requirements.[80]

In response to NEPA, the Federal Highway Administration (FHWA) issued guidelines for

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[78] The National Environmental Policy Act of 1968, Public Law 91-190, 42nd Cong. (January 1, 1970), Sec. 101, § 4321.
[79] The National Environmental Policy Act of 1969, Sec. 101, § 4331.
[80] Mead and Hunt, "Historic Context," Section 4.

producing EISs related to projects that were "likely to be highly controversial on environmental grounds."[81] In an address to the National Limestone Institute in Washington in 1970, FHWA administrator declared that they "must not only be concerned with the physical environment, but also with what we might call the social environment—with the interaction of highways and people, with a highway's impact on individuals and communities."[82] While there were discrepancies between the rhetoric of this statement and its practical implementation, it illustrates how highway planners had begun to see their work as contributing to a more holistic relationship between people and the natural world.

Officials at CDOH also began to re-orient their priorities after the passage of NEPA. Despite continuing skepticism towards the environmental movement, a booklet published by CDOH in 1970 explained,

> Many of our highways extend through or near open spaces, parks, fishing areas, historic sites, and other tracts of great value. The development of a highway certainly can be compatible with the preservation of such national wonders by virtue of early overall planning. The highway must not only protect these resources, but also fit the plan of other agencies responsible for development, recreation, and conservation in our rural regions. Today, as land more and more becomes a scarce and valued commodity, our federal state highway efforts must be directed increasingly toward such cooperation.[83]

The construction of Vail Pass was the first federal infrastructure project undertaken in Colorado after the passage of NEPA, and CDOH was thus particularly aware of complying with the new law, as well as demonstrating how a highway could be "compatible with the preservation of such natural wonders." CDOH Chief engineer Charles Shumate hired landscape architect Harvey Atchison to lead the newly created Environmental Research Analysis Section. Under Atchison,

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[81] Mead and Hunt, "Historic Context Report," Section 4.
[82] Quoted in Weingroff, "Addressing the Quiet Crisis."
[83] Colorado Division of Highways, *Through the Colorado Rockies: Interstate 70 Colorado* (Denver: Colorado Department of Highways, c. 1970), 1.

CDOH developed a process to adhere to the guidelines of NEPA.

Yet more than CDOH, it was the U.S. Forest Service (USFS) that had the most significant influence on the environmental ethic that came to define the construction of Vail Pass. Since most of Vail Pass goes through the White River National Forest, close coordination between CDOH and the USFS personnel became a central feature of inter-agency cooperation. Under the Forest Service's direction, a team was assembled that included the Colorado Division of Wildlife, the U.S. Geological Survey, and the Colorado Department of Public Health. Additionally, the Forest Service brought on architects, planners, and landscape architects, including the Taliesin Associated Architects of the Frank Lloyd Wright Foundation. Taliesin not only consulted on alignment plans, but also designed custom retaining walls and bridge columns. The presence of such a prominent design firm illustrates the unique status of the Vail Pass project.

Similar to transformations occurring within other public agencies, the Vail Pass project came at a time when the Forest Service was re-assessing how it thought about forest management. Years of clear-cutting across many Forest Service lands had led to calls for new management practices that considered the needs of the recreation industry as well as the timber industry.[84] In 1969, the Forest Service established the National Forest Landscape Management Program, which re-defined forest management to include greater consideration of ecological and aesthetic preservation. In 1976, Congress passed the National Forest Management Act, which called on the Forest Service to manage timber resources in a renewable manner. The act was followed in 1979 by the creation of the *Visual Management System* (VMS), an official set of guidelines

[84] Paul Gobster, "Foreword," in *Forests and Landscapes: Linking Ecology, Sustainability, and Aesthetics,* ed. by S.R.J. Sheppard and H.W. Harshaw (New York: Cabi Publishing, 2001), xxi.

specifying the principles and techniques of effective aesthetic practices. The *Visual Management System* states, "The American people are concerned about the quality of their visual environment. Because of this concern, it has become appropriate to establish the 'visual landscape' as a basic resource, to be treated as an essential part of and receive equal consideration with the other basic resources of the land."[85] Considering the 'visual landscape' as a 'basic resource' illustrates the impacts of the rise of "recreational consumerism" that William Philpott, Samuel Hays, and other scholars have identified. Since the late 1960s, the Forest Service—especially in areas such as the White River National Forest—has increasingly shifted its focus in many areas from ensuring a long-term timber supply to managing recreational resources. The production of recreational resources can thus be understood as a "reproduction of resource space."[86]

When the details of the *Visual Management System* are analyzed, we see that the aesthetic ideas that defined a 'visual landscape' refer back to Romantic ideals of nature-as-scenery, with an influence on dramatic, visually arresting views of a static landscape that refer back to the intellectual and visual traditions of the eighteenth and nineteenth centuries. Formal qualities such as the unity of a foreground, middle ground, and background defined the approach to creating and preserving visual landscapes.[87] These Romantic ideals were complimented by aesthetic ideas of modernist landscape architecture and planning. Within this modernist aesthetic, architectural and infrastructural features are integrated into natural systems by working with existing

[85] Warren Bacon, "The Visual Management System of the Forest Service, USDA," in "Proceeding of Our National Landscape," by Gary H. Elsner and Richard C. Smardon (National Forest Service, 1979), 660.
[86] Brent Olson, "Recreational Capital," 245.
[87] Paul Gobster, "Foreword," in *Forests and Landscapes,* xxi.

topography and mimicking natural patterns, textures, and shapes.[88] These principles exemplify Frank Lloyd Wright's doctrine that, "manmade structures can be harmonious enhancements of nature."[89] The recreational landscapes that emerged from the Forest Service's *Visual Management System* thus combined Romantic and modernist ideas about landscape.

Concern for aesthetic landscape management was especially prevalent in the White River National Forest during the design and construction of Vail Pass. In the 1960s, developers planned and built ski resorts such as Vail and Arapahoe Basin, which were soon followed by Copper, Breckenridge and Keystone. Managing forests for skiing rather than logging quickly became a priority.[90] One of the primary roles that the Forest Service played in this regard was the cutting of trees to create ski runs. The *Visual Management System* addressed this task through the principle of "retention." Retention described an objective for "management activities that are not *visually evident.*"[91] Activities such as tree removal "may only repeat form, line, color, and texture which are frequently in the characteristic landscape."[92] Landscape architects were hired to educate foresters on how to observe "surrounding vegetative patterns" that could be mimicked when they cut trees to make way for ski runs, parking lots, and housing developments in the emerging resort communities of the high country. Additionally, foresters working within White River could look at sections of I-70 that had already been completed west of Denver and observe the damage wrought to forests through traditional highway construction techniques.

The interdisciplinary team that worked on the Vail Pass project ultimately created two separate

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[88] Paul Gobster, "Foreword," in *Forests and Landscapes,* xxi-xxii.
[89] Colorado Division of Highways, *Vail Pass: Alignment Studies and Design Concepts,* prepared by Barton, Stoddard, Milhollin, and Higgins in Cooperation with Taliesin Associated Architects of the Frank Lloyd Wright Foundation, (Colorado Division of Highways, May 1972).
[90] Phillpott, *Vacationland,* 205-206.
[91] Bacon, "Visual Management System," 663.
[92] Ibid.

reports that each addressed a different set of issues. The first report, titled *Vail Pass Environmental Study,* focused on ecological concerns and made general recommendations on the alignment of the roadway and design features meant to avoid or mitigate environmental damage.[93] The second report, titled *Vail Pass Alignment Studies and Design Concepts,* went into more detail about specific design concepts that focused on aesthetic concerns.[94] Each report was printed in an oversized book, and included plans, renderings, and maps created by Taliesin. Designed to be easily comprehended by lay audiences at public hearings, these documents went beyond the requirements for an EIS specified in NEPA.[95]

The ultimate impacts of NEPA have been the subject of much debate. Some argue that while limited in many ways, the law has created an important framework for government agencies to make environmentally conscious decisions and avoid degrading forests, land, and water.[96] Others see NEPA as weak and susceptible to manipulations by industries keen on avoiding environmental oversight.[97] Language in the bill itself might support this sentiment. The notion that "man and nature can exist in productive harmony," could be criticized as supporting the status quo of economic development that is at the heart of many environmental problems.[98] Yet when we consider the story of Vail Pass, we see that neither of these interpretations is entirely sufficient. Vail Pass illustrates the flexibility of NEPA, and points to the importance of

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[93] Colorado Division of Highways, *Vail Pass Environmental Study,* 1972.
[94] Colorado Division of Highways, *Vail Pass Alignment Studies and Design Concepts* prepared by Barton, Stoddard, Milhollin, and Higgins in Cooperation with Taliesin Associated Architects of the Frank Lloyd Wright Foundation, (Colorado Division of Highways, May 1972).
[95] Mead and Hunt, "Historic Context," Section 4.
[96] Samual Hays, *A History of Environmental Politics Since 1945* (Pittsburgh: University of Pittsburgh Press, 2000), 200-202. See also: Stephen Haycox, *Alaska: An American Colony* (Seattle: University of Washington Press, 2002), 290-292.
[97] Adam M. Sowards, "NEPA transformed federal land management—and has fallen short," *High Country News*, December 6, 2019, accessed March 1, 2020, https://www.hcn.org/issues/52.1/reckoning-with-history-nepa-transformed-federal-land-management-and-has-fallen-short.
[98] National Environmental Policy Act, § 4331.

considering the people and contexts responsible for its implementation. While NEPA played an important role in organizing a diverse set of bureaucratic forces around the project and incentivizing engineers and planners to re-consider the role of the natural environment in how they thought about construction projects, the Vail Pass project is also a unique example of how agencies and individuals went beyond the letter of the law in bringing together ecological and technological knowledge. It gave environmentalists and environmentally concerned foresters a means to push engineers towards the holistic manner of thinking that ultimately defined the design and construction of the highway. But if Vail Pass is an example of how NEPA has been a success, it also illustrates some of the law's weaknesses. Many of the specific decisions that shaped the ultimate design were not the outcome of following NEPA guidelines but were rather the product of general concern over the natural environment of the high country environment in the 1970s. Because the provisions within NEPA are not binding, government agencies could make different decisions.

Assessing NEPA's impact on the Vail Pass project is therefore contingent on understanding the broader history of Interstate-70's construction in Colorado. Without the experience of the Red Buffalo-Vail Pass route debate, highway engineers and the general public may not have taken NEPA's requirements as seriously as they did. Additionally, because the White River National Forest was focused on providing an environment in which ski tourism could flourish, the Forest Service prioritized scenic qualities of forest management and highway construction. Concern over the highway's impact may very well have occurred without the existence of NEPA. Yet at the same time, NEPA's requirements for an Environmental Impact Statement, as well as inter-agency collaboration, provided a framework that organized these environmental concerns into specific actions.

The legacies of popular environmentalism that emerged in the 1960s and 1970s, as well as the environmental laws that were passed in Congress during this period, are etched into the Vail Pass landscape. Increasing levels of tourism and participation in outdoor recreation shaped human perceptions of and interactions with the natural environment, and these cultural attitudes were expressed through forest management and road design techniques that sought to harmonize human-nature relations. While these new techniques involved a diverse set of ecological and technical concerns, they were ultimately shaped by the aesthetic sensibilities that defined post-war environmentalism. As William Philpott points out, "the kind of environmentalism that gained popular favor in Colorado owed too much to tourism itself to fundamentally challenge tourism's continued growth." It is unsurprising, then, that environmentalists failed to stop or mitigate many of the negative environmental impacts that tourists had on the ecosystems of the high country. Aesthetically pleasing design was thus a tool used to soften the blows of highway and resort development. The Vail Pass landscape is thus exemplary of a kind of environmental politics based upon a scenic rather than ecological aesthetics. Seeing both the tensions and congruencies between these aesthetic value systems is an important component to understanding the meaning and significance of the Vail Pass landscape.

CHAPTER 3

THE RESURGENCE OF PARKWAY IDEAS IN THE INTERSTATE ERA: VAIL PASS IN THE HISTORY OF ROAD DESIGN

By the summer of 1972, planning for Vail Pass was well underway. With route location debates resolved, attention was turned to questions of design. There was general agreement between the Colorado Division of Highways, the White River National Forest, environmental groups, and concerned Coloradans that Vail Pass should be designed and constructed in a manner that avoided or mitigated negative impacts on natural systems while enhancing the visual experience of driving. Yet the methods for accomplishing these goals still needed to be worked out. While highway engineers had rhetorically acknowledged the importance of ecological and aesthetic issues, they were still in the process of formulating a comprehensive set of methods for incorporating these concerns into highway projects.[99] Environmental groups, on the other hand, were focused on schemes that would have minimal impacts on existing waterways, vegetation, and wildlife. Yet environmentalists were not particularly concerned about how the highway looked as long as the natural world was left undisturbed.[100] Between highway engineers and environmentalists, a group of landscape architects—brought onto the project by the Forest Service and the Colorado Division of Highways—put forth the idea that through the application of specific design principles, the roadway could tread lightly on the land while simultaneously enhancing the overall landscape from an aesthetic perspective.[101] These landscape architects

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[99] William Philpott, *Vacationland: Tourism and Environment in the Colorado High Country* (Seattle: University of Washington Press, 2013), 122.

[100] Albert Melcher, letter to Richard Proscence, Rocky Mountain Center on Environment, 1971. Conservation Collection, Western History and Genealogy Department, Denver Public Library. Melcher's letter expresses concern over the proposed split-road design, arguing that a more traditional 'autostrada' approach—with east and westbound traffic built side-by-side—would be more appropriate.

[101] Mike Tupa, interview by author, Fort Collins, CO, July 17, 2019. Tupa is a landscape architect who was hired by the Forest Service to work on the Vail Pass project. He was also involved in the publication

argued that the road itself could become an appealing feature within the landscape, where innovatively designed infrastructure would enhance the splendors of mountain scenery.[102]

The approach of these landscape architects ultimately had the greatest influence over the design decisions of the Vail Pass project. During early phases of construction, landscape architects demonstrated that ecological and aesthetic concerns could be a focus of the project without sacrificing attention to solving the significant engineering challenges of building an interstate highway at 10,000 feet above sea level.[103] Indeed, the most innovative technical features of the Vail Pass project emerged from the idea that by working with natural systems, the highway's environmental footprint could be lessened.[104] Yet while many aspects of Vail Pass' design were devised based upon a careful study of the particular characteristics of the high mountain environment, precedents within the history of roadway design also influenced the thinking of landscape architects and highway engineers. The tradition of the motor parkway was the most significant of these influences.

THE AMERICAN MOTOR PARKWAY

The American motor parkway emerged in the early decades of the twentieth century as a way to blend road engineering with landscape architecture. Reaching its most prominent point of

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of *I-70 in a Mountain Environment: Vail Pass, Colorado,* which documented the design and construction process.

[102] Colorado Division of Highways, *Vail Pass: Alignment Studies and Design Concepts,* prepared by Barton, Stoddard, Milhollin, and Higgins in Cooperation with Taliesin Associated Architects of the Frank Lloyd Wright Foundation (May 1972), 75.

[103] Colorado Division of Highways, *I-70 in a Mountain Environment: Vail Pass Colorado,* Prepared for the United States Department of Transportation in Cooperation with the United States Forest Service and United States Department of Agriculture, FHWA-TS-78-208, (Denver, 1978), 2-3.

[104] Colorado Division of Highways, *Vail Pass: Alignment Studies and Design Concepts,* prepared by Barton, Stoddard, Milhollin, and Higgins in Cooperation with Taliesin Associated Architects of the Frank Lloyd Wright Foundation (May 1972) 36; Mike Tupa, interview by author, Fort Collins, CO, July 17, 2019.

influence in the 1920s and early 1930s, the parkway movement had origins in nineteenth century Europe while also featuring innovations particular to late nineteenth and early twentieth-century America.[105] By blending Romantic ideas of landscape with cutting-edge technology, parkways helped to reconcile competing visions of progress among diverse facets of American society.[106] Not only did parkways facilitate the rise of the automobile by providing smooth lanes of pavement dedicated to vehicular traffic, parkways also "helped Americans to negotiate the disjunctive experience of modernization during the tumultuous period between the two world wars."[107] After falling out of favor with federal and state highway officials, parkway ideas were kept alive by the National Park Service in the 1930s.[108] In the 1970s, when highway departments were re-considering their work in light of changing cultural attitudes towards the environment, parkway principles re-emerged, and Vail Pass is exemplary of this renewal.[109]

The roots of the parkway tradition can be traced back the work of landscape architect Frederick Law Olmsted. Olmsted's impact on the American landscape can be observed in his designs of some of the country's most notable places, including Central Park in New York City, Boston's Emerald Necklace, Niagara Falls, and Yosemite National Park. Olmsted's legacy can be situated in a middle ground between the belief in preserving nature as wilderness in a seemingly

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[105] Parkways have been emulated in international contexts as well. The most significant example of the parkway idea being implemented outside of the United States is in Germany's Autobahn. See Thomas Zeller, *Driving Germany: The Landscape of the German Autobahn, 1930-1970* (New York: Berghahn Books, 2006).

[106] Timothy Davis, "The Rise and Decline of the American Parkway," in *The World Beyond the Windshield: Roads and Landscapes in the United States and Europe,* ed. by Christof Mauch and Thomas Zeller (Athens, OH: Ohio University Press, 2008), 35.

[107] Ibid., 37.

[108] Timothy Davis, *National Park Roads: A Legacy in the American Landscape* (Charlottesville: University of Virginia Press, 2016), 109-153.

[109] Davis, "The Rise and Decline of the American Parkway," 57-58. Davis also points to highway projects in New Hampshire and Vermont that were also influenced by the parkway tradition.

untouched state—advocated by figures such as John Muir—and managing natural resources for their practical use, an idea championed by the likes of Gifford Pinchot.[110] While Olmsted embraced the rise of urbanization, industry, and the new technologies that underpinned these developments, he also believed that the benefits of modernization would only result in an improved quality of life if they were accompanied by ample opportunities for people to spend time outdoors, with common access to open space, fresh air, and views of scenic beauty.[111] In order to provide these amenities, Olmsted incorporated non-native plant species, complex systems of water management, and elaborate construction schemes into his projects—thus creating places that blurred the boundary between natural and artificial.[112] The reconciliation of reverence and use, and of art and technology, was at the heart of a comprehensive idea of landscape through which Olmsted and his many imitators shaped key places across the United States.[113]

Many of Olmsted's most influential ideas about landscape coalesce in his designs of parkways. It was Olmsted, along with his partner Calvert Vaux, who first introduced parkways to the American landscape in 1869 in their design of Prospect Park in Brooklyn. Tree-lined approaches to the park connected city dwellers to a common green space, and Olmsted termed these routes "park-ways."[114] The basic design of these first parkways resembled European boulevards, with central drives bordered by broad, tree-lined margins and smaller access roads on each side. In

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[110] Anne Whiston Spirn, Anne Whiston "Constructing Nature: The Legacy of Frederick Law Olmstea" in *Uncommon Ground: Rethinking the Human Place in Nature,* ed. by William Cronon (New York: W.W. Norton and Co., 1996), 112.
[111] Charles Beveridge, "Frederick Law Olmsted, Sr.," in *Pioneers of American Landscape Design,* ed. by Charles Birnbaum and Robin Karson (New York: McGraw Hill, 2000), 277-281.
[112] Spirn, "Constructing Nature," 112.
[113] Witold Rybcynski, *A Clearing in the Distance: Frederick Law Olmsted and America in the Nineteenth Century* (New York: Touchstone, 1999), 417-422.
[114] Davis, "The Rise and Decline of the American Parkway," 37.

subsequent projects, Olmsted re-worked this basic boulevard template, translating straight thoroughfares into winding lanes, where the placement of trees and the framing of views inserted rural scenes into the urban environment.[115] In urban parks such as Prospect and Boston's Emerald Necklace, Olmsted constructed an image of rural scenery through the re-working of natural systems and the introduction of new plant species.[116] In other projects, Olmsted used roads to frame views of existing scenery. In laying out the ring road around Yosemite National Park, Olmsted integrated the road into the topography in order to frame specific views, while the road itself was concealed from opposite prospect points.[117] Landscape architecture emerged from Olmsted's legacy as a discipline that fused the processes of nature with those of technical systems, resulting in a series of hybrid worlds that neither 'wilderness' nor 'human-made' precisely express.

In many ways, these hybrid worlds are expressions of a landscape ideal known as the picturesque. The picturesque is a way of seeing in which the recognition of beauty in nature is derived from a painterly gaze. Nature is seen with a "painter's eye," and this "picturesque vision" allow places to become pictures and land to become landscape.[118] Understanding the historical and ideological contexts in which the picturesque arose is an important component to understanding the underlying ideas that shaped parkway thinking.

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[115] Ibid., 37.
[116] Spirn, "Constructing Nature," 106-107.
[117] Ibid., 92-93 and 99-102. See also Davis, *National Park Roads,* 184-185.
[118] Ethan Carr, *Wilderness by Design: Landscape Architecture and the National Park Service* (Lincoln, NE: University of Nebraska Press, 1998), 11.

The picturesque emerged in the context of the rise of capitalist society in Great Britain between the seventeenth and nineteenth centuries. In the context of Britain's colonial expansion and rising mercantile power, a landowning class arose that increasingly displaced the economic and political power of the hereditary nobility. Through the accumulation of surplus value, this land-owning class raised mortgages on land, resulting in the consolidation of smaller farms into larger ones. Along with innovations in farming technologies, this resulted in the emergence of commercial agriculture and a dramatic transformation of the British landscape.[119]

These developments were expressed through new ways of seeing and representing landscape. While benefiting economically from the changes in the countryside, the British ruling class sought to preserve an image of pre-industrial life through painting and poetry. Picturesque representations of nature thus emerged, where the painter or writer gazed upon the land from a vantage point and 'composed' the scenery so that "nature takes on the illusion of a picture."[120] In this mode of representation, rural scenes were organized in a harmonious manner, where the disruptive impacts of economic and political change were obscured through the application of a visual order. The creation of urban parks, such as Regent's Park in London, were also an expression of picturesque ideals, as they 'naturalized' the unsettling aspects of urbanization by inserting rural scenes into the city.[121] On the one hand defined by a rigorous adherence to perspective and an accurate representation of form, and on the other hand by an idealized depiction of rural life, the picturesque functioned to preserve a conservative idea of the British countryside during a period of dramatic economic transformations that were fundamentally

[119] Denis Cosgrove, *Social Formation and Symbolic Landscape* (Madison, WI: The University of Wisconsin Press, 1984), 199-222.
[120] Ibid., 194.
[121] Ibid., 217-221.

reshaping the relationship between people and land. [122] The picturesque can thus be understood as a search for tradition in opposition to the forces of modernity.

The landscape designs of Frederick Law Olmsted are deeply informed by the picturesque tradition. Through travel and study, Olmsted came to believe that cultivating aesthetic sensibilities was an important means of civilizing the darker aspects of modernization. Influenced by parks such as Birkenhead Park in Birkenhead, England, and by writers including John Ruskin, Olmsted was a central figure in translating core principles of the English picturesque into a distinctively American style of landscape architecture.[123] In Olmsted's projects, parkways became tools of vision that structured a series of scenic vistas. Groupings of trees, shrubs, and rocks were artfully placed to create a contrast with open meadows, which established a sense of foreground and background from various prospect points. Within these design schemes, parkways acted as nodes at which picturesque aesthetics met new road building technology. A sense of wilderness was brought into the city, tamed through the promotion of scenic sensibilities.[124]

In the 1920s, Olmsted's parkway concepts were updated to meet the needs of rising automobile use.[125] Early parkways were multi-use thoroughfares that accommodated carriages, pedestrians, and some cars. The automobile-only motor parkway was seen as an antidote to the increasingly

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[122] Ibid., 217-221.
[123] Charles E. Beveridge and David Schuyler, eds., *Creating Central Park: Volume III of the Papers of Frederick Law Olmsted* (Baltimore: Johns Hopkins University Press, 1983), 119-175. See also: Spirn, *Constructing Nature,* 92.
[124] Spirn, "Constructing Nature," 92.
[125] Marguerite Shaffer, *See America First: Tourism and National Identity, 1880-1940* (Washington, DC: Smithsonian Institution Press, 2001), 130-135.

congested, dusty, and dangerous character of America's road network.[126] In rapidly growing cities such as New York City, designers and planners began to construct a network of parkways to connect the city to communities in Westchester County and Long Island. These roads functioned simultaneously as scenic recreational spaces and commuter thoroughfares.[127]

The foundational design principles of parkways—first developed by Olmsted and subsequently updated by city park planners—featured innovations to both the design of driving surfaces as well as the relationship between roads and the broader landscapes through which they pass. Grade-separated interchanges limited collisions and created driving environments distinct from the rest of the road network. A broad right-of-way established a space devoid of buildings and billboards where designers could enhance the surrounding landscape. Alignments defined by gentle curves that traced the contours of the land offered drivers the ability to cruise at high speeds while enjoying views of the surrounding scenery. Medians separated opposite-moving traffic, which further improved safety and provided additional space to preserve and enhance the landscape.[128] Additionally, the cutting-edge aesthetic of these modern improvements was tempered with design details that referenced vernacular traditions. Elements such as guardrails and lampposts were designed in a rustic style, connecting the urbanized surface of parkways with adjacent rural places.[129]

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[126] Gilmore Clarke, "The Parkway Idea," in *The Highway and the Landscape,* ed. by Brewster Snow (New Brunswick, NJ: Rutgers University Press, 1959), 33-55.
[127] Davis, "The Rise and Decline of the American Parkway," 39-41. –The Bronx River Parkway, completed in 1925, is a key example of these developments.
[128] Davis, *National Park Roads,* 190.
[129] Jay Downer, "How Westchester Treats its Roadsides," *American Civic Annual, 1930* (Washington, DC: American Civic Association, 1930), 165-167.

By the late 1920s, parkway ideas began to have a broader influence on road building. Recognizing both the attractiveness and efficiency of parkways in places such as Westchester Country, officials at the U.S. Bureau of Public Roads (BPR) began applying parkway principles to federal projects. The most significant example of this is the Mount Vernon Memorial Highway (now known as the George Washington Memorial Parkway). Begun in 1928, the 25-mile road connects Mount Vernon to McLean, Virginia, and is defined by a tourist-oriented roadway running alongside a multi-purpose park.[130] Designed in coordination with the National Park Service (NPS), the road was intended to become a tourist attraction in itself—acting as a curatorial tool to tell a story of the region's history. Following suggestions from Frederick Law Olmsted, Jr. (who had taken over his father's landscape architecture firm), north and southbound lanes were separated with large medians so that each roadway followed its own course, appearing like two country roads rather than a modern highway.[131] The parkway thus sought to combine recreation, scenic preservation, and transportation, and become, as one booster put it, "the nation's parkway."[132] After the Mount Vernon Memorial Highway was completed, the BPR prepared a series of articles celebrating parkway design. These materials not only had an impact on road designers in the United States, but also influenced engineers and landscape architects in international contexts. The report on the Mount Vernon Highway influenced the designs of Germany's autobahn and as well as the Italian road magazine *Strade.*[133]

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[130] Timothy Davis, "Mount Vernon Memorial Highway and the Evolution of the American Parkway," (PhD diss., University of Texas at Austin, 1997). See also: Davis, "The Rise and Decline of the American Parkway," 41-42.
[131] Davis, *National Park Roads,* 206-207.
[132] John Frazier, "The Park That Is to Be," *American Motorist* 5 (October 1930), 24-25.
[133] U.S. Department of Agriculture, *The Mount Vernon Memorial Highway: History, Design, and Progress in Construction* (Washington, DC: Government Printing Office, 1930). Elements of this report were republished in Germany as Wilbur H. Simonson and R.E. Royall, *Landschaftsgestaltung an der Strasse* (Berlin: Volk und Reich, 1935), and in Italy as I. Vandone, "La Strada Commemorativa da Washington a Mount Vernon," *Strada* 13 (January 1931): 2-8.

By the early 1930s, parkways had thus become known for their ability to integrate picturesque aesthetics with modern road building technologies, thus reshaping the relationship between people and landscape. Yet this heyday of parkway design was relatively short-lived within federal and state highway departments, for as more people began to drive, the harmonious relationship between nature and culture that parkways expressed began to give way to a technically-oriented road building ethic. Increasing traffic, along with demands for higher speed limits, led highway engineers to appropriate the parkway scheme for traffic circulation while paying less attention to scenic improvements. As driving became a utilitarian means of transport rather than a recreational pursuit, highways became straighter and wider, and many of the blights that parkways sought to remove from roads—such as billboards and severe road cuts—re-emerged in new highway projects.[134]

The 1930s thus marked a transition from parkways to freeways. In 1939, the Bureau of Public Roads released a report titled *Toll Roads and Free Roads,* which portrayed road building as a technical enterprise with efficiency and speed as its primary goal.[135] Concerns over the aesthetic experience of driving and the preservation of roadside landscapes were relegated to mere footnotes, as engineers rather than landscape architects took the lead on road building projects. The very term 'parkway' was re-interpreted in a manner that ignored the comprehensive design vision of its original formulation, and instead referred to parkways simply as grass strips

[134] Clarke, "The Parkway Idea," 43-44. See also: Davis, "The Rise and Decline of the American Parkway," 51- 55.
[135] U.S. Public Roads Administration, *Toll Roads and Free Roads* (Washington, DC: Government Printing Office, 1939).

separating stretches of concrete.[136] The Pennsylvania Turnpike, opened in 1940, embodied this new approach to road design. While facilitating driving speeds of 70-miles per hour, it was defined by mind-numbing straight lines and road cuts that resembled strip mines. Landscape architects criticized the diminished role of aesthetics in highway design discourse, but their voices were drowned out by those enthralled by the high speeds and limited distractions. [137]

Despite receding from focus within federal and state highway departments, parkway principles were kept alive through road building projects in the National Park Service (NPS). Spurred by publics works programs of the New Deal, infrastructural development in national parks boomed during the 1930s, which has been termed the "golden age" of NPS road construction.[138] Roads such as the Blue Ridge Parkway in North Carolina and Virginia, the Going to the Sun Road in Glacier National Park, and Trail Ridge Road in Rocky Mountain National Park were built within this context.[139] For the Park Service, parkways offered a means of allowing increased numbers of people to visit parks while limiting the extent of their impact on natural systems, thus offering a compelling tool to balance NPS's competing goals of preservation and access.[140] The designs of these roads placed national parks within the tradition of nineteenth century American urban parks and their English landscape predecessors. Through the use of rustic materials, as well as appropriate scale and location, roads were made into elements of the landscape that blended into the natural scenery. Landscape architects working with the Park Service referred to improving

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[136] Ibid.
[137] Davis, 53-57. For a landscape architect's response to the Pennsylvania Turnpike, see Gilmore Clarke, "Beauty: A Wanting Factor in the Turnpike Design, *Landscape Architecture* 32 (1945): 53-54.
[138] Davis, *National Park Roads,* 109-152.
[139] Ibid.*,* 109-153.
[140] Davis, "The Rise and Decline of the American Parkway," 48-49.

the "roadside picture," which sometimes entailed removing buildings that did not conform to the principles of picturesque views or the stereotypes of 'wilderness.'[141]

Roads in national parks have continued to function as popular tourist attractions in their own right, but by the 1950s and 1960s, parkway ideas had lost influence in most other road building projects. The freeways and expressways that defined the Interstate Highway System contained some of the most basic features of parkway circulation schemes but lacked attention to aesthetic experience and environmental conservation. In fact, during the first two decades of Interstate construction, some parkways were 'updated' by straightening curved alignments and replacing rustic guardrails and lampposts with steel beams and stands.[142] In the 1970s, however, within the broader context of rising concern over the health of the environment and degradation that highway construction had brought to many places, some highway planners began to look back to the legacy of parkways for lessons in harmoniously integrating infrastructure into natural systems. It is here that Vail Pass project can be placed within the parkway tradition.

VAIL PASS AND PARKWAY IDEAS IN THE INTERSTATE ERA

In the early 1970s, the Federal Highway Administration (FHWA), in collaboration with the Bureau of Land Management (BLM) and the Colorado Division of Highways (CDOH), carried out a study of the visible landscape along I-70 between Denver and the Colorado-Utah state line. Titled "Colorado I-70 Scenic Lands: Preserving and Enhancing the Visibility from Interstate-70 of National Resource Lands in Colorado," the study identified sections of the I-70 corridor that presented opportunities for "the preservation and enhancement of the view from the highway of

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[141] Davis, "The Rise and Decline of the American Parkway," 49. See also: David Louter, *Windshield Wilderness: Cars, Roads, and Nature in Washington's National Parks,* 23, 36-37

[142] Davis, "The Rise and Decline of the American Parkway," 55-56.

scenic federal lands."[143] The study developed a methodology for identifying the value of such scenic resources, and this methodology incorporated concepts of landscape design that referred back to the parkway tradition. A 'visual corridor' was delineated along the highway, defined by a viewshed sequence of foreground, middle ground, and background. Patterns within the natural environment, related to geological formations, vegetation textures, and the flow of waterways, were categorized within a "scenic quality" rating system.[144] Once the qualities of the visual corridor were analyzed and documented, it was thought that public agencies would be able to make more informed decisions regarding the acquisition of scenic easements and the development of roadway features that enhanced and celebrated the visual landscape.[145] While focusing on I-70, the study included best practices for identifying similar characteristics along other roadways, with the aim of having "broad application for highway beautification throughout the United States."[146]

In many ways, the I-70 Scenic Lands project can be understood as an effort to ameliorate the negative environmental impacts that I-70 had already caused along much of its corridor. By constructing roadside overlooks or obtaining easements on yet-undeveloped private property, highway officials sought to more carefully manage what had up to that point been a haphazard relationship between highway construction, private development, and public land preservation.

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[143] Federal Highway Administration, Bureau of Land Management, and Colorado Division of Highways, "Colorado I-70 Scenic Lands: Preserving and Enhancing the Visibility from Interstate 70 of National Resource Lands in Colorado" (Federal Highway Administration, 1975), i.
[144] Ibid., vii.
[145] Ibid., ii-iv.
[146] Ibid.

In contrast to other sections of I-70, Vail Pass offered an opportunity to implement a comprehensive landscape design vision from the outset of the planning process. Because Vail Pass runs through land owned by the Forest Service, highway planners did not face the challenge of negotiating with private landowners over the treatment of right-of-ways. The project thus represents a collaborative effort to implement ideas about environmental conservation and aesthetic design that were becoming accepted throughout highway planning departments and land management agencies. Many of the fundamental principles of these ideas can be connected back to the parkway tradition.

There were three broad components of Vail Pass' design that illustrate this renaissance of parkway concepts. The first of these components was the split alignment of the roadway, which is an especially prominent feature of the highway on the east side of Vail Pass. As Interstate-70 passes the Copper Mountain Ski Resort just after the junction with State Highway 91, it curves gently to the north, and the east and westbound lanes split away from each other. Gore Creek runs through the wide meadow that stretches between the two roadways, which are aligned to trace the natural undulations of the topography. These alignment schemes were based upon detailed geological studies as well as a careful analysis of their impact on the visual landscape from the perspective of a moving car.[147] Throughout the project, alignment decisions were made in order to "fit the highway into the land with the least possible disturbance from the ecological as well as visual standpoint."[148] Because of this, Gore Creek has been left undisrupted, while the

[147] Environmental Division of the Colorado Division of Highways, "Vail Pass Erosion Control Plan: Guidelines for Implementation" (Colorado Division of Highways, 1974).
[148] Colorado Department of Highways, *I-70 in a Mountain Environment: Vail Pass, Colorado* (Federal Highway Administration Development Office, 1978), 4-5.

highway appears as two graceful ribbons that rest on the land rather than a monolithic slab dropped on top of it (figure 3.1).

Figure 3.1. Gore Creek meandering near highway, east side of Vail Pass. Photo by author.

The split alignment scheme allowed designers to construct distinct viewshed sequences for each direction of travel. Driving west, the road passes through dense stands of trees, and then emerges into open areas where the distant peaks of the Gore Range slide into view. For eastbound travelers, designers aligned the road so that motorists "will see the lower valley of Gore Creek spread before them on the left and, ahead, gentle slopes covered with fir and aspen."[149] Moving along the road, the mountain scenery was revealed in a rhythmic sequence of open and closed space. With oncoming traffic removed from view, the relationship between the road and the

[149] Colorado Division of Highways, *Vail Pass: Alignment Studies and Design Concepts,* prepared by Barton, Stoddard, Milhollin, and Higgins in Cooperation with Taliesin Associated Architects of the Frank Lloyd Wright Foundation (May 1972), 49.

natural environment became more intimate. Vail Pass' designers promoted their design by proclaiming "neither the occasional driver nor the daily commuter will fail to notice and be delighted with the varied vistas presented to him along this route. Meadows appear, as do clumps of trees, winding creeks, thickets of willow and sudden breathtaking views of distant, barren peaks."[150] This idea that a road could act as a tool to curate a sequenced experience of scenery defined the parkway tradition since the days of Frederick Law Olmsted.[151] The design documents of Vail Pass illustrate a similar approach to fitting the road into the natural environment.[152]

The shaping of the roadside landscape is the second central feature of Vail Pass' design that can be connected to parkway thinking. Parkways were defined by a holistic approach to road building in which the road became united with the adjacent environment through the careful composition of roadside landscape elements. In the right-of-ways and across the medians, designers framed existing scenery and introduced new plants in order to enhance picturesque qualities. The incorporation of both native and exotic species made the distinction between the natural and artificial particularly difficult to discern in these early parkway projects.[153]

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[150] Colorado Division of Highways, *Vail Pass Environmental Study,* prepared by Barton, Stoddard, Milhollin, and Higgins in Cooperation with Taliesin Associated Architects of the Frank Lloyd Wright Foundation (May 1972), 44.

[151] Spirn, "Constructing Nature," 96. The drive that structures the Emerald Necklace park system in Boston is a good example of this concept in Olmsted's work. The Bronx River Parkway and the Taconic State Parkway in New York illustrate later manifestations of these principles. See Timothy Davis, "The Rise and Decline of the American Parkway," 39-40; and Kathleen LaFrank, "Real and Ideal Landscapes along the Taconic State Parkway," in Hoagland and Breisch, eds., *Construction Image, Identity, and Place,* 247-262.

[152] *Vail Pass Alignment and Design Concepts,* 49-51.

[153] Spirn, "Constructing Nature," 106-107. In designs for Central Park and the Emerald Necklace, as well as other projects, Olmsted introduced selected plants that appeared "wild" in order to "bring the advantage of 'natural scenery' found in places like Yosemite to "those who cannot travel." Ibid., 107.

Vail Pass is defined by a similar emphasis on creating picturesque views but incorporates this concept of scenery through new approaches to ecology. By the time of the Vail Pass project, the conservation of native species was favored over the introduction of non-native plants, which was then seen as an affront to the integrity and beauty of natural systems.[154] Yet the ideas of 'ecosystem management' that define current practices within the fields of ecology, forest management, and landscape architecture had not yet been fully articulated. Vail Pass thus sits at a transition stage between scenic aesthetics—defined by a static unity of visual patterns—and ecological aesthetics—defined by the fluidity of naturally occurring interactions and changes.[155] Vail Pass' design contains elements of each of these approaches. Rather than introduce new elements into the landscape, designers of Vail Pass sought to imitate existing landscape elements.

This principle of imitation appears in the treatment of both geology and vegetation. New techniques of slope molding, where multiple small cuts were made instead of one straight cut, helped to create the appearance of "landform diversity."[156] Working with a team of geologists, engineers made cuts that continued the lines of existing rock outcrops, thus avoiding significant degradation that would have occurred if traditional vertical drilling methods had been used.[157] Additionally, instead of leaving slopes exposed after construction was complete, landscape architects reseeded disturbed areas with a seed mixture of native grasses and wildflowers chosen

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[154] Stephen R.J. Sheppard, "Beyond Visual Resource Management: Emerging Theories of fan Ecological Aesthetic and Visible Stewardship," in *Forests and Landscapes: Linking Ecology and Sustainability,* ed. by Stepehn R.J. Sheppard and H.W. Harshaw (New York: Cabi Publishing, 2001), 149-172.
[155] Sheppard, "Beyond Visual Resources Management," 152-159.
[156] *I-70 in a Mountain Environment,* 7-17.
[157] Ibid., 18-22; Robert K. Barrett, "Final Geotechnical Investigations on the Vail Pass Project," in *Engineering Solutions to Environmental Constrainsts: I-70 Over Vail Pass* (Washington, DC: National Academy of Sciences, 1978), 21-27.

by project ecologists.[158] Trees and shrubs were planted in disturbed areas in order to beautify the highway right-of-way. These trees were not foreign to the construction site, but were rather saplings that had been removed before highway construction began and then re-planted.[159] Other landscape elements, such as tree stumps and boulders found nearby, were artfully placed along the side of the road in order to "reflect the natural random stump conditions as existing on the undisturbed adjacent lands" (figure 3.2).[160] Together, slope treatment, rock cuts, and re-vegetation methods were used in combination to "create a completely landscaped highway corridor."[161] The landscape ethic that emerged through the Vail Pass project was thus committed to disturbing the pre-interstate environmental as little as possible, but also followed an aesthetic concept of landscape that was based upon a series of static views that reflected a picturesque sensibility.

Figure 3.2. Rocks were placed on disturbed slopes in a naturally appearing manner.[162]

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[158] Michael Tupa, "Landscape Treatments on the Vail Pass Project: Slope Design Procedures," in *Engineering Solutions to Environmental Constrainsts: I-70 Over Vail Pass* (Washington, DC: National Academy of Sciences, 1978), 27-29.
[159] *I-70 in a Mountain Environment,* 27-31.
[160] Ibid., 32.
[161] Ibid., 33.
[162] Ibid., 30.

Figure 3.3. Interlocking retaining walls minimize visual massiveness.[163]

Finally, the designed elements of the roadway itself are the third major aspect of Vail Pass that merit discussion within the lineage of parkway design. Between Copper and Vail, retaining walls, bridges, and dividing barriers are all designed using similar colors, shapes, and textures, thus forming a consistent architectural grammar throughout the drive. On the west side of pass, where slopes are steeper than on the east side, road engineers were required to construct retaining walls in order to prevent erosion. Instead of erecting monolithic concrete slabs, landscape architects devised new types of retaining walls that blended into the natural landscape. The most prominent of these wall types was created out of interlocking, parabolic concrete blocks. Stacked in a terraced fashion, the spaces between the blocks were filled with topsoil and planted with native grasses in an effort to "minimize the visual massiveness of the retaining walls."[164] The cement mixture used to create these blocks included an addition of iron oxide that provided a reddish-tan tint to the final product and further blended the walls into the surroundings (figure

[163] Colorado Division of Highways, *Vail Pass Alignment Studies and Design Concepts,* 80.
[164] Ibid., 63.

3.3).[165] In addition to these modular retaining walls, other wall types were created with a similar focus on blending infrastructure into nature. Cast-in-place walls were set with rough wood in order to achieve a varied surface, and wooden cribbing walls—integrated into hillsides to prevent erosion—were stained to blend into surrounding rock and vegetation colors.[166]

Vail Pass' designers also re-thought the use of barrier walls. In most interstate highway projects, the New Jersey MB5, or 'Jersey' barrier is used. These modular, triangular-shaped barriers are ubiquitous along highways across the country. Highway departments have favored them because they are easy to move and applicable to many different situations. Yet as the designers of Vail Pass pointed out, the Jersey barrier is the "least attractive of highway hardware elements."[167] Where slope grades permitted, the use of barriers was replaced with the planting of native trees or rounded berms of grass. In addition to continuing the natural vegetation patterns in surrounding forests and meadows, the earth and plant barriers were increased safety, as they broke up the visual landscape and softened the impact of potential crashes.[168] In places where concrete barriers were necessary due to slope and road alignment, the Jersey type was redesigned to feature more streamlined proportions. A lighting system was integrated into the barriers in order to avoid the construction of lampposts and preserve the darkness in nearby campgrounds.[169] Importantly, these barriers were continued along bridges, which established seamless site lines between the road and bridges.[170] Parkways such as the Bronx River Parkway

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[165] Ibid., 59.
[166] Ibid., 66.
[167] *Vail Pass Environmental Study,* 72.
[168] Ibid.
[169] *Vail Pass Alignment Studies and Design Concepts,* 89. Lighting was ultimately not seen as a necessary element of the Vail Pass project, and this integrated system was no implemented due to cost and maintenance concerns.
[170] *Vail Pass Environmental Study,* 73.

and the Taconic Parkway are also defined by a seamless integration of roadside elements such as walls and railings the overall design of the road. Vail Pass differs from these earlier projects in its use of a modernist rather than rustic aesthetic, but the underlying impulse to create a unified architectural language of roadway design connects Vail Pass to parkway thinking. While Vail Pass designers acknowledged the benefits of modern pre-cast concrete walls in regards to maintenance, they looked back to the parkway tradition for its ability to blend a highway into the specificities of place—from both a cultural and environmental perspective.[171]

In many ways, the most noteworthy feature of Vail Pass is its bridges. Two types of bridges were used: segmental, concrete box girders, and welded steel box girders with a composite concrete deck. Bridge designs grew out of both engineering and safety concerns, as well as environmental and aesthetic issues. In order to minimize bridge icing during winter months, box girder designs provided dead air pockets under the pavement to allow bridge surface conditions to match the rest of the roadway—a novel approach to bridge construction in cold climates. The idea of extending roadway conditions onto bridges was an aesthetic concept as well. Bridges were anchored into the hillsides in a way that allowed them to appear to emerge directly from the land and minimized the need for column construction. Minimizing bridge footprint on the land lessened disturbance to streams, vegetation, and wildlife movement. In many places, trees were left undisturbed to grow under or alongside bridges. Additionally, the visual continuity between roads and bridges provided uninterrupted sight lines for motorists, improving safety and creating a cohesive visual experience (figure 3.4).[172]

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[171] *Vail Pass Environmental Study,* 70-71.
[172] *Vail Pass Alignment Studies and Design Concepts,* 82-83.

Figure 3.4. Bridge anchored into hillside reduces need for support columns, west side of Vail Pass. Photo by author.

In places where bridge column construction was necessary, designers used triangular-shaped columns, which appear more slender than either rounded or boxed designs. Initially, designers considered using earth-filled arches inspired by earlier eras of road design. These schemes were ultimately decided against in favor of the more streamlined columns.[173] For the engineers and landscape architects who conceived of these designs, Vail Pass' bridges were created to "give the roadway the appearance of floating through the trees in a light, graceful manner."[174]

AESTHETICS AND ECOLOGY

The story of road and landscape design raises questions about the relationship between aesthetics and ecology. While the parkways of the late nineteenth and early twentieth centuries helped to protect natural areas from chaotic development, they often did so while altering ecological systems. The widespread planting of non-native species upset natural plant cycles, while water

[173] Ibid., 88.
[174] Ibid., 49.

diversion technologies interrupted hydrological systems.[175] In many instances, parkways concealed rather than avoided the disruptive impacts of roads on nature.

In assessing the legacy of the parkway movement through an ecological lens, some landscape architects have described the picturesque as a "worn out cliché."[176] In line with this view, ecologists have warned that a focus on aesthetic responses to landscape can impede efforts to manage landscapes sustainably.[177] In the 1960s, land management agencies such as the Forest Service incorporated picturesque aesthetics into management schemes in response to public outcry over the destructive impacts of clear cutting.[178] By the 1990s, this picturesque aesthetic had developed into an ecological aesthetic, which rejected formal notions of beauty in favor of a focus on ecological integrity. In this view, the appreciation of beauty in nature is derived from knowledge of environmental science.[179]

The construction of Vail Pass occurred at a moment of transition between preferences for picturesque aesthetics and ecological aesthetics. On the one hand, the resurgence of parkway ideas in Vail Pass' design demonstrated a desire to frame the Colorado High Country through the lens of Romantic notions of scenic beauty. At the same time, many of the smaller details of the

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[175] Susan Ahn and Regine Keller, "False Nature," in *Thinking the Contemporary Landscape,* ed. by Christophe Girot and Dora Imhof (New York: Princeton Architectural Press, 2017), 56-57.
[176] Adriaan Geuze, "Moving beyond Darwin," in *Modern Park Design: Recent Trends*, ed. by Martin Krinijl, Hans Ophnis, Peter van Saarie, and David I.ouwerse (Amsterdam: Troth, 1993), 37.

[177]Stephen Sheppard and Howard Harshaw, "Landscape Aesthetics and Sustainability: An Introduction," in *Forests and Landscapes: Linking Ecology, Sustainability and Aesthetics,* ed. by Stephen Sheppard and Howard Harshaw (New York: Cabi Publishing, 2001), 7.
[178] Paul Gobster, "Foreword," in *Forests and Landscapes: Linking Ecology, Sustainability, and Aesthetics,* xxii.
[179] Paul Gobster, "Foreword," in *Forests and Landscapes: Linking Ecology, Sustainability, and Aesthetics,* xxiv-xxv.

roadway, as well as the construction techniques that were used to build it, represents a more ecologically focused approach to road building. Landscape architects avoided planting non-native species along the road, and carefully devised construction plans so as to preserve the natural flow of streams and rivers.[180]

The results of these efforts have been mixed. Environmental studies conducted along the I-70 corridor since the completion of Vail Pass have found that during the spring and summer months following snow melting, road sand runs into Gore Creek, causing unhealthy levels of sediment to build up. This has reduced fish habitats and degraded water quality.[181] Yet these same studies have also shown that the negative impacts on the natural environment are much less severe along Vail Pass than they are along other sections of I-70 west of Denver, where less care was taken to integrate the highway into its ecological setting.[182]

In assessing the value of scenic and ecological approaches to landscape management, an 'either/or' approach may not always be appropriate. Often, traditional ideas about scenic beauty overlap with ecological health. Some landscape scholars have argued that scenic beauty can act as a "cue for care," defined by the notion that when landscapes are valued for their scenic beauty, people will care more deeply about their wellness.[183]

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[180] *I-70 in a Mountain Environment,* 44-47 and 52-55.
[181] Brian Lorch, "Transport and Aquatic Impacts of Highway Traction Sand and Salt Near Vail Pass, Colorado," (PhD diss., Colorado State University, 1998), 103-105.
[182] Ibid., 88.
[183] Joan Iverson Nassauer, "Cultural Sustainability: Aligning Aesthetics and Ecology," in *Placing Nature: Culture and Landscape Ecology,* ed. by Joan Iverson Nassauer (Washington, DC: Island Press, 1997), 65-84.

Understanding the meaning of the Vail Pass landscape depends on connecting the road's design to underlying ideas about the relationship between people and nature. The revival of the parkway tradition in Vail Pass' design portrays the environmental politics of the post-war years as being defined by traditional ideas of scenic landscapes—and thus as reformist rather than progressive. At the same time, elements of Vail Pass' design are representative of an effort to bring about a more ecologically aware environmental ethic. In assessing both the convergence and conflict between picturesque and ecological aesthetics, it is worth bearing in mind that all landscapes are defined by a tension between the autonomy of the nonhuman and its cultural construction.[184]

[184] Spirn, "Constructing Nature," 113.

CHAPTER 4

DEFINING THE VAIL PASS LANDSCAPE: ENVIRONMENTAL MODERNISM AND SUBURBAN NATURE

During the planning stages of Vail Pass, Richard Prosence, a lead engineer at the Colorado Division of Highways (CDOH), walked the length of the Vail Pass route with Lawrence Halprin, a landscape architect based in San Francisco. Prosence recalls that Halprin spoke of highway design as "an exercise in choreography in the landscape," where roads acted to guide drivers along a spatial narrative.[185] At various points during their walk, Halprin stopped to make sketches of the future highway, depicting the road to follow the contours of the hillside. By integrating the highway into the topography, Halprin believed that drivers would experience an enhanced sense of movement and a closer connection to the road's natural surroundings.[186] For Prosence and other highway engineers, the perspectives of landscape architects such as Halprin were central to their conception of highway construction as a holistic combination of technology, aesthetics, and ecology with human experience.

The work of Lawrence Halprin is representative of an outlook on modernist urban planning and architecture that reevaluated the relationship between people and the built environment. In contrast to earlier forms of modernism that were based upon a hyper rational conception of space, Halprin defined his viewpoint as a "whole appreciation of environmental design and a holistic approach to the matter of making space for people to live."[187] Rather than imposing

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[185] Richard Prosence, *Building I-70: The Story of the Development of Interstate Route 70 between the Utah-Colorado State Line and the Continental Divide* (Denver: Colorado Department of Transportation, n.d.), 41.
[186] Ibid., 42.
[187] Peter Walker and Melanie Simo, *Invisible Gardens: The Search for Modernism in the American Landscape* (Cambridge, MA: MIT Press, 1994), 120. On the role of traditional modernism within the

designs from a top-down point of view, designers began to consider the shaping of space from the perspective of human experience. This design philosophy can be understood as "environmental modernism." Environmental modernism is an approach to the built environment that combines the formal qualities of traditional modernism with a concern for natural systems and a preoccupation with human psychology. Many advocates of environmental modernism influenced the Vail Pass project. The work of urban planners Kevin Lynch and Donald Appleyard—who authored a detailed study of how cities and landscapes are experienced from the inside of a car—form the basis of the ideas expressed in the *Colorado I-70 Scenic Lands* report.[188] The direct involvement of the Taliesin Associated Architects of the Frank Lloyd Wright Studio on the Vail Pass project brought forth the idea that roads should be considered as architectural elements that form "a harmonious part of a great whole life."[189] Vail Pass is an example of these broader ideas of environmental modernism being applied to a federal highway project.

Examining the influence of modernist design on Vail Pass brings together the discussion of environmental politics in post-war Colorado with the discussion of the parkway tradition. The renaissance of parkway thinking in the design of Vail Pass was not a straightforward story of historical replication. Rather, parkway principles were mediated through the lens of an environmentally conscious modernism that positioned itself alongside the politics of the environmental movement. In formulating their ideas about good highway design, the landscape

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Federal Highway Administration, see Louis Ward Kemp, "Aesthetes as Engineers: The Occupational Ideology of Highway Design," *Technology and Culture* 27, no. 4 (October 1986), 760-762.

[188] See Donald Appleyard, Kevin Lynch, and John R. Myer, *The View from the Road* (Cambridge, MA: MIT Press, 1964). Michael Tupa, a landscape architect who worked closely on the Vail Pass project, also referred to the influence of Kevin Lynch on his approach to highway and landscape designer. Michael Tupa, interview by author, Fort Collins, CO, July 17, 2019.

[189] Frank Lloyd Wright, *The Living City* (New York: Horizon Press, 1958), 67.

architects who worked on the Vail Pass project integrated parkway concepts from the 1920s and 1930s with their own studies of human perception, ecological systems, and streamlined aesthetics.[190] It was thus through modernist design, rather than a romantic anti-modernist sentiment, that the parkway tradition re-emerged in the context of interstate highway construction in the early 1970s. Building upon the discussions of the previous chapters, this chapter contextualizes Vail Pass within broader themes of modernist road design, and in doing so draws together the aesthetic and political dimensions of the Vail Pass landscape.

ENVIRONMENTAL MODERNISM AND HIGHWAY DESIGN

By the mid 1960s, interstate highways had become defining features of urban and rural landscapes across the United States. While many celebrated the construction of the highway system as a symbol of individual freedom and collective technological advancement, highways were increasingly seen as destructive of both urban neighborhoods and rural landscapes.[191] Many architects, landscape architects, and urban planners felt that their ability to shape the built environment had been usurped by engineers and politicians who were blinded to human needs by an over-zealous belief in new technology. Indeed, until the passage of the National Environmental Policy Act (NEPA) in 1969, highway engineers were not legally obligated to consult design professionals on highway construction projects.[192] After NEPA became law, and in the general context of the rise of popular environmentalism, design professionals found their views on highway design increasingly accepted by both transportation planners and the general

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[190] Lawrence Halprin, *Freeways* (New York: Reinhold Publishing, 1966), 37. On the role of streamlined aesthetics in both parkways and freeways, see Timothy Davis, "The Rise and Decline of the American Parkway," in *The World Beyond the Windshield: Roads and Landscapes in the United States and Europe,* ed. by Christof Mauch and Thomas Zeller (Athens, OH: Ohio University Press, 2008), 56-58.

[191] For a portrayal of the perceived benefits of highways, see: Christopher W. Wells, *Car Country: An Environmental History* (Seattle: University of Washington Press, 2012), 254-255. One of the central vices in opposition to highways was Jane Jacobs, *The Death and Life of Great American Cities* (New York: Vintage Books, 1961).

[192] Kemp, "Aesthetes as Engineers," 763.

public.[193] Working within federal and state highway departments, as well as being hired as private consultants, designers attempted to lessen the negative impacts of highways on human communities and natural environments.[194]

The designers who sought to articulate an environmentally conscious modernism in the late 1960s were not wholly opposed to highways. While they found many highway landscapes appalling in their ubiquity and ugliness, they were also enthralled by the potential of highways and driving to re-shape American life through cutting-edge technology.[195] For landscape architects such as Lawrence Halprin, the cause of roadside blight was not highways themselves but rather an ignorance of good road design. "When highways have failed," Halprin wrote, "it has been because their designers have ignored their form-giving potential and their inherent qualities as works of art."[196] In conceiving of highways as "works of art," a formal approach to road design was taken that combined structure, function, and form.[197] Three underlying principles defined this approach. To varying degrees, these principles can be observed in the design of Vail Pass.

The first of these principles is based upon the idea that the experience of driving revolves around *vision in motion.* In articulating a renewed form of modernism that was responsive to human experience, designers drew lessons from spatial psychology, especially the relationship between

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[193] Halprin, *Freeways,* 24.
[194] Diana Litvak, interview with author, July 15, 2019. Diana Litvak is a public historian who works for Mead and Hunt, an engineering and historic preservation firm that produced the historical landmark designation for Vail Pass.
[195] James J. Fink, *The Automobile Age* (Cambridge, MA: The MIT Press, 1988), 362-363.
[196] Halprin, *Freeways,* 1.
[197] Christopher Tunnard and Boris Pushkarev, *Chaos or Control? An Inquiry into Selected Problems of Design in the Urbanized Landscape* (New Haven: Yale University Press, 1963), 166.

vision, space, and time. In their study of the urbanized landscape in the United States, architects Christopher Tunnard and Boris Pushkarev wrote, "To know the abilities and limitations of the eye is obviously important for the highway designer since, at his scale, he works close to the threshold of human vision."[198] In order to successfully portray roadside landscapes as scenic, designers had to understand the dynamics of human vision at driving speeds, and plan spatial sequences of scenery accordingly. The visual attention of a person standing motionless is very different from the visual attention of a person moving at over fifty miles per hour. As speed increases, the perception of detail decreases, the relationship between foreground, middle ground, and background unfolds dynamically rather than statically, and normal spatial perception is stretched out.[199] In contrast to traditional road types, the freeway—according to Tunnard, Pushkarev, Lynch, Halprin and others—should be designed in a manner that follows these laws of vision in motion.[200] For instance, simply planting groupings of trees alongside the road was seen as an inadequate landscaping strategy. Given the increased driving speeds, the scope of the viewshed was extended, as distant prospects became important landmarks from a moving car. Designers thus advocated for curving the alignment of the road so that background vistas would remain in view longer.[201] The patterns of curves and the sequences of enclosed and open spaces were laid out in a manner that integrated traditional notions of scenic beauty with the laws of vision in motion.[202]

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[198] Christopher Tunnard and Boris Pushkarev, *Chaos or Control? An Inquiry into Selected Problems of Design in the Urbanized Landscape* (New Haven: Yale University Press, 1963), 171.
[199] James J. Gibson, *The Perception of the Visual World* (Boston: Houghton Mifflin, 1950), 30-32.
[200] Lawrence Halprin, *Freeways,* 17.
[201] Appleyard et. al., *The View from the Road,* 10-11; and Halprin, *Freeways,* 86-87.
[202] Tunnard and Pushkarev, *Chaos or Control?,* 176.

Due to the steep terrain through which Vail Pass is built—especially on the west side of the Continental Divide—highway engineers and landscape architects were limited in the extent to which they could apply the principle of vision in motion to Vail Pass. Yet there are noteworthy elements of the roadway's design that illustrate an attempt to build a road based around vision in motion. For example, landscape architects directed highway engineers to cut rocks to mimic both the alignment of the highway as well as the natural patterns of nearby cliffs. Both doing so, they avoided the abrupt changes in visual patterns that would have resulted from traditional cut and fill construction methods (figure 4.1).[203]

Figure 4.1. Rock cuts mimic naturally existing faces, facilitating the principle of *vision in motion,* west side of Vail Pass. Photo by author.

Following this focus on vision, the second main principle of the modernist approach to highway design is *continuity*. The quintessence of driving on a highway entails moving at a constant speed without being interrupted by interactions with cross traffic. Accentuating this experience of uninterrupted movement defined the approach to road design that modernist thinkers advocated for. In contrast to straight alignments favored in many highway departments through the first two decades of interstate construction, landscape architects promoted the benefits of tangential

[203] Mike Tupa, interview with author, Fort Collins, CO, July 17, 2019. Mike explained that working with engineers on rock cut patterns was one of the most technically difficult aspects of the Vail Pass project.

alignments, where roadways were always slightly curving so that a "generous, free-flowing continuity" would be achieved.[204] Designers were influenced by sculptors who highlighted the essential physical properties of materials, and sought to make concrete appear in a "plastic harmony of flowing lines" (figure 4.2).[205] Captivated by the possibilities of highways as architectural forms defined by continuously moving surfaces, Lawrence Halprin wrote that, "Freeways out in the countryside, with their graceful, sinuous, curvilinear patterns, are like great free-flowing paintings in which, through participation, the sensations of motion through space are experienced."[206] The principle of continuity encapsulated the feelings of tilting, turning, dropping and climbing that one experiences while driving, and expressed the desire held by many designers to re-cover driving as a recreational activity.[207]

Figure 4.2. Bridge design helps create a sense of continuity, west side of Vail Pass. Photo by author.

The general alignment scheme of Vail Pass sought to achieve continuity of form, but it is the design of Vail Pass' bridges that illustrate this principle most clearly. From both the perspective

[204] Tunnard and Pushkarev, *Chaos or Control?*, 181.
[205] Tunnard and Pushkarev, *Chaos or Control?*, 177.
[206] Halprin, *Freeways,* 17.
[207] Kevin Lynch, *The Image of the City* (Cambridge, MA: MIT Press, 1960), 92.

of a moving car as well as when viewed from the bicycle and pedestrian path, Vail Pass' bridges guide the road through the landscape in an unbroken, gently curving line. Many are anchored into the hillsides, allowing the horizontal line of the road to overpower the static verticality of the few necessary columns. The continuous flow of the roadway that these bridges facilitate provides a sense of coherence as one passes through the diverse mountain landscape (figure 4.3).

Figure 4.3. Custom barrier walls create unified design language throughout the drive, west side of Vail Pass. Photo by author.

Following the principles of vision in motion and continuity, environmental modernism envisioned the highway as a cross-section through space that offered a unique way of discerning patterns within the landscapes. This can be thought of as the principle of *external harmony.* Building upon the parkway tradition, advocates of environmental modernism carefully considered how to integrate highways into their natural settings. The conception of these adjacent landscapes can be broken down into macro and micro scales.

On the macro level, designers sought to derive an "inner logic" from the geological and ecological processes that shaped the road landscape and design roads in a manner that accentuated these qualities.[208] When building along a river, the road should smoothly mimic the natural contours of the riverbed. Slopes should be traced along existing fault lines, and hills climbed in a gradual manner.[209] Here, it is important to distinguish between the aesthetics of 'integration' versus the aesthetics of 'blending.' While designers were careful to not destroy natural features (and admonished many highway engineers for doing so), they also saw highways as architectural objects that possessed inherent visual beauty. Emphasizing the visual qualities of curving concrete and soaring bridges expressed an approach to landscape in which modern technology and the natural world complimented and enhanced each other.[210]

On the micro-scale, designers endeavored to devise a consistent language of patterns and textures for road surfaces, medians, and borders. As Tunnard and Pushkarev wrote, "Continuity of space should not be confused with fuzzy and undefined transitions between elements, such as a dirty border where macam gradually blends with a grass shoulder."[211] Such seemingly inconsequential details of a road's edge were an important component in creating highways that made a distinct contribution to the visual landscape. Careful consideration was given to elements such as paving color and texture, barrier design, and roadside planting. Designers also argued that concrete mixtures should be derived from the color of adjacent soils or rock formations.[212] Barrier walls,

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[208] Halprin, *Freeways,* 37.
[209] Tunnard and Pushkarev, *Man-Made America*, 210.
[210] International Engineering Company, Colorado Division of Highways, and the Frank Lloyd Wright Foundation, *Vail Pass: A Highway in Harmony with its Environment*, DVD-ROM, (Colorado Division of Highways, 1978), 23.50.
[211] Tunnard and Pushkarev, *Man-Made America,* 240. Macam is a surfacing material similar to asphalt that is placed on top of a clay roadbed.
[212] Ibid., 240-241.

when necessary, should curve to accentuate the road's alignment, and continue across bridges in order to create seamless lines through space.[213] The most important feature of the micro-scale road environment was uniformity, as "a quick succession of diverse shapes, textures, and colors can easily result in chaos."[214] Considering both these macro and micro scale, the principle of external harmony can be understood to bring together the principles of vision in motion and continuity into a comprehensive idea of highway landscapes.

Considering Vail Pass at the micro level, the uniform design language of barrier walls and the thoughtful placement of roadside design elements such as trees, rocks, and berms speak to the desire to create a uniform design language throughout the drive. Viewed at the macro scale, Vail Pass' integration into the surrounding environment is most discernable when seen from the bicycle and pedestrian path on the east side of the pass. The east and westbound roadways trace opposite sides of the valley, while the bike path mimics both the flow of Gore Creek and the line of the road. The relationship between highway, path, and creek is the foundation for a systematic conception of landscape that facilitates both recreation and transit (figure 4.4).

Figure 4.4. Path, creek, and highway, east side of Vail Pass. Photo by author.

[213] Ibid.,
[214] Ibid., 243.

Within the interstate highway system, Vail Pass is a relatively unique example of a road shaped by the comprehensive vision of a landscape system articulated through the lens of environmental modernism. The pattern of rock cuts, the design of bridges and barrier walls, and the relationship between the road and the flow of nearby waterways together illustrate the idea that the visual power of human technology and the visual power of mountain geography complimented and re-enforced one another.

In discussing the interconnected influences of parkways and environmental modernism on the Vail Pass project, the unique character of the Vail Pass landscape emerges in more defined terms. Modernist preoccupations with vision in motion, continuity, and external harmony were applied to freeway design as a means to insert picturesque scenery into the experience of driving. From a broader cultural perspective, this conception of highways was derived from an effort to re-orient people to the landscapes created by the automobile by re-casting highways as spaces of leisure rather than channels of transit.[215] While I-70 was primarily built to facilitate cross-country transit and commerce, the designers of Vail Pass sought to insert a sense of leisure into the utilitarian space of the interstate highway system as it passed through one of Colorado's most scenic landscapes.[216]

The protagonists of environmental modernism thus did not formulate a new ideology of landscape, but rather re-inserted picturesque scenery into highway landscapes of the post-war

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[215] Colorado Division of Highways, *Vail Pass Environmental Study,* 67.

[216] This general idea can be connected to the particular history of Colorado through comparison with the development of the Denver Mountain Parks System. See, Wendy Rex-Atzet, Sally White, and Erika Walker, *Denver Mountain Parks: 100 Years of the Magnificent Dream* (Denver: John Fielder Publishing, 2013); and Davis, *National Park Roads,* 94.

era.[217] Further, the work of landscape architects on the Vail Pass project was not a nostalgic attempt at revitalization but rather an integration of traditional ideas of landscape appreciation with a whole-hearted embrace of the transformative power of new technology. It is this search for a balance between technology and nature that defines the aesthetics of the Vail Pass landscape.

LANDSCAPES OF SUBURBIA

The effort to establish a balance between human technology and natural systems from an aesthetic point of view aligns highway design with the broader political and economic conditions that defined the post-war development of the Colorado High Country. As William Philpott argues, the landscapes shaped by the interconnected rise of environmentalism and outdoor recreation expressed an essentially *suburban* conception of nature.[218] This suburban nature was comprised of open spaces for recreation, picturesque views, and a sense of distance from cities.[219] The comforts and conveniences of suburban living—including heating, air conditioning, and easy access to the full array of post-war consumer products—was combined with proximity to areas for skiing, hiking, fishing, and other outdoor leisure pursuits. As Philpott writes, "Suburbanites liked to live in landscapes with nature close at hand," so long as this nature was "wholly benign: fun and uplifting, yet utterly unthreatening, and conveniently accessible by car."[220] In Colorado, skiing was especially central to this type of relationship to the natural world. Cars and ski lifts allowed masses to easily access mountaintops with panoramic views that evoked a Romantic-style reverence for mountain landscapes. People skied "not to conquer

[217] Appleyard et. al., *The View from the Road,* 21-23.
[218] Philpott, *Vacationland,* 130.
[219] Ibid., 151.
[220] Ibid., 162.

nature but to experience places where nature seemed pristine."[221] The infrastructure of highways, ski lifts, water treatment facilities, power lines and other technological systems were constructed alongside efforts to protect natural spaces from development.

Connecting the design of Vail Pass to an inherently suburban idea of nature defines the Vail Pass landscape as an expression of some of the broader economic and cultural forces that were redefining the American landscape in the decades following the Second World War. One of the most important expressions of this moment was an antipathy towards cities and urban density. By facilitating easy access to previously underdeveloped regions of the Colorado High Country, the construction of I-70 became a part of a broader prioritization of private automobile use and suburban development, as economic investment was withdrawn from public transportation systems and inner city neighborhoods in cites such as Denver. Indeed, at the same time that Vail Pass was being constructed, historic buildings in downtown Denver were being demolished to make way for parking lots.[222] While Denver was defined in the early twentieth century by a tramway system that carried 36 million passengers over 150 miles of track each day, by the l940s streetcar tracks had been removed from many major thoroughfares.[223] The shift away from public transportation was dramatically accelerated after 1945, and in 1963 the plan for downtown Denver focused entirely on automobility.[224] While the pollution, traffic, and destruction of rural landscapes caused many to lament this car-centric development, the most significant response was an increasing popularity of mountain environments. Within this context, places such as Vail offered a sense of reprieve from the negative impacts of sprawl while simultaneously

[221] Ibid., 141.
[222] Gutfreund, *Twentieth-Century Sprawl,* 120.
[223] Ibid., 70-74.
[224] Ibid., 92.

maintaining the comforts of suburbia. The road design of Vail Pass encapsulates this nature-focused, anti-urban conception of vacation landscapes—where natural beauty could be enjoyed from the windshield of a car just two hours from Front Range cities.

The inherently suburban qualities of the development of the Colorado High Country for tourism allows for a deeper understanding of the kind of environmental politics that defined the Vail Pass project. In the year directly following the war, many Americans greeted suburban development with enthusiasm, as brand new homes built at lightning speed epitomized notions of progress and images of societal affluence.[225] Yet this exuberance around suburbs was soon reevaluated, as many began to see sprawl as an environmental disaster. Suburban home construction brought about a dramatic increase in soil erosion, water pollution, and the disappearance of open space and farmland.[226] Environmental historian Adam Rome argues that taken together, the environmental impacts of suburban development have been "catastrophe on the scale of the Dust Bowl."[227] Yet in contrast to other environmental 'disasters,' the degradation and harm brought about by suburban development was not defined by a single event, such as an oil spill or a flood. Rather, changes to the landscape occurred slowly, and many of the negative impacts of home building—such as well water contamination—were only discernable at a local scale. In many ways, it was because of this localness that the suburbs became an incubator of popular concern over environmental issues. Middle class Americans no longer saw environmental issues as being

[225] Adam Rome, *The Bulldozer in the Countryside: Suburban Sprawl and the Rise of American Environmentalism* (Cambridge: Cambridge University Press, 2001), 1-3.
[226] Ibid., 3-6.
[227] Ibid., 3.

confined to distant coalmines or wilderness areas. Suburban development meant that negative changes were occurring in in people's own backyards.[228]

There are a number of important features that define this rise in popular, middle class, suburban environmentalism. Perhaps the most relevant to understanding Vail Pass in particular and the Colorado High Country more generally is the rise in efforts to protect open space for recreation. New home construction often resulted in a dramatic transformation in the ecology of a landscape, as native trees and vegetation, or previously cultivated farmland, was replaced with homogeneous carpets of sod. As this transformation began to define more and more places across the United States, movements emerged to protect land from further development. While the calls for protected open space echoed conservationists of previous generations, open space advocates in the post war years based many of their arguments around protecting landscapes for scenic enjoyment and outdoor recreation.[229] Importantly, the kinds of nature that people began to desire and expect in these open spaces was distinct from spaces set aside as 'wilderness'—where the forces of wild nature were left to their own devices. Rather, suburban nature was defined by a kind of hybrid of human and natural systems. Open space areas were replete with well-groomed trails, informational signs, playgrounds, water fountains, and other amenities that allowed people to feel like they were 'getting out' without having to 'rough it.'[230]

Desire for open space resulted in the creation of various types of landscapes, from playgrounds and walking trails adjacent to new housing developments to larger scale park and greenway

[228] Ibid., 6.
[229] Ibid., 123.
[230] Christopher Sellers, *Crabgrass Crucible: Suburban Nature and the Rise of Environmentalism in Twentieth Century America* (Chapel Hill, NC: University of North Carolina Press, 2012), 5.

projects built by municipalities or states.[231] In Colorado, open space development was defined by ski runs, hiking and biking trails, and fishing ponds in the state's mountains. Coalitions of state agencies, politicians, and business people in mountain towns began to create and promote places and experiences that catered to suburban tastes. For instance, in order to lure more people to the mountains to fish, millions of trout and salmon were raised at a federal hatchery in Leadville and dispatched into rivers in order to raise fish population numbers and fulfill the promise of a state filled with "tumbling trout streams."[232] While this phenomenon disturbed the natural ecosystems of Colorado's rivers, it also had the effect of inspiring more people to care about the health of such habitats.[233] Ski runs developed along a similar pattern. As forests were cut to make room for runs, more people were able to experience mountain landscapes, and became advocates for their preservation.[234]

Beginning as early as the 1960s, the rising popularity of the High Country made it increasingly difficult to feel that one was escaping sprawl by going to the mountains.[235] New vacation homes and condominiums began creeping up the valleys from historic town centers in places like Breckenridge, Aspen, and Steamboat Springs. In response, towns began implementing zoning plans in an effort to manage the relationship between new development and protected lands.[236] These zoning plans mirrored a the rise in land use planning across the United States in response

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[231] Rome, *The Bulldozer in the Countryside,* 125-138. The development of the Platt River and Cherry Creek River recreational trail systems are good examples of this kind of open space development in Denver.
[232] Philpott, *Vacationland,* 131-133.
[233] Samual Hays, *Beauty, Health, and Permanence: Environmental Politics in the United States: 1955-1985* (Cambridge: Cambridge University Press, 1987), 19-21.
[234] Hal Clifford, *Downhill Slide: Why the Corporate Ski Industry is Bad for Skiing, Ski Towns, and the Environment* (San Francisco: Sierra Club, 2002), 64-65.
[235] Philpott, *Vacationland,* 218.
[236] Ibid., 218-221.

to suburban development, as state officials sought to implement a sense of organization within the haphazard construction taking place on urban fringes.[237]

While this discussion of suburbanization encompasses a set of issues that go beyond the design of a segment of highway, understanding this broader context is an important component of comprehending the underlying meaning of the Vail Pass landscape. By seeking to blend ecological conservation, scenic beauty, and recreation in a single landscape, the seemingly mundane details of Vail Pass' alignment, barrier walls, and bridge design reflect broader environmental ethic of suburban development. Rather than focus on changing the basic economic, political, and cultural forces that underpinned highway development and widespread automobile use, the group of engineers, designers, politicians, and environmental groups that shaped the design of Vail Pass were part of a broader effort to ameliorate the destructive impacts of highway development through innovative design and landscape management. Vail Pass represents an attempt to temper the environmental impacts of mass tourism while also celebrating the use of the personal automobiles. This whole-hearted embrace of roads and driving has underpinned the development of tourism in the Colorado, and helps to permit the belief that tourism and environmentalism are compatible.

When seen in light of these broader developments, the environmental politics that emerged around the construction of Vail Pass appear embedded within the political and economic forces that define many of the environmental problems that continue to challenge the Colorado High Country and other places like it. Indeed, Vail Pass is an embrace of modernism and

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[237] Rome, *The Bulldozer in the Countryside,* 225-230.

suburbanization. What makes it significant is that through thoughtful design, engineers and landscape architects sought to re-direct the negative impacts of highway development and sprawl into a more aesthetically pleasing and ecologically integrated manner. Compared with other sections of I-70 in Colorado, their efforts can be easily discerned in the visual landscape. Yet when viewed from a broader perspective of the cultural, economic, and environmental forces in which the highway was constructed, the unique qualities of Vail Pass become somewhat faded against the backdrop of the countrywide economic and cultural forces that were so dramatically altering the American landscape.

CONCLUSION

THINKING WITH LANDSCAPE

As I pull into the parking lot in front of the visitor's center at the top of Vail Pass, I roll down my windows and let the cool mountain air float into the car. The crisp, pine-tinged atmosphere is a welcome relief to the stuffy heat of Denver that I left two hours earlier. I get out of my car and walk across the parking lot to the visitor's center. The building is built into the hillside and surrounded by native vegetation. The low-slung roofline allows the building's profile to blend into the surrounding area. Inside, a long row of horizontally oriented windows frames a panoramic view of the peaks of the Gore Range. To look through these windows is to experience a balanced relationship between prospect and refuge.

Designed by the Taliesin Associated Architects of the Frank Lloyd Wright studio, the visitor's center was part of the overall attempt to integrate Vail Pass into the surrounding natural environment. Yet today, that sense of balance between the built and natural environment is difficult to discern. In front of the visitor's center, new guardrails painted garish white lead visitors from the parking lot to the building's entrance, while the original shingled roof has been replaced with a tin covering the reflects the sun and detracts from the structure's original humble design.[238]

Since the construction of the visitor's center, the parking lot has been expanded, while just across the highway a large structure has been built to store sand for wintertime road maintenance work.

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[238] Kelly Oliver, interview with author, July 17, 2019, Denver, CO. Kelly Oliver was the Denver representative of the Taliesin Associated Architects, and the lead designer of the Vail Pass visitor's center.

As I observe these features, I am distracted from the views of the surrounding landscape and find it more difficult to discern a sense of smooth integration between infrastructure and nature. I begin to see elements of the Vail Pass landscape that connect it to the haphazard highway-based development of nearby Silverthorne, rather than standing in contrast to such patterns.

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While my first bicycle journey over Vail Pass prompted a fascination with and appreciation of the sleek design of the highway and its seemingly harmonious integration into the surrounding natural environment, through subsequent trips over the pass, both in a car and on my bike, I discovered that while I continued to find the landscape of Vail Pass appealing, I increasingly felt skeptical about whether the highway's design represented a truly balanced relationship between infrastructure and nature. This thesis has partly been an attempt to confront my own mixed feelings towards the Vail Pass landscape, and thus my more general uneasiness about basing an environmental ethic around preferences for scenic beauty and enthusiasm for outdoor recreation. While I have at times drawn inspiration from the Vail Pass story, I have just as often realized the limitations of the kind of environmental thinking that underpinned the road's design and construction.

Despite the fact that my attitude towards Vail Pass in particular and the Colorado High Country more generally remains conflicted, I have taken from this project an appreciation of the benefits of studying a single landscape as a way of thinking about broader questions of human-nature relations. In particular, the Vail Pass has allowed me to more fully comprehend how a set of large-scale processes impact a single location. The tangibility entailed in the close study of place

gives clarity to less-palpable processes such as the rise of the environmental movement and the growth of suburbs. I have found that landscape is a useful tool to think with.

There are two particular features of the Vail Pass story that offer an opportunity to think about broader environmental questions. The first of these features is the relationship between environmental politics and environmental legislation. Vail Pass illustrates both the importance of environmental legislation, but also that in order for such legislation to have a meaningful impact, robust political organization must emerge around it. The second aspect of the Vail Pass story that lends itself to broader environmental questions is the role of aesthetics in shaping cultural attitudes towards nature. A consideration of aesthetics values can help to link material conditions to underlying relations of cultural and political power. It is therefore important to consider aesthetic questions as central to the study of human-nature relations.

When comparing the sections of Interstate-70 in Colorado built before the passage of the National Environmental Policy Act (NEPA), and those constructed after the legislation became law, it may be tempting to tell a straightforward story about federal environmental legislation protecting nature at a local scale. Indeed, the haphazard alignment of I-70 near Idaho Springs and the eroded hillsides on either side of Eisenhower Tunnel contrast starkly with the graceful curving bridges of Vail Pass. Yet, as Chapter Two illustrates, the relationship between NEPA and these projects is not a straightforward story in which federal environmental legislation directly resulted in the protection of the natural world. The specific terms of NEPA do not require landscape architects to design streamlined barrier walls or manage viewsheds to showcase the landscape in a picturesque manner. Rather, the central features of the law are quite

broad: federal agencies must collaboration with other state agencies and citizens on federal infrastructure projects, they must consider "environmental amenities and values" alongside economic and technical considerations, and their proposals must be presented to the public for review.[239] The open-endedness of the law can be viewed as both strength and a weakness. On the one hand, it encompasses a very broad set of potential circumstances and creates a platform for the inclusion of wide-ranging perspectives. On the other hand, NEPA is non-binding: it does not require that federal agencies abide by environmentally sound recommendations, but simply that the public is informed of the different options. Within the Federal Highway Administration (FHWA), NEPA has generally helped to protect natural resources that they would otherwise not consider within highway building projects. At the same time, politicians—in the guise of "modernizing" the planning process—have at times allied themselves with profit-driven construction companies to weaken some of NEPA's requirements.[240]

When considering the impact of NEPA on Vail Pass, we see that environmental legislation is often only as strong as the environmental politics that emerge around it. NEPA provided a framework within which environmental politics played out but did not fully determine the outcomes of the debates about the highway's location and design. More direct forms of political action, including lobbying and public outreach campaigns by groups such as the Colorado Open Space Coordinating Council, were necessary to align political power behind efforts to build Vail Pass in an environmentally conscious manner. Additionally, during the 1960s and 1970s,

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[239] The National Environmental Policy Act of 1969, Public Law 91-190, 42nd Cong. (January 1, 1970), Sec. 101, § 4321.

[240] Richard Weingroff, "Addressing the Quiet Crisis: The Origins of the National Environmental Policy Act of 1969," in *Highway History,* Federal Highway Administration, last modified June, 27, 2017, accessed July 13, 2020, https://www.fhwa.dot.gov/highwayhistory/nepa/06.cfm. The weakening of NEPA's requirements was initiated by the administration of President Ronald Reagan.

environmental issues were not as politically polarizing as they often are today. In Colorado and elsewhere, basic environmental protections were accepted by a broad segment of the public.[241]

The Vail Pass story also illustrates the important role played by public agencies working on infrastructure projects. In the case of Vail Pass, the efforts of environmentalists would likely not have been as successful as they were if officials within the White River National Forest had not also been concerned about protecting the viewsheds and ecosystems of the Vail Pass landscape. The environmental values that shaped laws such as NEPA also informed new forest management practices, many of which were articulated in the Forest Service's *Visual Management System.* Vail Pass thus offers a case study in understanding the important role played by key individuals within public agencies.[242]

The relationship between environmental legislation and environmental politics is thus not defined by successful enactment of environmental law, but rather by the political and cultural contexts that arise around it. Most significantly, the ability of environmental legislation to have a positive impact on human-nature relations is dependent on the ongoing commitment of both the public and the government to enforce legislation and to update it in congruence with an evolving understanding of environmental challenges. Properly enforcing environmental legislation will not necessarily address the underlying causes of most environmental problems, but, as the story of Vail Pass illustrates, rules such as NEPA provide a minimum standard for addressing

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[241] Adam Rome, *The Genius of Earth Day: How a 1970 Teach-In Made the First Green Generation* (New York: Hill and Wang, 2013), 10-15.

[242] Environmental historians have written extensively about the role of government agencies in shaping environmental outcomes. For two examples, see: Marsha Weisiger, *Dreaming of Sheep in Navajo Country* (Seattle: University of Washing Press, 2009) and Robert Wilson, *Seeking Refuge: Birds and Landscape of the Pacific Flyway* (Seattle: University of Washington Press, 2010).

environmental concerns. When allied with grass-roots political organization and sympathetic public agencies, these standards can lead to meaningful environmental outcomes.

In addition to offering an opportunity to examine the relationship between environmental legislation and environmental politics, Vail Pass illustrates the central role played by aesthetics in shaping how people think about and act towards the natural world. The Romantic notions of picturesque scenery that shaped the parkway movement and subsequently influenced the design of Vail Pass point to a set of deeply embedded ideas and assumptions about nature. Picturesque aesthetics portray nature as beautiful, tame, and something to be enjoyed through leisure and art.[243] By framing nature as scenery, Vail Pass portrayed the Colorado High Country as a place where people could enjoy natural beauty surrounded by the comforts of modern life. This particular notion of beauty was defined by a series of predictable scenes, most prominently panoramic views of mountain peaks.[244] In this sense, picturesque aesthetics represented nature as static. The fluctuations inherent to ecological systems were obscured by preferences for a visual coherence between foreground, middle ground, and background vistas.[245]

The appeal of this static nature gained its power in large part through an opposition to the more chaotic environment of cities.[246] While the construction of Vail Pass and the growth of High Country ski resorts have been intimately connected to the suburban expansion of Front Range

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[243] Ethan Carr, *Wilderness by Design: Landscape Preservation and the National Park Service* (Lincoln, NE: University of Nebraska Press, 1998), 11-13.
[244] William Philpott, *Vacationland: Tourism and Environment in the Colorado High Country* (Seattle: University of Washington Press, 2013), 142.
[245] Isis Brook, "Reinterpreting the Picturesque," in *The Place of Landscape: Concepts, Contexts, Studies,* ed. by Jeff Malpas (Cambridge, MA: MIT Press, 2011) 171.
[246] William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York: W.W. Norton, 1991), 372.

cities such as Denver, seeing the mountains through a picturesque gaze allowed for the selective removal of the imprints of urban life from the landscape.[247] The highway's alignment, the design of its bridges and retaining walls, and the discerning placement of rocks and trees along the side of the road contribute to the sense of Vail Pass as distant from the urban way of life that produced it. This anti-urban sentiment defined the picturesque portrayals of the British countryside in nineteenth century and the American parkways in the early twentieth century.[248] In the case of post-World War II landscapes such as Vail Pass, highway design helped to transform the remote mountain environment into a tamed vacationland.

The ideas of scenic beauty that Vail Pass embodies reflect some of the broader values of the modern environmental movement.[249] As more people began to take part in outdoor recreation following the Second World War, they began to care about protecting places from environmental damage because they valued those places for their scenic beauty and as sites for outdoor recreation.[250] This focus on scenery and recreation connects post-war environmentalism to broader patterns of consumer culture, in contrast to earlier periods in which the appreciation of the natural world emphasized the conservation of wilderness areas and the management of natural resources for production.[251] Aesthetic preferences have thus been central to shaping

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[247] Denis Cosgrove, *Social Formation and Symbolic Landscape* (Madison: University of Wisconsin Press, 1984), 204 and 212.
[248] Cosgrove, *Social Formation and Symbolic Landscape,* 203-204; Timothy Davis, "The Rise and Decline of the American Parkway," in *The World Beyond the Windshield: Roads and Landscapes in the United States and Europe,* ed. by Christof Mauch and Thomas Zeller (Athens, OH: Ohio University Press, 2008), 38-39.
[249] Samuel Hays, *Beauty, Health, and Permanence: Environmental Politics in the United States, 1955-1985* (Cambridge: Cambridge University Press, 1987), 36-39.
[250] Philpott, *Vacationland,* 301-305.
[251] Hay, *Beauty, Health, and Permanence,* 21.

beliefs about what kinds of landscapes are seen as meaningful and valuable.[252] Seen in this light, aesthetics emerges as a powerful tool in shaping how people think about and act towards the natural environment. Rather than disregarding the picturesque tradition as a tool to hide the forces of production from a landscape, it may be more useful to recognize the power of aesthetics to shape environmental values, and work to articulate new ways of seeing that are more congruent with the natural variations of ecological systems.[253]

An attempt to articulate a new aesthetic mode of landscape appreciation is particularly necessary as climate change reshapes Colorado's High Country. As I reflect on my hesitation to fully embrace the landscape ideal expressed by the Vail Pass design, I realize that in many ways my feelings are shaped by the understanding that the natural systems that define the landscape will continue to undergo dramatic changes that significantly complicate efforts to preserve natural conditions. For instance, since the 1990s, a mountain pine-beetle epidemic has ravaged conifer forests in Colorado and throughout the West. Since 1996, nearly four million acres of forest have succumbed to the insect in Colorado, especially in forests containing lodgepole and ponderosa pine.[254] Climate change has led to warmer wintertime temperatures and increased drought, and these conditions have aided the pine beetles in destroying forests.[255] The tree mortality caused by the mountain pine beetle epidemic has sent waves of change throughout many forest ecosystems,

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[252] William Cronon, "The Trouble with Wilderness; or, Getting back to the Wrong Nature," in *Uncommon Ground: Rethinking the Human Role in Nature,* ed. by William Cronon (New York: W.W. Norton, 1995), 80-81.
[253] Stephen Sheppard, "Beyond Visual Resource Management: Emerging Theories of An Ecological Aesthetic and Visible Stewardship," in *Forests and Landscapes: Linking Ecology, Sustainability, and Aesthetics,* ed. by Stephen Sheppard and H.W. Harshaw (New York: Cabi, 2001), 149-172.
[254] Jose Negron and Bob Cain, "Mountain Pine Beetle in Colorado: A Story of Changing Forests," *Journal of Forestry* 117, no. 2 (March 2019), 144-145.
[255] Ibid., 145.

altering soil composition and water quality, and perhaps most significantly, providing highly-combustible fuel for wild fires.[256] Additionally, climate change has diminished snowpack, threatening the viability of both winter recreation and agricultural production throughout the West and Southwest.[257] The changes to ecosystems caused by phenomena such as pine beetle infestation and degraded snowpack have already altered much of Colorado's visual landscape. As the impacts of these changes become more apparent, it may become increasingly difficult to view Colorado's landscape through a picturesque lens. Efforts to design infrastructure and create land management plans that showcase scenes of natural beauty will need to contend with a landscape that looks different than the stereotypical images of alpine wonderland that define popular perceptions of Colorado.[258]

There is little question that skiing and resort development are major contributors to environmental damage in Colorado. Yet seeing the Vail Pass story as a tale of good design covering up bad ideas may be too simplistic. One may question the wisdom of building a highway through a pristine mountain landscape in the first place, but to argue that people should not seek out experiences in Colorado's outdoor spaces also does not seem like a feasible or desirable position to take. The question, then, is how to allow people to access mountain landscapes without destroying them with sprawling development. The design and construction of Vail Pass may offer a few partial answers to this question. As I seek to reconcile my own conflicted feelings towards Vail Pass and the mountain landscape of Colorado more generally, I

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[256] Tania Schoennagel, Thomas Veblan, Jose Negron, and Jeremy Smith, "Effects of Mountain Pine Beetle on Fuels and Expected Fire Behavior in Lodgepole Pine Forests, Colorado, USA, *Public Library of Science* 7, no. 2 (2012), 300-302.
[257] Henry Fountain, "In Parched Southwest, Warm Spring Renews Threat of 'Megadrought,'" *The New York Times,* July 8, 2020, accessed July 8, 2020.
[258] Philpott, *Vacationland,* 54-60.

have identified two inter-related topics that connect the Vail Pass story to broader questions of sustainability.

First, the Vail Pass landscape is a unique example of an attempt to systematically integrate infrastructure and nature under a comprehensive vision of landscape design. Replicating this relationship in other places may help address broader environmental challenges. To drive Vail Pass is an enjoyable experience because highway and nature are connected through a set of design elements that are unified under a comprehensive idea of landscape. This sense of comprehensiveness stands in contrast to many other sections of I-70, where one must endure sights of destruction before reaching more scenic destinations. The lack of cohesiveness along much of I-70 is in large part due to the fact that there is no centralized land use planning authority for the I-70 corridor. Zoning rules vary from county to county, giving federal and state highway officials minimal power to shape the landscape beyond the edge of the roadway.[259] By embracing the I-70 corridor as a single landscape system—a space not only for travel and transit but also as a space of shared experience—some of the negative aspects of high country development could be addressed. Implementing a unified zoning plan along the entire highway corridor, which could include public transportation alongside private automobile use, would help to more meaningfully connect Denver and other Front Range cities to towns and resorts in the mountains. While there have been attempts to implement such plans, they have for the most part focused on preserving and enhancing sections of highway that are already fairly well-integrated

[259] William Travis, *New Geographies of the American West: Land Use and the Changing Patterns of Place* (Washington, DC: Island Press, 2007), 142-144.

into the landscape rather embracing a larger scale geography that encompasses both the city and the mountains.[260]

Second, the Vail Pass landscape expresses a basic environmental ethic that can aid in breaking down some of the cultural boundaries that have been constructed between human society and the natural world. In assessing the many forces that shaped the construction of the Vail Pass—from the engineering challenges of building a highway at 10,000 feet to the rise of the environmental movement—it is the underlying influence of figures such as Frederick Law Olmsted that articulate an approach to constructing infrastructure that is based upon a collaboration with rather than an opposition towards natural systems. Olmsted's projects embody the principle of shaping place by integrating processes of nonhuman nature with human imagination and ingenuity. Given Vail Pass' connection to the legacy of the parkway movement, some of the basic elements of Olmsted's approach to landscape are evident in the design of Vail Pass. Seen in this light, Vail Pass embodies one of the fundamental qualities of landscape: that they "blur the boundaries between the human and the nonhuman."[261] When some landscapes are seen as 'natural' and others as 'artificial,' this permits the idea that some places are worth treating with care while the degradation of other places can be ignored.[262] Yet when specific design principles are employed in a manner that integrates human and natural systems, the dichotomy between natural and artificial is broken down.

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[260] Colorado Department of Transportation, "Crest of the Rockies Design Segment: Aesthetic Guidance Index," (Denver: Colorado Department of Transportation, n.d.), 1-35.
[261] Anne Whiston Spirn, "Constructing Nature: The Legacy of Frederick Law Olmsted," in *Uncommon Ground: Rethinking the Human Place in Nature,* ed. by William Cronon (New York: W.W. Norton, 1995), 111.
[262] Ibid.

Reflecting on the legacy of Olmsted has helped me to reconcile the conflicted feelings I had towards Vail Pass when I stood outside the visitor's center. As I contemplated the landscape, it struck me that what I appreciated most about the design of the roadway was the effort to treat the ubiquitous space of an interstate highway with a similar amount of attention and care that is given to roads through in places such as national parks. Of course, such care was taken on Vail Pass in large part because of the revered status of Colorado's mountains. Yet the project also shows that within the vast interstate highway system, thoughtful landscape design can emerge. This requires proper legislation, organized grassroots action, and perhaps most importantly, a shared ethic of environmental stewardship within both the public and state agencies. Creating such an environmental ethic is difficult, especially within an economic system that often prioritizes private profit over shared public assets. Yet to embrace infrastructure as a reflection of deeper values and priorities may help to imagine and create such a society.

BIBLIOGRAPHY

Archives

Colorado Department of Transportation. Records. Colorado Department of Transportation Library, Denver.

Denver Public Library. Western History and Genealogy Collection. Conservation Collection, Denver.

Eagle County Historical Society. Historical Files. Eagle Valley Library District, Eagle Branch, Eagle, CO.

Avery Architectural and Fine Arts Library. The Frank Lloyd Wright Foundation Archives. Columbia University, New York City.

Primary Sources

Colorado Division of Highways. *I-70 in a Mountain Environment: Vail Pass Colorado.* Prepared for the United States Department of Transportation in Cooperation with the United States Forest Service and United States Department of Agriculture. FHWA-TS-78-208. Denver, 1978.

--. *Vail Pass: Alignment Studies and Design Concepts.* Prepared by Barton, Stoddard, Milhollin, and Higgins in Cooperation with Taliesin Associated Architects of the Frank Lloyd Wright Foundation. May 1972.

--. *Vail Pass Environmental Study.* Prepared by Barton, Stoddar, Milhollin, and Higgins in Cooperation with Taliesin Associated Architects of the Frank Lloyd Wright Foundation. May 1972.

--. *Transcript of Proceedings of Public Hearing on Interstate 70 Vail Pass Design, Vail, Colorado, June 19, 1972.* Reported by W.J. Burton. June 1972.

Mead and Hunt, Inc., and Colorado Department of Transportation. "Historic Context: Vail Pass Segment of Interstate Highway 70. Colorado Department of Transportation, 2019.

E. Lionel Pavlo Engineering Co. *Interstate Highway Location Study, Dotsero to Empire Junction: State Project No. HPS-I-(20).* Prepared for the Colorado Department of Highways. New York, 1960.

Federal Highway Administration, Bureau of Land Management, and Colorado Division of Highways. "Colorado I-70 Scenic Lands: Preserving and Enhancing the Visibility from Interstate 70 of National Resource Lands in Colorado." Federal Highway Administration, 1975.
The National Environmental Policy Act of 1969. Public Law 91-190, 42nd Congress. January 1, 1970.

Transportation Research Board. *Engineering Solutions to Environmental Constraints: I-70 Over Vail Pass.* Washington, DC: National Academy of Sciences, 1978.

U.S. Department of Agriculture. *The Mount Vernon Memorial Highway: History, Design, and Progress in Construction.* Washington, DC: Government Printing Office, 1930.

U.S. Public Roads Administration. *Toll Roads and Free Roads.* (Washington, DC: Government Printing Office, 1939.

The Wilderness Act of 1964. Public Law 88-557, 88th Congress. July 30, 1964.

Secondary Sources

Ahn, Susan and Regine Keller. "False Nature." In *Thinking the Contemporary Landscape,* edited by Christophe Girot and Dora Imhof, 52-63. New York: Princeton Architectural Press, 2017.

Appleyard, Donald, Kevin Lynch, and John R. Myer. *The View from the Road.* Cambridge, MA: The MIT Press, 1963.

Ballesta, Jordi. "J.B. Jackson: Photographic Notes on the Road." In *Photo Landscape Exhibitions.* Accessed June 7, 2020. https://unmphotolandscapeexhibits.wordpress.com/gph/.

Bacon, Warren. "The Visual Management System of the Forest Service, USDA." In *Proceedings of Our National Landscape*, by Gary H. Elsner and Richard C. Smardon (National Forest Service, 1979): 660-665.

Banham, Reyner. *Los Angeles: The Architecture of Four Ecologies.* Middlesex: Pelican Press, 1971.

Beveridge, Charles E. and David Schuyler, eds. *Creating Central Park: Volume III of the Papers of Frederick Law Olmsted.* Baltimore: Johns Hopkins University Press, 1983.

Birnbaum, Charles A. and Robin Karson. *Pioneers of American Landscape Design.* New York: McGraw Hill, 2000.

Brook, Isis. "Reinterpreting the Picturesque." In *The Place of Landscape: Concepts, Contexts, Studies,* edited by Jeff Malpas*,* 165-182. Cambridge, MA: MIT Press, 2011.

Carr, Ethan. *Wilderness by Design: Landscape Architecture and the National Park Service.* Lincoln, NE: University of Nebraska Press, 1998.

Carson, Rachel. *Silent Spring.* Cambridge, MA: The Riverside Press, 1962.

Clark, Gilmore. "Beauty: A Wanting Factor in the Turnpike Design. *Landscape Architecture* 32 (1945): 53-54.

Cosgrove, Denis. *Social Formation and Symbolic Landscape.* Madison, WI: University of Wisconsin Press, 1984.

--. "Prospect, Perspective, and the Evolution of the Landscape Idea." *Transactions of the Institue of British Geographers,* 10, no. 1 (1985): 45-62.

Cronon, William. *Nature's Metropolis: Chicago and the Great West.* New York: W.W. Norton, 1991.

--. "The Trouble with Wilderness; or, Getting back to the Wrong Nature*."* In *Uncommon Ground: Rethinking the Human Role in Nature,* edited by William Cronon, 69-90, New York: W.W. Norton, 1995.

Crowe, Sylvia. *The Landscape of Roads.* London: The Architectural Press, 1960.

Davis, Timothy. *National Park Roads: A Legacy in the American Landscape.* Charlottesville: University of Virginia Press, 2016.

--. "The Rise and Decline of the American Parkway." In *The World Beyond the Windshield: Roads and Landscape in the United States and Europe,* edited by Christof Mauch and Thomas Zeller, 35-58. Athens, OH: Ohio University Press, 2008.

--. "Mount Vernon Memorial Highway and the Evolution of the American Parkway." PhD diss., University of Texas at Austin, 1997.

Downer, Jay. "How Westchester Treats its Roadsides." *American Civic Annual* (1930): 165-170.

Frazier, John. "The Park That Is to Be." *American Motorist* 5 (October 1930): 24-32.

Gibson, James J. *The Perception of the Visual World.* Boston: Houghton Mifflin, 1950.

Gobster, Paul. "An Ecological Aesthetic for Forest Landscape Management." *Landscape Journal* 18, no. 1 (Spring 1999): 54-64.

Gottlieb, Robert. *Forcing the Spring: The Transformation of the American Environmental Movement.* Rev. ed. Washington, DC: Island Press, 2005.

Gutfreund, Owen D. *Twentieth Century Sprawl: Highways and the Reshaping of the American Landscape.* Oxford: Oxford University Press, 2004.

Halprin, Lawrence. *Freeways.* New York: Reinhold, 1966.

Hartshorn, Richard. " 'Exceptionalism in Geography' Re-Examined." *Annals of the Association of American Geographers* 45, no. 3 (September 1955): 205-244

Haycox, Stephen. *Alaska: An American Colony.* Seattle: University of Washington Press, 2002.

Hays, Samuel P. *Beauty, Health, and Permanence: Environmental Politics in the United States. 1955-1985.* Cambridge: Cambridge University Press, 1987.

--. *A History of Environmental Politics Since 1945.* Pittsburgh: University of Pittsburgh Press, 2000.

International Engineering Company, Inc., Colorado Division of Highways, and the Frank Lloyd Wright Foundation. *Vail Pass: A Highway in Harmony with its Environment*. DVD-ROM, 29 minutes. Colorado Division of Highways, 1978.

Jackson, John Brinkerhoff. *Discovering the Vernacular Landscape.* New Haven: Yale University Press, 1984.

Jacobs, Jane. *The Death and Life of Great American Cities*. New York: Vintage Books, 1962.

Kemp, Louis Ward. "Aesthetes as Engineers: The Occupational Ideology of Highway Design." *Technology and Culture* 27, no. 4 (October 1986): 759-797.

Lekan, Thomas and Thomas Zeller. "Region, Scenery, and Power: Cultural Landscapes in Environmental History." In *The Oxford Handbook of Environmental History,* edited by Andrew Isenberg, 332-365. Oxford: Oxford University Press, 2014.

Lewis, Pierce. "Axioms for Reading the Landscape: Some Guides to the American Scene." In *The Interpretation of Ordinary Landscapes: Geographical Essays.* Edited by Donald Meinig, 11-32. New York: Oxford University Press, 1979.

Lorch, Brian. "Transport and Aquatic Impacts of Highway Traction Sand and Salt Near Vail Pass, Colorado." PhD diss., Colorado State University, 1998.

Litvak, Dianna. "Freeway Fighters in Denver, 1948-1975." BA thesis, Colorado College, 1991.

Louter, David. *Windshield Wilderness: Cars, Roads, and Driving in Washington's National Parks.* Seattle: University of Washington Press, 2006.

Meinig, Donald, editor. *The Interpretation of Ordinary Landscapes: Geographical Essays.* New York: Oxford University Press, 1979.

Mitchell, Don. *The Lie of the Land: Migrant Workers and the Californian Landscape* Minneapolis: University of Minnesota Press, 1996.

--. "New Axioms for Reading the Landscape: Paying Attention to Political Economy and Social Justice." In *Political Economies of Landscape Change: Places of Integrative Power,* edited by J.L Wescoate, Jr. and D.M. Johnston, 29-50. Dordrecht: Springer, 2008.

Nash, Roderick Frazier. *Wilderness and the American Mind.* 4th ed. New Haven, CT: Yale University Press, 2001.

Naussauer, Joan Iverson, ed. *Placing Nature: Culture and Landscape Ecology.* Washington, DC: Island Press, 1997.

Negron, Jose and Bob Cain. "Mountain Pine Beetle in Colorado: A Story of Changing Forests." *Journal of Forestry* 117, no. 2 (March 2019): 144-151.

Olson, Brent. "Recreation Capital: Natural Resources, Amenity Development, and Outdoor Recreation in Bend, Oregon." PhD diss., Syracuse University, 2012.

Philpott, William. *Vacationland: Tourism and Environment in the Colorado High Country.* Weyerhauser Environmental Books, edited by William Cronon. Seattle: University of Washington Press, 2013.

Procence, Richard. *Building I-70: The Story of the Development of Interstate Route 70 between the Utah-Colorado State Line and the Continental Divide.* Denver: Colorado Department of Transportation, n.d.

Rex-Atzet, Wendy, Sally White, and Erika Walker. *Denver Mountain Parks: 100 Years of the Magnificent Dream.* Denver: John Fielder Publishing, 2013.

Rome, Adam Rome. *The Genius of Earth Day: How a 1970 Teach-In Made the First Green Generation.* New York: Hill and Wang, 2013.

--. *The Bulldozer in the Countryside: Suburban Sprawl and the Rise of American Environmentalism.* Cambridge: Cambridge University Press, 2001.

Rose, Mark H. and Bruce E. Seely. "Getting the Interstate System Built: Road Engineers and the Implementation of Public Policy, 1955-1985." *Journal of Policy History* 2, no. 1 (1990): 23-55.

Rothman, Hal. *The Devil's Bargain: Tourism in the Twentieth-Century West.* Lawrence: University of Kansas Press, 1998.

Rybcynski, Witold. *A Clearing in the Distance: Frederick Law Olmsted and America in the Nineteenth Century.* New York: Touchstone, 1999.

Sackman, Douglas Cazaux., ed., *A Companion to American Environmental History.* Malden, 2010.

Schoennagel, Tania, Thomas Veblan, Jose Negron, and Jeremy Smith. "Effects of Mountain Pine Beetle on Fuels and Expected Fire Behavior in Lodgepole Pine Forests, Colorado, USA. *Public Library of Science* 7, no. 2 (2012): 300-302.

Schuler, David. *The New Urban Landscape: The Redefinition of City Form in Nineteenth Century America.* Baltimore: Johns Hopkins University Press, 1986.

Sellers, Christopher. *Crabgrass Crucible: Suburban Nature and the Rise of Environmentalism in Twentieth Century America.* Chapel Hill, NC: University of North Carolina Press, 2012.

Shaffer, Marguerite. *See America First: Tourism and National Identity, 1880-1940* Washington, DC: Smithsonian Institution Press, 2001.

Sheppard, Stephen and Howard Harshaw, eds. *Forests and Landscapes: Linking Ecology, Sustainability, and Aesthetics.* New York: Cabi Publishing, 2001.

Simonson, Wilbur H. and R.E. Royall *Landschaftsgestaltung an der Strasse.* Berlin: Volk und Reich, 1935.

Snow, Brewster, ed. *The Highway and the Landscape.* New Brunswick, NJ: Rutgers University Press, 1959.

Spirn, Anne Whiston. "Constructing Nature: The Legacy of Frederick Law Olmstead." In *Uncommon Ground: Rethinking the Human Place in Nature,* edited by William Cronon, 91-113. New York: W.W. Norton and Co., 1996.

Stern, Marc J., Andrew Predmore, Michael J. Mortimer, and David N. Seesholtz. "The Meaning of the National Environmental Policy Act within the U.S. Forest Service. *Journal of Environmental Management* 91 (2010): 1371-1379.

Summer, Jason. "Copper Triangle." In *75 Best Rides Colorado: The Best Road Biking Routes,* 38-39. Seattle, WA: Mountaineer Books, 2015.

Sutter, Paul. *Driven Wild: How the Fight Against Automobiles Launched the Modern Wilderness Movement.* Weyerhauser Environmental Books, edited by William Cronon. Seattle: University of Washington Press, 2002.

Travis, William R. *New Geographies of the American West: Land Use and the Changing Patterns of Place.* Washington, DC: Island Press, 2007.

Tunnard, Christopher and Borris Pushkarev. *Man-Made America: Chaos or Control? An Inquiry into Selected Problems of Design in the Urbanized Landscape.* New Haven: Yale University Press, 1963.

Turner, James Morton and Andrew Isenberg. *The Republican Reversal: Conservatives and the Environment from Nixon to Trump.* Cambridge, MA: Harvard University Press, 2018.

Vandone, I. "La Strada Commemorativa da Washington a Mount Vernon." *Strada* 13 (January 1931): 2-8.

Venturi, Robert, Denise Scott Brown, and Stephen Izenour. *Learning from Las Vegas.* Cambridge, MA: The MIT Press, 1972.

Weingroff, Richard. "Addressing the Quiet Crisis." *Highway History.* Federal Highway Administration. Last modified June 27, 2017. Accessed February 7, 2020. https://www.fhwa.dot.gov/highwayhistory/nepa/01.cfm#a.

--. "The 1956 Standards." In *The Interstate Highway System.* Federal Highway Administration. Last modified January 1, 2017. Accessed March 3, 2020, https://www.fhwa.dot.gov/infrastructure/target.cfm.

--. "Why Does I-70 End in Cove Fort, Utah?" *Highway History.* Federal Highway Administration. Last modified June, 27, 2017. Accessed March 3, 2020. https://www.fhwa.dot.gov/infrastructure/covefort.cfm.

Weisiger, Marsha. *Dreaming of Sheep in Navajo Country.* Seattle: University of Washing Press, 2009.

Wells, Christopher W. *Car Country: An Environmental History.* Seattle: University of Washington Press, 2012.

Williams, Raymond. *The City and the Country.* New York: Oxford University Press, 1973.

Wilson, Robert Wilson. *Seeking Refuge: Birds and Landscape of the Pacific Flyway.* Seattle: University of Washington Press, 2010.

Wylie, John. *Landscape.* New York: Routledge, 2007.

Zeller, Thomas. *Driving Germany: The Landscape of the German Autobahn, 1930-1970.* New York: Berghahn Books, 2006.

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