

# HISTORICAL DEVELOPMENT OF SCENIC ROUTES

Thematic Study





---

# HISTORICAL DEVELOPMENT OF SCENIC ROUTES

Thematic study for the consideration of the inscription of scenic roads  
into UNESCO's World Heritage List

**Project management:**

Michael Schimek

**Management Team USA:**

Natasha Martin

**Authors:**

Michael Schimek  
Kristina Skåden  
Kurt Luger  
Natasha Martin  
Dan Moore  
Sally Pearce  
Thomas Mitterecker

**Editor:**

Michael Schimek

**Proofreading:**

Natasha Martin  
Sally Pearce  
Ruby Cray

**French summary translation:**

Cleo Thoma

**Layout:**

Michael Schimek

**Commissioned by the**

Austrian Ministry for Arts and Culture,  
Public Service and Sports (BMKÖS)

 Federal Ministry  
Republic of Austria  
Arts, Culture,  
Civil Service and Sport

**following a recommendation by**

ICOMOS

**Krems / Oslo / Salzburg / Phnom Penh / Seattle / Denver / Berndorf**

August 2020

**Overall project responsibility:**

schimek plant  
Ingenieurbüro für Raumplanung und Raumordnung  
DI Michael Schimek, MA  
A-3500 Krems, Ernst-Krenek-Straße 3/22  
www.schimek-plant.at



**Printing:**

druck.at, A-2544 Leobersdorf



---

## SHORT SUMMARY

Roads have been built throughout the history of mankind, but for the longest time they predominantly stayed the concern of local and regional authorities. Modern-style road building began in the 18<sup>th</sup> century. Long-distance roads were mainly built for military or commercial purposes. During the industrial revolution, railways and waterways were the preferred ways of transport. This changed at the end of the 19<sup>th</sup> century with the invention of the automobile and the eventual motorization of every corner of the world.

Roads can be either cultural roads, which have evolved over time, or engineered roads, which have been built for a certain purpose. A sub-category of both are aesthetic or scenic roads. From the end of the 19<sup>th</sup> century onwards, many of the globe's scenic roads have been built as engineered roads, as infrastructure serving the rising tourism industry, and closely connected with the phenomenon of individual mass motorization.

Tourism serves the desire of people for travelling to places of longing, experiencing new horizons and leaving behind everyday life for a period of time. Scenic roads refer to perception and landscape concepts developed in the 19<sup>th</sup> century, in the landscape parks of the time and by recognizing the value of nature. Purpose-made roads for car travel, such as many scenic roads of the late 19<sup>th</sup> and the 20<sup>th</sup> century, have their roots in the carriage parkways of the 19<sup>th</sup> century and in existing Alpine pass roads which proved to have scenic potential.

This thematic study gives a profound background of the development of relevant disciplines, like landscape perception, tourism, fine arts, landscape architecture, and traffic system development. It describes a wide range of cultural and engineered roads, with a focus on engineered scenic roads of the 19<sup>th</sup> and 20<sup>th</sup> century, and deals with contemporary ways of conserving and presenting historic roads by branding and including them in protection and management programs. Finally, the study proposes issues and questions to be raised in case that roads are considered to be included into UNESCO's World Heritage list.

---

# RÉSUMÉ

À travers son histoire, l'homme construit des routes, mais la plupart du temps, cette mission incombait aux autorités locales et régionales. La construction de routes au sens moderne du terme commença au 18<sup>e</sup> siècle. Des trajets de longue distance furent mis en place avant tout à des fins militaires ou commerciales. Pendant la révolution industrielle, les chemins de fer et les voies fluviales constituaient les voies de transport les plus utilisées. Tout cela changea à la fin du 19<sup>e</sup> siècle, suite à l'invention de l'automobile et la motorisation du monde entier qui en résulta.

Les routes peuvent être subdivisées en „voies culturelles“ (*cultural roads*), qui se développèrent à travers le temps, et en „voies construites“ (*engineered roads*), qui furent érigées à des fins précises. Dans les deux cas de figure apparut la sous-catégorie des routes esthétiques ou panoramiques (*scenic roads*). À partir de la fin du 19<sup>e</sup> siècle, de nombreuses routes panoramiques furent érigées en tant que voies construites, alimentant l'infrastructure de l'industrie du tourisme alors en plein essor, et reliées étroitement au phénomène de la motorisation individuelle de masse.

Le tourisme répond au désir des gens de voyager vers des destinations de rêve, de faire de nouvelles expériences et d'abandonner, pendant un moment, leur vie quotidienne. Les routes panoramiques se fondent sur des perceptions et des conceptions de paysage datant du 19<sup>e</sup> siècle, sur les parcs paysagers de l'époque et sur la valorisation émergente de la nature. Des routes érigées spécialement pour les voitures, comme beaucoup de routes panoramiques de la fin du 19<sup>e</sup>, ainsi que du 20<sup>e</sup> siècles, prennent racine dans les voies de transport aménagées (*carriage parkways*) du 19<sup>e</sup> siècle et dans les cols alpins existants, dont le potentiel paysager et touristique fut vite reconnu.

Cette étude thématique établit un lien entre ce développement et celui d'un grand nombre d'autres disciplines, telles que la perception paysagère, l'histoire du tourisme, l'histoire des arts, l'architecture paysagère, et le développement des réseaux de transport. Elle examine et décrit un large éventail de voies culturelles et de voies construites, en mettant l'accent sur les routes panoramiques érigées aux 19<sup>e</sup> et 20<sup>e</sup> siècles, et s'intéresse à la façon dont ces voies historiques sont incluses de nos jours dans des programmes de conservation et de marketing. Enfin, cette étude propose des sujets de discussion au cas où il serait prévu d'inscrire ces routes au Patrimoine mondial de l'UNESCO.

---

# ZUSAMMENFASSUNG

Straßen wurden schon immer gebaut, aber die längste Zeit blieb dies eine Aufgabe der lokalen und regionalen Ebene. Straßenbau im modernen Sinn gibt es seit dem 18. Jahrhundert. Längere Straßenverbindungen wurden vor allem aus militärischen und wirtschaftlichen Gründen errichtet. Während der Industriellen Revolution blieben aber Eisenbahnen und Wasserwege die wichtigsten Verkehrswege. Das änderte sich mit der Erfindung des Automobils und der darauffolgenden Motorisierung der ganzen Welt.

Straßen fallen in die Kategorien „Kulturwege“ (cultural roads), die sich über die Zeit entwickelt haben, oder „Ingenieurstraßen“ (engineered roads), die für bestimmte Zwecke errichtet wurden. Eine Unterkategorie von beiden sind ästhetische oder Panoramastraßen (scenic roads). Viele der Panoramastraßen seit dem Ende des 19. Jahrhunderts wurden als Ingenieurstraßen für die aufstrebende Tourismuswirtschaft errichtet, als Infrastruktur für das Phänomen der Massenmotorisierung.

Tourismus bedient das Interesse von Menschen an Orten der Sehnsucht, um neue Perspektiven zu erhalten und den Alltag für eine bestimmte Zeit hinter sich zu lassen. Panoramastraßen fußen auf Sichtweisen und Landschaftskonzepten des 19. Jahrhunderts, auf den Landschaftsparks dieser Zeit und auf der aufkommenden Wertschätzung für den Wert der Natur. Straßen, die speziell für Autos errichtet wurden, wie viele Panoramastraßen des späten 19. und des 20. Jahrhunderts, haben ihre Wurzeln in den Parkways des 19. Jahrhunderts und in den bestehenden Alpenpässen, deren landschaftliches und touristisches Potenzial schon früh erkannt wurde.

Die Thematische Studie stellt diese Entwicklung in Zusammenhang mit der Perspektive vieler Disziplinen, wie Landschaftswahrnehmung, Tourismusgeschichte, Kunstgeschichte, Landschaftsarchitektur und Verkehrssystementwicklung. Sie untersucht eine breite Palette von Kulturwegen und Ingenieurstraßen, legt einen Fokus auf die Panoramastraßen des 19. und 20. Jahrhunderts und beschreibt, wie historische Straßen heute vermarktet und in Schutz- und Managementpläne integriert werden. Abschließend schlägt die Studie Themen und Fragestellungen vor, die behandelt werden sollten, wenn vorgeschlagen wird, Straßen in die Welterbeliste der UNESCO einzutragen.





---

# CONTENTS

## THE TASK

1.1.	<b>The need for a Thematic Study</b> .....	3
1.2.	<b>The team of authors</b> .....	3
1.3.	<b>Methodical approach</b> .....	5
1.4.	<b>Acknowledgements</b> .....	6

## THEORETICAL AND HISTORICAL BACKGROUND

2.1.	<b>Cultural-historical background of landscape perception and definition of the aesthetic and the scenic - theoretical assumptions</b> .....	9
2.1.1.	The concept of the term landscape .....	9
2.1.2.	The role of the observer in space and landscape perception .....	11
2.1.3.	Speed and panorama - determinants of landscape perception .....	13
2.1.4.	The sublime and natural beauty .....	16
2.1.5.	Places of happiness - heterotopia .....	18
2.1.6.	Photographs as remembrance of the important .....	19
2.1.7.	The quasi-sacralization of space .....	20
2.2.	<b>The history of travelling and tourism from 1500 to today</b> .....	21
2.2.1.	Early travel and tourism .....	21
2.2.2.	Forms of tourism .....	24
2.2.3.	Phases of modern tourism in European history .....	26
2.2.4.	The development of the tourism industry in Northern America .....	28
2.2.5.	Current trends in global tourism .....	30
2.3.	<b>Landscape and fine arts since 1600</b> .....	33
2.3.1.	Enlightenment and a new focus on landscape painting .....	33
2.3.2.	The 19 <sup>th</sup> century .....	35
2.3.3.	The 20 <sup>th</sup> century .....	38
2.4.	<b>Landscape architecture and planning from 1750 to today</b> .....	40
2.4.1.	The development of landscape gardens and parks in England in the 18 <sup>th</sup> century .....	40
2.4.2.	Landscape gardens and parks in the rest of Europe from 1750 to 1900 .....	44
2.4.3.	American landscape parks in the 19 <sup>th</sup> century .....	48
2.4.4.	Landscape planning issues from 1850 to 1950 .....	50

---

2.4.5.	World War II aftermath and the ecological movement from the 1970s .....	55
<b>2.5.</b>	<b>History of land-bound traffic system development from 1660 to today .....</b>	<b>55</b>
2.5.1.	Road construction in Europe from 1660 to 1840 .....	55
2.5.2.	Focus on railway and waterway construction in Europe in the 19 <sup>th</sup> century .....	61
2.5.3.	Road and railway construction in the United States in the 19 <sup>th</sup> century .....	62
2.5.4.	Traffic systems in other continents in the 19 <sup>th</sup> century .....	65
2.5.5.	Early motorization in the United States from 1890 to 1945 .....	69
2.5.6.	Early motorization in Europe from 1890 to 1945 .....	71
2.5.7.	Post-World War II scenarios and future developments .....	75

## ROADS

<b>3.1.</b>	<b>Three types of historic roads .....</b>	<b>83</b>
3.1.1.	Cultural roads .....	83
3.1.2.	Engineered roads .....	84
3.1.3.	Aesthetic roads .....	84
<b>3.2.</b>	<b>Roads and commodity theory .....</b>	<b>84</b>
<b>3.3.</b>	<b>Cultural roads .....</b>	<b>86</b>
3.3.1.	Cultural roads in Europe .....	86
3.3.2.	Cultural roads in the United States .....	87
3.3.3.	Cultural roads in other parts of the world .....	90
<b>3.4.</b>	<b>Engineered roads and their relationship to landscape issues .....</b>	<b>95</b>
3.4.1.	Early designed roads in Europe .....	95
3.4.2.	Early designed roads in America .....	97
3.4.3.	Sub-urban carriage parkways in the United States from 1860 to 1920 .....	99
3.4.4.	Motor roads in the United States from 1900 to 1940 .....	102
3.4.5.	The Italian <i>autostrade</i> .....	106
3.4.6.	The German <i>Reichsautobahn</i> .....	108
3.4.7.	Highway and Interstate construction in the United States from 1930 to 1970 .....	114
3.4.8.	Highway construction in Europe since 1945 .....	118
3.4.9.	Road construction and environmental issues in the United States .....	120
3.4.10.	Road construction and environmental issues in Europe since 1970 .....	122
3.4.11.	Engineered roads in other continents .....	124

---

## LEISURE AND TOURISM-ORIENTED ROADS

<b>4.1.</b>	<b>The transition of cultural and military roads to leisure roads in the 19<sup>th</sup> and early 20<sup>th</sup> century</b>	<b>131</b>
4.1.1.	Early examples of mixed-purpose Alpine Roads	131
4.1.2.	First mixed-purpose roads for motorized leisure traffic	138
4.1.3.	Ocean drives turned scenic routes	141
<b>4.2.</b>	<b>Historic carriage and car parkways in the United States</b>	<b>143</b>
4.2.1.	19 <sup>th</sup> century carriage parkways	143
4.2.2.	The Bronx River Parkway	145
4.2.3.	Mount Vernon Memorial Highway / George Washington Memorial Parkway	146
4.2.4.	The Colonial Parkway	147
4.2.5.	A case study: Denver parks and parkways	149
<b>4.3.</b>	<b>National Park parkways in the United States</b>	<b>149</b>
4.3.1.	Accessing the scenic wonders of the United States	149
4.3.2.	The National Park Service	152
4.3.3.	The parkway concept in the National Parks	153
4.3.4.	The Blue Ridge Parkway	154
4.3.5.	The carriage roads of Acadia National Park	157
4.3.6.	Other National Park parkways	158
4.3.7.	Similar parkways outside the National Parks	159
<b>4.4.</b>	<b>The role of car racing at the beginning of motorization</b>	<b>161</b>
<b>4.5.</b>	<b>Tourism parkways in Europe from 1918 to 1945</b>	<b>167</b>
4.5.1.	Austrian examples	167
4.5.2.	German examples	175
4.5.3.	Swiss, Italian, Spanish, and French examples	178
4.5.4.	Norwegian examples	182
<b>4.6.</b>	<b>Similar tourism and multi-purpose roads after 1945 and in other continents</b>	<b>185</b>
4.6.1.	Additional Austrian examples	185
4.6.2.	Alpine roads to skiing resorts with scenic aspects in Europe	189
4.6.3.	Roads with different purpose turned into or created as scenic roads in Europe	192
4.6.4.	Additional examples from Northern America	195
4.6.5.	Examples from Asia	197
4.6.6.	Other scenic roads worldwide	202

---

## PROTECTION SCHEMES AND BRANDING CONCEPTS

<b>5.1.</b>	<b>Monument protection</b> .....	<b>209</b>
<b>5.2.</b>	<b>United States National Scenic Byway Program</b> .....	<b>210</b>
5.2.1.	Scenic Byway Programs .....	210
5.2.2.	The National Scenic Byway Program .....	211
5.2.3.	The benefit of scenic byway designation .....	213
5.2.4.	A calculation of the economic impacts and benefits of scenic byways .....	214
5.2.5.	Other Scenic Byway Programs .....	214
5.2.6.	Multiple byway designations: The example of Colorado .....	215
<b>5.3.</b>	<b>Examples for Other Branding Concepts</b> .....	<b>216</b>

## CONCLUSIONS

<b>6.1.</b>	<b>General framework of the study</b> .....	<b>223</b>
<b>6.2.</b>	<b>General findings</b> .....	<b>223</b>
<b>6.3.</b>	<b>The application of World Heritage criteria to roads</b> .....	<b>224</b>
<b>6.4.</b>	<b>Authenticity, integrity, and management</b> .....	<b>226</b>

## SOURCES

<b>Bibliography</b> .....	<b>229</b>
<b>Uncredited and additional internet references</b> .....	<b>244</b>

---

# ILLUSTRATIONS

## THE TASK

### THEORETICAL AND HISTORICAL BACKGROUND

Fig. 1	View from Mont Ventoux, to the north, as possibly witnessed by Petrarch during his ascent in 1336 .....	10
Fig. 2	Emotional geography, full of symbolism - World Heritage Florence .....	12
Fig. 3	A detail of the ‚Panorama of Salzburg‘ (Johann Michael Sattler, 1825-1829) .....	14
Fig. 4	Natural beauty - summits of desire around the Matterhorn .....	17
Fig. 5	Paradise and heterotopia - Garden of Dreams, Keshar Mahal, Kathmandu, Nepal .....	19
Fig. 6	Tourists like to capture the moment and take it home as a trophy .....	20
Fig. 7	A reality not of this world .....	21
Fig. 8	The Netherlands were visited on the <i>Grand Tour</i> because of their excellence in technical development .....	23
Fig. 9	A typical <i>Sommerfrische</i> villa in the lake district of the Salzkammergut .....	25
Fig. 10	The early days of coach tourism, organized by travel agencies .....	27
Fig. 11	Greenwood Cemetery, built in 1837 in Brooklyn, is an early example of a rural graveyard .....	28
Fig. 12	1921 Ford Model T designed by Henry Ford and mass produced for the keen driving population in the United States .....	30
Fig. 13	‚Living rooms on wheels‘ at Monument Valley. ....	31
Fig. 14	The days before Corona: Overtourism in front of Mozart’s birthplace in Salzburg .....	33
Fig. 15	‚The Passage through Krokkleven near Ringerike in Norway‘ (Erik Pauelsen, 1788-1789) .....	34
Fig. 16	‚The Abbey in the Oak Forest‘ (Caspar David Friedrich, 1808-1810) .....	35
Fig. 17	‚Alla Stanga‘ (Giovanni Segantini, 1886) .....	37
Fig. 18	‚Die Bergmäher‘ (Albin Egger-Lienz, 1907) .....	38
Fig. 19	The Temple of Piety at Royal Studley .....	41
Fig. 20	Upper and Lower Cascades, Rousham House Garden, designed by William Kent .....	42
Fig. 21	Prior Park in Bath, designed by Capability Brown .....	43
Fig. 22	Iron Bridge, Wörlitz Park .....	45
Fig. 23	Park Landscape at Bad Muskau .....	46
Fig. 24	Artificial waterfall in Bad Muskau Park .....	47
Fig. 25	Bridle path in Central Park, New York City .....	48
Fig. 26	1894 plan of Boston’s Emerald Necklace of parks .....	50
Fig. 27	<i>Schrebergarten</i> in Böblingen, Germany .....	51

---

Fig. 28	One of the first plans for an ideal Garden City by Ebenezer Howard, 1902 .....	52
Fig. 29	The ‚Moorish Room‘, one of the educational ‚architectural style classrooms‘ in the Primary and Secondary School at Berndorf, Austria, built by the Krupp Family .....	53
Fig. 30	Protest against the Nuclear Reprocessing Plant at Wackersdorf, Bavaria, was partly organized by the Catholic Church .....	55
Fig. 31	Portrait of Daniel-Charles Trudaine .....	56
Fig. 32	The former Penparcau Tollhouse at Aberystwyth, Wales, from 1771 .....	58
Fig. 33	John Loudon McAdam (1756-1836) .....	59
Fig. 34	Strelitzer Chaussee at Ravensbrück in Brandenburg, Germany, around 1900 .....	60
Fig. 35	‚The Railway as a Farmer Menace‘ (Carl August Schöll, 1858) .....	61
Fig. 36	B&O Railroad Bridge in Harpers Ferry, West Virginia .....	63
Fig. 37	The Trans-Siberian Railway bridge over the Kama River .....	66
Fig. 38	The opening of the short-lived Woosung road, the first railway in China .....	67
Fig. 39	The steam engine ‚Ballarat‘ in the sand in Wonnerup, Western Australia 1921 .....	68
Fig. 40	One of the first horseless carriages built by Frank Duryea around 1895 .....	70
Fig. 41	Alfred Sloan, the architect of ‚planned obsolescence,‘ was on the cover of Time Magazine in 1926 .....	71
Fig. 42	A Hildebrand & Wolfmüller motorbike from 1894 .....	72
Fig. 43	A Morris Cowley from 1927 .....	74
Fig. 44	Cars per inhabitant in Austria 1950-2019 .....	75
Fig. 45	The original VW 1 car, called ‚Bretzel Käfer,‘ produced in 1950 .....	76
Fig. 46	A Shinkansen train in front of Mount Fuji .....	77

## ROADS

Fig. 47	A classification of goods .....	85
Fig. 48	Part of the Roman <i>Via Appia Antica</i> at the Rome city quarter Quattro Miglio .....	87
Fig. 49	A plank road on St George Island, Alaska, in 1938 .....	88
Fig. 50	1904 editorial cartoon urging for funds for the Good Roads Movement .....	89
Fig. 51	The Kizil Caves in Xinjian province, China .....	91
Fig. 52	A worker at Bilma saltworks in Niger .....	93
Fig. 53	A street scene from Timbuktu, Mali, 1895 .....	93
Fig. 54	A part of the historic <i>Qhapaq Ñan</i> road network in Peru .....	94
Fig. 55	‘A Hiker in the Krokkleiva Gorge on His Way to Oslo’ (Eduard von Buchan, 1833) .....	96

---

Fig. 56	Pueblo Bonito, Chaco Canyon National Park .....	97
Fig. 57	An original milepost marker in Ohio .....	98
Fig. 58	Stone bridge over Beargrass Creek in Cherokee Park, Louisville, Kentucky .....	100
Fig. 59	Seattle parks, boulevards, and playgrounds map from 1909 .....	101
Fig. 60	Interpretive mural on the Lincoln Highway .....	103
Fig. 61	Historic Route 66 near Peach Springs, Arizona .....	105
Fig. 62	A map of the original location of the <i>autostrada Milano-Laghi</i> .....	106
Fig. 63	Toll gate zone of the <i>autostrada Milano-Laghi</i> in 1929 .....	107
Fig. 64	Gas station at the <i>Reichsautobahn</i> Göttingen-Bad Hersfeld in 1937 or 1938 .....	110
Fig. 65	Reichsautobahn Berlin-Munich at the Elbe and Mulde Lowlands southeast of Dessau. The trees in the central median were deliberately kept for landscape reasons .....	111
Fig. 66	Bridge over the river Saale at Hirschberg, 1938-1940 .....	112
Fig. 67	Passage over the Irschenberg hill in 2017 .....	113
Fig. 68	The ‘Heroes Tunnel’ on Wilbur Cross Parkway, Connecticut, an extension of Merritt Parkway built at the same time .....	115
Fig. 69	Arroyo Seco Parkway, California .....	116
Fig. 70	Denver-Boulder Turnpike .....	117
Fig. 71	A two lane section of the original Yugoslavian ‘Highway of Brotherhood and Unity’ .....	119
Fig. 72	A wildlife overpass over the motorway near Stuttgart, Germany .....	121
Fig. 73	Construction site of the Austrian Motorway A5, one of the recent projects that was evaluated by an EIA .....	123
Fig. 74	A ‘mammy truck’ .....	124
Fig. 75	The still unpaved <i>Carretera Austral</i> near El León .....	126
Fig. 76	Construction of a part of the bridges and one of the artificial islands along the route Hongkong-Zhuhai-Macau .....	128

## LEISURE AND TOURISM-ORIENTED ROADS

Fig. 77	Near the Brenner pass in North Tyrol .....	132
Fig. 78	The Simplon pass road .....	133
Fig. 79	The east ramp of the Stilsfer Joch pass road .....	135
Fig. 80	A picture of the Axenstrasse taken in 1905 for a photo catalogue produced in Detroit, Michigan .....	136
Fig. 81	Juf near Septimerpass, continental Europe’s highest permanently inhabited village .....	137
Fig. 82	Flexenstrasse, Hölltobel passage .....	139

---

Fig. 83	The summit of Pordoijoch, Great Dolomite Road .....	140
Fig. 84	Bixby Creek Bridge, viewed from the northern side near Big Sur on the Central Californian coast .....	141
Fig. 85	Driving on the Amalfi coast .....	142
Fig. 86	U.S. Highway 101 on the coast of Oregon, north of Florence .....	143
Fig. 87	Separate ways for carriages and pedestrians in Central Park .....	144
Fig. 88	Bronx River Parkway .....	145
Fig. 89	George Washington Memorial Parkway .....	147
Fig. 90	Brick underpass on the Colonial Highway .....	148
Fig. 91	Chinook Scenic Byway, Mt Rainier National Park, Washington .....	150
Fig. 92	Going-to-the-Sun Road, Glacier National Park, Montana .....	151
Fig. 93	South entrance sign, Yellowstone National Park .....	152
Fig. 94	Natchez Trace Parkway .....	154
Fig. 95	Green Knob Overlook on Blue Ridge Parkway, North Carolina .....	155
Fig. 96	Mabry Mill on Blue Ridge Parkway, Virginia .....	156
Fig. 97	A carriage road in Acadia National Park, with granite coping stones called 'Rockefeller's Teeth' ..	157
Fig. 98	Skyline Drive, Shenandoah National Park, Virginia .....	158
Fig. 99	Summit of Mt Evans Scenic Byway .....	160
Fig. 100	Needles Highway, South Dakota .....	161
Fig. 101	A Lohner-Porsche electric all-wheel-drive race car from 1902 .....	162
Fig. 102	One of the remaining banked turns at Brooklands .....	164
Fig. 103	A 1909 advertisement poster for Indianapolis Motor Speedway .....	165
Fig. 104	Starting grid at the French Grand Prix 1934 at Linas-Montlhéry .....	166
Fig. 105	Cobblestone paved stretch of the <i>Wiener Höhenstraße</i> between Cobenzl and Kahlenberg .....	168
Fig. 106	The Gaisberg peak and a part of the Gaisberg road .....	169
Fig. 107	Panoramic view of the Großglockner High Alpine Road .....	170
Fig. 108	Original massive coping stones at the Großglockner High Alpine Road .....	171
Fig. 109	The Großglockner peak, the Pasterze glacier, and the end of the High Alpine Road at Franz-Josefs-Höhe .....	173
Fig. 110	One of the original snowplows from the 1950s .....	174
Fig. 111	The harbor of Lindau at Lake Constance, starting point of the German Alpine Road .....	176
Fig. 112	Roßfeld Panorama Road, the Hoher Göll massif in the background .....	177
Fig. 113	Strada della Forra .....	179
Fig. 114	The Nus de Sa Corbata turn ('necktie'), Sa Calobra Road, Mallorca .....	180
Fig. 115	Part of the <i>Lacets de Montvernier</i> during the Tour de France cycling race in 2015 .....	181



---

Fig. 116	Geirangervegen and Geirangerfjord from Dalsnibba .....	183
Fig. 117	The Vøringsfossen waterfall .....	183
Fig. 118	Trollstigen .....	184
Fig. 119	Part of the Krimml waterfalls .....	186
Fig. 120	Restaurant and museum at the Timmelsjoch pass summit .....	187
Fig. 121	The Wachau valley at St. Michael, right of the Danube .....	188
Fig. 122	One of the <i>Colonia Fiat</i> towers in Sestriere, built in 1930 .....	190
Fig. 123	L'Alpe d'Huez in summer 2005 .....	191
Fig. 124	A part of the Transfăgărășan .....	193
Fig. 125	Storseisund Bridge, part of the Atlanterhavsveien .....	194
Fig. 126	Seward Highway, Alaska .....	196
Fig. 127	Tourists planning their journey at a roadside stop, 1952 .....	197
Fig. 128	Arniko Highway from Kathmandu to the Tibetan border after the earthquake in 2015 .....	198
Fig. 129	Salam aleikum - the Pamir Highway in Kyrgyzstan .....	200
Fig. 130	Entrance gate to Great Ocean Road, Australia .....	202
Fig. 131	Mount Cook Road, New Zealand .....	203
Fig. 132	Chapman's Peak Drive, South Africa .....	204
Fig. 133	The Chilean climb to Paso de los Libertadores .....	205

## PROTECTION SCHEMES AND BRANDING CONCEPTS

Fig. 134	Inscription on a monument-protected house in the World Heritage city of Bamberg .....	209
Fig. 135	Santa Fe Trail is designated as a National Historic Trail .....	210
Fig. 136	San Juan Skyway, Colorado, is an All-American Road .....	212
Fig. 137	Kancamagus Scenic Byway, New Hampshire .....	213
Fig. 138	Gold Belt Tour, Colorado, is designated a BLM Backcountry Byway .....	215
Fig. 139	The resting zone at Tungneset Tourist Route, North Norway .....	217
Fig. 140	Touge Roads at Mount Fuji, Japan .....	218

## CONCLUSIONS

## SOURCES



# THE TASK



## The task

---

### 1.1. The Need for a Thematic Study (Michael Schimek)

In 2017, Austria submitted a nomination file for inscription of the Großglockner High Alpine Road (Großglockner-Hochalpenstraße) into the UNESCO World Heritage list to the World Heritage Centre.

After a number of consultations, a technical evaluation mission in September 2018, and the provision of additional information following questions and requests, the World Heritage Committee, during its 43<sup>rd</sup> session in Baku in 2019, deferred the examination of the nomination. The deferral should give the Austrian State Party the chance to “reconsider if a robust case can be made based on a global thematic framework of designed scenic routes in a global context and in a range of environmental contexts which underpins a thorough and compelling comparative analysis, in order to bring into focus the potential significance of the nominated property.”

To further discuss the issue, on March 10<sup>th</sup>, 2020, a meeting at ICOMOS Headquarters was held. There, ICOMOS informed the Austrian State Party and representatives from the nomination file authors and the planned Comparative Analysis with their basic issues:

- *The historical context in terms of how the road reflects landscape ideas was not adequately considered.*
- *The comparative analysis did not fully address philosophical ideas inherited from European Romanticism, which underpinned the concept of scenic roads and the way they offer an understanding of sublime natural landscapes for motorized tourists.*
- *The Alpine Road did not spring up from out of nowhere, it built upon earlier ideas of scenic beauty and how landscapes might be perceived and understood not as static pictures but rather as a dynamic and evolving experiences.*
- *It also built upon earlier engineering creativity, but no detailed comparisons were offered with, for instance, 18<sup>th</sup> century European road engineers or 19<sup>th</sup> century*

*road-makers in other parts of the world.*

- *The comparative analysis needed augmenting at a global scale since the use of motor vehicles in society was and continues to be a global phenomenon.*

[Therefore] *Before further global comparisons can be made, there is a need for a clearer understanding of what is being compared:*

- *What are scenic routes?*
- *When did scenic routes start to be constructed?*
- *Are motorized scenic routes different in concept from earlier scenic routes and carriage drives?*
- *Is engineering creativity a key part of their value?*
- *Are scenic routes still being constructed?*

*To answer these questions, a Thematic study needs to be undertaken to consider whether and how scenic routes might be considered as type of site for nomination to the World Heritage list.*

*This study would start by defining:*

- *What is meant by a scenic route and what types of routes it includes (such as specifically constructed routes for wheeled vehicles).*
- *Historical timeframe within which such scenic routes were constructed.*
- *Geographical scope of such scenic routes.*

*The study would consider:*

- *Landscape ideas upon which scenic routes were developed.*
- *How ideas were transmitted (e.g. the influence of Capability Brown and Humphry Repton on American road building).*
- *How motorized scenic routes evolved.*

*The study would draw conclusions on whether and how scenic routes might be considered for World Heritage nomination. [...] Such a Thematic Study [...] could be helpful to further nominations.*

### 1.2. The Team of Authors (Michael Schimek)

The deferral calls for the creation of a Thematic Study which gives a global perspective and covers a wide range

of environments. This is why the team of authors of the Thematic Study was put together in order to have gained

## The task

---

professional and personal experience in various disciplines all over the world and keep a good balance between scientific, practical, and generalist approaches.

The seven team members have together visited well over 100 countries in the world and are currently based all around the globe, in Austria (Krems, Salzburg, Bernsdorf), Norway (Oslo), the United States (Seattle, Washington, and Denver, Colorado), and Cambodia (Phnom Penh):

### Michael Schimek, Dipl.-Ing., MA

- Consultant for World Heritage issues and regional development. Owner of the consultancy 'schimek plant' in Krems, Austria. Overall team leader.
- Michael Schimek holds a master degree in Spatial Planning, Technical University of Vienna, Austria, with a focus on Landscape Architecture, acquired at the Swedish Agricultural University in Alnarp, Sweden, plus a master degree in Cultural Management, Danube University, Krems, Austria.
- Before starting his consultancy, he served as site manager for the World Heritage cultural landscape Wachau in Austria for more than 16 years. During that time, he held almost 100 speeches and presentations about World Heritage site management all over Europe. As the only practitioner, he held a teaching assignment at Brandenburg Technical University Cottbus, master course 'World Heritage Studies,' for ten years. Additional experience as a trainer for establishing bottom-up led regional development structures in Romania and Bulgaria, by appointment of the European Commission.

### Kristina Skåden, Dr.

- Curator at the museum Maihaugen in Lillehammer and guest researcher at the University of Oslo, Department of Cultural Studies and Oriental Languages (IKOS). Based in Oslo, Norway.
- Kristina Skåden holds an MA and a PhD in Cultural History from the University of Oslo, Norway. In her doctoral thesis, she dealt with how transnational road projects changed through history and shaped landscapes.
- She was recently active as an expert for technical and industrial heritage at the Norwegian Directorate for Cultural Heritage (*Riksantikvaren*) and for historical road at the Government of Hedmark/Innlandet Fyl-

ke. She is elected into the Executive Committee of T2M, the International Association for the History of Transport, Traffic, and Mobility.

### Kurt Luger, Univ.-Prof. Dr.

- Holder of the UNESCO chair for "Cultural Heritage and Tourism" at the University of Salzburg, Austria.
- Kurt Luger holds a professorship and a doctorate in Communication Sciences, University of Salzburg, Austria.
- He served as the head of the Department for Transcultural Communication of the University of Salzburg, Austria, from 1991 to 2017. During that time, he founded the university study courses 'Intercultural Studies' and 'Intercultural Competence' and served as their scientific director. He spent several years of his professional career abroad, as visiting professor in the USA, Nepal, Switzerland, and South Africa. As a mountaineer, he puts a special focus on the mountainous areas in Asia and has initiated an NGO committed to intercultural exchange between the Alps and the Himalayas.

### Natasha Martin, MTA, BA (Hons)

- Tourism specialist at Solimar International, a large consultancy based in Washington D.C. She herself is currently based in Phnom Penh, Cambodia. Team leader of Team USA.
- Natasha Martin holds a Master of Tourism Administration from The George Washington University School of Business in Washington, D.C., and a BA (Honors) in African History from Concordia University in Montréal, Canada.
- She has twelve years of professional experience in integrated adventure tourism product development, strategic planning, building new sector wide public-private partnerships, and tourism branding and marketing. Her work focuses on frontier and niche destinations, including Nepal, Ethiopia, Greenland, Namibia, India, Peru, and Myanmar. She has worked in over 40 countries worldwide.

### Dan Moore, BA

- CEO of Pandion Consulting & Facilitation, a travel industry consultancy focusing on raising the standards, quality, and sustainability of the travel industry, based in Seattle, Washington.
- Dan Moore holds a BA in Biology and Environmental

## The task

---

Studies from Macalester College, St. Paul, Minnesota, and a Certificate in Environmental Education from University of Minnesota in Duluth.

- He has 20 years of experience as an entrepreneur, professional travel guide, and workshop facilitator. He is the founding chair of the international Adventure Travel Guide Standard Governance Board. Because of his focus on nature tourism, he has extensive working experience in National Parks in the United States and Canada, many of which maintain scenic roads as part of their offer. He also teaches Ecotourism, Adventure Travel, and Guide Training at Peninsula College in Washington State.

### Sally Pearce, MA, BA

- President of SJ Pearce Consultants based in Denver, Colorado, specializing in strategic planning, wayfinding and interpretation, hospitality training, marketing, and grant management for scenic byways.
- Sally Pearce holds an MA in Historic Preservation from Colorado State University and an BA in American Studies from Colby College in Waterville, Maine.
- She served as the Executive Director of the National Scenic Byway Foundation for nine years and as manager of the Grand Circle Association, a marketing

organization in the Four Corners Region (Colorado, Utah, Arizona, New Mexico). Former State Scenic Byways Program Coordinator for the Colorado Scenic and Historic Byways Program at the Colorado Department of Transportation for twenty years. In addition, she also served as the Department's Staff Historian for thirteen years. President and Treasurer of the Board of Directors for Colorado Preservation Inc. for seven years. She is a published author, including a guide to Colorado architecture and several books on historic mining districts.

### Thomas Mitterecker, Dipl.-Ing.

- Specialist for building surveys in historical environments at Bogensberger ZT GmbH, Vienna, Austria.
- Thomas Mitterecker holds an MA in Architecture, Technical University of Vienna, Austria. He has graduated with a master thesis on the history of the Großglockner High Alpine Road, which was later professionally published.
- He served as a researcher at the Department of History of Architecture and Building Archaeology, Technical University of Vienna, Austria, and is a member of ICOMOS Austria.

## 1.3. Methodical Approach (Michael Schimek)

The issues raised by ICOMOS cover a wide field of disciplines. The development of scenic routes and roads during the last 250 years was not only influenced by technical developments, but also by political, philosophical, economic, social, and artistic frameworks.

This means that a merely geographical description of different scenic roads all over the world would be too little for a thorough thematic study. The construction of roads over time has to be interpreted in a holistic manner, taking into account the development of society and technical evolutions, but also changing ways of perception and the different roles of travelling and moving through landscapes in general.

This is why we chose to describe relevant aspects of the historical evolution of mankind first, before we deal with the development of road construction for different

means of transport and then focus on leisure-oriented aesthetic roads, since this is also the key feature of the nomination of the Großglockner High Alpine Road in Austria, which gave the reason to compile this thematic study. In the end, we will draw conclusions and propose important features and criteria which might constitute Outstanding Universal Value (OUV) for other nominations of scenic roads in the future.

It is obvious that each of these chapters could be the subject of a single thematic study, with lots of experts worldwide who concentrate on particular issues and have developed a huge amount of specific knowledge. Still, we believe that a useful thematic study should contain a reasonable amount of expert knowledge, but at the same time keep an eye on maintaining comprehensible and applicable information for more generalist users,

## The task

---

like site managers or those who are responsible for local stakeholder involvement. This is why we tried to keep a balance in our team between scientists and experts with academic affiliation as well as people with a lot of expe-

rience in practical consulting and site management. Still, this thematic study is made in accordance with academic standards and procedures.

### 1.4. Acknowledgements (Michael Schimek)

First of all, we wish to thank our contractor, the Austrian State Party, represented by Ruth Pröckl and Elsa Brunner from the Austrian Ministry of Arts and Culture, Public Services and Sports (BMKÖS), for putting trust in us and supporting our work with expertise and experience from recent discussions among World Heritage Professionals.

Another thank you goes out to ICOMOS and its experts, who helped us define the scope of the thematic study.

And finally, we would like to thank the many people in our professional networks who helped us identify the relevant aspects of the study and provided us with additional useful information.





# **THEORETICAL AND HISTORICAL BACKGROUND**



## 2.1. Cultural-Historical Background of Landscape Perception and Definition of the Aesthetic and the Scenic – Theoretical Assumptions

### 2.1.1. The Concept of the Term Landscape (Kurt Luger, Michael Schimek)

A thematic study which aims to describe the interplay between roads and the environment they are built and maintained in has to first deal with the term ‘landscape.’ Any kind of road interacts with its setting, as do the users of those roads.

The primary term to describe this environment or setting of roads is the term ‘landscape.’ Formerly, it was primarily used to describe rural settings, but lately become more ubiquitous since the concept of the ‘urban landscape’ (e.g. as ‘historic urban landscape’) has been introduced into the discussion of heritage issues.

For this thematic study, landscape is therefore not only interpreted as a part of earth of a certain size, containing natural and artificial elements and understood as an entity. Of course, the physical elements that form a landscape - such as mountains, rivers, lakes, vegetation - are characteristic, as are the various forms of visible land use, such as buildings or other traces of human presence. However, this study is rather concerned with the attribution of meanings that, in a holistic way, determine space in the context of its material and topographical conditions. Thus, landscapes become human projections beyond their physical nature. Without going into the details of the paradigm shift in cultural and geographical studies at the end of the 1980s (‘spatial turn’), this study addresses various issues of the connection between human corporality and space. The experience of space is about sensations, the intensity of impressions, emotions, the atmosphere and spirit felt. Thus, it becomes a subjective matter. Sense, meaning, or interpretation affect the concept of space and thus not only the question of how a certain geographical space is constituted, how culture forms and shapes a landscape, but also how spaces are produced linguistically and communicatively in the context of the production of identity through the differentiation of symbolic spatializations. Space – in the sense of distance and proximity – is a central element within cultural systems of order. Through ‘maps of meaning’ or

‘mental maps,’ spatial categories become determinants of social orientation.

An illustrative example for this paradigm is the concept of ‘Imaginary Geography,’ known from Edward Said’s publication ‘Orientalism.’ In his work, Said describes the Orient as a construct that, over a long period of time in the Western world, was created primarily through travel literature or descriptions. These attributions created an ethnocentric perception and formed a distorted image – “its sensuality, its tendency to despotism, its aberrant mentality, its habits of inaccuracy, its backwardness” (Said 1978) – thus influencing global socio-political contexts in a negative way. It is only in postcolonial studies that this way of creating an image of the other has become subject of a disparaging social science criticism.

On the other hand, however, it is also about ideas of ideal landscapes or spaces of longing, about the experience of a space of feelings and immersion, such as the aesthetics of immersion in a real and pictorial space, about playing with the dissolution of distance, and about ideas of space in which people feel comfortable or experience the opposite. (Jackson 1989; Günzel 2017; Lehnert 2011)

There is no doubt that natural space has a formative significance for a settlement area. For example, topography requires a certain kind of architecture, but we have to thank Georg Simmel for the insight that its specific form is the key to an understanding of space, because space is not a matter of nature, but shaped by society as a way of expressing itself. (Simmel 1957)

The debate on the concept of landscape has a long tradition, especially in Europe. The influential German philosopher Joachim Ritter has described his view on the main difference between nature and landscape. According to him, the differentiation of nature and landscape started with the famous ascent of the French mountain Mont Ventoux by the Italian poet and humanist Francesco Petrarca (*Petrarch*) in 1336. In modern times, this

mountain road became an iconic site for early motorization as well as one of the most strenuous stages of the Tour de France cycling race. In his letter about the hike, Petrarch reflects on the holistic view he experienced of the surroundings during his walk up Mont Ventoux, he specifically references the 'landscape,' being something else than just single elements of nature that can be scientifically described. (Ritter 1974; Zeller 2002; Jakob 1997)

Ritter claims that nature, which is described by single scientific disciplines, may only become perceivable in a holistic way as 'landscape' within a philosophical and aesthetic context. So "landscape is nature which becomes present in the view of an empathic observer." Thus, elements of the environment of human beings that have either been used in an economic manner or that have been useless, hostile or dangerous to people, so perceived from a mainly utilitarian point of view, become, as a landscape, something 'huge, sublime and beautiful,' transcending economic categories. (Wittkamp 2001)

Without a doubt, the question of what exactly is meant by 'huge, sublime and beautiful' may vary significantly because of the personal economic and cultural background of the single observer and society in general, not to mention changes to these over time. For example, the same type of hydropower dam built through the Austrian Danube was seen as a symbol of economic prosperity and recovery of society in the post-war Austria of the 1950s and, only a few years later, constituted the

starting point of the ecological movement in the 1970s and 1980s, when concerned citizens prevented the construction of two new dams to protect the character of the landscape along the river and the rich biodiversity of the natural riverine system. Both sites and surroundings of the formerly planned dams are now protected areas, one as a World Heritage site and the other as a National Park.

Any other relevant scientific discipline, like geography, spatial planning, or art history, dealt with this subjectivity of the relationship of the observer and the observed entities in the end. In any of those, a 'landscape' describes a set of natural and cultural elements perceived as something holistic, interacting with each other. The way this interaction was evaluated and has always differed significantly over time, depending on the personal or collective cultural and intellectual paradigms of a certain period of history. Particularly interesting is how the relationship between people and nature and, ultimately, how the interaction of people with the landscape was seen in different times. Especially the answer to the question if people should see themselves as a part of a larger system interacting with nature or if they should be the ones to shape, sometimes even overcome nature in order to create a better way of living for themselves has constantly changed over the last 250 years and has always been reflected in the role of the landscape in art history, architecture, and gardening.

The organization of this interaction of people with

**Fig. 1:**

**View from Mont Ventoux to the north, as possibly witnessed by Petrarch during his ascent in 1336.**

© Nicolas Vincent / iStock



their landscape has always played a key role when it comes to the development of human infrastructure and, especially, traffic lines, such as roads. The creation of roads always imposes a change to landscape itself and to human interaction with it. Thus, the construction of roads, by its nature, cannot avoid changing the perception of the 'huge, sublime and beautiful' of the landscape. The answer to the questions if, and if yes in which way, the construction of roads may contribute to the sublim-

ity and beauty of the landscape and in which way roads should allow the observer to perceive the sublime and beautiful when moving on them, has changed constantly over time.

To describe the differing answers to these questions during the last 250 years will be the task of this thematic study. A special focus will be put on how early motorization from 1890 to 1940 influenced those answers, up until the present day.

### 2.1.2. The Role of the Observer in Space and Landscape Perception (Kurt Luger, Michael Schimek)

Landscape does not exist without an observer. It is an accomplishment of the subject and is bound to his or her attention.

Looking at the history of the topic, it is remarkable that certain types of landscapes have, during the last 250 years, always been evaluated as particularly scenic or beautiful, all over the planet. This is why, some decades ago, doubt arose that this evaluation is mainly following individual cultural backgrounds. Some researchers tried to find more natural science-oriented explanations. For example, in the field of environmental psychology of the 1970s and 1980s, the human geographer Jay Appleton or the biologist Gordon H. Orians created more evolution-oriented theories.

According to the prospect-refuge theory by Appleton, early humans preferred landscape situations that provided them with a good prospect for hunting at the same time as good shelters in case some dangerous predator, most of them physically superior to human beings, approached them. For them, a good landscape gave them the advantage to spot potential danger or threats before they were too near. This is why human beings preferred landscapes similar to the African savannahs: a varied pattern of wide grasslands, single trees, small groups of trees and shrubberies, water, and the edge of forests. Preferring these kinds of landscapes has, in an evolutionary way, shaped the mindset of human beings and, even though they have lost their importance to our survival, still influence the way we see and evaluate landscapes.

Orians also looked for an explanation in the early development of humankind. His theory uses a more

utilitarian approach than Appleton. In this theory, early humans didn't choose locations for living solely from considerations connected to hunting and shelter, but more generally as places which provided them with good resources for living, with sufficient prey and places to collect natural goods, like plants, berries, or wood. This has conditioned human beings in a way that they evaluate such landscapes as beautiful. This is a reason why contemporary ideas of beautiful landscapes, as, for example, represented in the landscape gardens of the last 250 years, still are similar to the savannah-type of landscapes.

More recently, these theories have been criticized for a number of reasons. First of all, it is impossible to empirically prove them, since the starting point of the theories lies so far back in history. Experiments using images of landscape situations neglect the fact that the way those images were taken was to a large extent shaped by the cultural dimensions of the development of humankind, especially during the last centuries. If at all, the varied character of savannah-like landscapes supported orientation in the landscape, which was of high importance to a wandering species like the humans.

An important aspect of the criticism is that the term 'landscape' has only evolved during the last centuries of human development since the Renaissance. There are no written sources using the term prior to that. (Lorberg 2010) What we understand by the term 'landscape' today was created in the 18<sup>th</sup> century. Before that, nature or the environment perceived by people were seen as an orderly whole that did not require any particular aesthetic mediation or interpretation. The environment had a

practical or moral relationship with people. Only when nature became an object of scientific research, technical use, and economic appropriation, when it had been broken down into its individual parts, did the task arise of making it into an aesthetic whole again, adding emotional attention. The fact that a lot of effort had to be put into this task illustrated this loss of cultural self-understanding, which resulted into transforming the material of nature into a landscape entity, as the German cultural philosopher Georg Simmel wrote at the end of the 19<sup>th</sup> century in his *Philosophie der Landschaft* ('Philosophy of Landscape').

The spirit of the time when our contemporary understanding of the term 'landscape' evolved was characterized by industrial-technical change, social upheavals, but also by a crisis of meaning that affected wide parts of the population and especially the bourgeoisie and educated middle classes. It was caused by a certain alienation from life due to the growing domination of technical civilization, the impetuously advancing materialism and the increasing trivialization of the spiritual. But the cultural and social criticism of the time was also understood as a challenge to shape life as a work of art and to develop meaning through style. (Schorske 1979)

Whoever looks at the landscape chooses a location and specifically, a section of it, a secluded part of the whole. The sensitive viewer feels the desire to experience something holistic in the chosen section. To bring

together individual parts into a whole is the task of the painters and poets. Their aestheticization of certain landscape sections, viewpoints, and fields of vision is a precondition for tourists enjoying consuming landscapes.

The term *landschap* was probably first used by Dutch painters who referred to paintings showing scenes from nature or rural life. The term was later used in colloquial language to describe the result or the content of a certain form of 'aesthetic-subjective perception,' in which a sensitive observer views a region formed by nature alone (natural landscape) or by nature and human hand (cultural landscape) – within the framework of culturally shaped patterns of perception – as a harmonious, individual, pictorial whole. In other words, the unity of a landscape does not result from a causal relationship between the objective objects in an area, but from aesthetic, selective, and synthesizing perception.

In the context of the criticism of the Enlightenment and civilization in general, a reinterpretation of this mode of perception has taken place. (Cultural) landscapes were no longer interpreted as subjective and aesthetic totalities, but as "objectively given regional units," as unique "organic totalities" of "land and people," which are the result of successful cultural development. The beauty of the landscape is the aesthetic expression of this development. Since then, in European culture, especially small-scale pre-industrial cultural landscapes symbolize the ideal of harmonious, sustainable, unique regional peo-

Fig. 2:

Emotional geography, full of symbolism - World Heritage Florence.

© Kurt Luger



ple-nature units or socio-ecological systems that need to be protected against globalization, industrialization, and other developments. (Kirchhoff 2012; Thompson 2008)

When we nowadays think of 'imaginary' or 'emotional' geography, we attach great symbolic and emotional importance to landscapes, regions, cities – specific places within a geographical space. Geographical conceptions of the world are based on values, on ideological guidelines of political and religious nature, on literary representations, photographs, films, dreams, and fantasies, which can become symbolic spaces, psychological spatial constructions, or even utopias. (Gravari-Barbas/Graburn 2012)

This applies to one's own environment, for example, in the ideologically biased concept of *Heimat* (homeland), or the faraway space imagined as a dream in the sense of a destination of longing. Images we imagine turn spaces into places, landscapes we imagine shape the subjective experience of landscapes even before we get to know them in person, because they guide and even control our perception. Tourists seek the sensual experience of worlds they have previously imagined and create their own spaces of experience through imagination and projection, supported by literature and film, reinforced by tourism marketing, which produces illusions through visual and verbal messages, 'dream worlds' of which one has forgotten that they in fact may be very different.

During the journey, the tourists seek confirmation of their imaginary geography, the images presented, and the tourist perception on the journey, on holiday, will follow or be adapted to the imagination as much as pos-

sible. Realities that may contradict the imagination and do not correspond with our expectations are deliberately neglected. Our pictures create images of landscapes, their inhabitants, and idealistic concepts, therefore they equip space with meaning and significance. In the perception of landscapes, the mental space, formed by signs and symbols, merges with the physical space. Imaginary geography semiotizes space, endows it with signs and meaning. (Mader 2007)

In all societies and with all individuals, the imagination searches for its spaces beyond everyday activities. Celebrations, daydreams, rites, rituals, games, fairy tales, myths, and even travel give way to the imagination. The journey draws its special power from its positioning between reality and imagination, enables the individual to break out of the standardized everyday life for a certain period of time. Whether this is done for reasons of escape, of amusement, or with the intention of enriching one's life with new experiences - none of the many available entertainment techniques combine real activity and fictional experience like travel. On holiday, we are physically moving, and at the same time, we enter spaces of the imagination. This allows a unique holistic experience, something which is considered being endangered in the modern industrial society based on the division of labor and daily routines. Tourism allows people to look for compensation, it links fantasy and action, it finds its setting in the realm of imagination and the physical world at the same time, leads into real, materially tangible worlds and yet remains attached to the imaginary, to dreams and wishes. (Hennig 1997)

### 2.1.3. Speed and Panorama - Determinants of Landscape Perception (Kurt Luger, Michael Schimek)

The history of the landscape is also one of the means of transport, as perception depends on the speed and the mode of people passing through landscapes.

Before 1750, when the first modes of higher speed transport were established in the form of the post carriages and coaches, transport and travel happened in, what would today be considered, a rather slow form, by foot, on horse, on open carriages, or by ship on natural rivers. All these have in common that the landscapes trav-

elled through were perceived from a central perspective by the traveler. Roads and rivers were seldomly straight, rather winding, at the same time offering varied views into the landscape which helped with orientation. For a very long time this asset was not generally appreciated by the traveler, since travelling, instead of being enjoyable, principally meant a strenuous and dangerous endeavor.

During the era of Enlightenment, when nature started becoming the focus of artistic and aesthetic interest,

the English painter William Gilpin was one of the first to travel down parts of the Thames river and the Wye river at the border of England and Wales for recreational purposes. Following the new ideal of the picturesque, he wanted to record the various landscape impressions along the winding rivers. He created books about his travels, which gave a major boost to domestic tourism at the time. The landmarks along the banks were depicted in the old British tradition of itineraries, a kind of map which didn't show the land in a two-dimensional manner, but as a rectified stretch of land along the route from A to B. (Di Palma 2011)

Since around the turn of the 19<sup>th</sup> century, daily routines and lifestyles of people had increased in pace and mobility from previous generations. The new vessels created for this kind of travel, the post carriages, steamboats, and railway trains, required a different, more rectified and geometrical form of route. Due to the nature of the vessels, only the drivers continued experiencing the landscape passing by from a central perspective viewpoint. The passengers were, on the contrary, placed in cabins and coupés that only allowed a look to the rectangular direction of the travelling vehicle. It was not the direction of one's own movement that could be experienced out of the coupé window, but the endless band of views that ran too fast, a series of background views trimmed around their foreground.

The view from the train window, just as the view from the carriage or steamboat window, created a two-dimensional panoramic world consisting of space and time, giving perception a fleeting

character. It did not allow to experience the journey as a path and thus to capture the landscape as it is when looking at a landscape picture - from the best location chosen for aesthetic reasons. Only from this perspective can the best view or the significant features reveal themselves. One is much more likely to access this all-encompassing panoramic view on top of the coach box or in an open wagon, and this also applies to the first automobiles around the turn of the 20<sup>th</sup> century. In fact, the view from the seats of an automobile were one of the major reasons for their initial success as leisure vehicles. Nowadays, the coupé car - which refers mostly to sports cars with a convertible top - best meets this demand, although the boundless experience of the landscape is probably not the main reason for purchase for most modern-day buyers.

Through its speed, the railway presents a new view of the landscape and a new type of perception of a space-time panorama in motion. The movement of the train through the landscape creates the impression of a moving landscape, although the landscape is actually immovable and the train is moving. Its speed makes objects and scenes appear in an immediate sequence. The 'panoramic view' from the compartment window requires a quick synthesis by the eye to establish the relation. It captures a scenery created by movement, the fleetingness of which makes it impossible to capture the whole at a glance. (Schivelbusch 1981)

Around the middle of the 19<sup>th</sup> century the art of panoramas experienced its heyday. Painters produced huge round paintings that attached great importance to the minute reconstruction of the reproduced moment, be-

**Fig. 3:**

**A detail of the 'Panorama of Salzburg' (Johann Michael Sattler, 1825-1829)**

© Salzburg Museum





## Cultural-Historical Background of Landscape Perception and Definition of the Aesthetic and Scenic - Theoretical Assumptions

cause the moment is the fixation of time immortalized at certain points. Large panoramas were intended for a wide audience and thus became early mass media. Robert Barker, an Irish painter who is considered the inventor of this genre and of the *terminus technicus* (*panorama* – literally means “see everything”), had both patented.

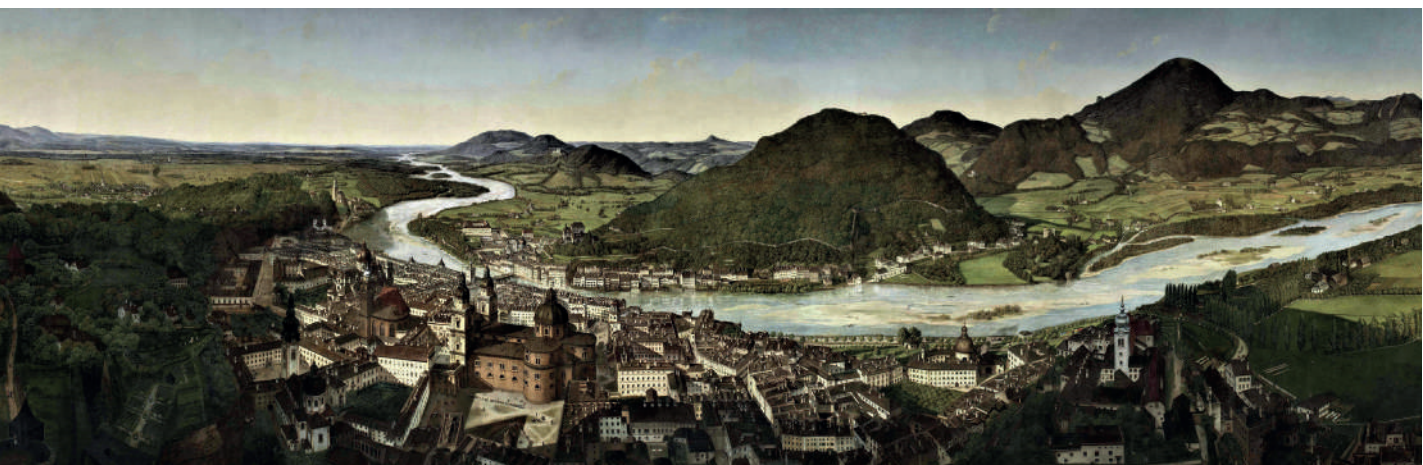
Panoramas of Sydney, Hobart, or Gibraltar enchanted the imperial consciousness of metropolitan visitors in England, while on the continent, mountains became the central theme of many panoramas. The summit world of the Swiss Alps became a hit with the public, and between 1810 and 1850, many so-called ‘cosmoramaists’ served the fairs, presenting their peep-box panoramas. Dioramas managed to convey the illusion of a day’s run from sunrise to sunset. The biggest success was the Moving Panorama ‘The Ascent of Mont Blanc’, the show opened in 1852 and had 2,000 performances. Its success contributed considerably to the enthusiasm for the Alps and to the increase of tourism in Chamonix. John Ruskin noted with annoyance that “this place at the foot of the highest mountain of the Alps was as populated by the English mob as Piccadilly was at rush hour.” (Oettermann 1997) Moving panoramas - striped canvas paintings that are rolled horizontally from one roller to the other - gave the impression of a passing landscape. These simulated travel panoramas were the forerunners of the film. (Roters 1995)

Panoramas allow a 360-degree panoramic view of a painting from a central perspective. The viewer stands in the center and overlooks the events on the canvas like from a tower. They primarily show cities and their sur-

roundings, battle scenes at sea and on land, and mountain landscapes. Enormously large round pictures, such as the *Sattler-Panorama* of the city of Salzburg and the ‘landscape garden’ of its surroundings, which measures five meters in height and 26 meters in length and was painted in the late 1820s, served to whet the appetite of a wide public. The artist Johann Michael Sattler and his family dismantled and packed the panorama and the wooden pavilion necessary for the exhibition and went on a journey with it. They travelled on a houseboat and horse carts for more than 10 years and presented the panorama for an entrance fee all over Europe. The artist earned the living for his family and at the same time made the beauty of the city known everywhere. (Marx 2017)

This travel abroad, which was not an easy endeavor at the time, is an early form of tourism marketing or location placement. A hundred years later, this job was taken over by the film ‘The Sound of Music,’ a fairytale-like plot with vocal interludes set in the enchanting Salzburg countryside. Until today, this musical adaptation attracts hundreds of thousands of tourists to the city of Salzburg and its surroundings, especially from the USA and all over Asia, thus proving the charisma of images that promise a ‘heterotopia,’ a place of happiness as a localizable utopia.

The connection between time and space of this development may be summed up in the following way: The speed of movement extends the radius of action and perception considerably, but at the same time it reduces the experience of detail and the peculiarities. Over the centuries, several ‘space revolutions’ caused by media and tech-



nology have taken place. They find a temporary climax in the concept of the 'global village,' in the real-time reporting of audiovisual media or in the supposed shrinking of space through digitalization. This has also influenced mentalities and changed modes of perception that are profoundly related to everyday practices. (Burckhardt 1997)

Technical interventions in nature like the construction of settlements, industrial estates, roads, bridges, railways, canals, cable cars, power poles, river regulation, or similar changes to a previously unspoilt landscape can have the effect of a massive disruption and provoke social protest. But already in the next generation they will be interpreted as a matter of course, which may in no way have a disturbing character. Perceptions of what is considered untouched and beautiful at the same time of what is considered disturbing or destructive changes over

the years, and so it can happen that some transformations occur as creeping and hardly noticeable and become a new everyday occurrence.

Tourism is accused of consuming a lot of natural landscape because the tourism economy prepares it for 'experience space management' – think of ski slopes or the construction of hotel complexes, chalets, golf courses etc. On the other hand, through appropriate means, tourism also contributes to the preservation of traditional architecture or landscape formations. Sometimes tourism can even enhance the beautification of a location or enables visitors – for example through the construction of a cable car or a road – to experience the existing beauty of nature to its full extent or the new dimension of a designed landscape as a spectacular sensual experience.

#### 2.1.4. The Sublime and Natural Beauty (Kurt Luger)

Landscape is the great theme of art around 1800 - the idealized studio landscape becomes unfashionable, nature studies gain importance, the veduta becomes a landscape portrait. Landscape, depicted as a special form of natural space, as the face of the country, as an appearance, directly affects the viewer in the mirror of his subjective sensations and personal aesthetic patterns of interpretation.

In the Middle Ages, the religious world view of Christianity still dominated in Europe, the whole of nature was a part of creation, just as people were, and nature formed a religious symbol of life and global significance. After the lavish and expansive spatial constructions of the baroque, the landscape narrows, the gaze turns from the distance to the near, viewpoints of romantic emotional art focus on the wilderness, which appears harmonious and its impassability idyllic. The age of Romanticism is characterized by a 'sacralization' of landscape (the 'quasi-sacral' character of World Heritage sites will be discussed later), it becomes the object of almost religious devotion. Art and literature create a new spirit, a remedy against the diseases of civilization, which are essentially attributed to urban areas. The loss of nature is compen-

sated for to a certain extent. In contrast to the ideal landscape in art or the well-known nature around the cities, seascapes and high mountains are discovered. In the first half of the 19<sup>th</sup> century, carried by the romantic movements, an enthusiasm for picturesque mountain landscapes emerged, which remained dominant well into the modern age. (Kos 1992)

At the end of the 19<sup>th</sup> century, the Swiss painter Ferdinand Hodler, one of the most famous creators of Alpine landscapes, saw the artist's mission as "giving shape to the imperishable of nature, revealing its inner beauty. [...] The work of art will reveal a new order inherent in things, and that will be: the idea of freedom." (Wismer/Kunz 1997)

As sublime and natural beauty, landscape found its way into romantic-idealistic philosophy and literature in the 19<sup>th</sup> century. The concept of the sublime expresses the ambivalent feelings of lust and horror in the face of an alien nature as opposed to the pure pleasure of a beautiful work of art. Using the Alps as an example, the conditions of the origin of aesthetic experience and attributions can be understood. Up until the 18<sup>th</sup> century, the mountains were generally regarded as a place of horror

and a hindrance to traffic, as an imposition also on their inhabitants, and were largely avoided. Improvements of roads and pass crossings hardly contributed to a different view of the Alps. The same applies to forests, seas, and deserts, which could be rejected, avoided, or mastered only with the greatest competence and divine assistance. It is only through the imaginations of poets, painters, and philosophers that the new construct of the Alps as a space of longing and imagination is born.

Marjorie Hope Nicolson summarized this paradigm shift as follows: "Human response to mountains has been influenced by inherited conventions of literature and theology, but even more profoundly it has been motivated by man's conception of the world which he inhabits. Before the 'Mountain Glory' could shine, men were forced to change radically their ideas of the structure of the universe, of which that earth is only a part. Theology, philosophy, geology, astronomy - basic and radical changes in all these occurred before the 'Mountain Gloom' gave way to 'Mountain Glory.'" (Nicolson 1959)

The idea of the sublime, the banished and aestheticized horror, is a precondition for the landscape cult of the last centuries. It set the course for modern tourism in natural and alpine settings. Getting to know the sublime of nature or the mountain world through one's own eyes becomes a central reason for travel.

This positive image of the Alps is based on an idealized view from the perspective of the lowlands and defines the mountains as a peripheral space, at the same time making it a place of retreat, and its landscape, through its poetic sign function, a guarantor for an ideal world, which expresses a contrast to the urban civilization. By disregarding the hard living conditions of the inhabitants in the Alps or idealizing them (the 'noble savage' in the cheerful figure of the alpine farmer) and by interpreting the landscape as an intact world, one finds the starting point for today's widely held view - from the perspective of tourism - of a seemingly utopian counterspace. The frightening mountain world has become a postcard idyll - at least in our minds and imaginations. (Stremlow 1998)

Within two centuries, the Alps became thus reassessed on mental maps. This was done by an intellectual elite - first by shifting the denotation of the mountains to a place of longing, and then by the completion of Alpine journeys and the emerging practice of alpinism. The rural or alpine region experienced a new coding in the ideas of the dominant urban cultural consciousness. The emotional exaggeration of the Alpine phenomenon in the increasingly enlightened, bourgeois society had the characteristics of a theology of nature. At the summit, people manifested themselves as the ruler of nature. In the past, only God had that job. Now, also people won ac-

**Fig. 4:**

**Natural beauty -  
summits of desire  
around the Matter-  
horn.**

© Kurt Luger



cess to the “divine view.” (Hanisch 2019) This process was triggered and accompanied by a scientific-rational development and control of space as well as by aesthetic-emotional attention. Both are also to be seen in the context of the historical circumstances of the time, which were marked by massive social and economic changes, a world of rapid transformation from monarchical to republican structures, and the rise of the urban wealthy bourgeoisie, which claimed a political leadership position thanks to its economic power.

This romantic picture of the Alps, which was created in the 19<sup>th</sup> century, is still influential today, because it combines the original with the expression of a seemingly perfect harmony of landscape and people, of color and ‘air of paradise,’ without assigning a specific history to the original. The ancient motif of the ideal landscape *Arcadia*, which was praised in early shepherd poetry as a place of unearthly happiness, is still slumbering there. (Wittkamp 2001) Today, we find it in the advertising messages of tourism marketing as well as on the front pages of coffee-table books, stereotypical images of a supposedly ‘intact’ world. In them, a primeval landscape is imagined, which is classified as authentic and ecologi-

cal. (Burckhardt 2006) 250 years after the rapturous epistolary novel *Julie, ou la nouvelle Héloïse* by Jean-Jacques Rousseau or the enlightening poem ‘The Alps’ by the Bernese naturalist Albrecht von Haller, the desire for boundless freedom is still shaped by suggestive symbolic images full of longing, and the ‘untouched landscape’ is affirmed as an ideal place of refuge.

The two central aesthetic categories of this Alpine image are thus the beautiful and the sublime. According to the German philosopher Immanuel Kant, anyone who judges the beauty of an object also claims to be making a judgement that others would have to agree with. For him, therefore, beauty has the claim of ‘subjective generality,’ about which each of us may have different opinions, and in contrast to the good or pleasant, where personal interest in the object plays a role, he defines beauty as “pleasure without a vested interest.”

It is easier to agree on the second category, the sublime. It had most probably a greater impact on the recoding and alteration of the image of the Alps, because it expresses the ‘par-excellence greatness’ of the natural spectacle, or, as Petrarch put it, something that “surpasses every measure of the senses.” (Jacob 1997)

### 2.1.5. Places of Happiness - Heterotopia (Kurt Luger)

Such a place projected into the nearer or further distance can be called a *heterotopia*. This term has made its career in the theory of culture and tourism, where it is interpreted as ‘other-place’ or as ‘localizable utopia.’ As ‘counter-places,’ such spaces serve to emotionally stabilize social processes, and the philosopher Michel Foucault, who has enriched the debate on spatial theory with this term, already cites the garden as the oldest example of a heterotopia. Such a garden, with lots of greenery, running water and fenced in, is called ‘paradise’ in Persian poetry. The term itself comes from ancient Persia. In carpets, the motifs of the garden are visualized in an abstract form, and Foucault recognizes in them elements of an ideal place of longing without any emotional clouding, friction, or distortion. This stands in contrast to other heterotopic places such as the cemetery, the prison, or the psychiatric ward, which are linked to problematic ex-

ceptional and special states and are emotionally charged. (Foucault 2005)

The extraordinary nature of heterotopic places characterizes tourism spaces as emotional escape spaces, niches in which individuals can even express and cultivate feelings that violate social conventions. (Gammerl/Herr 2015)

Heterotopias are quasi-artificial places in which everything appears that is different to everyday life, and Klaus Kufeld sees the cruise ship as the “perfect illusion of the quasi-utopian integral, when good food, bar music and a deck chair are on offer, when wishful thinking and good living have a temporary place, and all this on the high seas with only the sky above. The ship’s heterotopia is a home on voyages.” (Kufeld 2010) Holiday travel in a car with a caravan trailer could be similarly considered, but possibly with less luxury. Nevertheless, it allows het-

Fig. 5:

Paradise and heterotopia -  
Garden of Dreams, Keshar  
Mahal, Kathmandu, Nepal.

© Kurt Luger



erotopic experiences in the context of one's own family and domesticity.

For Kufeld, the holiday is an almost perfectly organized heterotopia, an apparently realized utopia. But he sees vacation as travel reduced to statics, "more a state than a way," an illusion subtracted around the way, because the foreign reality is only understood as a backdrop and thus the difference to home no longer seems significant. The journey to the holiday resort becomes, in this view, again a stretch of distance, just as once in the age of the railway journey the in-between of starting point and end point was ultimately of no importance. If the jour-

ney is degraded to reaching the destination, it gets along without utopia, but real utopia contains a way there and back, too, because travelling as utopia – at least oriented towards cognition and knowledge – means being on the way and staying on it, thus it has no real place. Tourist travel, on the other hand, may only give meaning to the route, or more accurately, to the path if it has a visible experience character, because it either leads through an impressive landscape or offers attractions such as a spectacular road itself. But the path can also be remembered because, for example, a traffic accident has destroyed the joy of a holiday.

### 2.1.6. Photographs as Remembrance of the Important (Kurt Luger)

Tourist habitats are regarded as places of desire and 'places of happiness.' They are loaded with experiences and meanings, made accessible to the senses and emotionally appropriated by tourists. (Wöhler 2011) It is all about external happiness, earthly paradises, filled with extra-ordinary highlights, which are loudly propagated by the media as ideal images. It is precisely such images and 'moments of bliss' that are the task of photography, which was previously reserved for travel photographers and photojournalists. However, the compact camera, which has become increasingly easy to operate, gradually

gained a firm place in the luggage of all tourists. Today, a digital camera is part of the standard equipment of every smartphone and there is an even greater chance of preserving the ephemeral, transient, and beautiful, and of saving a past experience. The photographic behavior implies a projective moment - the anticipation of a memory that will be desired later, the capture of a mood that one would like to experience again when the picture is reviewed after some time.

Photography in general and especially in the case of extraordinary circumstances such as travelling or hol-

Fig. 6:

Tourists like to capture the moment and take it home as a trophy.

© Kurt Luger



idays, which for many people is understood as the biographical highlight of a year or even of life, fixes not only a section of reality but also a slice of time. Holiday photos are memories of a temporal state of exception, of beautiful hours, days, or weeks, an attempt to recall events and emotionally charged moments for the moment of observation or to force time to stand still in a symbolic way. (Luger 2018)

Tourists travel to locations they already know from films, brochures, postcards, or other people who have already visited a certain place, in order to take the picture

with their own camera, in order to snap the decisive moment out of life. (Theye 1989) The experience lies in the exaggeration of that one moment – “I was there” – the rest may be lost in the shadow of uncertain memory. This image captures what seemed to be necessary in self-reassurance. The unknown foreign scenery was – as once with Petrarch – perceived through one’s own eyes and the encounter documented. This photo is both a way to preserve and a trophy at the same time, like the souvenir that creates recognition at home.

### 2.1.7. The Quasi-Sacralization of Space (Kurt Luger)

The highest distinction for a given area of outstanding universal value is its inscription into the UNESCO World Heritage List. By elevating it to the status of World Heritage and assigning cultural significance to it, a profane place or a space that is of religious value for a community becomes a ‘quasi-sacralized’ space for the whole of humanity.

In World Heritage tourism, visitors experience, study, and consume basic elements of a culture, the icons of national identity, or the extraordinary beauty of a landscape. By having introduced the cultural landscape concept to the list, the World Heritage Committee distinguishes those properties that represent the combined work of nature and of people, thus following the term

used in geographical science to describe “a landscape created by human culture.” (Wallach 2005)

Visiting and experiencing such a World Heritage site gives visitors the opportunity to experience themselves as part of history, to see themselves as part of a larger whole, because visitors get into contact with an order that transcends time. Wöhler (2008) even speaks of a ‘sacramental experience’ in this context, because transcendent things are revealed in it. This expresses an extraordinary appreciation and respect for certain places, memorials, or natural monuments, because by being declared a World Heritage site, the profane becomes something ‘sacred’ through the cultural assignment of meaning. In this *hierophany*, the sacred is revealed, “a reality that is not of

this world,” as Mircea Eliade puts it, in a way describing a similar thing like the ‘greatness’ that Petrarch once said exceeded every measure of sensuality.

The history of the human spirit, the manifestations of its artistry, and the impressive spectacles of nature are classified as ‘valuable,’ as if they were ‘sacralized,’ in the cultural understanding of contemporary societies – as a contrast to the almost completely desecralized cosmos, because they are granted a value that claims validity for the whole of humanity. In this way, the World Heritage sites create a ‘fixed point,’ a center or world axis that provides orientation. It is important to understand, Eliade continues, “that the cosmization of unknown territories is always a consecration: whoever orders a space repeats the exemplary work of the gods.” (Eliade 1998) Wöhler describes this as “canonization of spaces.” Cultural mem-

ory is thus formed, because out of the diversity of cultural artefacts, certain ones are declared worthy of remembrance. A place, a region, a site is given a permanent code, and this way its timeless significance is established. (Wöhler 2008)

This experience of the highly significant is also what makes it unique. In a way, it makes us aware of its extraordinary and universal value. This is also where the great potential for tourism lies because there is a great longing for positive emotions, spiritual experience, and wholeness or the desire to feel one with or in harmony with the world. World Heritage tourists thus embark on a pilgrimage to worldly destinations, so to speak. The main reason why tourists travel thousands of miles and climb hundreds of steps is to experience with their own senses the places ‘sacred’ as World Heritage sites. (Luger 2018)

Fig. 7:

A reality not of this world.

© Kurt Luger



## 2.2. The History of Travelling and Tourism from 1500 to Today

### 2.2.1. Early Travel and Tourism (Kurt Luger)

Human history is also a history of movement, of mobility, of pushing horizons. While at first mainly crusaders, soldiers, messengers, and pilgrims were on the move, mobility had been increasing in the age of humanism. In the course of the 16<sup>th</sup> century, metropolises of trade

and science emerged, the business areas for merchants expanded, journeys for religious, educational, or scientific motives made Rome, Naples, Paris, or Strasbourg the fixed points of reference for many young nobles, scholars, and artists. Between these cities - as in China or in the

Arab world - the first paved roads were constructed, forerunners of today's road networks, and the corresponding road maps were created in proper scale. The systematic expansion of postal transport networks through forced road construction with the help of land surveying techniques did not take place in Europe until the beginning of the 19<sup>th</sup> century, though.

The usual means of transport during this period was the horse-drawn carriage, which was used for the postal routes. Where there were no routes for carriages, for example at pass crossings, travelers were transported by locals in carrying chairs. Only wandering poor people, vagabonds, craftsmen on their way to a new job, traveling market traders, or poets in search of adventure and self-affirmation, like Johann Gottfried Seume, who came from Saxony, used their own feet. Seume's crossing of the Alps under the title 'Walk to Sicily,' published in 1802, marked the beginning of today's nature tourism or Alpine tourism, like Jean-Jacques Rousseau's hikes, which were processed into literature of longing.

The travelogues of that time are full of complaints about hostels, inns, but also about other travelers and their manners or behavior. With the spread of the *Ordinari-Fahrpost*, the regular postal service throughout Europe, the first travel compendia came onto the market, providing information about the network of paths, post stations, and recommended accommodation. Among the many travelers who travelled between Paris and Moscow, London, Stockholm, Rome, Hamburg, and Vienna in the 18<sup>th</sup> century, the musicians probably have one of the oldest mobility traditions. Long before travelling for educational or entertainment purposes became fashionable, they had travelled through Europe as minstrels, entertaining princes, bishops, kings and queens, citizens and peasants. They did so at imperial diets, fairs, weddings, and coronation celebrations, at pilgrimage sites and at councils. Mozart's letters to his sister or father repeatedly complain about the inconveniences of travelling, which took him all over Europe in this early period of globalized concert culture. In August 1771, for example, he wrote from Milan to his „dearest sister“ that he had been exposed to a great deal of heat on the journey and that „the dust had constantly pestered us impertinently.“ From Munich, he wrote to his *mon très cher Père* at Salzburg that the journey was short but very arduous, the

seats were hard as stone, and he would not have slept a minute in the night, „this carriage still pushes your soul out.“ (Mozart 2006) These journeys – like most journeys of that time – were certainly not pleasure trips, but were made for professional reasons, and the landscape to be travelled through to the destination was of completely secondary importance to these travelers.

However, the transport of passengers and mail was always severely affected by wartime events. At the turn from the 18<sup>th</sup> to the 19<sup>th</sup> century, for example, travel was hampered by the revolutionary events in France, the political upheavals that followed, and Napoleon's conquest campaigns. It was not until after the Congress of Vienna in 1815 that the postal administrations started to invest in the further development of their services again. Neglected paths and roads had to be improved and the paved country roads (French: *chaussée*), which had been specially laid out in the Netherlands and France in the baroque era to speed up traffic, were also built in other countries. With the developing express mail system, a network of long-distance roads emerged from this. It provided some more comfort for travelers but was of utmost state interest since military purposes were associated with it. These roads had the advantage of considerably reducing the travel time of stagecoaches, and because of the surface, a horse cart could also transport a heavier load than before.

As early as 1754, for example, a fast moving *Journalière* had been established between Berlin and Potsdam. In England, faster passenger transport was provided by 'Mail Coaches' and in France by the *Malle-Poste* – where by speed was also at the expense of comfort, especially since the aim was to transport people as quickly as letters and this was only possible because the number of stopovers was drastically reduced. In 1828, there was a daily service between Berlin and Paris and a weekly express mail service between Paris and St. Petersburg three times a week. The travel time on this route was reduced from three to two weeks. (Glaser/Werner 1990)

The cultural sociologist Justin Stagl describes the epoch from late humanism to the scientific revolution – from around the middle of the 16<sup>th</sup> to the middle of the 17<sup>th</sup> century – as the age of 'epistemological curiosity,' which produced the cultural technique of a sophisticated art of travel, the *ars apodemica*. In apodemics, systematic



Fig. 8:

The Netherlands were visited on the *Grand Tour* because of their excellence in technical development.

© Kurt Luger



and methodical travel for scientific reasons and for the collection of the “treasures of wisdom and virtue scattered throughout the world” was in the foreground. “Indeed, travel is a change of place undertaken by a suitable person out of a desire and wish to wander, to visit and get to know foreign places, in order to acquire there any good that could be useful either to the fatherland and friends or to ourselves,” wrote Samuel Zwicker, who came from a family of scholars in Gdansk, in 1577. The refinement of the three cultural techniques of travel, surveys, and systematic collecting began at this time. (Stagl 2002) At the end of the 18<sup>th</sup> century, the fiction of the idealistic generalist traveler with his scientific claim faded away, but a form of travel that is more strongly oriented towards the feelings of the individual came along, together with the corresponding travel literature.

While the *peregrinatio academica*, the scholarly journey, regarded the Dutch university city of Leiden as an indispensable travel destination, the imperial city of Vienna came into that role for the aristocratic journey in the age of absolutism. The *Grand Tour* of the young lineage holders of old-established and land-owning noble families was undertaken in order to adapt to the lifestyle and manners of the European aristocracy. These journeys served the purpose of comprehensive education and training for the adolescent pleasures of the upper classes. The young cavaliers travelled under the control of an instructor, and they used horse-drawn coaches to get from

the most important cities, castles, and universities to the other. France was visited because of its gallant customs, fashionable elegance, and conviviality, while in Italy attention was focused on the architectural evidence of antiquity, the courtly art of opera, and the comparative theory of the state. For the Catholic nobility, Rome was the highlight of the journey, the Netherlands and England were visited because of their higher level of economic and technical development, and Vienna was an indispensable destination because the imperial city was both a test of what the young nobility had learned and a springboard to catch a position in the services of rulers. Court life and cosmopolitan experience, two main traits of aristocratic travel experience, were closely linked. (Lauterbach 2008)

In the second half of the 18<sup>th</sup> century, the early form of today’s hiking tourism developed as a foot journey, a slow locomotion through landscape and society that scans space in a physical way. It served as a means of collecting physical sensual impressions and one’s own views, following the horizon of ideas of the Enlightenment. Writing down and recording what is seen arranged these impressions into a system of experience. This was the beginning of the great age of travel literature, which placed the discovery of the self in a foreign country in the foreground as an important school of civic character formation. But the journey on foot also had an anti-feudal aspect and embodied an attitude that was symbolically different from the *Grand Tour* of the young *bon vivant*

nobility. Especially in the German principalities and kingdoms of the time, the upright walk was an element of the bourgeois spirit of opposition to the aristocratic privileg-

es of late absolutism since it expressed a social partisanship for the people. (Bausinger/Beyrer/Korff 1991)

### 2.2.2. Forms of Tourism (Kurt Luger)

If one tries to systematize tourism, to bring it into a chronological order of development, the aristocratic and later upper middle-class individual travel brought the first epoch of travel to an end. Although the Grand Tour in particular was undertaken primarily for other motives, elements of early educational tourism can be identified in it. The places visited were the ancient art sites, churches, monasteries, treasuries, art chambers, and similar sights all over Europe. (Black 1992) The bourgeois educational tour that emerged during Enlightenment served to broaden horizons in every sense and was oriented towards the same and similar places in Italy and later in Greece. (Hachtmann 2010) At this time, travel became a new form of adequate experience of the world, inspired by the reading of great writers (such as Goethe's 'Journeys to Italy' at the end of the 18<sup>th</sup> century), which triggered a longing for Italy (the land where lemons grow and bloom) among the people living north of the Alps. The usual means of travel at that time were the horse-drawn carriage and the sailing ship. The road network was of low density, the roads were bad, the speed of travel was rather low.

As early as the 15<sup>th</sup> century, the first world journeys were made by explorers, soldiers, and scientists, financed by monarchies and merchants. Europeans penetrated the other, to them completely unknown, continents, took possession of them and subjugated the local population. Since the 16<sup>th</sup> century, Jesuits have been travelling like merchants along the Silk Road, and a few of them even reached the court of the Chinese emperor. It took eight years until Father Gruber could inform the Pope about the living conditions and the arsenals of weapons in the far-advanced civilization of the East. (Grueber 1985) The emergence and the expansion of the colonial empires overseas and the stories of exotic islands and wondrous regions aroused the interest of broad social circles. Wealthy gentlemen and ladies such as Gertrude Bell, Ida

Pfeiffer, or Alexandra David-Neel crossed the deserts and mountains of the world on horseback or camel, the very courageous ones searched for the sources of the Nile and even found Timbuktu, though not the legendary gold treasures, but a flourishing slave trade across Africa. At the end of the 19<sup>th</sup> century, the World's Fairs in European capitals awoke the desire to travel among members of the bourgeoisie. They portrayed an operetta-like Africa and Asia with colonial propaganda that lived from two elements - foreign landscapes and white colonial masters who cultivated their highly privileged way of life. Travel literature also propagated the perceived superiority of European civilization.

In the years between the World Wars, daredevils made their first long-distance journeys on motorcycles and cars, their travelogues and photographs captivated audiences whose yearning for worldly experience was great. One especially remarkable adventure was the first travel around the world in a car, accomplished by the German woman Clärenore Stinnes. Starting in Frankfurt in May 1927, she drove her *Adler Standard 6* car through 23 countries, visiting Moscow, Lake Baikal, Tokyo, Honolulu, Lima, Buenos Aires, and Panama City, before crossing through the United States from west to east. The two male technicians who were supposed to support her on her journey both gave up. The only man travelling with her all the way was the Swedish photographer Carl-Axel Söderström, her future husband. In June 1929, after 25 months of hardships, they arrived back at Berlin. (Stinnes 2016)

All these influences finally led to a travel market that developed into one of the largest global economic sectors in the second half of the 20<sup>th</sup> century. Some kinds of travel are still a privilege of the affluent world today, though. Although the most beautiful corners of the developing countries of the global south have become destinations for long-haul tourism, apart from the economic elites,

## The History of Travelling and Tourism from 1500 to Today

only small segments of their population can afford to travel there themselves.

Around the middle of the 18<sup>th</sup> century, spa tourism or the affection for the sea began, first in Great Britain and then, towards the end of the century, also on the European continent. In Scarborough, bathing in the sense of health tourism had begun in the 17<sup>th</sup> century and bathing in the sea was reported as early as the 1720s. In the second half of the 18<sup>th</sup> century, the foundations for the fashionable bathing of the fine English society were laid on the English south coast in the small fishing village of Brighton. Spa promenades and seawater bathhouses were built, and the place was upgraded by the plans of the English royal family to build a summer residence. On the mainland, the first sea bathing infrastructure was established on the French Atlantic coast and the Channel, and a little later on at the Baltic Sea. (Berghoff et.al. 2002; Walton 2000) The sea, the unruly nature, is said to have the power to restore harmony between body and soul, to counteract the loss of life energy and the widespread melancholy and restlessness. It stimulates curiosity and a thirst for adventure and urges us to travel. The growing desire for the seacoast was particularly widespread among the lower nobility, among the members of the 'gentry,' and was considered *très chic*. (Corbin 1994)

At about the same time, travel to inland medicinal springs became more modern. The first spas were built at the site of these springs and where water treatment promised relief for many ailments. At first, these spa stays were also a privilege of the nobility and wealthy bourgeoisie, but towards the end of the 19<sup>th</sup> century, even the middle classes could afford such stays. Many of the most famous spa towns have been able to preserve their characteristic townscape until today. Examples are Bath in England with its architecture referring to ancient times, World Heritage since 1987, Karlovy Vary in today's Czech Republic, since 2008 on the tentative World Heritage List with two other Czech spa towns, or Badgastein and Bad Ischl in Austria. All these places were in demand throughout Europe and benefited from the stays of crowned heads as well as famous musicians and writers who gave these small towns an intellectual and artistic flair. With the medicinal triumph of the *Trinkkur* (drinking cure), their townscapes got their unmistakable and characteristic appearance. Fountains and foyers, ca-



Fig. 9:

A typical *Sommerfrische* villa in the lake district of the Salzkammergut.

© Kurt Luger

sinos, luxury hotels, but also the spa gardens appeared at that time and are still indispensable for the classic 'health resort' today. (Knoll 2006)

A certain similarity to this form of tourism is to be found in the *Sommerfrische* (summer resort holidays), which appeared in the middle of the 19<sup>th</sup> century. This is a stay of several weeks or even longer for wealthy bourgeois families in a villa or other accommodation in rural areas to escape the summer heat in the cities. At the time of the Austrian monarchy – especially in the second half of the 19<sup>th</sup> century – imperial officials also stayed near 'His Majesty' during the summer months, as the emperor used to stay in health resorts in the Salzkammergut lake district (a part of it is a World Heritage Site since 1997) or went for hunting in the Semmering region (World Heritage Site Semmering Railway since 1998). (Kos 1992, Haas 1992)

### 2.2.3. Phases of Modern Tourism in European History (Kurt Luger)

The first phase of modern tourism dates from 1835 to 1880 and begins with the age of the railway. It allowed a larger number of people to be transported, and a specialized tourist infrastructure began to develop. Spas and seaside resorts expanded, hotels and guesthouses were built, travel agencies were established to handle business and bookings. Tourism as a phenomenon of modernity is based on the industrial transformation. Tourist demand originated in industrial zones of the world economy and thus started in England, later it spread to the entire Western European industrial core zones. However, it is not the working class that travels first, but the urban bourgeoisie, the new wealthier classes afford to travel and go on holiday, following the behavior of the nobility, which in turn looks for new destinations.

Already at the beginning of the 19<sup>th</sup> century, nobles penetrated the high mountains, the first Alpine Club was founded in London in 1857 by British nobles. First ascents in the western and eastern Alps follow, the furnishing of the mountain world with alpine huts and paths is carried out by members of the Alpine Clubs. 1862 the Austrian Alpine Club is founded in Vienna, 1869 the German one in Munich. The purpose of the Alpine Clubs was to promote mountaineering, to encourage youth to go hiking but also to preserve the beauty of the mountain landscape. Over the years, a tourist infrastructure was established in several Alpine valleys, and with the further expansion of the railway network, the towns moved closer to the mountains.

In 1845, Thomas Cook founded his first travel agency in England, which he developed into a global organization in a few decades by offering package tours around the world. Profiting from the many overseas possessions of the British colonial empire, he became the most famous tour operator in the world. In 1876, the *Compagnie Internationale des Wagons-Lits* (CIWL) was founded in France. With its luxury trains (including the Orient-Express), it was able to win a large share of the train travel market and rose to become one of the most important travel agencies alongside Cook and American Express. Tourism development in Germany followed that in England, and the Stangen travel agency took over Cook's flat-rate sys-

tem, whereby tourists were transported by ship, rail or stagecoach for a fixed amount payable in advance and accommodated in booked inns along the fixed route.

In the first half of the 19<sup>th</sup> century, the first popular travel guides also came on the market. In 1828, the German Karl Baedeker published the travel description *Rheinreise von Mainz bis Köln* (Rhine Tour from Mainz to Cologne), and his series of travel guides offered detailed and reliable information in a simple and factual language. 'Murray's Handbooks for Travellers' were travel guidebooks published in London by John Murray, starting in 1836. The series covered tourist destinations in Europe and parts of Asia and Northern Africa. The Murray style exemplified the exhaustive rational planning that was as much an ideal of the emerging tourist industry as it was of British commercial and industrial organization generally. (Spode 1988)

With the establishment and expansion of the summer resort to the middle social classes, one can speak of a second phase in the history of European tourism, which ends with World War I. This also includes the beginnings of social tourism through trade unions and the labor class movement.

At the end of the 19<sup>th</sup> century, with the growing industrial proletariat, a labor movement emerged in many countries, which increasingly became an important political player. It fought not only for workers' rights such as higher wages and better working conditions. They also achieved the reduction of weekly working hours, and Sundays and holidays became days off, thus providing the first opportunity for Sunday excursions. But the workers' associations also saw themselves as an educational movement, and workers' leisure organizations such as the *Arbeiterwanderer* (hiking workers) came into being. In 1895, the proletarian tourist association *Die Naturfreunde* (Friends of Nature) was founded in Vienna. The hiking destinations were mostly not very far away from their homes and were reached by train and/or bicycle. (Pilz 1994)

The first mass tourism phenomena – the third phase of development, so to speak – date back to the 1930s, since tourism was temporarily stopped by World War I.

## The History of Travelling and Tourism from 1500 to Today

In 1925, the *Opera Nazionale Dopolavoro* (National Organization After Work) was founded in Italy, a hotbed of fascism through which leisure time was controlled under uniform national aspects. It was to be consumed exclusively collectively – hikes, marches, shooting exercises, popular social trips, and mass events were organized to generate a fascist national community. In the German Reich, with the help of the National Socialist *Kraft durch Freude* (Community Strength through Joy, KdF), a politically organized folk and social tourism based on the Italian model was created. The manipulation of the individual was taken even further, a feeling of togetherness was created to cover up cultural and social contrasts through integrative use of leisure time. State organized tours were offered at low prices, and besides hiking, the greatest number of travels took place by rail. KdF thus became the largest tour operator at the time, selling 40 million trips between 1934 and 1939, which could be interpreted as the first German travel boom. (Studienkreis 1991)

In the decades after World War II, and after the painstaking years of reconstruction, around the world a leisure society gradually emerged from the working society. (Hahn/Kagelmann 1993; Prahl 2002) Vacation became a part of lifestyle, at least in Western societies. Annual leisure time increased enormously, and the number of working days gradually decreased. The reasons for this were the advancing mechanization of work processes and socio-political reforms. ‘Mobile privatization,’ as Raymond Williams puts it, shaped societies, the search for individual, private freedom within the socially defined scope and constraints. This took place through consumption, in the design of the home, and in the family sphere, as well as in the removal of boundaries, in the widening of attainable horizons by the mass media, and in tourism. The attitude towards life changed from the static to the mobile, to living and travelling. The new means of communication, cars and motorways, air travel and television, visibly mixed up the hierarchy between near and far, and at the same time promoted the formation of identities that tried to absorb the alien within the own personality. Popular mass media and tourism became escape helpers from an industrialized world, and the marketing of desires became itself a highly profitable cultural industry. (Luger 2015)

The complete industrialization of tourist travel and



Fig. 10:

The early days of coach tourism, organized by travel agencies.

© Kurt Luger

‘travel for everyone’ marks the fourth phase of modern tourism, which began in the western world around the 1970s and is still continuing. Since the turn of the millennium, emerging markets in Asia have also been experiencing a strong expansion of tourism, both domestically and internationally. Tourist travel in Europe is now mainly done by car. Coaches and trains have become of secondary importance, and airplanes have become a matter of course not only in long-distance tourism. Cruise ships, on seas and more recently also on rivers, are increasingly becoming an affordable option outside the luxury segment cruises they usually belonged to. So now all social classes have, during the last decades, become involved in tourism. It should be noted that the need for travel is still much more pronounced among the urban population, though.

#### 2.2.4. The Development of the Tourism Industry in Northern America (Natasha Martin)

Many scholars have argued that the ambition to forge a national identity and culture are what first drove tourism in the United States. There is proof that travel helped build and shape the American collective identity, but seeing as the United States is geographically large and vast, covered in mountains, rivers and other topographical barriers, ultimately travel would not have been possible without transportation links, and as these improved and extended, so too did the reach of tourists.

It was the presence of parks in cities, such as Central Park in New York, that had an important influence on how Americans of all social classes thought about nature, places, or destinations and ultimately how to interact with the landscape around them. These parks in the United States could be considered an egalitarian asset, as they were accessible to all, this in particular as compared to other forms of leisure travel at the time, such as the trans-Atlantic travel or even private gardens in Europe.

The popularity of public parks began in an unlikely place: with pleasantly manicured 'rural cemeteries' where working class Americans started to spend their leisure time around the mid-19<sup>th</sup> century. The cemeteries of the time were expansive, located a certain distance from the cities, and had many of the features we today associate with parks, such as pathways, gardens, ponds, etc.

(Greene 2008)

In the mid-1800s, shifting social norms led people to feel uncomfortable enjoying themselves among the dead, and building parks for leisure purposes became more urgent. The most famous of these is Central Park in New York City. Parks provided easy access to nature, for everyone - in this way, like the rural cemeteries, they were democratic. This was intentional, many landscape architects that worked on parks, and Olmstead in particular, were committed to egalitarian ideas and ideals and wanted their designs to reflect this and be tools to ensure equal access to nature.

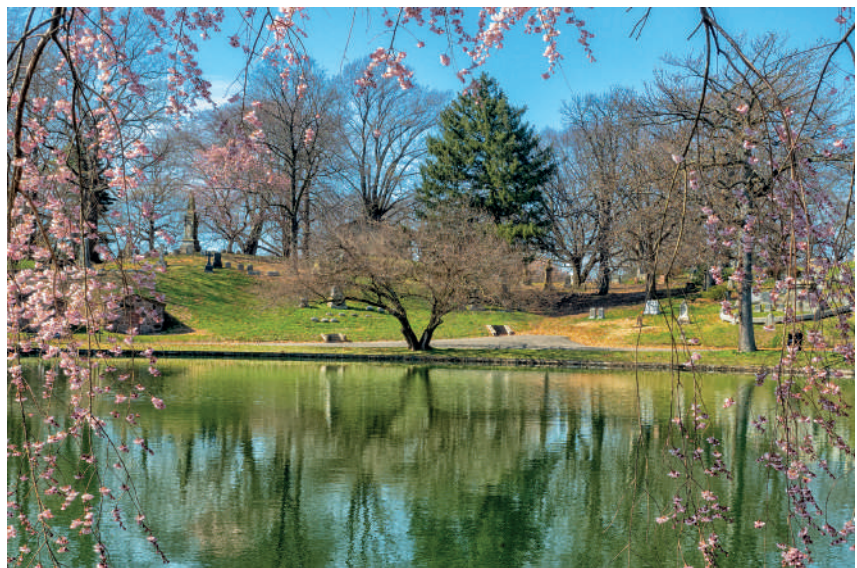
Early American tourists, like their European counterparts, sought out the sublime, and in the form of beautiful and majestic natural landscapes, they found it all around themselves. In these natural formations, they found a link to God, proof of American's exceptionalism, a landscape to rally around, and a meaningful part of what it meant to live in America and be a patriotic American.

Many natural sites began as destinations for tourists searching for a divine experience. Niagara Falls, for example, was marketed as 'One of God's greatest creations,' and visitors were promised a conversion experience. (Zuelow 2015) Houghton Bunnell Lafayette, an early

Fig. 11:

Greenwood Cemetery, built in 1837 in Brooklyn, is an early example of a rural graveyard.

© Carrie Thompson / iStock



explorer of the Yosemite Valley, which would eventually be the first land gazetted for conservation in the United States, wrote in 1851: “[T]he wonders of this region of sublimity, have been a source of inspiration to visitors, but none have been able to describe it to the satisfaction of those who followed after them.” (Bunnell 1892) Such descriptions were early examples of tourism marketing, inspiring others to visit as well. As demand increased, an industry of hotels, souvenir shops, entertainment, and eateries were available for people to enjoy. Transportation network evolved to enable people to reach these new destinations.

From rural cemeteries and public parks came the idea that public space should be protected and enjoyed by all. From visits to natural wonders came the idea that there was a religious benefit to communing with nature. Together, these two ideas directly led to the foundation of national parks in the United States. (Zuelow 2015)

The tourism potential of the Yosemite Valley in central California was recognized as early as 1850. On June 30<sup>th</sup>, 1864, the Yosemite Grant Act was signed by President Abraham Lincoln, preserving the Yosemite Valley and Mariposa Grove for future generations. The bill stated the land was granted to the State of California “upon the express conditions that the premises shall be held for public use, resort, and recreation.” The grant set aside public land for preservation, and it ultimately presented a way for Americans to experience their cultural and natural heritage. This was a crucial first step in establishing national parks. In Montana and Wyoming, Yellowstone National Park was established by Congress in 1872 “as a public park or pleasuring-ground for the benefit and enjoyment of the people.” Domestic tourism campaigns soon followed. In the early 1900s, tourism operators were encouraging eastcoasters to ‘See America First’ before traveling to Europe. However, accessing national parks was not easy and, in the 1800s, required a mixture of transportation methods, including steamboat, railway, and horse-drawn carriage.

Early American travel depended predominantly on rivers to travel any significant distances, and in 1807, river travel was greatly improved with the first steamboat on the Hudson River. These were the first vehicles used by the middle-class tourists in the United States (Gasman 2008), and exploring the upper Hudson River Val-

ley by steamboat was a first example of tourism that was available to the many, instead of just the few. It is not coincidental that the art movement of the Hudson River School, a group of painters, was also located in this region. Their work was steeped in themes of discovery, exploration, and settlement (Mankin 2003), and this led to more Americans wanting to see the landscape they painted and contributed to the vision of the United States as idyllic and peaceful.

Soon, steamboats were bringing the first tourists out west. The same phenomenon of writers and painters being the first emissaries of these travels occurred here. These artists captured the new landscape, which later included national parks, in painting, magazine, and newspaper articles. These artists raised awareness of the sublime natural landscapes in the west and created a sense of desire in eastern cities. Through their representations they “conferred value on the scenes represented and helped shape the vision of the tourists who visited them.” (Gottfried 2012)

While efficient for their times, steamboats were largely replaced by railroads as the preferred method of long-distance travel toward the end of the 19<sup>th</sup> century. The first railway tracks in the United States were laid in 1830, and by 1880, there were 93,000 km of tracks all over the United States, creating a deep network that connected a previously disconnected country to an extent that was previously unimaginable. The connection was reflected in the way people literally spoke of the country. The historian John Hankey tracked a change from people referring to “these United States” to “this United States.” (Hankey 2019) This connection and shift in mindset contributed to the construction of an American identity for a population only recently emerged from a civil war.

In the early 1900s, railways were largely for passengers (though later in the decade, this would shift and moving cargo would become the main purpose of the railway). Railway companies, for their part, were excited about the economic potential of tourism attractions out west and lobbied the government for the creation of more national parks and built hotels near or adjacent to stations to cater to the passengers.

In July 1868, a New York Times Article titled ‘Summer Travel’ notes: “The facility of locomotion in our age of steam has done much to make summer pleasuring a general

Fig. 12:

1921 Ford Model T designed by Henry Ford and mass produced for the keen driving population in the United States.

© OverCrew / iStock



thing.” As in Europe, railways allowed greater numbers of people to have a holiday and become tourists.

At the beginning of the 20<sup>th</sup> century, automobiles and automobility dramatically changed American life, including their approach to leisure travel. Motor vehicles expanded a process of democratization of travel that had commenced with steamboats and made the journey itself the object of a holiday. Though the vehicle was invented in Europe, American manufacturers came to dominate the car industry with their perfection of mass production methods, and because of the United States’ great size and vastness and a higher level of income in the States as compared to Europe, automobiles were in great demand by the American public. American manufacturers endeavored to “build cars for the multitudes,” and indeed they succeeded. (www.thehenryford.org 2015) In 1899, there were 2,500 automobiles produced in the United

States, by 1913, this had risen to 485,000.

Before World War I, roads were largely unpaved, and automobiles were a tool that enabled travelers to get closer to nature. At the same time, with cars, the travelers were for the first time in control of their own journey – the cost, the time, the distance. This provided a new sense of freedom and discovery, one that was not available to passengers on a train or boat.

The experience of touring evolved rapidly between the two World Wars. More Americans took to the roads, and because of cars, a robust camping and motel industry emerged to meet the needs of road travelers. (Belasco 1997) By the end of World War II, the prices of cars had come down so that automobility was available to a large number of Americans, and so, too, were the travel opportunities that came with it.

### 2.2.5. Current Trends in Global Tourism (Kurt Luger)

The further improvements of transport systems and the wide development of all types of landscapes for the tourism industry have contributed significantly to its global development. Whereas the railway was the first major driving force for the expansion and was still the dominant means of transport after World War II, today,

in postmodern tourism, it is clearly the passenger car, because it extends the radius of action and allows even greater individual mobility. Its unleashing is the central characteristic of tourism in recent decades, even though tourism destinations offer a wide variety of standardized services. Rapidly growing motorization and the expan-



## The History of Travelling and Tourism from 1500 to Today

sion of the road network also contributed to the inclusion of other regions into the tourism industry, which formerly only covered places within the catchment area of the railway.

Today, two out of three German tourists travel to their holiday destinations by car. The situation is not much different in other European countries, especially since the car is the cheapest means of transport for family holidays. Camping was only made possible by the car, and from tents and caravans to 'glamping,' a deluxe way of camping, and living rooms on wheels, a tourism sector directly oriented towards the car was created. The tour coach as a means of travel has lost importance compared to the car, but it serves the segment of group travel and has gained in image because it emits significantly less greenhouse gases than individual car traffic and is therefore considered more environmentally friendly.

situation.

Tourist car traffic has negative effects not only because of the environmental impact, but also because of traffic congestion. The migration of people on overcrowded motorways to the holiday regions on the Mediterranean or in the Alps generates similar 'crowding' effects in the destinations. Many attractive cities or several ski and beach destinations have recently become plagued by 'overtourism,' or the overstretching of the carrying capacity of the places. Overtourism impairs both the quality of experience of the travelers as well as the quality of life of the inhabitants. (Goodwin 2017)

Since the turn of the millennium at the latest, there has been talk of a global tourism industry that uses all means of transport and has developed a 'pleasure periphery' even at very remote regions. Without wanting to go into the various branches of tourism here, they serve

Fig. 13:

**'Living rooms on wheels' at Monument Valley.**

© Kurt Luger



Air travel has the largest negative ecological footprint, and charter trips from many cities to holiday destinations are now part of everyday tourism. The airplane has become the most important means of transport for package tourism, which relies on series production, standardization, and high unit quantities. With the introduction of so-called low-cost carriers and the decline in air travel prices, short and long-haul flights became affordable for a broad section of society. The continuously growing boom in cultural and city tourism is also benefitting from this

all the needs that arise from the deficits of everyday life and are essentially also the motives for travel – self-realization, recreation, pleasure, prestige, and the search for temporary happiness and fleeting moments of bliss.

The technical acceleration of the last decades has pushed the pace of life enormously, the realization of the promises of modernity could not keep track. Social acceleration no longer provides the resources for the realization of dreams, life plans, and goals of individuals, or for the political shaping of society in accordance with

ideas of justice, progress, or sustainability. Rather, social development leads to a 'disembedding of space and time' at a permanently excessive speed. (Giddens 1991) It creates a growing alienation of the people from their spatial and material environment, because they hardly succeed anymore in combining episodes of action and experience into a whole life. The German sociologist Jürgen Habermas diagnoses a 'threefold separation of the self' - with society, with inner nature, and with outer nature. (Habermas 1976) The short-lived world of the beginning of the 21<sup>st</sup> century allows less and less resonance relationships, the consequence is increasing self-alienation and world alienation. (Rosa 2013)

Contrary to the dictates of time, tourism or vacation seems to be part of the promise of modernity, even if it remains trapped in the social norms of temporality, which create time constraints in postmodern societies. It is a component of the system in the sense of a repair business, but with legally established holiday entitlement it is left to the individual to decide how he or she wants to spend this part of the year. Like adventure, which can only generate its extraordinary status as a foreign body of our existence in contrast to everyday bourgeois life, working time and vacation time remain inseparably linked.

The postmodern, rushed person has the permanent feeling of missing something and - according to Klaus Kufeld (2007) - has lost sight of the beauty of being on the road, which calls for pausing. 'Slow Tourism' - forms of holiday and travel that last for longer periods than average, such as nature-based tourism with no cars - have emerged as a growing niche market because they meet the demand for a reduced speed of living.

The exit from everyday life, in time as well as space, is not yet sufficient to explain holiday and travel behavior comprehensively. But escapism is a central motif of 'holiday people' who, to use an aphorism here, would prefer to buy sun oil rather than heating oil, and it has unleashed the growth of the leisure industry. Karlheinz Wöhler does not see the dropping-out from everyday life as an escape, but rather as maintaining the self in everyday life, because travel interrupts the profane everyday life and gives meaning to life. The worlds of consumption, leisure, and tourism are the leading trendsetting spaces of postmodernism, which need an everyday space in order to be perceived as a different world. To move away

from well-acquainted spaces enables being different, to go beyond oneself. Tourism, in this respect, becomes something outside of everyday life, and in spaces of desire people learn to recognize the incompleteness of their being. Tourism spaces, therefore, are places where the meaning of life is supposedly revealed - these are happy, distant spaces: heterotopes. (Wöhler 2011)

In mass tourism, the landscape has become a consumer good, and rooms with a view are sold more expensively than those without - this applies to the mountains as much as to the sea. Such panoramas of beauty form the basic capital for a tourist landscape in which the picturesque and the typical are traded as the emblem of a region or even as national symbolic products. The Bay of Capri, the aerial view of Cape Town with the Table Mountain, the steep flanks of the Matterhorn, the street canyons of Manhattan, the view from the Trocadéro over the Jardins and the Champ de Mars with the Eiffel Tower - these are icons and recognizable images with which a tourist's longing is triggered or heightened.

Tourism is an inspection of looks that no longer have to be defined with one's own eyes. Art has played the role of the scout in landscape painting, for example, and has created images that have become stereotypes in tourism marketing and are enriched with further promises of experience. Moving through the landscape by train, cable car, or automobiles triggers a tension between nature and technology, a wild and inaccessible mountain landscape is transformed into a prototypical tourism landscape, into a show, pleasure, and experience landscape. (Kos 1992) The new landscape feeling takes into account the desire to master nature by technical means. An example of this is the railway line over the Semmering, a World Heritage Site since 1998 because of its outstanding technical achievement as the first high-mountain railway worldwide and because it made areas of great natural beauty more easily accessible, opening them up for residential construction and recreation, which led to the creation of a new landscape form. (www.unesco.at 2020) Another is the Rhaetian Railway in the Swiss Alps, a World Heritage Site because of its lines and construction technology since 2008. (www.rhb.ch 2020) The same applies to challenging routes and Alpine roads such as those crossing the Dolomite passes, the Großglockner High Alpine Road from Salzburg to Carinthia through the

Fig. 14:

The days before Corona: Over-tourism in front of Mozart's birthplace in Salzburg.

© Kurt Luger



Hohe Tauern National Park, or the German Alpine Road, but also to Ocean Drives such as the Corniche on the Côte d'Azur or the Amalfitana. (Kreuzer 2017) Certainly this also holds true for many of the famous American parkways and coastal drives.

This transformation applies to many other landscapes. The masterpieces of engineering art of the 19<sup>th</sup> and early 20<sup>th</sup> centuries do not only tell us about impressive technical progress but can also be seen as symbols for the taming of nature and its preparation for a cinematic viewing pleasure for the visitors. They now form a natural theater that can be perceived through pleasurable consumption. By making use of tourist infrastructure, a tourist space is created and experienced. Driving through it supposedly emotionally reduces the experience space and disarranges concepts such as proximity and distance. (Wöhler 2011)

While tourism is based on the underlying principle of consumption or usage of landscape and resources, cultural or natural heritage are fragile, non-renewable resources that require protection in order to preserve their exceptional character for future generations. The reasons for their endangerment are manifold, and tourism can also cause significant disturbances in the cultural fabric or environment. Uncontrolled tourism development is one source of danger among many. To a large extent, this fundamental conflict of goals and principles can be resolved through quality-oriented tourism. It takes place when there is, firstly, a conceptual discussion dealing with World Heritage that provides a meaning-giving or meaningful experience, and secondly, if a tourism policy based on sustainability and the preservation of heritage is implemented in practice.

## 2.3. Landscape and Fine Arts since 1600

### 2.3.1. Enlightenment and a New Focus on Landscape Painting (Michael Schimek, Kurt Luger)

For more than 400 years, until 1814, Norway was a part of the kingdom of Denmark and Norway. Over these 400 years, power was increasingly concentrated in Copenhagen. Norway remained a huge, but rather far-off and inaccessible part of the kingdom. This is why during

the 18<sup>th</sup> century, the Danish king visited Norway only four times.

Both the trips in 1733 and 1788 were documented and are the most important sources on the shape of the Norwegian landscape of the time. (Brenna 2011) The

different way of documenting those two journeys puts a light on the changes that happened in most of Europe during those 55 years, both in society and arts.

In 1733, King Christian VI and Queen Sophie Magdalene visited Norway. After the king's return, a commemorative album of the journey was produced, based on sketches done during travelling. None of the paintings and etchings were produced already during the journey, but afterwards, by masters from all over Europe. The magnificent colored paintings clearly still show the style of absolutist ways of representing power. All of those paintings show the royal family and their entourage and the road they were travelling on. The landscape of Norway forms the background, "the stage on which the royal drama unfolds," and is free of people and signs of local life. (Brenna 2011) These paintings still show a baroque understanding of the role of arts.

Only some years later, a local artist from Fredrikshald (Halden) got the job to contribute a number of drawings to the album. Different to the big paintings, it was his task to create accurate drawings of reality, of 'nature as it was.' Nature becomes something fixed to be faithfully recorded. This takes away attention from representative compositions and leads the viewer to depictions of 'real life,' of landscapes, towns, and villages, and to some extent even the way the local people interacted with the landscape. The existence of both schools of painting and drawing in the same album clearly shows the struggle that existed between the old absolutist way of government and the new enlightened ideas emerging at the time.

In 1788, the enlightened view on arts had replaced the former representative style of painting. In this year, Crown Prince Frederik, later King Frederik VI, went on a long journey to Norway. This time, he was accompanied by an artist, Erik Pauelsen. During the second half of the 18<sup>th</sup> century, starting in France, it had become fashionable to create so-called *voyages pittoresques* (picturesque voyages) of places and countries. Artists mainly from France travelled to different parts of France itself, but also the Mediterranean, and Switzerland (Pinault-Sørensen 2002). In England, painters like William Gilpin formulated similar programs. Records of such voyages are kept from countries that were as far away as the Caucasian mountains in present-day Georgia and Armenia. (Fröhlich-Schauseil 2017)

Pauelsen had the idea to create the first *voyage pittoresque* in a Nordic country. This time, not the prince or the road should be in the focus of his paintings, but the view from the road, on the landscape. Government should start from nature, following the ideas of Jean-Jacques Rousseau ('Back to nature!'). Pauelsen's work was never finished, unfortunately, since he committed suicide in 1790, but, at the same time, the paintings of the scenic Norwegian landscape fostered the Norwegian independency movement and laid the ground for the national identity which finally led to Norway becoming a sovereign state in 1905. (Brenna 2011)



Fig. 15:

**,The Passage through Krokkleven near Ringerike in Norway' (Erik Pauelsen, 1788-1789).**

© Public Domain

The shift in political and societal paradigms in the 18<sup>th</sup> century also had its influence on the role of landscapes in fine arts. Changes in style had already started quite some time before. In the 17<sup>th</sup> century, many famous Dutch and Flemish artists had set the standards for making landscape painting a discipline of its own. At the same time, the French painter Claude Lorraine had created a standard for landscape painting that subsequently became appreciated especially in England and lay the ground for the aesthetic principles of the first landscape gardens. (Eberle/von Butlar 1985) Until 1750, though, landscape painting had lost some of its importance it used to have during the 17<sup>th</sup> century and was partly replaced by masters who

## Landscape and Fine Arts since 1600

painted accurate views of orderly situations, like cities (the famous veduta painters like Canaletto).

In 1757, Edmund Burke published his famous treatise 'A philosophical enquiry into the origin of our ideas

of the sublime and beautiful,' which shaped the discussion of our perception of nature and landscape from then on. One of the first English painters creating a new style of landscape painting close to nature was Richard Wilson.

### 2.3.2. The 19<sup>th</sup> Century (Michael Schimek, Kurt Luger)

The fifty years between 1789 and 1848 were a turbulent phase in European history. The initial ideas of the French Revolution were quickly jeopardized and perverted and led to two decades of instability and radical behavior. Napoleon brought war to wide parts of Europe and changed former cornerstones of European society in an enduring way. Even though restauration after 1815 re-established a rather strict form of absolutism, with censorship and suppression of libertarian ideas, the spirit of the revolution had not disappeared. Wuthenow quoted and formulated the ideas of the early 19<sup>th</sup> century German-Baltic publicist Carl Gustav Jochmann in the following way: "If revolutions end up in Restauration, like his generation had witnessed, it is nothing but the forerunner of a second revolution, because the experiences made cannot be liquidated like institutions and edicts: 'Only revolutions of the mind are those which stay. They cannot become subject of Restauration. [...] Governments work against their own interests if they prevent the people

from finding their own ideas.'" (Wuthenow 1993) This is why a fundamental change in society took place in the course of the revolutions of 1848.

At the same time, also the economic system of many European countries was rapidly changing. Society turned from a predominantly agrarian to an industrial society, starting with machines like the automatic loom or the steam engine. People left the countryside and moved to the cities. Wealth was accumulated not only by the nobility, but also by successful members of the bourgeoisie, which themselves became an important source of income for artists.

Many artists of the first half of the 19<sup>th</sup> century reacted against the repressive political system by retreating into the private. In a time of ideological turmoil, a common denominator for them was a close connection and belief in the enduring principles of nature, represented by the philosophy of Romanticism. Painters of the first half of the 19<sup>th</sup> century searched for a transcendental

Fig. 16:

'The Abbey in the Oak Forest'  
(Caspar David Friedrich, 1808-1810).

© Public Domain



connection with nature, fostered by the philosophical movement started by Jean-Jacques Rousseau. The landscape impressions depicted in their paintings very often not showed reality, but augmented landscapes aiming at this transcendental romantic sublimation. Some of the most important painters of this period are William Blake, William Turner, or Caspar David Friedrich.

With some decades of delay, this movement was taken over in the United States by the so-called 'Hudson River School,' a group of landscape painters around Thomas Cole whose aesthetic vision was influenced by Romanticism. The paintings typically show the Hudson River Valley and the surrounding mountains. They reflect themes of America in the 19<sup>th</sup> century – discovery, exploration, and settlement. Pastoral settings where human beings and nature coexist peacefully shape the painted landscapes supplemented with sometimes idealized portrayals of nature and wilderness which refer to the divine. (Weber 1981) At the same time, classicistic painters looked for idealistic landscape views rooted in Greek and Roman traditions. They were not entirely following the ideas of Romanticism, but also creating augmented landscapes that were altered from reality.

From 1830 onwards, painters became more interested in showing nature and reality as it really was. An early representative of this movement was John Constable. It became more fashionable to paint outdoors. Painters like Carl Spitzweg in Munich or Jakob Alt in Austria depicted the life of their times in a rather realistic manner. An important focal point on this period of arts history came from the French plein-air 'School of Barbizon,' which had a direct influence on later impressionistic painters.

One effect that stayed from Napoleonic times is the fundamental paradigm shift in the organization of the profession of painters. Before, painting was regulated, as many other forms of handicrafts, by the guild system in Central Europe. Apprentices were educated by their masters in the local guilds. They also travelled a lot before 1800, but mostly because of the rule that they had to take to the road before being allowed to take their master exam. (Tacke 2017) After their apprenticeship, most painters worked locally, since the guilds took care that few of the masters from other places were allowed to work freely in districts other than their own ones.

From 1800 onwards, the education of painters was

taken over by the academies. This, of course, didn't mean free access to the profession of painting as well, since all students of the academies first had to pass an entrance examination and were not only tested if they are talented enough but also if they conformed to the values of their professors. But after their education, many painters chose to work either employed by the nobility or as freelancers and made use of the enhanced ways of travelling of the 19<sup>th</sup> century to work on the road. Some of them even travelled far distances and were, especially towards the end of the century, also sent to foreign continents along with colonialization.

Because of the increase of railway and steamboat connections, and because of the changes in the organization of the painting business, traveling became easier for the painters of this age, and many toured Europe in order to collect different impressions and the various ways landscapes looked in other places. Many of them took the chance to go on voyages pittoresques, where they sketched their impressions of the landscapes they travelled along and turned them into larger paintings, but also reproduced them by creating etchings of their primary works. Thus, the images of foreign places became more and more well-known and triggered the desire in others to see them as well. Railways and steamboats made it also easier for other people to leave the cities and spend parts of the years in rural areas for summer vacation. This formed the start of nowadays tourism, which is an important background for the later creation of scenic routes.

The school of realism became more and more important during the 19<sup>th</sup> century, when it became state of the arts in academic teaching. An early example of this type of almost documentary landscape painting are the pictures of the chamber painters of Archduke Johann, the most popular member of the Habsburg family of the 19<sup>th</sup> century. He was interested in the technical development of agriculture and in raising the standard of living in the crown lands of the Austro-Hungarian monarchy, especially in the Alpine regions. To achieve his goals, he spent years on foot with painters and scholars, wandering through the most remote areas with the aim of creating a comprehensive visualization of the life of the farmers, industrial production, traditional costumes, and Alpine flora. The topographical accuracy of the vedutas was a

## Landscape and Fine Arts since 1600

prerequisite for achieving a documentation of the actual appearance of the landscape, which could be used as a basis for future promotion and development. Between 1802 and 1848, over 1,400 watercolors and pictorial testimonies were created by his team, which were consciously oriented towards the factual or the landscape as it 'really was.' They were so detailed that today's glacier research can explicitly refer to these early visual testimonies in its comparative studies. (Schröder/Sternath 2015)

Nevertheless, even such extremely detailed landscape paintings still are a work of art, a creative achievement of reflection. As Georg Simmel writes, the artist captures new sensory units from sections of the endlessness of the immediately given world. Painters such as Jakob Gauermann, Matthäus Loder, or Thomas Ender, were instrumental in the visualization of space, which, as a near-space, is important for the formation of identity and was also important for the political thinking of a 'region building' well into the 19<sup>th</sup> century.

In the second half of the 19<sup>th</sup> century, in the course of the rapidly growing popularity of Alpinism, mountain painting experienced a flight of fancy. The Alps were visibly losing their physiognomy of terror, their inhuman character was increasingly replaced by passionate devotion, and an idealization of the mountains was combined with the sublime and the creative. The aim of Alpine painting was to depict the spatial extension of the mountain world, to involve the viewer in it and to let him participate in the spectacle of nature in order to be able to feel the emotive charisma of the mountains. Increasing naturalism but also the sense of pathos and the

unleashed elements of nature are elements that can be found in many paintings.

Many famous European painters of that time dealt with the mountains and their inhabitants or even became specialists in this genre. Among them are Alexandre Calame, Edward Theodore Compton, Giovanni Segantini, Markus Pernhart, Raphael Ritz, and Eduard Schleich. They have all developed their own style to bring order and harmony to nature in their paintings or to combine their impressions of the landscape into a unity in one picture. One of the most important of them, the Swiss Ferdinand Hodler, who had always been committed to nature, used basic geometric shapes, parallels, oval color surfaces, symmetries, reflections, abstract forms, and reduced colors for structuring. He relied on natural variables such as light, fog, and clouds as design elements in his compositional technique. They give his pictures a tendency towards pathos and the cosmic, in which the magical attraction of the mountain landscape is expressed. (Wipplinger 2018; Somogy edition d'art/Musée d'Art et d'Histoire 2003)

New developments of style started in the second half on the 19<sup>th</sup> century. The French impressionists still stuck to reality, but rather than depicting nature 'as it was' they tried to record moods and light impressions in their paintings. This style of painting already interacted, to some extent, with early photography. In the beginning a merely French style, it was later adopted all over Europe and also in the Americas and Australia, though at a time when other styles of painting were already developing in a parallel way, like pointillism and especially expression-

Fig. 17:

„Alla Stanga“ (Giovanni Segantini, 1886).

© Public Domain



ism, where composition and the personal subjective view were more important than depicting reality. At the same time, some of the more traditional landscape painters still clung to realism, some integrated influences of the

new styles into their works. None of them is still considered an important contributor to the development of the history of arts, but their paintings certainly still had a market.

### 2.3.3. The 20<sup>th</sup> Century (Kurt Luger, Michael Schimek)

The developments during the first half of the 20<sup>th</sup> century show the ongoing discussions between 19<sup>th</sup> century, realistic arts, subjectivity, and modernist, abstract concepts. Some of the new concepts, like futurism in Italy, paved the road for autocratic forms of government which replaced the partly democratized monarchies in many countries during the 1920s and 1930s.

At the same time as modernistic concepts of society developed, older interpretations of society, the arts, and landscapes perception persevered. New travel modes, like the car, had given people the opportunity to explore landscapes on their own, without the need of a mediator like painters. From the windshield, the traditional central perspective at landscapes gained momentum again. The distribution of photography, film, and affordable cameras empowered people to take their own pictures. Postcards, magazines, and tourism brochures took the role of paintings and etchings telling people about the beauties of landscapes.

It is striking that the longing for the natural and the beautiful apparently always played an important role when industrialization and externally determined work dominated and people sought distance and relief from it. The arts as well as the entertainment industry, which also includes tourism, provide such ambulatory therapy rooms. The U.S. cultural geographer Bret Wallach rightly wonders why pictures of shopping malls, hospital corridors, and car park buildings are not exhibited at art festivals, but rather - although people use all these facilities frequently - pictures of landscapes, of meadows and mountains, bays and beaches, of animals, and other resonance-generating motifs such as a gas station from the 1950s. It seems as if people are chasing after images and the values conveyed in them, which are opposed to the motifs of progress. (Wallach 2005)

This search for high-contrast resonance to everyday life can be understood using the example of the emotionally charged region of Tyrol, the federal state of Austria

Fig. 18:

„Die Bergmähler“ (Albin Egger-Lienz, 1907).

© Public Domain





which is the most popular tourism destination. The appeal of the Tyrol brand has not changed since the advent of Alpine skiing. Two well-known Tyrolean painters have shaped the image of Alpine Tyrol in the world with their art, and that already almost a hundred years ago: Albin Egger-Lienz and Alfons Walde.

Egger-Lienz is regarded as the most important figure on the border between modernism and local art. His powerful interpretations of the hard life in the mountains are beyond all romanticism and express an intimate connection with the people and their place on earth. The everyday life of his characters is characterized by work, humility, and hopelessness. The pictures are contemporary witnesses of the pre-modern and pre-touristic Tyrol, of rural poverty, of deep piety. The figures seem like statues, like monuments in the landscape.

Alfons Walde brought other pictures and strong colors into his representations. He was born in Kitzbühel and is considered the most famous Austrian landscape painter of the interwar period. After World War II and in the general urbanization mania, his work fell into oblivion. The many flowering farm gardens, depictions of rural life, the summits painted by Walde by the dozen, were no longer appreciated during these years. It was only with the exodus from the cities back to the rural areas co-organized by the tourism industry that Walde's stimulating quality, his stylistic art, and his wealth of narratives were rediscovered.

The general theme of Walde's most successful creative period was the human being in the high mountain landscape, his native habitat, between decorative realism and exotic expressionism. Few, flat, and strikingly designed figures in the snow become symbolic pictorial content, above them a cloudless, deep blue sky, color chords as if made for tourist posters, many of which then bore his signature. Like no other artist or marketing manager, he has shaped the image of Tyrol as a 'snow destination' abroad, with which the hotel beds are still filled to this day. The sun always shines in Walde's landscapes. His paintings fulfilled the requirements of a tourism brochure because they showed the landscape from its best side. Thus, his cheerful view of the landscape met the pictorial ideas of the original inhabitants because the pictures had a positive mood. Through technical duplication they became stereotypes. His art publishing house, founded in 1923,

had sold one million color postcards and two hundred thousand color prints by 1950. (Amann 2001)

He was the first painter to bring the sport of skiing to the canvas with a brush, indeed he made it 'presentable' in a way. In the early 1930s, skiing was still a rather elitist affair, but it became more and more popular. In these years, the Hahnenkamm Downhill Race in Kitzbühel and the Kandahar Race in St. Anton am Arlberg were held for the first time. In 1933, the FIS Alpine Skiing World Championship took place on the slopes around Innsbruck. The movie picture *Der weiße Rausch - Sonne über dem Arlberg* (The White Ecstasy), which was released in 1932 as one of the first sound films in Austria ever, captured the masses, because skiing now allowed everybody to experience a manifestation of the mountains that until then had been closed to urban people. The snow-covered high mountains offered a picture of a previously unseen harmony of forms. With skis and camera, thanks to the medium of film and its immensely suggestive power, it was now possible to dive into this white world created by snow and wind: pictorially in the cinema and in real in the mountain world. At the same time, the real boost to winter tourism in the Alps started with the first ski lifts - as an important source of foreign exchange, as a modernization factor for Austria's mountain regions, and as a component of the popular entertainment and leisure industry in Western industrial society. (Luger/Rest 2002)

The way people looked at landscapes was clearly shaped by the view of the artists of the last centuries. Individual travel by car and the roads made for this purpose played a key role in creating and empowering people to access the landscapes they had only known from paintings before. Even today, some painters prove that there still is a need for this type of landscape images, full of mood and emotion. One of them is the American Thomas Kinkade. Inspired by William Turner, he painted idyllic settings of gardens, rivers, stone cottages, lighthouses by the sea, and natural lake and mountain landscapes, always bathed in a romanticizing light. Though not always attributed high artistic value, Kinkade has certainly found an emotional message that appeals to a mass audience. Allegedly, every twentieth American household owns a replica of a picture by Kinkade, a commodified romanticism that has itself taken on an industrial character but is rooted in a legacy of decades of arts history.

## 2.4. Landscape Architecture and Planning from 1750 to Today

### 2.4.1. The Development of Landscape Gardens and Parks in England in the 18<sup>th</sup> Century

(Kristina Skåden)

What is a road in relation to landscape? And what is a landscape in relation to a garden? These are broad questions as the notion of ‘landscape’ changes according to time and place. What follows is a brief investigation of the aesthetic theory and practice in landscape gardening in 18<sup>th</sup> century England, at a time when the garden itself became a landscape.

Paths and roads lead to gardens, and they are essential objects within the garden. They structure the garden area, orchestrate the visitors’ movement and gaze, and produce meaning. Thus, a garden, with its paths and roads, is a place for experimenting with perceptions of nature, ideas, and practices of landscape. By speaking of the ‘landscape’ of a country we introduce notions of value and form, which relate, not just to seeing the land, but also seeing it in a certain way – pictorially. (Barrell 1972) When seeing pictorially, we approach the garden as a picture, and this approach was prevalent in the 18<sup>th</sup> century, particularly in England. The English landscape garden in the 18<sup>th</sup> century is referred to as the ‘picturesque garden.’ The picturesque comprises the idea to evoke physical nature similar to the painted landscape, arranged and compounded with the means of the landscape painting. (Hunt 2004)

One way of studying the garden uses a historical timeline, where gardens are studied as processes. This chapter does not subscribe to this approach, however, it is worth noting that many gardens, as well as those mentioned here, changed over a long period of time. Another way of studying this question is emphasizing gardens as expressions of a certain ‘style.’ The earliest signs of applying the concept of style to gardens are found in the 18<sup>th</sup> century and linked to ideas of nationalism: The English gardener Stephen Switzer (1682–1745) wanted an ‘English model,’ Sir William Chambers (1723–1796), a Scottish-Swedish architect and garden theoretician, based in London, recommended a Chinese manner. Apparently, the English writer, art historian, antiquarian, and politician Horace Walpole (1717–1797) was the first to have an awareness

of garden styles when he wrote, in 1771, that the English architect interior designer, landscape gardener, and painter William Kent (1685–1748) invented ‘the new style’ (‘modern taste’). In the 18<sup>th</sup> century, however, the concept of art history did not play a major role. Concepts of national styles were more important, as were aesthetic styles (from the 1770s and onward) such as the *pittoresque*, *poétique*, and *Romanesque*. (Wimmer 1989)

From about 1700, there was a movement towards a more ‘natural’ way of arranging gardens, both in the French garden as well as in early forms of the English landscape garden. For this, the term ‘landscape garden’ and the occupation of the ‘landscape gardener’ were introduced at the end of the 18<sup>th</sup> century by the English landscape designer Humphry Repton (1752–1818). (Lauterbach 2017) The term *jardin à l’anglais* or *jardin anglais-chinoise* was used in almost all European countries at the end of the 18<sup>th</sup> century, nevertheless, there were different versions of this English or English-Chinese garden to choose from. (Sørensen 2013)

In order to provide a historical background to the English landscape garden in the 18<sup>th</sup> century, the Italian and French gardens from the 16<sup>th</sup> century onwards need to be addressed. Formality, strict geometry, and the division of ground into separate sections characterize Renaissance and baroque gardens of the 16<sup>th</sup> and 17<sup>th</sup> century. These principles of organization were applied to both kitchen gardens and gardens for adornment. The garden was regarded as an extension of the architecture and the interior of grand villas, like the Medici villas in Fiesole and Rome (UNESCO World Heritage site, listed 2013), the Villa d’Este in Tivoli (UNESCO World Heritage site, listed 2001), or the Boboli Gardens in Florence. In the Italian Renaissance, garden shrubs and trees were arranged in square patterns, where the squares were planted and separated by narrow walkways. Dense tree plantings alternated with passages covered with shrubs and trees. The gardens were often laid out in terraces connected by stairs and ramps. Water was an important feature, and

## Landscape Architecture and Planning from 1750 to Today

walls surrounded the inner garden – the *giardino intimo* – and beyond the walls was the wild nature with all its savagery and strenuousness and its unpleasant beasts and robbers. Nature was a place rather not visited.

The first characteristic of the French (royal) garden was to move the interior style of the castle outside. Examples are the Luxembourg Gardens, the Tuileries Garden, and the garden of Saint Germain, conceptualized by the French garden designer Jacques Boyceau (ca. 1560–1633) and the gardens of Vaux-le-Vicomte and Versailles (UNESCO World Heritage site, listed 1979), designed by the most famous French garden architect, André Le Nôtre (1613–1700). The garden space was divided into geometric and sculptural patterns by cutting living plants (*parterres*, in English ‘knot gardens’). These varying systems of parterres, placed next to the castle, were surrounded by areas for movement covered with gravel or (preferably colored) sand. The palace and park of Fontainebleau is an early example of this French system (UNESCO World Heritage site, listed 1981). These gardens were supposed to be looked on from a higher level, like from a window in the castle, or from a terrace.

The second defining characteristic of the French garden was its single or double avenues (road networks) through dense forests and with the use of bushes, molded trees, fountains, sculpture groups, and flat sand-covered lots. (Sørensen 2013) While the predecessors had kept their gardens within confined and fenced areas, André Le Nôtre was allowed to break most of the boundaries at Vaux-le-Vicomte and Versailles. The axes, parterres, and gravel surfaces were built on gigantic flattened and then drained terrain, leading to the opening-up of perspective views of the horizon. They were adorned with large planted forest areas, large pools, canals, and wide gravel roads. The roads were designed to have the least possible gradient in order to appear as, in the understanding of the times, harmonious. The concept of a garden broke out of its formerly defined meaning, as an intimate, protected place, in order to become part of the landscape, thus everything becoming a ‘landscape.’ This is worth noting, in order to avoid the dichotomy that has traditionally locked the two garden systems of formal French gardens and English landscape gardens to two opposites that could never overlap or exist in the same universe. (Sørensen 2013)

The contemplation of landscape – think of it as a visual phenomenon – in nature, or as representation in literature and visual art became an important interest among educated people during the 18<sup>th</sup> century. Moreover, the activity that shows the ideal conception of landscape at its most synthetic was the landscaping of parks and gardens. The landscape garden in the 18<sup>th</sup> century was a theoretical and practical subset of comprehensive aesthetic discourses. Italy had become the predominant influence on English taste in terms of the landscape, by the middle of the 18<sup>th</sup> century - firstly, by being the ultimate destination for many young men who went on the *Grand Tour*, and secondly, collecting landscape paintings (originals, imitations, copies, and forgeries) became a fashionable activity, and the value and numbers of works



**Fig. 19:**  
**The Temple of Piety at Royal Studley.**

© Ian Capper / Creative Commons BY-SA 2.0

ascribed to Poussin, to Salvator Rosa, and to Claude Lorrain increased rapidly. The art historian Michael Kitson writes about space in Lorrain's paintings in terms of "a circuitous path taking the eye by easy and varied stages to a luminous distance." These paintings encourage a movement towards the horizon, and in order to achieve the effect of perspective, Lorrain makes use of a road or a bridge, or the slope of a hill, which runs diagonally across the picture. (Barrell 1972)

The landscape garden consisted of naturally grown forest areas, open grasslands, lakes, streams, and meandering paths. The gardens were landscaped by random coincidences and enriched with artificial caves, ruins, classical and Gothic monuments, as well as temples and cottages scattered throughout the countryside. In the landscape garden, the road layout became important. A key innovation was the destruction of walls and boundaries. This change in perception is expressed in the words of the English garden designer Batty Langley (1696–1751) in 1728: "Is there anything more shocking than a stiff regulated garden?" Later in 1739, Lord Lovell writes to Lord Burlington of the "damned dull walks" and "cold and insipid strait walks" of "unpicturesque" gardens. (Jourdain 1948) If certain gazes are favored in the Renaissance and baroque gardens, for example in the central axis or at the intersection of paths, the 'pictures of nature' multiply in the landscape garden. The planting on the one hand, and the layout of the walkways and roads on the other hand,

enable the garden designer to calculate garden and nature pictures, by showing and hiding, in such a way that a walking person was attracted and motivated to move. This method of landscaping inevitably demanded that the pictures thus created ought to be seen from ordered and fixed points of view that were connected with each other by walks thickly enough wooded to prevent the pictures being glimpsed from anywhere except the right place, the 'viewpoint.' (Barrell 1972)

In the 17<sup>th</sup> century, the ideal for gardeners was an architectural one, by which an irregular curve was seen as a deformity, and the landscape was reorganized into a pattern of straight lines and circles. In 18<sup>th</sup> century England, the garden was no longer thought of as rigidly separated from the rest of nature. William Kent (1685–1748), architect, interior designer, painter, and landscape designer, is one of the pioneers of the 'informal' English garden style. Apparently, he saw no distinction between the gardens he 'improved' and manipulated, and the natural landscape outside, and therefore his style of improvement was more 'natural' than the one of his predecessors. This was a view of English achievements in landscaping and gardening in general widely held in the 18<sup>th</sup> century. (Barrell 1972) Kent created gardens at Chiswick House (from the 1720s, and further in a constant state of transition), Rousham House (1738–41), Stowe House, Buckinghamshire (c. 1730), Pope's Villa, Twickenham, (c. 1730), or Richmond Gardens. (www.britannica.com 2020; Mowl

**Fig. 20:**

**Upper and Lower Cascades,  
Rousham House Garden,  
designed by William Kent.**

© JR P / Creative Commons  
BY-NC-2.0



2006)

An example of a very early landscape park showing the transition from the baroque style to a landscape park is Studley Royal Park (UNESCO World Heritage site, listed 1986). The entrepreneur and Member of Parliament John Aislabie (1670–1742) made the grand design, during the 1720s. He manipulated on a majestic scale and seems to have been more or less his own architect. Seven contractors were employed to bring in stone, the river was expanded into a lake and a chain of pools, channeled, and was made to flow down a staircase cascade. Its surroundings were adorned with little temples, a banqueting house, pavilions, bridges, and statuary. The water garden even contains the ruins of Fountains Abbey (1132). (Lively 2003)

The large, open, idealized park landscapes, realized between around 1750 and 1783 by the gardener, architect, and engineer Lancelot ‘Capability’ Brown (1716–1783) have become the archetype of the English landscape park. Capability Brown and his assistants were responsible for over 250 gardens. By extensive earthwork,

removing entire forests, and transforming the area with rolling grasslands and lawns, Gothic or Neo-classical monuments, temples, rotundas and follies, picturesque stone bridges, tree clusters, and large artificial serpentine lakes, they created the typology of an open ‘Brownian parkscape.’ The park was facilitated for ‘sportsmanship,’ angling, hunting, ball games, horseback riding, walking, and carriage rides. Brown also took into account the need for rapid horse and carriage transport, by designing the roads and the landscapes for quick glimpses of vistas, and calculated gazing through openings in the vegetation. These gardens met the needs of country nobility and landowners by putting emphasis on productivity and yield, they were easier and cheaper to maintain than the older formal gardens, they opened for a less formal lifestyle, and still they were a symbol of prosperity and social status.

At the end of the 18<sup>th</sup> century, Capability Brown was criticized for large-scale felling of trees and the unification of the park landscape. In contrast, the English landscape gardener Humphry Repton (1752–1818) devel-

**Fig. 21:**

**Prior Park in Bath, designed by  
Capability Brown**

© Public Domain



oped the *gardenesque* style. Here, the aim was to repatriate the garden, to regain some of its profusion of flowers, and a regular order suitable for smaller gardens – the so-called ‘pleasure grounds.’ Repton wrote repeatedly about the function of the road in the landscape: “[...] a road it is an artificial object, and may be avowed in such cases [as in the garden of Sherringham] as a work of art.” (Repton 1816) His approach aimed to create ‘the most interesting scenery’ by reconsidering the relations between the garden, the estate, and the road, and thereby orchestrating specific views: “As this [the road’s] chasm, dividing the land from the sea views, will be one of the most striking stations at Sherringham, I have called it the Scalp, from a noted scar of this kind in Ireland. The annexed view is supposed to be taken from this spot.” (Repton 1816) Repton had been employed at 50 places, more than 20 of which now fall under the care of The National Trust.

Horace Walpole, in his patriotic essay about the history of the landscape garden (1771, published 1789), described the origin of the landscape garden as a mod-

ern phenomenon, developed in England, it was naturally adopted nature. Walpole clearly underplayed the massive work that had been undertaken to arrange nature. Landscape gardening started as a reaction to the formal continental style, which was incorporated everywhere in the early 1700s, also in England. The changes of methods and style were, among other, a product of land reforms, which favored wealthy landowners since landownership as both a source and a sign of power was the traditional heart of the British political system. The language and practice of landscape aesthetics were composed by institutions of patriarchal culture, power, and knowledge. Aesthetic discourses about land both assumes and reinforced the status of land as the foundation of sociopolitical power, and the illusions of the boundlessness in landscaping rhetorically invoked British political freedom in contrast to continental servitude. Nevertheless, this assumed freedom was reserved for a few, and can be further analyzed in relation to gender and class. (Bohls 1995)

### 2.4.2. Landscape Gardens and Parks in the Rest of Europe from 1750 to 1900

(Michael Schimek)

Starting around 1750, the age of Enlightenment replaced absolutism in many European countries. In some countries, enlightened kings and queens allowed or even conducted reforms which reduced the importance of nobility and laid the ground for the economic prosperity of the bourgeoisie and of farmers. In other countries, the new paradigms came into effect through revolutions, like in the United States or France.

One of the most visible effects of this paradigm shift was a change in the style in which gardens and parks were designed. Instead of the strictly geometrical forms of the baroque gardens, more and more landscape gardens were built. Following the philosophical movements of the times, those new gardens were designed to represent the new idea that people should live in harmony with nature and not subjugate it, like in baroque representation.

During the first decades of the new fashion, landscape parks were almost entirely built in connection with private representative estates. The ‘normal’ rural people

had no need to return to a more natural way of living, since they never had any alternatives than to respect nature and live according to its rules. This is why old representative patterns were more important to them. A good example for this is the development of small representative house gardens near the farmsteads of southern Sweden at the beginning of the 19<sup>th</sup> century. Previously, farmers in Sweden were so poor that their only focus was to earn a living by cultivating all of their land. With a slightly increased wealth, they could now set aside a small portion of their properties for ‘useless,’ mainly beautiful gardens. These gardens were set in the most unimportant part of their land, immediately north of the farmhouses. The typical design of those small gardens still imitated Renaissance or baroque models and combined them with traditional heathen symbols, like the sun or the moon. (Christenson 1996)

The designers of representative landscape parks toured the famous British examples and carefully record-

## Landscape Architecture and Planning from 1750 to Today

ed the new styles. Within Europe, their designs attempted to imitate elements whilst criticizing and refining some parts. They set out to achieve a similar design whilst taking into account the different climatic, pedological, and phytosociological conditions of their home countries and specific locations. Therefore, creating landscape parks in Central Europe was not only about a proper design, but also about the practical issues of gardening. (Fürst von Pückler-Muskau 1834)

Many examples of landscape gardens were created in present-day Germany, because of the huge number of small independent states with reigning families owning castles, although there are examples all over Europe. Many of these parks are now, either independently, in connection with neighboring castles, or as a cultural landscape, inscribed into UNESCO's World Heritage list.

Landscape gardens did not replace all of the former baroque gardens. Often the terraces in front of the castle stayed, however were amended with a large and representative landscape park to the side, for example in Drottningholm (Sweden) or Frederiksborg (Denmark). In Potsdam (Germany), the baroque castle of Sans-Souci maintained its world famous terraced garden with a new large landscape park built to the west of the main castle and in front of the Neues Palais (New Palace), where it replaced a part of the old baroque garden. In Karlsruhe (Germany) in approximately 1750, the circular structure of the remaining park area behind the castle was re-shaped into a landscape park. Some parks were also integrated into existing forests or natural areas, such as

the Niederwald landscape park at the southern end of the World Heritage cultural landscape Upper Middle Rhine Valley near Rüdesheim.

In the World Heritage sites of Versailles or Fontainebleau (France), the portions of landscape gardens stayed small compared to the remaining baroque gardens. Although not World Heritage listed, the Castle Park in Laxenburg (Austria), one of the summer seats of the Habsburg family, was entirely re-shaped into a landscape park, leaving almost no baroque elements.

The following landscape parks of continental Europe are World Heritage listed or cover a significant proportion of those sites:

- The 'Garden Kingdom of Dessau-Wörlitz' (*Gartenreich Dessau-Wörlitz*) was created by Prince Leopold III Friedrich Franz of the Principality of Anhalt-Dessau near the cities of Dessau and Wörlitz in present-day German federal state Saxony-Anhalt during the second half of the 18<sup>th</sup> century. The cultural landscape covers an area of around 120 km<sup>2</sup> along the Elbe and Mulde rivers, spanning 25 km from east to west. It contains the first neoclassical castle and parochial buildings to be erected in Germany. Apart from its landscape gardens, *Gartenreich Dessau-Wörlitz* also contains agricultural land which was cultivated with a clear educational purpose following the philosophies of the Enlightenment (Kulturstiftung DessauWörlitz 1999).
- The landscape park surrounding the castle of Bad Muskau was created by Prince Hermann von Pück-

**Fig. 22:**

**Iron Bridge, Wörlitz Park. The bridge, constructed in 1791, was the first one made of cast iron in Germany.**

© M\_H.DE / Creative Commons BY 3.0



Fig. 23:

## Park Landscape at Bad Muskau.

© Dguendel / Creative Commons  
BY 4.0



ler-Muskau and his student Eduard Petzold during the first half of the 19<sup>th</sup> century. The park was integrated with the natural and agricultural landscape of Upper Lusatia (present-day Saxony) and the valley of the river Neiße. Through his design, Pückler-Muskau made a significant contribution to the development of the discipline of landscape architecture in the 19<sup>th</sup> century. He considered his skillful work as ‘painting with plants,’ creating a clear connection with the landscape painters of his age. By incorporating the town of Bad Muskau into his planned utopian landscape by creating green connections between the castle park and the city and by additionally creating urban parks in the city, he also was a forerunner to the urban planning of the second half of the 19<sup>th</sup> century. His concepts influenced American town planners and landscape architects when creating the famous parks and parkways such as in Boston, New York, or Brooklyn. Because of the shift of the German-Polish border to the west after World War II, the park is now shared between Poland and Germany who jointly proposed the nomination of the park for the World Heritage list. (Michałowski et. al. 2003)

- At the beginning of the 19<sup>th</sup> century, the Liechtenstein family of the Principality of Liechtenstein owned a number of castles in Austria, a huge city palais in present-day Vienna’s 9<sup>th</sup> district, and had re-bought their ancestral castle in Maria Enzersdorf south of

Vienna. Additionally, the family owned domains in Southern Moravia (Czech Republic), now located directly on the Austrian border. These domains form the cultural landscape of Lednice-Valtice and cover an area of 200 km<sup>2</sup>. The basic grid of the landscape was formed during the 17<sup>th</sup> and 18<sup>th</sup> century by creating a Renaissance and baroque style system of avenues and vistas between the family’s main residence in Valtice (Feldsberg) and their summer seat in Lednice (Eisgrub). Duke Johann I Josef began a reconstruction project at the beginning of the 19<sup>th</sup> century, creating a smaller landscape park at Valtice Castle and a large park north of Lednice Castle (also in this case, the baroque garden south of the castle has stayed), incorporating the Dyje (Thaya) river. The landscape in between and around the castles was equipped with a number of smaller manors, castles, and objects reflecting the ideas of Romanticism. Not all of them have survived, unfortunately. (ICOMOS 1995)

The World Heritage cultural landscape of Sintra, Portugal, is another World Heritage site which has been inscribed because of the quality of its landscape gardens. The parks surrounding Sintra were built during the first half of the 19<sup>th</sup> century, however, they look different to the classical landscape parks of England and Central Europe due to the different cultural environment and the landscape they were built in.

In the fast-growing cities of the time, especially



Fig. 24:

Artificial waterfall in Bad Muskau Park.

© FrankPr / Creative Commons BY-NC-ND 2.0



during the second half of the 19<sup>th</sup> century, a need for creating recreational areas for the urban population was recognized. Many cities used the opportunity of the removal of medieval fortifications to create new parks, for example in Vienna, Cologne, Düsseldorf, Braunschweig, or Riga. Almost all of these were built in landscape park style. In Vienna, all new parks along the Ringstraße are landscape parks, except for the Volksgarten, which was deliberately built in neo-baroque style.

The architectural elements of the landscape parks were clearly different to the typical baroque parks, especially those parts of the parks that were located further away from the castle or manor. Roads and pathways through the park were twisting, which was considered closer to a natural shape than long straight avenues and chaussées. They led through a varied landscape with open grasslands and patches of forest and shrubbery, depending on the natural environment they were built in, creating different impressions of light when travelling through the park. In many cases, a nearby river was integrated into the park and provided the water needed for the creation of small lakes and ponds. If built in flat environments, rocky passages simulating Alpine landscapes were artificially created, sometimes with integrated grottos, with small waterfalls, and rapids built into the existing rivers or artificial side branches or canals.

Another issue for landscape gardens during this time was the deliberate integration of agriculturally cultivat-

ed land into the park scenery. In his treatise from 1834, Pückler-Muskau criticized some English gardens for allowing grazing cattle to come close to the castle or manor. Instead, he proposed a zoning for parks that included a colorful flower garden (*Garten*) as an outdoor living room directly next to the main house. Moreover, instead of the park (*Park*) beginning next to the house, he preferred an intermediate zone, called the 'pleasure ground' (not translated into German). Beyond the pleasure ground, the park zone began, as close to nature as possible. The pleasure ground could be separated from the park by fences, walls, or a 'ha-ha,' a combination of wall and ditch below the surface which was visible only from a short distance. The ha-ha's main purpose was as a barrier for cattle and wildlife in the park.

Roads and pathways in the park provided a variety of different landscape impressions and integrated the scenery beyond the park. Depending on the direction of travel, they offered views on different parts and the built elements of the park. The main roads through the park were often designed in a robust way, allowing for a pleasurable ride on a horse carriage, though with a different purpose than the carriageways of the later North American parks, since in many cases the parks were not entirely open to the public.

In many parks built towards the end of the 18<sup>th</sup> and the beginning of the 19<sup>th</sup> century, many of the artificial landscape elements and additional buildings and monu-

ments were influenced by the ideas of romanticism and classicism, as painted by the major artists of the time. Some buildings did not only fall into decay after their construction but were built as ruins straight away. In addition to conventional monuments, obelisks and columns with a clear reference to ancient Egypt, Greece, or Rome were carefully placed at important viewpoints.

Temples and tea houses were located in the green areas of the parks, but also close to the lakes and ponds, many of them not only in Greek-Roman, but also in Chinese and Japanese style. Cloister-like confinements and far-off hunting lodges idealized the contemplative nature of medieval monasteries and served as shelters during hunting excursions into the parks.

### 2.4.3. American Landscape Parks in the 19<sup>th</sup> Century (Dan Moore)

Frederick Law Olmsted and his successors had a profound impact on the very look and feel of the United States, and consequently on the profession of landscape architecture. During his career, Olmsted and his firm carried out some 500 commissions, including 100 public parks and recreation grounds, 200 private estates, 50 residential communities, and subdivision and campus design for 40 academic institutions, (www.olmsted.org 2020), and his sons went on to design hundreds more and continue his legacy.

A combination of his personal values and the reality of late 19<sup>th</sup> century America led to his approach to landscape design. During his lifetime, the United States were transformed from a rural society into an industrial economy, with factories, pollution, and urban density. Olmsted believed that people needed a place to relax and contem-

plate the scenery. Parks and natural areas were respites from the crowds and the stress of city life. But to Olmsted, parks were not just an escape, they were a place to put into practice ways to address many of the social problems that society faced, such as crime and alcoholism. He believed, like other transcendentalists of his time, that nature could promote social reform in response to challenging urban conditions. Being public spaces, parks appealed to his democratic ideals, as they were places available for all to use and experience. Unlike the rest of society at the time, where poverty and crime divided the community, parks were places where members of all classes could congregate. This ethic evolved to include the importance of designing and guarding landscapes for everyone to enjoy, not just the privileged few, and not to be exploited for economic gain. He visited the Yosemite Valley in 1864

Fig. 25:

Bridle path in Central Park, New York City.

© Jet Lowe, U.S. Library of Congress / Public Domain



and not only had the foresight to predict it would attract millions of visitors, he felt it should be preserved for the use of all people, in perpetuity. Less than ten years later, Yosemite became the United States' first National Park. This viewpoint may seem normal in the 21<sup>st</sup> century, but it was quite radical in the 19<sup>th</sup> century.

His approach to landscape design was also quite radical. His first major design was Central Park in New York City. "Unlike the European landscape gardeners that preceded him, Olmsted [and Vaux] designed Central Park as a service to people, not as a contribution to art. The plan catered to the pedestrian experience, with pathways strictly for traveling on foot, sunken transverse roads that elevated carriage thoroughways so they would not interfere with the footpaths underneath, and various park areas strictly meant for human enjoyment, including meadows, pavilions, and seating areas." (Chow 2016)

Olmsted was not the lead designer on Central Park but was actually a junior partner and protégé of Calvert Vaux. Vaux was an early proponent of the public park movement. The public park movement started in the 1830s and was conceived out of a desire to improve health in the over-crowded conditions of the rapidly growing industrial towns. Parks became symbols of civic pride, providing inhabitants and visitors alike with attractive surroundings, and also took on a social role as places to improve the quality of life for the lower economic class of society. (Jordan 1994) Prior to Central Park, Vaux was partnered with Andrew Jackson Downing and assisted with the design of the National Mall in Washington, D.C.

Vaux and Olmsted would form a partnership in 1865 until its dissolution in 1872 to build off the success of Central Park. In addition to Central Park, another famous early collaboration was Brooklyn's Prospect Park. Vaux would go on to design dozens of parks on his own and in other partnerships. Although less famous than Frederick Law Olmsted and his sons, without initially bringing in Olmsted to the Central Park project it is unknown whether the Olmsteds would have gone on to a career in landscape architecture.

A key requirement of Olmsted's work is a space large enough to have an appreciation for broad expanses of scenery. The park should enhance the natural landscape of the site and fit into its surroundings. With this, while

there are some design similarities, each Olmsted park is unique and has a distinct individuality of its own. By expanding the 'space' for a park into parkways, a word coined by Olmsted in a proposal for the Brooklyn Park Commission, the Olmsted-designed parks ended up contributing to the design (or re-design) of the cities themselves. Olmsted created park systems that were a series of unique parks connected by equally aesthetic parkways to connect the parks. An example of this is Boston's Emerald Necklace. Parkway are wide roads that have each use – carriages, pedestrians, bicycles, equestrians – separated from each other by landscaped medians.

By the late 1800s, the park movement had swept the country, and Olmsted and his partners were the best known designers in the country. By the time Olmsted Sr. passed away in 1903, his sons, John C. and Frederick Jr., had already been working alongside Olmsted Sr. for many years. The two Olmsted brothers changed the name of the firm in 1898 to Olmstead Brothers. It is estimated that by 1979 this firm participated in more than 6,000 projects, including more than 700 public parks, parkways, and recreation areas. ([www.olmsted.org](http://www.olmsted.org) 2020) Some cities have done a better job of preserving the Olmsted park legacy, but it is evident that the modern park in the United States would be vastly different if it were not for the contributions of Frederick Law Olmsted and his partners.

Examples for Olmsted parks are:

- New York City's Central Park  
As stated above, New York's Central Park is what put Frederick Law Olmsted on the map. His draft, created in collaboration with Calvert Vaux, was chosen for the project due to clear separation of the park from the city and the more picturesque and pastoral design. This is what spurred the term 'landscape architect,' versus just a garden designer.
- Prospect Park, Brooklyn  
Another project Olmsted completed with Calvert Vaux, like Central Park, Prospect Park was designed to display a pastoral and picturesque aesthetic design. The two designers were able to go forward with their ideals due to the strong support from Park Commissioner James Stranahan. A notable aspect to Prospect Park was the park being circled by a series of



Fig. 26: 1894 plan of Boston's Emerald Necklace of parks (Olmsted, Olmsted & Eliot Landscape Architects)

© Norman B. Leventhal Map Center Collection / Public Domain

four scenic drives. Like Olmsted's parkway concept, these drives are paralleled by an extensive system of pedestrian and equestrian paths. Some of these paths can be traced back to trails used by the Canarsee Native Americans, the first inhabitants of what is now Brooklyn. Many of the original drives are now dedicated bike paths.

- Buffalo, New York, Parkway System

Olmsted and Vaux coined the word 'parkway' in their proposal for Central Park, but it was their plan for the parkway system in Buffalo, New York, where they perfected the concept. These parkways were not just designed to connect the suburbs to the city, they were ways to make the feel of the large parks they are connecting extend to a larger part of the city. In this sense, Olmsted and Vaux ended up designing not just parks, but shaping the entire urban area.

- Boston's Emerald Necklace

Boston's Emerald Necklace is the name of a chain of over 10 parks that are connected by parkways and waterways in Boston, Massachusetts. Similar to the parkway system in Buffalo, the Emerald Necklace ended up shaping the entire urban design of Boston and determining development within the area being covered by the chain of parks.

- Louisville, Kentucky, three parks and parkway system

By the time Olmsted got to Louisville, Kentucky, he had perfected the ability of his park designs to shape the entire urban planning of a city and eventually leading to his work leaving behind whole park 'systems.' Louisville, the last system Olmsted Sr. would work on, is probably the finest example of an Olmsted park system. Again, the key aspect is the connecting of three very large parks by parkways.

#### 2.4.4. Landscape Planning Issues from 1850 to 1950 (Michael Schimek)

The 19<sup>th</sup> century and the beginning of the 20<sup>th</sup> century marked an era with many disruptive events in the development of humankind. To some extent, the spirit of nationalism defined the way to the map of the world

as we still know it, at least in Europe and the Americas. In Germany and Italy, national reunification took place. The last large multinational state in Europe, the Austro-Hungarian empire, collapsed at the end of World War I. The

colonialization of Africa, parts of Asia, and Australia and Oceania and the internal colonialization in the Americas and Siberia contributed to the economic prosperity of the big empires, whilst leaving a continuing legacy of poverty and political instability still today.

The new industrialized technologies and the construction of faster and more reliable infrastructures, like railways and canals, made a major contribution to a new kind of bourgeois wealth. This came at the cost of the creation of a new working proletariat in the cities and at important industrial sites in the countryside. During the 19<sup>th</sup> century, as an example, the rural areas of Germany lost more than a third of their population to the cities. At the same time, industrialization relied on the exploitation of resources from rural areas in a non-sustainable way. Many European states, especially in Western and Central Europe, featured a highly urbanized and mobile population whose way of life had separated significantly from the agrarian society which had dominated those states only decades before. (Jakobi 2003)

Modernistic developments in arts, music, or architecture mainly took place in the cities. Rural areas, in contrast, became the site of relaxation and retreat. Urban life was seen a necessity for economic prosperity by all social classes, although at the same time was considered dangerous to health and strenuous because of the speed, noise, housing conditions, and lack of nature. It is no wonder that rural areas, looking for prosperity and income out of the newly established tourism industry, marketed their

places as a realm of peace and nature, a kind of living that was lost for the urban dwellers but which still seemed desirable. This is why many of the touristic products that were developed at the beginning of the 20<sup>th</sup> century tried to combine the close-to-nature experience with new technologies that supported the feeling of staying in – to use the words of more recent research – heterotopia and created a perception of the landscape that was still rooted in more old-fashioned ways, including landscape art of the 19<sup>th</sup> century. The panoramic roads for car travel of the interwar times are a typical example of this strategy.

At the turn of the 20<sup>th</sup> century, the focus of landscape architects shifted from creating gardens and parks to a more holistic view on society. The enormous growth of cities during the 19<sup>th</sup> century – Vienna, for example, had reached the largest number of inhabitants in its history in 1910, with more than 2 million inhabitants – created an enormous need for housing space, at the cost of green areas. As a result, traditional garden architecture and the creation of urban parks were not able to solve the challenges of urbanization anymore. Therefore, garden architects expanded their work to supporting comprehensive urban planning and landscape planning as an important discipline of planning science.

One answer to the enormous lack of green areas in the cities was the creation of allotment gardens (*Schrebergärten* in German, named after the German doctor Moritz Schreber from Leipzig, who pointed out the importance of physical motion in the green as supporting

Fig. 27:

*Schrebergärten* in Böblingen,  
Germany.

© qwesy qwesy / Creative  
Commons BY 3.0



physical and mental health, though his methods are classified as highly questionable from a contemporary point of view). From about the 1890s, urban residents could rent a small plot of garden for little money in specially assigned areas. Here they could grow their own vegetables or create an area of retreat in the green space. The tenants organized themselves in associations and cooperatives, renting out the gardens with long-term contracts. This system ensured stability which allowed the tenants to invest in their private refuge. On the other hand, this makes allotment garden areas a very immobile urban resource, which prevents the gardens from playing a similar social role like around 1900 in our contemporary cities. In Germany, for example, 93 % of the tenants are Germans without migration history, who still pay, on average, only 1 Euro per day for rent and operative costs. (Buhtz et al. 2008)

The most influential new idea in urban planning was the concept of the Garden City developed by the British visionary Ebenezer Howard. It aimed at creating new au-

tonomous cities in the green, with a distance to the big industrial urban agglomerations. The idea proposed that people should live in smaller houses in settlements which were similar to agrarian rural settlements, with their own gardens and fresh air. These initial concepts planned to equip the new cities with their own industrial and cultural facilities. This did not always happen in reality – the first examples were created at a certain distance (around 50 km) north of London in Hertfordshire and still remained logistically closely connected with the capital city.

In Central Europe, new garden cities were rarely built. This was because of the limitation of the concept – that it requires large plots of land for development and can only house a relatively low density of people. Most of the famous examples were built by entrepreneurs with a sense of social responsibility and a cultural mission, like the two lines of the Krupp family in Essen, Germany (*Margarethenhöhe*), and Berndorf, Austria, or the furniture manufacturer Karl Schmidt in Hellerau north of Dresden. They were all built in connection with an existing or re-

Fig. 28:

One of the first plans for an ideal Garden City by Ebenezer Howard, 1902.

© Public Domain

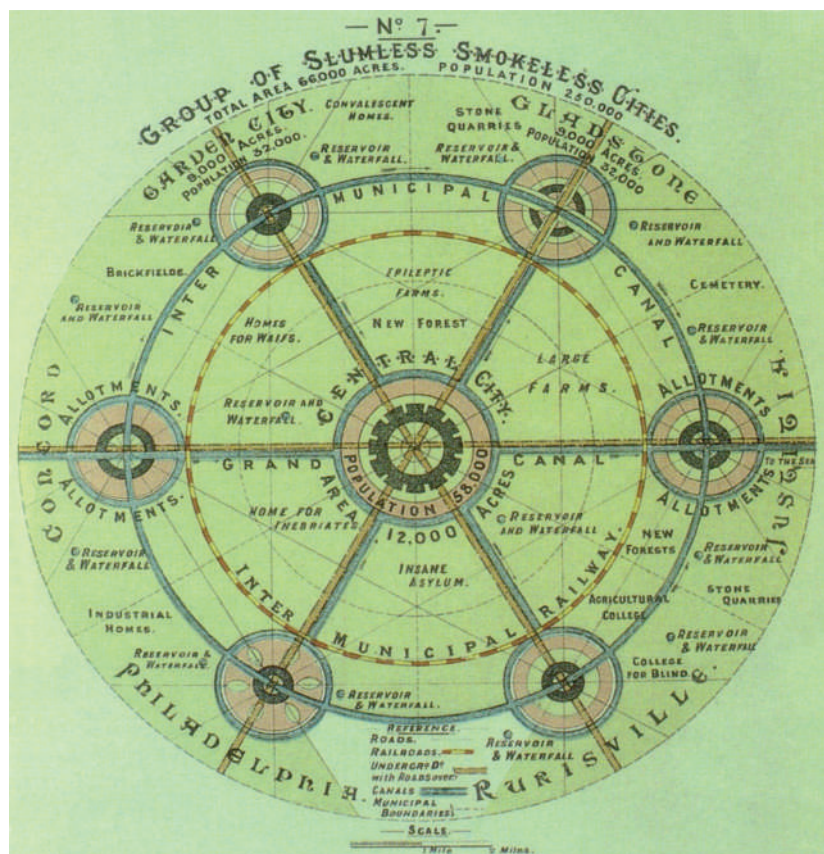


Fig. 29:

The ‚Moorish Room,‘ one of the educational ‚architectural style classrooms‘ in the Primary and Secondary School at Berndorf, Austria, built by the Krupp Family.

© Thomas Ledl / Creative Commons BY-SA 4.0



located industrial estate and featured schools, churches, and some of them even theaters and opera houses.

The concept of Garden Cities was not only adopted by social reformative personalities like Krupp and Schmidt, but also by people following a different concept of reform of the society. The radical racist and antisemitic publisher Theodor Fritsch had already issued a book called *Die Stadt der Zukunft* (The Town of the Future) two years ahead of Ebenezer Howard, who he accused of plagiarism. Following Fritsch's ideas, some similar cities were built after 1900 by people following radical ideas of the time, like vegetarianism or esotericism. Fritsch played a major role during the following decades foremost as a publisher for radical pamphlets that were important in paving the way for the ideologies of national socialism. (Hartung 2001)

Similar role model cities like in England or Germany were erected in the United States, Canada, or Australia. The concept of the garden city was also applied for the typical suburban development in American cities. Supported by the quick and widespread private motorization of the country, affluent people could afford moving out into the green and commuting to work in the city. The complete socially oriented concept of the garden city drafted by Ebenezer Howard was not implemented here.

This form of development rather marked the beginning of the urban sprawl which is now typical not only in America, but worldwide. The development and construction of new types of roads, tailor-made for private car use, like the parkway and the highway, played an important role. (Primas 2003)

The societal changes of the 19<sup>th</sup> century did not only influence different urban planning concepts, they also led to differing approaches to cultural change in general. Even people thinking in a modernistic way criticized the unwanted effects of industrialization and urbanization, like the gruesome housing environments or the formation of a new working poor. Other people went even further, radically disapproving of the development of society and longing for old-fashioned ways of living. During the second half of the 19<sup>th</sup> century, a number of neoromantic and retrospectively oriented movements evolved among people who felt alienated by the social, economic, and political disruption in their countries. These included a.o. vegetarians, anti-alcoholists, nudists, naturopaths, or anti-vaccinationists. (Jakobi 2003)

The most important one was a movement that was called *Heimatschutzbewegung* in German. They gained a lot of political influence after World War I and to some

extent also after World War II. *Heimat* is a term which is rooted in romanticism and can loosely translate to 'home.' *Heimat* describes a feeling of belonging to places where one is rooted. In the meaning of the 19<sup>th</sup> and early 20<sup>th</sup> century, *Heimat* is often connected to the roots of people in a formerly agrarian rural society, which many have lost due to industrialization and urbanization. One thing the Heimatschutzbewegung has in common with the other neoromantic movements is a cultural pessimism and orientation towards the values of the past which seem endangered. (Jakobi 2003) It paved the way for the science of folklorism (*Volkskunde*). Helmut Eberhart underlines the connection between folklorism and Heimatschutzbewegung by quoting the Swiss folklorist Richard Weiss: "Folkloristic interest and research always came out of cultural crises. Its major force was and is being homesick after a paradise lost, after the paradise of nativeness, after 'simple life.'" (Eberhart 2018)

Different to the German branch of the movement, which, in the beginning, focused its interest on the loss and the protection of nature, the Austrian version of the Heimatschutzbewegung was mainly interested in aesthetic questions and issues of the built environment. Carl Giannoni, advisor for *Heimatschutz* in a number of Austrian ministries and the Austrian Federal Office for Monument Protection since 1913, a position he kept in the Austrian democracy from 1918 and also during Austrian fascism from 1933, describes: "Heimatschutz first of all means digressing from the academic architecture formalism and turning towards vernacular culture. It requires to considerably integrate new creations into the existing built environment and the landscape." (Eberhart 2018) Similar movements were founded in other European states. In the United Kingdom, for example, the struggle between the Roads Beautification Association (RBA) and the Council for the Preservation of Rural England (CPRE) had a significant influence on the shape and the landscape integration of English roads from 1920 to 1950. (Merriman 2008)

Both the German and the Austrian movements began to retreat from attempting to impact the active development of modern society. Instead, they concentrated on conservation and on "navigating against the storm of modernity" (Eberhart 2018). They were increasingly instrumentalized by nationalistic and reactionary po-

litical forces, providing important cultural support for leading Austria and Germany into fascism and national socialism, which had influence both on the cultural paradigms of the decades before and after 1945. What this has meant for the development of road construction will be described in more detail in the following parts of the study.

In the United States, similar forces were at work, though in a democratic framework. The 1850s saw the rapid industrialization of the northeastern federal states and the ongoing development of the country towards the west, including places of high natural value. This meant the unregulated exploitation of natural resources through events like the gold rush, and early tourism, evoking similar fears like in Europe at that time. Based on the ideals of Romanticism, many people called out for a protection of the natural wonders of the west. The designer of New York City's Central Park, Frederick Law Olmsted, wrote of Yosemite in California that it was "the greatest glory of nature [...] the union of the deepest sublimity with the deepest beauty." Already in 1864, Abraham Lincoln signed a bill protecting Yosemite, and in 1872, Yellowstone became the first National Park in the United States, though with a clear focus of creating "a public park for the benefit and the pleasure of the people." By the end of the 1930s, more than 20 National Parks had been established, mostly in areas which were not considered valuable for economic exploitation. (Duncan 2009) One way to control public access and the educational purpose of the parks was to create panoramic roads for car use.

National Parks took some time to be replicated in Europe. By the end of World War I, only Sweden (nine parks created in 1909) and Switzerland (1914) had established National Parks. Germany (1970) and Austria (1981) were among the last countries to follow. This was because of the economic crises after World War I and the legacy of fascism and national socialism. The majority of the Swedish parks were created in wilderness areas in the north of the country or on remote islands in the Baltic Sea. Two of them were established in agricultural areas of the south (one close to Stockholm and one close to Örebro), with the clear goal of preserving the traditional agricultural landscape. Thus, these two National Parks embodied ideas similar to the landscape parks from the early 19<sup>th</sup> century and are clearly connected to romantic ideas.



### 2.4.5. World War II Aftermath and the Ecological Movement from the 1970s (Michael Schimek)

Following World War II, people of wide parts of Europe focused on the reconstruction of the devastated cities. As a result, not all places were rebuilt in historic style. A drive to economic and technological recovery boosted modernistic paradigms. The loss of historic substance and their replacement by modern structures did not only take place in Germany, Austria, or England. Cities that escaped harassment during the war, like Stockholm, faced the destruction of traditional old city quarters to be replaced with modern high-rises. In Germany and Austria, the ideas of the Heimatschutz movement were largely discredited by their role and abuse during dictatorship.

At the end of the 1960s, many people stood up against the careless modernization and destruction of valuable resources. From the 1970s onwards, large projects, like especially dams for electricity production, nuclear power and waste treatment plants, and later on high-speed railway lines and, in some exceptional cases, skiing resort plans were questioned by the public and the rising ecological movement. Motorways often escaped public discussion, since in many countries the main motorway network was already more or less finished by the end of the 1970s.

The formation of the first ecological movements and parties revitalized the old ideas of the Heimatschutz movement. Many of the key personalities of the early environmental movements of the 1970s were, like 70 years before, deeply rooted in cultural pessimistic and some even esoteric traditions and were especially worried about the loss of the qualities of rural landscapes. Some of them were socialized during Nazi times and had founded their professional careers and reputation as



Fig. 30:

**Protest against the Nuclear Reprocessing Plant at Wackerdorf, Bavaria, was partly organized by the Catholic Church.**

„In our times, in which our environment is in danger of extinction by the poisoning of air, water, and soils, our home Upper Palatinate has to face the menace of nuclear contamination by the construction of a reprocessing plant, for our generation and the ones to come. Mary, Mother of God, patron of our home, protector of the Kreuzberg, pray for us to your Son for the protection of our home. O Lord, save us from the poisoning of the earth!“

© Wikida / Creative Commons BY-SA 3.0

reliable members of the national socialist system. Present-day green parties shifted towards the political left only during the 1980s, when they teamed up with university grassroot groups or the Peace Movement.

## 2.5. History of Land-Bound Traffic System Development from 1660 to Today

### 2.5.1. Road Construction in Europe from 1660 to 1840 (Kristina Skåden)

Because of the inadequacy of public finances and administration during the 18<sup>th</sup> century, the maintenance of transport infrastructure was normally a local responsibility. Landowners bordering the road were responsible for

maintenance, notably by raising the height of the middle of the road and pruning trees. Sometimes the local nobility were also authorized to collect tolls on goods using repaired bridges or roads, but they had neither the means

## History of Land-Bound Traffic System Development from 1660 to Today

nor the desire to build new roads, and in many cases the tolls collected were not spent on repairs.

Travel guides from the era are an interesting source of information on the road network of the 18<sup>th</sup> and 19<sup>th</sup> century. For example, the English writer Mary Wollstonecraft travelled to Scandinavia in 1795 and published her impressions in a book called 'A Short Residence in Sweden, Norway and Denmark.' Occasionally, she makes remarks about the roads and their quality, which seem to have varied a lot. The roads from Gothenburg to Strömstad "make allowance for the ups and downs, are uncommonly good and pleasant." However, close to the border to Norway, "the road was so bad, that walking up the precipices consumed the time insensibly." Between Larvik and Tønsberg "the roads were very good; the farmers are obliged to repair them; and we scampered." But then again, the road from Risør to Arendal was only "a path, almost impracticable for a horse." (Wollstonecraft 1987)

In 1838, the Norwegian engineer and road director Georg Daniel Barth Johnson (1794-1872) travelled to mainland Europe for a study journey. He recorded some of his findings as follows: "The roads between the mountains at Koblenz [Germany] are beautiful, but of a far simpler kind [than in Scotland and England]. The roads through Holland stand out with their brick cover and construction in long straight lines." In Belgium, he travelled along the *Grote Steenweg*, that ran from Antwerp to Brussels. Under Napoleon, this was a part of *Route Impériale* No. 1 that stretched from Paris to Amsterdam. On the other hand, "3<sup>rd</sup> and 4<sup>th</sup> class roads in Belgium are almost impassable, even the 1<sup>st</sup> rank roads are bad, they're badly stone set, and even in so narrow width, that two wagons hardly would be able to pass each other, and outside the stone setting the wagon sinks in to the axis; though clay and soil is the usual road filling, and in addition the roads are laid without precision and seem to have been done in a hurry." (Seland 2014)

John Murray's 'A Hand-Book for Travellers on the Continent,' also from 1838, doesn't leave a better impression: "Most of the Belgian roads are paved in a way which makes travelling on them very exhausting, especially for ladies. Their impact on carriage wheels is most destructive: a single day's journey over these chaussées will sometimes cause them to split unless they are made very stout. The postilion should be desired to drive on the

unpaved ground at the side as much as possible (*allez sur la terre*)." (Seland 2014)

In 18<sup>th</sup> century France, only a few streets in towns were cobbled, and the road system was in a poor state. Meanwhile, the growing volume of haulage required increases in infrastructure and the widening of bridges. Many roads could only be made suitable for wheeled traffic if the narrow packhorse bridges were replaced by bridges wide enough to carry carriages and carts. (Conchon 2006) The question of how best to maintain roads centered less on repair techniques to be used than on restrictions that should be imposed on road users. In the second half of the 18<sup>th</sup> century, largely due to the interest



Fig. 31:

Portrait of Daniel-Charles Trudaine.

© Public Domain

now shown by government, more attention was given to the state of the roads and ways in which they could be improved. The first engineering school in Europe, the *École nationale des Ponts et Chaussées* (National School for Bridges and Roads), was established in Paris in 1747 by Daniel-Charles Trudaine (1703–1769). He served as the director of the school. Jean-Rodolphe Perronet (1708–1794) was in charge of the educational program. With the foundation of the school, the professional profile of engineers gradually changed, from the ‘artist’ of the Old Regime to the ‘technologist’ of the industrial era. (Picon 1994)

Until this time, roads in France had been built, with minor modifications, along the model of the very heavy Roman cross section. In 1764, Pierre-Marie-Jérôme Trésaguet (1716–1796), credited for establishing the first scientific approach to road building, became engineer of bridges and roads at Limoges and, in 1775, inspector general of roads and bridges in France. In that year, he developed an entirely new type of relatively light road surface, based on the theory that the subsoil, rather than the surface, should support the load. (Benson 1989) His standard section, 10 inches thick, consisted of uniform stones laid edgewise covered by a layer of walnut-sized broken stone. (Steiger 1995) The roadway crown was six inches thick and 18 feet wide and had a uniform cross section. The roads were built in long, straight lines without any regard for the terrain or migratory animals. In this way, road builders would save money by making the roads as short as possible. Outside France, this solution was called ‘the French principle.’ In 1775, the French authorities decided that the main roads should not have a steeper gradient than 7 %.

Different to England, where local labor was replaced by wage labor and new roads were mainly financed as turnpikes, by collecting tolls, France chose an opposite way. Unpaid duty service was generally used in France after 1738 in order to build toll-free main roads and keep them in good shape. The employment of pauper labor was also widespread from 1775 onwards whenever special repairs or improvements were made to the highways. These workers were divided into groups according to physical strength and paid at a rate lower than the current wage.

Despite all these innovations, unsystematic methods of road construction and maintenance continued to be

used for the majority of the French road network. The quality of roads was also very varied in different parts of the country: In the north, the highways were often paved and well-kept, whilst in the mountainous regions of the south they were tricky to build. Local availability determined the materials primarily used – most commonly gravel, but also pebbles, flints, and broken stones. Generally speaking, road materials were of poor quality. Road building faced a serious crisis during the French Revolution, when military transport caused considerable damage to main roads. The delay in construction and subsequent neglect meant that important parts of the road network were still incomplete around 1820. It was not until the 1830s that French road building techniques underwent a pronounced change under engineers such as Navier, Schwilgué, and Coriolis. (Conchon 2006)

Roads in 18<sup>th</sup> century England were just as bad as they had been hundreds of years before, except for some remaining roads from Roman times. Something like a road network did not follow specific plans, roads simply formed along the routes that people used for travelling. Wheeled vehicles could usually not go on roads during four or five months of the year, when the British weather turned them into muddy swamps. Road maintenance was not done professionally, but it was one of the jobs of the local parishes, done by unskilled people and financed by local taxes. The parish council appointed one of their members as ‘Surveyor of the Highways’ to organize the local labor force and direct it to where it was needed. The appointment was unpaid, as was the labor of the workers, and lasted only for a year. Thus, the surveyors did not have more knowledge or experience with road building than most other members of the local communities. The roads did not improve under this system. They steadily worsened as loads transported on the roads increased. (Hearfield 2012)

A change, at least on longer-distance roads, came along with the introduction of the turnpike road system. “Turnpikes were gated roads that travelers could use only if they paid a fee.” (Hearfield 2012) The idea was that the tolls would be used to reimburse contractors who would build proper modern roads and keep them maintained. The construction and maintenance of turnpike roads were organized by the so-called ‘turnpike trusts.’ Turnpike trusts were local voluntary corporations of large and

## History of Land-Bound Traffic System Development from 1660 to Today

small landowners. They grew out of the inadequacies of the traditional parish system of road maintenance and became permanent institutions, replacing the responsibilities of the local parishes. (Spring 1973; William 1972)

The obligation of parishes to continue their contributions towards keeping their roads maintained (the so-called Statute Duty) did not stop when a road was turnpiked, and protests were severe. (Hearfield 2012) Armed crowds gathered to destroy the turnpikes, and they burnt down the toll houses and blew up the posts with gunpowder. The resistance was the greatest in Yorkshire, along the line of the Great North Road towards Scotland. (janeaustrworld.wordpress.com 2009) Best known is the Leeds Turnpike Riot in 1753. A crowd attacked a meeting of magistrates to protest against the fee they had to pay to use the new roads. A troop of dragoons (infantry on horseback) was called to control the crowd. Ten people ended up dead and 27 were wounded. (secretlibraryleeds.net 2019)

Despite events like this one, the trusts did their job properly. “They employed skilled engineers, brought in labor and materials, hired surveyors, and even bought land when a different route would be better.” (Hearfield 2012) This created harmonized control over long stretch-



**Fig. 32:**

**The former Penparcau Tollhouse at Aberystwyth, Wales, from 1771, now relocated to St Fagans National History Museum, Cardiff.**

© Jaggery / Creative Commons BY-SA 2.0

es of roads formerly repaired by many different parishes. “The turnpike trusts transformed muddy quagmires into properly surfaced roads that could withstand an English winter.” (janeaustrworld.wordpress.com 2009) In economic history, there has been a long debate about the causes of the transportation revolution and its economic impact. “One theory is that turnpike trusts were responsible for the majority of the efficiency gains because road improvements had a large effect on transport costs. An alternative theory is that turnpike trusts had little impact because improvements in horse breeding and the emergence of larger carriage firms were the primary factors behind lower transport costs. Overall, analysis demonstrates that turnpike trusts were one of the key innovations that caused the road transport revolution.” (Bogart 2005)

The development of uniform road construction techniques took a little longer in England. In the mid-18<sup>th</sup> century, the English road system looked complete on the map, with adequate connections among villages and towns. But despite the early turnpikes and pioneering work by Trésaguet and John Metcalf (1710-1810), much of the system was still almost unusable by wheeled vehicles. (Evans 1981) The underlying problem was a more fundamental one. The parliamentary act of 1773, a major public policy statement on roads and their maintenance, illustrates the problem: It simply lacked understanding on how to build a durable road on which vehicles could travel easily - the act was more concerned with protecting the roads against vehicles. Not only legislators knew too little about this issue. Even contemporary encyclopaedias, otherwise strong on technical matters, ignored the issue. When defining the term ‘road,’ they described how the Romans built them, and, in lengthier works, listed the major Roman routes.

The general ignorance of the principles of good road building persisted until the end of the century, though some minor innovations actually took place. Individuals like Metcalf built reasonably, and in other places sheer hard work improved surfaces, flattened slopes, or straightened curves. (Evans 1981) John Harriott’s (1745–1817) road harrow is a good example of the small, simple improvements taking place in the late 18<sup>th</sup> century. Still, English road building lacked a systematic approach like the French *École Nationale des Ponts et*

## History of Land-Bound Traffic System Development from 1660 to Today

Chaussées. (Hearfield 2012) For a long time, theorists with little experience in practical road construction debated about which profile roads should have. Some argued that they should be concave, so that rainwater washed the mud away, or flat but sloping down to a ditch on one side, or wavy with little hills and valleys to assist drainage. On highly convex roads, vehicles bore down too heavily on the outside wheel, overturned, or most usually, drove astride the crown of the road. (Hearfield 2012) This resulted in deep furrows which retained the water that should actually run off the convex surface. Another challenging factor was the variety of available roadmaking materials and the soils the roads were built on. Parts of Lancashire, for instance, had limestone close at hand, which bound well, creating a good surface. But elsewhere in the county, stone and gravel were not hard enough to support the increasing weights and volume of transport, so costly paving stones were imported from Wales. A turnpike road near Manchester, for example, cost £ 2,000 a mile to be paved. (Evans 1981)

At the beginning of the 19<sup>th</sup> century, the Scottish inventor John Loudon McAdam (1756-1836) was well aware of the shortcomings of his predecessors. According to him, the road-building profession had “become contemptible to the greatest degree” and “perfectly adapted to the most ignorant day labourer,” while the system was controlled by “surveyors selected from the lowest and most illiterate class of the community.” His main argument was: “Nothing has been written on the subject of the surface of roads, or the means of making them proper for the easy passage of carriages, though volumes have been published to recommend many useless and many vexatious restrictions on the carriages themselves.” (Evans 1981) In his eyes, roads should be convex, with proper foundations. “McAdam observed that most of the ‘paved’ roads in the early 1800s were composed of rounded gravel. He knew that angular aggregate over a well-compacted subgrade would perform substantially better. He used a sloped subgrade surface to improve drainage (unlike Thomas Telford, who used a flat subgrade surface) on which he placed angular aggregate (hand-broken, maximum size 3 inches) in two layers with a total depth of about 8 inches. McAdam realized that the layers of broken stones would eventually ‘bind’ with fine material generated by traffic. On top of this, the wearing



**Fig. 33:**

**John Loudon McAdam (1756-1836). Painting from 1830, National Gallery London.**

© Stephendickson / Creative Commons BY-SA 4.0

course was placed (about 2 inches thick with a maximum aggregate size of 1 inch).” (www.asphaltwa.com 2020) McAdam’s reason for the 1-inch maximum aggregate size was to provide a smooth ride for wagon wheels. Thus, the total depth of a typical McAdam pavement was about 10 inches. The largest permissible load for this type of design was estimated to be 158 N/mm.

In 1815, McAdam was appointed ‘surveyor-general’

of the Bristol roads and was now able to use his design on numerous projects. It proved so successful that his way of pavement design and construction was even called ‘macadamized.’ The term ‘macadam’ is also used synonymously for ‘broken stone pavement.’ By 1850, about 2,200 km of macadam type pavements were in use in the urban areas of the United Kingdom. (pavementinteractive.org 2020) His ideas about road construction had become state of the art and were recognized by scholars like Thomas Young (1773-1829). Young had, in a rational and scientific way, analyzed different ways of road construction and stated that hard and smoothly paved roads are best for the functioning of a cartwheel. He concluded that McAdam’s style of road construction was the best available method. (Robinson 2007)

*Chaussee* is a historic term, derived from the French *chaussée*, used in Germany for graveled rural highways, designed by engineers, as opposed to the traditional unpaved roads. It survived in road names and is used by historians. In some Eastern European countries, normal paved highways outside of settlement areas are still called *shosse*. They may continue as *prospekt* within the cities. *Chausseen* or *Kunststraßen* (the term was explained in the *Encyclopaedie* from 1774 by Karl Daniel Küster (1726–1804) as a delight version of the chaussee, more or less in the style of the old Roman army roads) were extra-ur-

ban roads that were constructed with a solid pavement and often designed in long straight lines. Another difference to normal country roads was that the embankment and roadbed were also artificially constructed. The first chaussee roads were built in Western Europe in the late 17<sup>th</sup> and early 18<sup>th</sup> century, starting in the Netherlands at the end of the baroque era. The concept was adopted in some other European countries, like in Denmark or Norway.

Despite all efforts for a more systematic approach to road construction, the efficiency of the transport systems in Europe were very low by today’s standards at the beginning of the 19<sup>th</sup> century, and almost everywhere most of the roads were in a miserable state. Most of them still were unpaved sand or clay paths which at best were graveled with a little bit of quarry stone, gravel, or lime. In winter, but also in summer, many roads were impassable after rainfall. A lot of transport was still done in traditional ways. The *Botenfrauen* (carrier women), for example, who commuted on foot between Weimar and Jena in modern-day Thuringia, were said to have managed five kilometers an hour, with a load of 25 kg on their back. The transport costs on roads were, depending on the means of transportation, from ten to fifty times higher than today. (Filarski 2005)

Fig. 34:

Strelitzer Chaussee  
at Ravensbrück  
in Brandenburg,  
Germany, around  
1900.

© J. Goldiner /  
Public Domain



### 2.5.2. Focus on Railway and Waterway Construction in Europe in the 19<sup>th</sup> Century

(Michael Schimek)

The most important means of transport of the 19<sup>th</sup> century was, without any doubt, the railway. Its suitability for long-range and mass transport of people and goods, its convenience, and its reliability meant, more than any other infrastructure, it made industrialization possible. During the second third of the 19<sup>th</sup> century, road transport significantly diminished in importance because of the success of the new railways. In Prussia, for example, the maximum load allowed for four-wheeled carts was only raised to 7.5 t in 1887. So, it is obvious that road transport, compared to railways and ships on the rivers and canals, was rather meant for local and small-scale transport. Public investment, therefore, focused on the creation of resilient railway and ship transport networks. (Müller 2010)

The development of the steam locomotive started around 1800 in England. It took some time, though, until the reliability of engines and rails reached a standard which allowed for kind of a mass production of the new vessels. This is why many of the first railways, which were mainly built in mining districts or as connecting routes between cities and harbors, were operated by horses instead of machines in the beginning. In fact, the first long-range passenger railway between Linz and Budweis (now České Budějovice in the Czech Republic) in Austria, opened in 1837, was first operated as a horse railway as well.

Steam locomotive railways developed very quickly

in Western and Central Europe. After the first line of its kind started operating between Stockton and Darlington in northwestern England in 1825, similar lines were opened in most European countries during a period of only 15 years. Only Switzerland, the Nordic countries and many of the Southern European countries adopted this mode of transportation later in the century. From 1835 to 1885, more than 190,000 km of railway lines had been built all over Europe, which amounted to more than 40 % of all railway lines worldwide. (Meyers Konversations-Lexikon 1888) Especially in northern Germany, the Netherlands, and some Nordic countries, additional investment went into the building of new canals for ships. Regular passenger traffic lines were established on the major European rivers.

The investments into this huge amount of railway lines stood to create a considerable burden for the public households. This is why many of the railway lines were either financed as private-public partnerships or even entirely built and operated by private corporations. Many members of the rising bourgeoisie class, who profited from industrialization and became an increasingly important factor in the society of the 19<sup>th</sup> century, privately invested into the public infrastructure and, in exchange, received a more productive infrastructure for their economic activities, in addition to an immediate financial return on investment.

In federal and small-scaled political systems, like

Fig. 35:

**'The Railway as a Farmer Menace'** (Carl August Schöll, 1858).

© Verkehrshaus der Schweiz, Luzern / Public Domain



Germany, the construction of roads mainly stayed the responsibility of municipalities, districts, and federal states. A centralized authority for the production and maintenance of roads was, in most European countries, not established before well into the 20<sup>th</sup> century. Major road projects were usually only undertaken in order to create a better connection of newly acquired provinces to the mainland, or as military routes along newly established borders. In some cases, road projects served as a form of economic empowerment of remote and underdeveloped regions, which were not interesting enough for the private railway companies from an economic point of view. (Müller 2010)

A real demand for better roads was finally triggered by the invention of the contemporary bicycle at the

end of the 19<sup>th</sup> century. Before mass motorization after World War II, the bicycle became the most important daily means of transport in Europe, mostly in the growing urban centers and among the lower classes. Around 1900, all over Europe rather powerful lobbying associations for cyclists constituted themselves. Together with the emerging upper-class motorist associations, they fought for better and more reliable roads for the newly developed means of transport. Since the public authorities for railway and canal management had acquired the best know-how in transport infrastructure planning and maintenance, it was usually these bodies who also were charged with creating the first transnational road networks suitable for the new kinds of mobility. (Mom 2010)

### 2.5.3. Road and Railway Construction in the United States in the 19<sup>th</sup> Century

(Natasha Martin)

During the 19<sup>th</sup> century in the United States, federal or state investment into non-defense and non-public health related infrastructure was controversial, and rare: “The states admitted that they were unequal to the task and enlisted the aid of private enterprise.” (Durrenberger 1931) Instead, major infrastructure, including but not limited to roads and railways, was predominantly financed by private companies or businessmen - such as bankers, miners, farmers, and ranchers - who wanted to provide access to their other investments. The private companies needed to create revenue, and so most early roads were toll roads (and railways obviously required a paid ticket). In exchange for these massive investments, they were granted a type of exclusivity agreement by the government. (Norton 2019) The government ensured that no other company could set up competitive routes, even by a different mode of transportation. The government also set the rates to ensure that the public access was accessible to all, in that sense they were regulated. It is worth noting that some states, namely Pennsylvania, Virginia, and Ohio, did subsidize private entities to build these roads and railways.

The first railways in the United States were conceived of during the Industrial Revolution. In the eastern part of

the United States, efforts were made to connect to other cities, to Atlantic ports and to the mid-west, to access agricultural products. These railways slowly pushed west with the ambition of encouraging settlement in that region, while in the south, railroads were typically shorter, connecting cotton producing regions to ports.

In the early 1800s, railways were short and pulled by horses or gravity. The Leiper Railroad was the very first freight carrier and was built by a businessman, Thomas Leiper, because he required access to his quarry and was blocked from creating a canal, as another company already had the exclusive rights or the ‘right of way’ to a canal on that route. The Leiper railroad was 0.75 miles / 1.2 km and was pulled by horses. (von Gerstner 1997) In another example of quarry access, the Granite Railway was built so that granite could be brought from the quarry to the site of the Bunker Hill Monument in Charlestown, Massachusetts, where it was being built. The short railway was pulled by horses and ran 3 miles / 4.8 km to a port, from where a boat transported the granite to the monument site. (von Gerstner 1997) Another notable example of an early railway is the Mohawk & Hudson Railroad, which was designed for passengers traveling along the Erie Canal, to speed up the time by bypassing



## History of Land-Bound Traffic System Development from 1660 to Today

---

a cataract called Cohoes Falls. The Mohawk & Hudson Railroad was the first railroad in North America to use a locomotive powered by steam.

These early examples were all moving freight (and mostly rocks, at that). The very first passenger (and freight) line was the Baltimore and Ohio Railroad (or the B&O, readers may recognize the name from the board game 'Monopoly'). In the mid-1820s, businessmen in Baltimore grew increasingly concerned that they would lose business to merchants in New York City, who had benefitted from both the Erie and the Chesapeake and Ohio (C&O) canals. The goal was to build a railroad from the city of Baltimore to a point on the Ohio River to facilitate the transportation of mid-western goods to Baltimore. Despite several study trips to England, the knowledge around railway building was limited, and engineers

were cautious. So, they sought out the strongest material available and used granite, the sturdiest of rocks, for both the track bed and the tracks. These were overlaid by strap iron rails. Originally, horses were used to pull trains on the earliest sections, as steam engines didn't come to the B&O lines until 1830, with 'Tom Thumb,' the first American-built locomotive. Around the same time, other innovations were introduced, including a system of carts to distribute weight, flanged iron wheels which better held to the rails, and an improved braking system. Over the next decade, the B&O stretched westward, and in 1853, the rails finally reached Wheeling, Virginia (in modern-day West Virginia), and the west was considered 'open.' By the turn of the century, the B&O railroad stretched over 5,800 miles / 9,334 km and linked the cities of Chicago and St. Louis to Baltimore, Washington,



Fig. 36: B&O Railroad Bridge in Harpers Ferry, West Virginia.

Philadelphia, and New York City. (Stover 1987)

By the 1850s, there were over 9,000 miles / 14,000 km of railway tracks in the United States, though it was predominantly in the eastern part of the United States. There was a desire to connect the west, but building a railway was an expensive endeavor and was still primarily led by the private sector. The government wanted the young country to be connected via the railway, and so they created a land grant program for railways companies that gave out plots of land to railway companies in the Western United States. Over 129 million acres were given out between 1860 and 1900, which companies could sell or build on to help finance the construction of the railways. Although the construction of the railway was led by private corporations, they would not have been built without the assistance of the federal government. The first transcontinental railway, a 1,912 miles / 3,077 km route, also referred to as the Overland Route, was constructed by three separate companies, over public lands acquired through land grants.

The three companies that built segments of the Transcontinental Railway were the Union Pacific, the Central Pacific and the Western Pacific Railways Companies. The Central Pacific Railroad (CPRR) was built slightly after the completion of the B&O. Construction of the route started in Sacramento, California, and was the first railway to employ Chinese laborers. These laborers had come to the United States during the gold rush and were tapped to build the railway after insufficient white laborers applied for the advertised jobs. (web.stanford.edu 2020) An anti-Chinese sentiment had built up in California, and this caused opposition to the idea of hiring the Chinese, but there were no other options, as Leland Stanford, one of the financiers of the railroad, told Congress: Without the Chinese laborers, “it would be impossible to complete the western portion of this great national enterprise, within the time required by the Acts of Congress.” (Chang 2019). The immigrant laborers were paid 30 to 50 % of what white laborers were paid and were given the most dangerous jobs, such as laying tunnel building. (web.stanford.edu 2020) By the completion of the project, 80 % of the workforce was Chinese. The Union Pacific Railway began in Iowa, and eventually met the Union Pacific line in Utah, it relied heavily on Irish immigrant labor. Many of them had worked to re-

pair the U.S. Military Railroads during the Civil War. A racial hierarchy was present among the laborers, with the Irish often working as foremen to groups of 30 or more Chinese laborers. (web.stanford.edu 2020)

When the transcontinental railway was completed in 1869, Americans could travel from New York to San Francisco in just eight days. Speed was important - but trains were not only faster, they were safer, cheaper, and could operate in any weather. At the end of the 19<sup>th</sup> century, trains were certainly poised to overtake steamboats and the dusty, bumpy roads that covered most of the United States at that time.

Roads built by private enterprises at the time were referred to as ‘turnpikes,’ today we more commonly use the term ‘toll roads.’ The word ‘turnpikes’ comes from the pikes that were set up to block the passing of vehicles while they paid their fare. They were often set up along turning points in the road. The model was copied from toll bridges and toll roads in Britain. Turnpikes were not necessarily profitable in and of themselves, however, they connected communities and commerce in a way that led to increased economic activity, making the investment in the construction of a turnpike attractive.

The very early turnpikes, built right around the turn of the 18<sup>th</sup> century, used round stone cobbles with small, indented tracks for wagon wheels. In 1820, John Loudon McAdam invented a new method for creating smooth roads which was termed the ‘Macadam Road.’ The method was brought to the United States for the first time in 1823, when the Boonsborough Turnpike Road was constructed in Maryland. A ‘macadamized’ road was smooth and easier to drive on, but maybe most importantly, it was all-weather, which had positive implications for commerce.

Macadam roads were simple, but because they relied on the natural soil alone to bear the weight of the road and the traffic on top of that, they were dusty and degraded with erosion in heavy rains. As early as 1834, efforts were made to stabilize macadam roads. This was done by layering tar in between macadam layers and putting a final layer of a mixture of tar and sand on top of those.

During the 19<sup>th</sup> century, there were instances where railroads and turnpikes competed – everyone wanted exclusive access to profitable routes. Lawsuits settled many competition cases. At the end of the 19<sup>th</sup> century, there

## History of Land-Bound Traffic System Development from 1660 to Today

---

were significant roads around the United States, connecting cities, towns states, and even transcontinental routes. Bicycles were becoming more popular as a mean for short-distance travel, and through the 'Good Roads Movement,' cyclists lobbied for better roads, followed

by motorists. In 1893, the 'Office of Road Inquiry' was founded, and this can be seen as a shift away from private funding of transportation infrastructure towards public sources.

### 2.5.4. Traffic Systems in Other Continents in the 19<sup>th</sup> Century (Kristina Skåden)

As the historian Charles S. Maier has pointed out, technology transformation was a critical input to the re-organization of states during the 19<sup>th</sup> century. Central to this transformation of the production process was a wave of innovations in transportation of people and goods, based on self-propelled steam engines that ran on parallel rails mounted on ships. By 1803, the innovation was fitted to the paddlewheel boat that could travel upstream, creating a vessel that was no longer dependent on wind directions. By the 1830s, steamboats were traveling intercontinentally. However, they did not displace sailing vessels right away. In addition, in 1804, the steam engine was fitted to a vehicle that could run on parallel rails on land to haul iron, and a passenger steam train was installed in Wales in 1807. The innovation of the railway was extraordinary, not so much because it initially replaced canal and turnpike traffic, but because it increased speed and technological breakthroughs, and it supported the expansion of iron production and required organization of large pools of investors. (Maier 2012) During the final third of the 19<sup>th</sup> century, imperial economy systems took on a new shape and quality, due to steam power and electricity. These innovations allowed empire builders to import larger volumes of raw materials from their colonies at greater speeds and lower costs, and this also meant that it was cheaper to export larger amounts of finished goods back to colonial markets. (Ballantyne/Burton 2012)

A traffic system may refer to movements of ships, trains, of aircraft between one place and another, and also to the people and goods that are being transported. The system consists of a number of components, which, in combination, generate and reproduce the specific dominance of this system. (Urry 2004) The aim of this chapter is to give a brief introduction to land-bound traffic

systems, mainly railways, with a focus on Russia, China, Australia, Africa, Japan, and India.

*Dorogi – dorogi, a bezdoroz'e – dorozhe.* "Roads are expensive, but roadlessness is more expensive." (popular Russian saying of unknown origin). In Russia, formal serfdom was introduced in 1648. A part of the job of serfs was the construction and maintenance of the road system. This began to change by the end of the 18<sup>th</sup> century, when laborers were paid from the imperial treasury. By being in charge of the roads, peasants could exercise more power than they could in most other realms. The Russian Empire was vast, and the road network was thus often out of the spatial and temporal control of the governing center.

After the defeat of Napoleon and the Vienna Congress, Russia saw itself as the savior of Europe and strived towards becoming a world power. Russia's 19<sup>th</sup> century rulers put a lot of effort in the improvement of their transportation networks to modernize the country following Western European models. Steamboat traffic increased, and railroad construction grew. (Busch 2009) In addition to that, a network of highways, called *shosse*, from the French *chaussée*, was built that connected the major cities in the European part of the empire. These thoroughfares were primarily serving military and postal functions, they were usually straight, lined with trees, and occasionally had hard surfaces. The ministry of Ways and Communication had responsibility for maintaining them, and the provincial and local government institutions administered local roads. (Siegelbaum 2008)

However, around 1850, Russia lagged far behind Western Europe in railroad construction. Like many tsarist bureaucrats, Egor Kankrin, who served as minister of finance from 1823 to 1844, opposed building railroads. (Snow 1981) He feared that "all the returns



**Fig. 37:** The Trans-Siberian Railway bridge over the Kama River. Picture taken by Sergei Mikhailovich Prokudin-Gorskii around 1910.

© Public Domain

would go to foreigners”, while railroads “would injure the peasants engaged in transport goods, and the steam engines would destroy the forests for lack of coal.” (Polunov 2005) The first large-scale railroad in Russia was the Nikolayevsky Railroad between Moscow and St. Petersburg, which went into operation in 1851. Especially after its defeat in the Crimean War in 1853, Russia, which was culturally torn between the competing ideologies of Slavophiles and Westernizers, adopted Western transportation techniques quickly. (Busch 2009) The war had demonstrated the need for railroads, from both an economic and a strategic point of view. Nicholas I (1796-1855) and Alexander II (1818-1881) drew up plans for a

nationwide railroad network that was constructed late in the century, largely by French concessionaires. So also in Russia, the railway became the foundation of industrial development. (Polunov 2005)

The most famous Russian railway line, the Trans-Siberian Railway, was planned and constructed at the beginning of the 20<sup>th</sup> century. Construction of the Trans-Siberian Railroad was characterized by administrative incompetence, daunting nature, and limited budgets that made the project challenging for the laborers and frustrating for its visionaries. Although the rail network was conceived and executed by the tsar and his officials, in order to strengthen national power and facilitate indus-

## History of Land-Bound Traffic System Development from 1660 to Today

trial development, it had an adverse effect, weakening the state's control during the 1905 Revolution. (Busch 2009) The costs of the Trans-Siberian Railway caused the opposition of aristocracy and increased impatience among those who wanted to keep Korea out of Japanese influence. (Maier 2012)

The first railways in China were built during the Qing dynasty in the late 19<sup>th</sup> century. The relatively late arrival of railways was due both to the lack of industrialization and the skeptical attitude of the Qing government. Initially, the Chinese government had declined all proposed projects. By 1863, 27 companies, mostly British, requested government permission to build railways from Chinese ports to the interior, but the authorities refused. The government did not want to open the country to foreign investment and argued that railways were too costly to construct with local resources. However, the British insisted on their plans and simply started building. (Dougherty n.d.) The first railroad to operate commercially in China opened in Shanghai in 1876. The railway, known as the Woosung Road, ran from the American Concession in the present-day Zhabei District to Woosung in the present-day Baoshan District and was built by a British trad-



**Fig. 38:**

**The opening of the short-lived Woosung Road, the first railway in China, between Shanghai and Wusong, in 1876.**

© Public Domain

ing firm. Since construction took place without approval from the Qing government, the railway was dismantled again in October 1877.

Later in the 19<sup>th</sup> century, a new generation of Qing modernizers, who were more open to a Western influenced government style, increasingly called for more aggressive integration of the empire's vast border regions and thereby emphasized the development of infrastructure. "While proper roads connecting Xinjiang to China already existed, the lack of a centralized transport network capable of efficiently shipping large volumes of people and goods remained a source of major concern for central government officials. The Qing-era post road connected Beijing to the former imperial capital of Yili." (Kinzley/Joniak-Lüthi 2016) Travelling the road took 43 days of hard horse-back riding. An additional, non-official route largely used by camel pullers who wanted to avoid paying tolls on the post road led through Outer Mongolia. This road was rather flat, provided enough food for animals, but it took three months to go all the way. China did not build anything similar to a modern-style road until the 20<sup>th</sup> century.

"The prominent Qing reformer Ma Jianzhong referred to the connection between transport and the power of the state in an 1879 treatise calling for the development of an integrated transport network. 'All over the world and in each of the five continents there is not one that does not have rails, or the ruts of wheels,' Ma argued. Though important conceptual differences between roads and railways are commonly recognized, Ma as well as later planners of the Republic and People's Republic saw little difference between the power of rails and the power of roads. While rails represented a higher modern ideal, both forms of transportation supported the end goal of sustaining the power of the central government." (Kinzley/Joniak-Lüthi 2016)

The first railway to endure was the Kaiping Tramway and Imperial Railway of North China. A 10 km long line from Tangshan to Xugezhuang was built in 1881. It was extended to Tianjin in 1888, and Shanhaiguan and Suizhong in 1894. This railway became known as the 'Guanneiwai Railway' and was not well-received by influential members of the Chinese court. In order to convince the court, a 2 km narrow gauge railway was built from the residence of the Chinese empress to her dining

hall in 1888. The Empress was still concerned that the locomotive's noise would disturb the spirit of the Imperial City and therefore required the train to be pulled by eunuchs.

In Australia, people used to travel around the colonies of the continent by horse-drawn transport and by coastal shipping services until the middle of the 1800s. In 1854, the first steam railway between Melbourne and Port Melbourne was built, and the railway system of the various colonies developed quickly afterwards. The idea of connecting the coastal towns with a road began in the 1870s. Such a road, it was argued, would help producers transport their goods. By the 1890s, Victorian newspapers had started a campaign for an Ocean Road. Fundraising began in the 1910s. ([www.infrastructure.gov.au](http://www.infrastructure.gov.au) 2020) The expansion of railways enabled the conversion of the grasslands of southeastern and southwestern Australia into grain-growing regions for export. (Ballantyne/Burton 2012)



**Fig. 39:**

**The steam engine ,Ballarat' in the sand in Wonnerup, Western Australia 1921.**

© William Edward Fretwell /  
Public Domain

The construction of railways was also prioritized for the development of New Zealand's colonial economy, and it connected major ports and urban centers. Still, traveling to and from smaller provincial towns relied on local

roads with dangerous river crossings and mountain passes. (Ballantyne/Burton 2012)

Although there were transport networks in many parts of Africa in precolonial times, during the colonial era that followed, these networks were reconstructed to access the interior from the seaports to serve the commercial and administrative needs of the colonial powers. "They stayed fragmented, because of the varied and difficult terrains, the economic artificiality of some national frontiers, the lack of a developed intra-African trade, and the strong orientation of commodity trade towards the administering countries. All of this was complicated by the existence of vast unpopulated areas lying between the main centers." (Gardiner 1989) Interregional links were rarely developed. Africa south of the Sahel was never integrated as firmly into the British Empire (or any European empire) as India was. (Ballantyne/Burton 2012)

"The early railways were constructed partly to facilitate the administration of interior regions and to bring supplies from ports to central consumption or distribution points and partly – especially in the south – to enable valuable minerals or commodities to reach the coast for export. In Africa, the major period of railway development took place from the end of the 19<sup>th</sup> century to the end of World War I. By constructing railways with different gauges of track and by operating them with rolling stock of different braking and coupling systems, the colonizing powers left a difficult and costly legacy for the independent African countries of the 20<sup>th</sup> century." (Gardiner 1989)

"Japanese land transport routes were developed primarily for foot passengers and riders, because horse-drawn carriages were not common prior to the Meiji Era (1868–1912). For this reason, roads were usually in good condition since damage caused by traffic was not severe and maintenance was relatively easy. Road maintenance was not performed by the Shogunate or the government of feudal clans, but by roadside residents on a voluntary basis. This implies that there was a general understanding that roads were public property." ([www.mlit.go.jp](http://www.mlit.go.jp) 2020)

Japanese railway networks developed after the country opened its borders to international contact after an isolation of 250 years in 1868. The first railway between Shimbashi and Yokohama opened in 1872. It was partly financed by British investors. The new government invited

## History of Land-Bound Traffic System Development from 1660 to Today

---

civil engineers, general managers, locomotive builders, and drivers for supporting them. They explicitly had the job to train Japanese workers so that the country would become self-sufficient in railway construction soon.

In India, in the 1830s, the British East India Company started a program of metaled road construction. The Grand Trunk Road from Calcutta via Delhi to Peshawar was rebuilt. Roads from Bombay to Pune, Agra, and Madras were constructed, and the Public Works Department and the Indian Institute of Technology Roorkee were established in order to train and employ local surveyors, engineers, and overseers to do the work and to maintain the roads. This program resulted in an estimated 2,500 kilometers of metaled roads being constructed by the 1850s.

The first train in India ran from Red Hills to Chintadripet Bridge in 1837 and was mainly used for transporting granite stones for road-building work in Madras. The first passenger train in India ran between Bombay and Thane in 1853. After 1870, in Britain's tropical colonies, railways were key instruments for accessing commodities and bringing finished goods and labor even from the smallest market cities to the large port cities that were vital nodes in the imperial system. India's railway network was also seen as a vital tool on combatting the growing reach of Russian imperial power in Central Asia. While

the colonial Indian network connected interior commercial centers to the coast, its lines often cut across existing routes and lines of movement, displacing some well-established market towns and important waterways. (Ballantyne/Burton 2012)

Railway lines were significant within the Ottoman Empire, being a generally speaking land-based empire. They were constructed to serve both commercial and strategic concerns. The Oriental Railway, which connected Istanbul to Sofia and Edirne and Edirne to Salonica in the 1870s and 1880s, linked key imperial markets. A heavily symbolic project was the announcement of the construction of a new rail line in 1900, the Hejaz Railway that would run from Damascus to Medina and Mecca—a project designed to enable pilgrims to reach Islam's sacred cities and to demonstrate the sultan's commitment to the Islamic faith and culture. Despite these ambitious projects, the Ottoman network developed slowly and unevenly. (Ballantyne/Burton 2012)

In the late 19<sup>th</sup> and early 20<sup>th</sup> centuries, railways were in many ways the key instrument of European imperial expansion. The bulk of capital flowing from Europe into America, Africa, and Asia went into financing the railways that gave imperialists the means to extend their authority beyond the coastal fringes of the 'underdeveloped' world. (Davis/Wilburn/Robinson 1992)

### 2.5.5. Early Motorization in the United States from 1890 to 1945 (Natasha Martin)

At the start of this period, cars were rare, even in democratic America, reserved for the elite and generally unreliable. By the end of the period, cars were ubiquitous, accessible to all, and in the United States, they were influencing economic and social life, urban planning, and much more. As we've seen in earlier chapters, road construction evolved greatly over the second half of the 19<sup>th</sup> century, and by 1900, roads were smoother and stronger, allowing for more comfortable and speedier travel. The automobile was evolving, too. There was demand for automobiles among the middle and upper classes for whom it was not only a convenient method of personal transportation but also a symbol of personal freedom.

In 1895, a bike mechanic named J. Frank Duryea

entered a horseless carriage that he designed with his brother into the 50-mile long American Car Race. After ten hours of racing his gasoline powered vehicle, he won the race, beating out two cars made by Benz, including one entered by the department store Macy's. Duryea parlayed that win into a successful business. That year, he and his brother sold 13 of their Motor Wagons. They were one of over 450 car companies in existence at the turn of the 20<sup>th</sup> century. These companies experimented with cars powered by steam, electricity, and gasoline, like the Duryea vehicle. But soon, gasoline cars were preferred as they could travel further and were more powerful.

Building cars was expensive, and competition in the United States was fierce. Few of the 450 companies



**Fig. 40:**

**One of the first horseless carriages built by Frank Duryea around 1895.**

© Paul Cooper / Creative Commons BY-NC 2.0

survived, and the automobile industry soon became an oligopoly, with the Big Three (Ford, General Motors, and Chrysler) dominating the field. The Big Three perfected mass production techniques pioneered by innovators such as Ransom Olds and Henry Ford that were necessary due to the high demand created by the American public.

Driving between 1890 and 1945 was a chaotic and stressful activity. As cars multiplied and streets became more crowded, car accident fatalities mounted and a need to regulate driving became more urgent. Signage began around 1915. The first stop sign was introduced in Michigan in 1915 and was standardized across the United States in 1922. An octagonal shape was chosen so that it was easily recognizable from afar. The first traffic lights were installed in Cleveland, Ohio and were manually operated from inside a control booth. Slowly, other external safety measures like speed limits, minimum age limits, and driver tests were introduced. Together with improved safety measures on cars themselves, such as safety belts signals and brake lights, driving became incrementally safer.

By 1926, the United States made and bought more cars than Europe. In fact, marketing and promotion of

automobiles in the United States was so successful in the first quarter of the century that the market reached a type of saturation. To address this, the head of General Motors, Alfred P. Sloan, introduced a concept some referred to as 'planned obsolescence' but which he referred to as 'dynamic obsolescence,' whereby the manufacturers plan for a product to go out of date and consumers are encouraged to purchase new models of an item after a certain duration, inspired by new features, functionalities or fashion.

In 1890, cars were still limited to the very wealthy who bought cars for their convenience, their enjoyment, and as a status symbol. They were, after all, experimental, expensive, and unreliable. But manufacturers got better quickly, and demand spread across social classes. The layout of the United States was vast, cities connected to rural areas - and many people needed to travel across great distances. Cars were convenient for doctors visiting patients, farmers taking their goods to market, and holiday makers, keen to explore at their own pace. In this section we examine three typologies that help to understand precisely *who* was driving the car in the period in question and what their motivations were.

A *Herrenfahrer* was a 'gentlemen-driver,' typically a member of the elite or bourgeoisie, who drove for pure fun, because he (it was typically single men at this time) could afford a car (or many cars) of his own. *Herrenfahrer* were early adopters of the 1890s and 1900s who purchased early models when they were expensive and unreliable. In popular literature they are depicted as careless speed devils, who pushed cars to their functional limits for the sport of it. (Lekan/Zeller 2005) They sought out roads that were challenging and scenic, with features like hills, parkway-like racetracks, or even tailor-made race tracks, like the Vanderbilt Parkway or the AVUS in Berlin.

As cars became more accessible to greater numbers of people, couples and families began to purchase and drive cars. The ability to control fast transportation and having a vehicle that could take you directly from one place to your destination was revolutionary. In the past, trains took you to the stations and steamboats to port, with wagons making up the rest of the distance. There was also a shift in how roads were viewed. Whereas they were previously the concern of the rare, elite drivers, now they were seen as "pathways constituting a democratic public





Fig. 41:

Alfred Sloan, the architect of ,planned obsolescence,' was on the cover of Time Magazine in 1926.

© Samuel Johnson Woolf / Public Domain

sphere, places where individuals and families performed a cultural code based on tolerance, reciprocity, and freedom.” (Koshar 2008)

### 2.5.6. Early Motorization in Europe from 1890 to 1945 (Kristina Skåden)

On January 29<sup>th</sup>, 1886, the German engine designer Carl Benz (1844–1929) applied for a patent for his three-wheeled ‘vehicle powered by a gas engine.’ At practically the same time, the German engineer, industry designer, and entrepreneur Gottlieb Daimler (1834–1900) constructed a similar driving machine. Since their beginning,

With the advent of signage, signaling, and improved roads, driving was markedly safer and comfortable. Throughout the 1920s and 1930s, with the introduction of ‘planned obsolescence’ and the objective of manufacturers to improve the cars just enough so consumers would be persuaded to buy the latest model (whether they needed it or not), this meant that cars were increasingly and incrementally becoming more comfortable and more attractive, with cloth seats, glass windows, and roofs.

Driving was still utilitarian, but it was also now a common pleasure, a tool to bring families and friends to scenic landscapes they could enjoy in their leisure time. For this, they especially sought out scenic parkways, rural roads, and Alpine roads.

An oppositional driver is described by Koshar (2008) as a, typically young, person who rejected the calm, democratic driving that was emerging among the middle-class masses. Instead, the oppositional driver wanted to push limits, misusing public roads, speeding (now that speed limits were in place), and ‘joy-riding’ on dirt tracks, dry desert lake beds, or on public roads. These drivers are not concerned with scenic landscapes, but rather in pushing the limits of their car, through installing bigger motors and generally ‘tuning up’ cars. This subculture continued through the 1940s and 1950s as ‘hot-rodding,’ and the TV show ‘Pimp My Ride’ can be seen as a modern incarnation of this motivation to customize vehicles to make them more powerful and more unique. For their purposes, oppositional drivers seek out racetracks and straight roads where high speeds can be reached. Contemporary dragster racing and American-style racing on oval tracks also have their roots in this subculture.

car manufacturers have brought one billion automobiles to market. In 2020, the world will soon reach the manufacturing of the second billionth car.

Gijs Mom, a researcher in industry engineering and innovation sciences, writes that the history of motorization evolved through five distinctive phases: Emer-

## History of Land-Bound Traffic System Development from 1660 to Today

gence (1880-1917), persistence (1917-1940), exuberance (1945-1973), doom (1973-2000), and confusion (2001-present). (Mom 2015) These different phases vary from place to place and are not to be considered as a deterministic development. However, the controversies about the making of motorization, the foundation of the automobile age, and the automotive idea were multinational. Sociocultural differences reflected by national boundaries were far less significant than the evolution of a modern urban-industrial social order in Western Europe and the United States. “This includes a widely disseminated shared state of scientific and technical knowledge.” (Flink 1990)

In terms of the history of innovation, railways, automobiles, motorcycles, and bicycles had one thing in common: that they gradually became more popular as means of transportation for the great masses, fostered by the fact that all the technical basic components were available at the time of their invention. They created transportation for the mobility needs of the industrial age. They served the economic and social needs of their times. The bicycle was the main means of transport for especially working-class people in the cities well after World War II. At the same time, the automobile could satisfy the demand for faster, individual mobility of people, goods, and commodities in a more differentiated society, and, at least at the beginning of motorization, the demand for

social distinction.

A critical problem of implementing a new transport system is the restoration of an infrastructure needed for its operation – like functioning roads for the automobile. In the early years of motorization, there were several competing mobility systems (Engelskirchen 2005). Early expectations for motor vehicles had to do with the experiences people had made with horse-related traffic forms. Trolleys would run on tracks, like horsecars, automobiles would displace private carriages, mostly serving as status symbols, and trucks would haul goods to and from intercity terminals or carry consumer goods to neighborhoods. Hopes were high that cars would relieve traffic jams because of their greater speed and shorter length, and that the smell, noise, and pollution stemming from former ways of transportation would reduce. (McShane/Tarr 2007)

The transition phase from the introduction of a new form of transport to the point at which it is widely accepted takes a long time. For example, in the Netherlands, it took about 70 years from the introduction of the car until it achieved its breakthrough. Up until the 1930s, walking was the most common way to get to work. The emergence phase is the period in which the new means of transport is tested and improved step by step. At that time, the automobile drivers were affluent young men who loved the prestige the speedy vehicle style and technical versatility

Fig. 42:

A Hildebrand & Wolfmüller motorbike from 1894, Deutsches Zweirad- und NSU-Museum.

© Joachim Köhler / Creative Commons BY-SA 3.0



## History of Land-Bound Traffic System Development from 1660 to Today

---

needed to manage and repair their vehicle brought along. For this group of people, the car was like a toy, sports equipment, and an adventure machine. Later on, wealthy excursionists, amusement drivers, and businesspeople contributed to establishing 'the automobile age.' Some women were part of this second group. (Filarski 2005) This type of automobilist obviously overlaps with social communities - aristocrats, bourgeoisie, doctors - but cannot be reduced to it. (Guigueno 2009)

At the start of motorization in Europe, the motorcycle was the vehicle that met the majority's desire for inexpensive, individual mobility. At this time, a car was still unaffordable for most people. In 1894, the German steam engineers and brothers Heinrich and Wilhelm Hildebrand, together with the mechanic Hans Geisenhof and the investor Alois Wolfmüller, designed and produced the world's first two-wheeled, motorized machine referred to as a 'motorcycle.' ([www.barbermuseum.org](http://www.barbermuseum.org) 2020) The motorcycle stayed the main means of mass motorization until 1950. (Engelskirchen 2015)

Around World War I, car motorization was still very low in most of Central Europe. In 1913, Germany had a ratio of 1,100 residents per car, in the US, at the same time, the ratio was at 81 to 1, 390 to 1 in the United Kingdom, and 430 to 1 in France. The proportions stayed the same during interwar times. In 1922, Germany had a ratio of 900 residents per car, whereas the United States had a ratio of 10 to 1, the United Kingdom of 136 to 1, and France of 161 to 1. In 1938, the ratios had changed to 148 to 1 in Germany, 5 to 1 in the United States, 24 to 1 in the United Kingdom, and 23 to 1 in France. (Kühne 1996)

Still, the interwar period saw a rapid growth of the use of cars in Europe, too. A major reason was that the car got its 'final' design. (Filarski 2005) The car changed from being an adventure machine to the 'utilitarian' vehicle, with a roof, which turned the formerly open vehicles into closed rooms in which driver and passengers were reliably protected against weather and road conditions. This was the starting point for an everyday use. (Krebs 2009) Research on early motorization in Europe, as well as in the United States, emphasizes that not only a purely economic perspective offers an explanation to the 'triumph' of the automobile. The social value the car brought along played an important role, too. The automobile offered

adventure – the joy of speed – new versions of rhythm and time, excursions, vacation trips, journeys across the country, comprehensive access to places, solidity, reliability, convenience, and comfort. It offered a membership to the leisure society and automobile communities. The many national automobile clubs, which were linked in international networks with other automobile clubs, road societies, tourist promoters, or car manufacturers also played an important role. (Guigueno/Flonneau 2009; Blomkvist 2001)

During World War I, the vehicles of the army were prioritized, and the private passenger transport came to a standstill in Germany, France, and Switzerland. Private cars were required to increase military service and mobility. After the end of the war, the rate of private automobility remained stagnant for a long time. However, the war gave a boost to the use of trucks. (Merki 2002) Despite the fact that mass motorization in Switzerland only started after World War II, motorization of road traffic was largely completed by 1930. There was no future for horse traffic. The course of motorization in Switzerland followed the same pattern as in most European countries regarding the role of the wealthy elite and their automobile clubs. Resistance against the automobile could be expressed particularly well, because for a long period of time federalism prevented the centralization of transport policy. A well-known example is the Canton of Grisons, a mountainous tourist destination in southeast Switzerland, where the automobile was banned up to 1925. Still, the motorization was more advanced in Switzerland in 1930 than in most of Europe, apart from France, Great Britain, Denmark, and the Netherlands. This is due to the importance of transit and tourism in Switzerland. (Haefeli 2009) Reports about crossing Swiss alpine passes with the automobile were published in several popular, specialized automobile and tourist magazines. In the United Kingdom, Morris revolutionized the automobile industry by mass production of small reliable cars at low prices. Morris Motors Ltd., founded in 1913, survived the difficulties of 1920/21 by slashing prices. From then on, the business expanded. ([www.britannica.com](http://www.britannica.com) 2019)

The German national socialist policy planned a drastic rise of the number of private automobiles in Germany under the slogan *Parole Motorisierung*. After World War I, Germany lagged behind in motorization compared to

Fig. 43:

A Morris Cowley from 1927.

© Adrian Pingstone / Public Domain



most its neighboring countries. New tax breaks, drastic simplifications for acquiring a driving license, the construction of car-only lanes and roads, the subsidization of car racing, or the massive funding for the construction of the Volkswagen factory were part of Nazi motorization policies. Despite these efforts and the massive propaganda disseminated by the Nazis, the number of private automobiles in Germany stayed relatively low at this time, still limited to few hundred thousand. (Knie 2005; Day 2011)

The history of roads, traffic, and mobility is usually researched as a part of the history of the national states. A different approach is to follow the work of international organizations and networks. Early motorization and the efforts to establish a worldwide car culture cannot be separated from history of their networks. Business, politics, and different advocacy groups were (and still are) intertwined. The *Association Internationale Permanente des Congrès de la Route* (AIPCR), or, in English, the 'Permanent International Association of Road Congresses (PIARC)', started its work at the First World Road Congress in Paris in 1908 and was established as an association in

1909. Due to the new automobile, its members felt the need to organize themselves as a strong lobbying group for motorization. They aimed at exchanging knowledge and techniques for roads and road transport and at influencing public policies in order to change the priorities in road building. (Moraglio 2003; Skåden 2013)

France had given special attention to building a national highway network since the foundation of the *École des Points et Chaussées* in 1747. In the 1890s, when the first automobiles appeared, the quality of French roads was considered the best. Elsewhere in Europe and in the United States, the beginning of the automotive era created a massive reawakening of interest in highway transport. (Flink 1990)

The European countries were for a long time dominant in PIARC especially in terms of arranging the conferences. Still, the participants came from all over the world, some as official representatives, in increasing numbers. At the first conference in Paris in 1908, 33 countries were represented. At the 1930 conference in Washington, D.C., the number of represented countries had more than doubled, to 68.

### 2.5.7. Post-World War II Developments and Future Scenarios (Kristina Skåden, Michael Schimek)

The third phase of the introduction of new transport technologies, like the car, is characterized by the fact that it is dominant, or is approaching dominance and constitutes the majority of traffic. (Filarski 2005) Beyond direct transport policy decisions - such as parliament decisions to expand a road - structural social developments have an impact on the development of transport systems. After World War II, the modest general prosperity gave many working-class city dwellers the opportunity to realize some of their ambitions, that were out of the reach of the previous generation, like a home in the countryside. This led to an unprecedented urban sprawl, which in turn required individual mobility and in the long term caused an increase in automobile traffic. (Engelskirchen 2015)

Europe started its path towards mass motorization during the period between 1950 to 1965, when the car became affordable for large parts of the population. (Filarski 2015) "The United States achieved mass motorization in 1958, and Canada followed in 1972." (Price 2012) Mass motorization is the result of shifts that took place between 1946 and 1952. It is notable that in the United States, this is prior to the federal funding of the interstate highway program in 1956. (Jones 2008) Mass motorization was a disciplining process in which not only automobile, but also non-automotive road users were

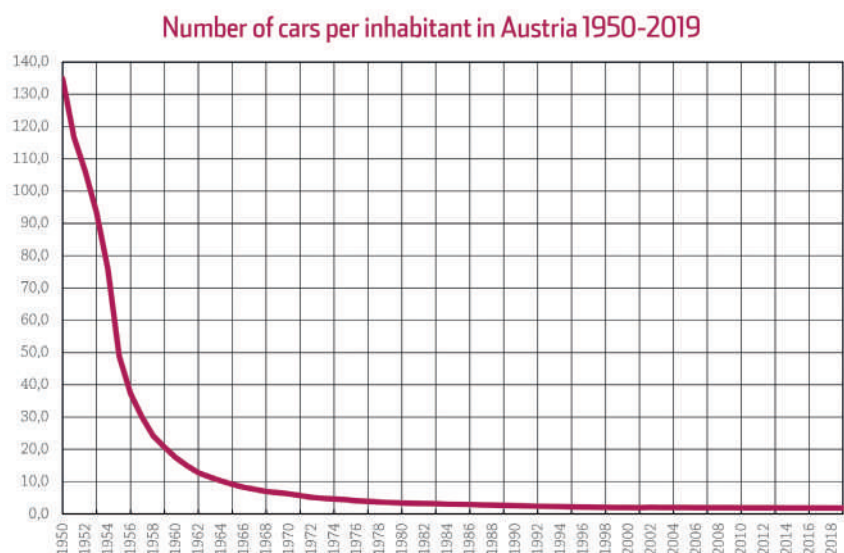
forced to do what was often painful - to adapt to new, foreign technologies, and the changing of behavior and ways of perception that had been trained for centuries. (Kühne 1996)

The global conflict between capitalism and socialism from the end of the 1940s - the 'cold war' - is characterized as "a struggle between irreconcilable ideological systems: one in which the freedom of the individual prevailed, and one that bent the individual to the will of the collective." (Seiler 2008) The formless idea of 'freedom,' the sociologist Dorothy Lee argues, always requires clarification through material expression. "By paying attention to the ways in which the cold war organized the political and cultural conditions under which automobil-ity took on a significant power, we can in the American context recognize the Interstate Highway System and the automobile as those expressions. The act of driving was a sort of ideological exercise that was seen to reverse the postwar 'decline of the individual' and the deterioration of the 'American character' of a heroic and expansionist past. The figure of the driver, moreover, embodied the ideological gap separating the United States from its communist antagonists, and proved to the essential individual freedom enjoyed under liberalism and capitalism." (Seiler 2008). These materialized practices of freedom,

Fig. 44:

**Cars per inhabitant in Austria 1950-2019. The quota of 1 car per 10 inhabitants was reached in 1965. Since 1985, the number of cars in Austria has doubled. Currently, more than 5 million cars are registered in a country with 9 million inhabitants.**

Source: wko.at 2020  
Graph: Michael Schimek



maintained by the automobile, had a tremendous impact in Western European countries. One expression of this development were sub-cultures like the Norwegian and Swedish *raggare*, starting from the late 1950s. Raggare were mainly young people, driving mostly American cars, listening to American music, and referring to notions of freedom on the road and in particular in America. (Rosengren 1997)

In Europe, mass motorization was more than a symbol of freedom. It became the material expression of the *Wirtschaftswunder* ('economic miracle'), the era of economic growth which lifted West Germany and Austria from wartime devastation to developed nations in modern Europe. At the time of the establishment of the European Common Market in 1957, West Germany's economic growth stood in contrast to the struggling conditions in the United Kingdom. Around 1960, the German Federal Republic gradually reached the level of motorization of the leading Western European industrial nations. In 1950, 1 out of 100 Germans owned a car. In 1961, it was 1 out of 10. The situation in Austria was similar: In 1951, 1 out of 117 inhabitants owned a car, in 1961, it was 1 out of 15. The total number of cars in Austria was eight times higher in 1961 compared to ten years before.

In comparison, the ratios in other countries in 1950 and 1960 were as follows: United Kingdom 1 out of 22 and 1 out of 9, France 1 out of 31 and 1 out of 7, Bel-

gium 1 out of 32 and 1 out of 11, Switzerland 1 out of 32 and 1 out of 10. Within only one decade, Germany and Austria had almost reached the motorization level of other Western European countries. The German Democratic Republic (GDR) reached this rate about decade later. (Kühne 1996) Even though the Nazi regime had created a demand among its people, it was unable to satisfy it, but it had built a car factory that - although soon converted for military purposes - was ready for mass production after 1945. The regime had even developed blueprints and prototypes of a robust car, which met the standards of the 1950s and 1960s. The *VW Käfer* (Volkswagen Beetle) became an icon of postwar West German reconstruction. (Berghoff 2001)

In the Nordic countries, the reaching of mass-motorization is closely linked to economic growth and the development of the welfare state after World War II. In Sweden, the real breakthrough for motorization happened during the thirty years from 1946 to 1976. During the 1950s, the car became an important investment object also for the working class, and the car was politically accepted by the governing social democrats. After the oil crisis of 1973 and the price jump of oil in 1979, discussions about the problematic effects of being dependent on oil began. Since the 1980s and until today, environmental and climate issues are discussed in connection to car usage. (Hagman 2000)

Fig. 45:

The original VW 1 car, called 'Bretzel Käfer,' produced in 1950.

© Lothar Spurzem / Creative Commons BY-SA 2.0 de



Fig. 46:

A Shinkansen train in front of Mount Fuji.

© tansaisuketti / Creative Commons BY-SA 3.0



To be faster, more efficient, and more productive is a driving force of modern societies, although this is from time to time called into question, by the environmental movement among others. Acceleration and speed are sought after characteristics for modern transport systems and criteria for social distinction among consumers. During the 19<sup>th</sup> and 20<sup>th</sup> century, acceleration and speed materialized in different forms of networks. For a long time, express trains were hardly affordable for the majority of the people. Still today, high speed railways are the most expensive railway alternative. However, high-speed traffic with speeds of 200 kph and more could not be achieved by ‘individual mobility’ at a big scale. The only realistic alternative was rail-bound or at least track-bound traffic. The perception of what exactly is meant by ‘high-speed transport’ has changed over time and has varied from country to country. (Engelskirchen 2005)

The 50 kph reached by the impressive ‘Rocket’ locomotive by George Stephenson in 1829 meant that railways were considered high-speed vehicles from the beginning. Very soon, railways reached speeds that are even much more impressive: 100 kph before 1850, 130 kph in 1854, and even 200 kph at the beginning of the 20<sup>th</sup> century. In any case, these were just speed records. The maximum speed in daily operation was much more modest but nevertheless important, reaching 180 kph as the top speed and 135 kph as the average speed between two

cities in the 1930s, with steam, electric, or diesel power. (uic.org 2020)

The historical effort to reach high railway speed is not a straightforward story of progress. In Europe, World War I and II broke up international rail relations and militarized the railway. The *Union Internationale des Chemins de Fer* (UIC) outlines high speed rail history: After some significant speed records in Europe (Germany, Italy, UK, and especially France with 331 kph in 1955), on October 1<sup>st</sup>, 1964, the Japanese National Railways started the operation of a brand new 515 km standard gauge line, the Tokaido Shinkansen, from Tokyo Central to Shin-Osaka. This line was built to provide capacities for the new transport system necessary because of the impressively rapid growth of the Japanese economy. The Tokaido Shinkansen was designed to operate at 210 kph (later at higher speeds). This is the beginning of the High-Speed Rail (HSR).

Several European countries, particularly France, Germany, Italy, and the United Kingdom, developed new technologies and innovations aimed at establishing the basis for the ‘passenger railway of the future.’ SNCF, the national French railway company, started the operation of the first TGV high-speed line between Paris and Lyon on September 27<sup>th</sup>, 1981, at a maximum speed of 260 kph. “In contrast to the Shinkansen concept, the new European HSR was fully compatible with existing railways,

and this largely influenced the further development of the systems in Europe. After the big success of the TGV, each European country looked for a new generation of competitive long and medium distance passenger rail services, in some cases by developing their own technology and in others by importing it.” (uic.org 2020) Italy and Germany joined the group of countries offering high-speed rail services in Europe in 1988, Spain in 1992, Belgium in 1997, the United Kingdom in 2003, and the Netherlands in 2009.

In Germany, the new high-speed trains could not run on many of the existing tracks, especially in the hilly and mountainous regions of the country. This is why, at the end of the 1970s and the beginning of the 1980s, a number of new high-speed tracks had to be planned. They soon faced massive resistance by local citizen groups. To achieve a speed of 260 kph, the new tracks could not be created with a lot of respect for their integration into the landscape. The tracks had to use formerly remote areas with a high natural and landscape value, with lots of tunnel stretches, creating huge amounts of excavation material that needed to be disposed of, and dams and viaducts which interfered in areas with high landscape value. In addition, people were concerned about noise issues. Individual citizen groups, which primarily were formed out of a certain ‘not-in-my-backyard attitude,’ quickly realized that the only chance to prevail was to network and join forces with other similar groups. They managed to delay the construction of the new tracks for years. In the end, the railway planners chose to file lawsuits of a volume which exceeded the financial resources of the local grassroot movements. The new tracks are now in operation all over Germany, at the cost of the landscape experience of the travelers, since the high-speed trains mostly run in tunnels, between dams, or between noise barriers. (Zeller 2002)

“In the meantime, other countries and regions introduced similar concepts, such as China in 2003 (even if the big development came later, in 2008), South Korea in 2004, Taiwan in 2007, and Turkey in 2009.” A new dimension of HSR started in China on 1 August 1<sup>st</sup>, 2008. “The 120 km high-speed line between Beijing and Tianjin represents just the first step in a huge development to transform the way of travelling for the most populated country in the world. Since 2008, China has implement-

ed almost 20,000 km of new high-speed lines, and thanks to an enormous fleet of more than 1,200 trains, it carried 800 million passengers in 2014, more than the half of the total high-speed traffic in the world that year.” The numbers have constantly increased since then. (uic.org 2020)

Since the beginning of the 19<sup>th</sup> century, the rise of speed and the democratization of motorized travel (steam train, cars, planes, ...) has led to a ‘mobility turn:’ it is now a common practice to travel more often, faster, and longer distances. The Swiss sociologist Vincent Kaufmann writes that the term ‘mobility’ can be broadly defined as the intention to move and as the realization of this movement in geographical space, implying a social change. Mobility is a socio-spatial phenomenon with two aspects: social change, and movement through space. (Kaufmann 2000) The concept of mobility in relation to mass-motorization after 1949 is discussed and analyzed by scholars with a wide range of backgrounds. One aspect of mass motorization is commuting to work. The trans-institute ‘The Mobile Forum’ defined highly mobile individuals as people who either spend a great deal of time commuting to work each day or who spend the working week away from their partners because their workplaces are geographically far away, or who travel their region, their country, and the world as part of their job. This includes both physical movement and social change. The past several decades, the average distance travelled between home and workplace has increased. In 2007, between 18 and 25 % of all European households were affected by high mobility. High mobility is something that many people experience sometimes in their lives. In 2007, at least one highly mobile person lived in half of the households with working people in France. (Ravalet/Vincent-Geslin/Kaufmann 2014)

The car’s inexorable expansion and dominance over other systems of mobility came to be considered as something natural and inevitable. “Nothing, it was thought, should stand in the way of the car’s modernizing path and its capacity to eliminate the constraints of time and physical space.” Over the course of the 20<sup>th</sup> century, this way of perceiving cars was reinforced through the notion that urban environments should be shaped primarily for the needs of cars. The car system was considered a way of living and not just a means of transportation, and its characteristics make it different from any previous way



## History of Land-Bound Traffic System Development from 1660 to Today

---

of movement:

1. Cars are manufactured by the leading business sector managing some of the most valuable brands of the 20<sup>th</sup> century.
2. In most households, the car is the individual consumption item most money is spent on, after housing.
3. The car has lots of links with other institutions and related occupations.
4. “Car culture has developed into a dominant culture generating the ideals about what represents the ‘good life’ and what is necessary to be a good mobile citizen in the 20<sup>th</sup> century.”
5. The car driver is increasingly surrounded by control systems that allow a simulation of the domestic environment, a way of flexibly and riskily moving from ‘home to home’ through strange and dangerous environments. (Dennis/Urry 2009)

The final development phase of a means of transportation witnesses a process characterized by reduction. Some products will disappear altogether, and others will be cut back to a limited share of the market. (Filarski 2005). This phase is also named the ‘confusion phase’ of automobility. (Mom 2015) Since 2009, when Dennis and Urry analyzed the state of the automobile society, it has become more and more obvious that mass motorization in the way we know it is under pressure. Today discussion centers around the question of which mobility is just. This means that the question of how, when, and where to move people, goods, and capital is not only a technological-material issue, but also a political and moral one. (Sheller 2018). In government papers, among the car and road industry, and in research we find many attempts to predict this unknown future.

One is the UK government paper ‘A time of unprecedented change in the transport system. The Future of Mobility.’ This paper describes how we should deal with the uncertainty about how mobility will develop. Rather than using standard planning tools, using scenario approaches can help policy makers to make more resilient decisions for the different ways the future might look like:

- If we follow the ‘Trends Unmodified’ scenario, where

the government is reactive to change in mobility and limits its intervention into distributing the benefits of new technologies in transport, private car use will reach a record high in 2039.

- If we follow the ‘Individual Freedom Trend’ scenario, where the public demands freedom, independence, and individual control over their ways of transport and are concerned about data privacy, long-distance travel will have reduced by 2039 as people will have less trust in the people who direct them. This causes private car ownership to reach a peak already in 2036, which will even continue to grow afterwards. Because of the Covid-19 pandemic we can witness this tendency already today – people avoid using public transport, and private car mobility increases.
- If we rather follow the ‘Greener Communities’ trend, where society is less materialistic and prioritizes the social and environmental aspects of mobility over new technologies and individual choice, car clubs and car sharing will overtake the number of trips in privately owned cars by 2035.
- The last scenario is following the ‘Technology Unleashed’ trend. The transport and the transport-related industries have been deregulated, which means that rapid technological progress is dominated by the private sector. In this case, private car-dominated passenger traffic is expected to be swiftly replaced by aerial vehicles (AVs) once they become available. In this scenario, 80% of all passenger miles are expected to be travelled in AVs in 2039. (assets.publishing.service.gov.uk 2019)

This study underlines the following quotation: “Every great technique carries with it a landscape.” (Desportes 2005) Every mode of transportation and infrastructure means new ways of feeling, seeing, and finding landscapes. Desportes writes that a certain ways of transport will shape a traveler’s ways of doing things, of venturing, of finding one’s origin. Each major transport technique therefore models an original approach to the travelled space, each technique carries a ‘landscape’ in itself. (Guigueno 2009) Although roads come in many forms, it is not given that today’s and yesterday’s solutions will be the same in the future.



# ROADS



### 3.1. Three Types of Historic Roads (Sally Pearce)

The framework of the great baroque city plans of Europe is their road network. In the United States, roads and automobiles defined the culture and shaped the landscape. But few of these roads are thought of as historic resources. Some of these roads are being lost, whether by demolition, neglect, or the result of poor management or policy. It is becoming increasingly important to recognize and preserve our historic roads.

Today, historic preservation and scenic byway organizations are looking more closely at the roads in their communities and developing plans for their management and protection. Unfortunately, there is no obvious template to follow. Each road possesses unique qualities and features. In order to properly evaluate roads for their significance, it is necessary to understand the origins and evolution of the road. To determine whether a road is historic or significant, its design, construction, and physical changes must be studied.

In general, there are three types of historic roads - cultural, engineered, and aesthetic. (Marriott 2004) Not every road can be categorized as cultural, engineered, or aesthetic. And some routes may fall into more than one of the three categories or even be an exception to all three types. These multicategory routes may exhibit characteristics of two types - perhaps an early engineered freeway that was designed for a pleasing or aesthetic experience. In the eastern United States, some scenic parkways that

would be considered aesthetic might have also been designed to provide quick and efficient traffic flow. But in most cases, at least one of the three categories will be recognized as the primary origin of the road. (Marriott 2004)

Evaluation of the road helps determine how to classify a specific road as one of the three types. The first step is to look at the physical design of the road. Does it traverse through a mountain meadow, follow along a winding river, or pass through an urban area? Understanding the setting of the road is also important - does it follow along a coastal area, climb high mountain terrain, cross a rolling prairie, navigate through an urban area, or go across a landscaped park? It is also important to make note of the design details that distinguish the road, including rock walls, bridges, culverts, landscaping, lighting, pavement, and built features such as tunnels.

Next, it is useful to study the goals and expectations for which the road was originally constructed. Was its original intended use for pleasure, commerce, or speed? For example, did the road provide access to a mining area? Was it used to connect an urban area to a rural area for the purpose of delivering supplies?

Finally, it is important to consider the evolution of the road over time. In many cases, the uses, elements, or goals of the original builders have changed.

#### 3.1.1. Cultural Roads

Cultural roads evolved through necessity or tradition. Some may have a documented purpose for their existence but would not have the design and construction legacy of aesthetic or engineered roads. These roads may have evolved from old continental and transcontinental trade routes, trails used by native people, colonial roads, or they were simply logical connections between villages or followed passages through mountainous terrain or along rivers and streams.

Cultural roads, especially those still in use, may demonstrate multiple layers representing various histor-

ical periods. Some routes may exhibit the physical traits of a cultural road as well the social and environmental characteristics of a distinctive culture.

There are likely many archaeological sites underneath or along the roadbeds of cultural roads, including representations of not only people and culture but the construction of the road itself - compacted soil from an early trade route or evidence of alignment changes to accommodate the changes from native trails to carriages and wagons to automobiles. (Marriott 2004)

### 3.1.2. Engineered Roads

Engineered Roads are the most common type, with a documented purpose and a documented date of construction. Although they may exhibit some aesthetic features, these roads were primarily designed for the efficient movement of people, goods, and services, ease of access, and reasonable construction costs. Engineered routes are designed to open isolated areas to commerce, reduce traffic congestion, or provide links to allow goods to reach their markets. Sometimes, these roads were the responses to specific policy. For example, the Oregon

Market Road Act (1920-1931) provided funding to build and improve roads for the purpose of moving goods such as agricultural products from farms to the commercial areas of the county. (Marriott 2004)

Engineered roads are less likely to influence or manage the larger landscape, rather they stick to the defined right-of-way. But it is also common that early turnpikes, transcontinental routes, toll roads may have demonstrated many engineering advances in materials, design, and safety. (Klein 2008)

### 3.1.3. Aesthetic Roads

Aesthetic Roads were designed for a very specific traveler experience, particularly for scenic enjoyment and leisure driving, to provide access to recreational opportunities, or to commemorate an event. These roads have a documented purpose or rationale behind their development as well as a documented date of construction. (Marriott 2004)

Typically, aesthetic roads are not the fastest or most direct way of travel between two points of interest or destinations. They are influenced by the viewshed and surrounding landscape and take in the many resources that lie beyond the right-of-way. The route might follow the

natural topography in rural areas, traveling through river valleys, crossing over ridge tops, or traversing thick forests. In urban areas, aesthetic roads might be grand park boulevards or monumental avenues, perhaps lined by magnificent sculptures or towering rows of ancient trees.

Aesthetic roads are known for their attention to detail and enhancing the traveler's experience. Views from the road are carefully planned to frame scenic mountain vistas or preserve views of an important civic or institutional building. Features such as bridges, lighting, railings, and pavement are carefully designed and often blend purposefully into the landscape.

## 3.2. Roads and Commodity Theory (Michael Schimek)

From our contemporary point of view, roads are often seen as infrastructure provided by the state to its inhabitants. In many states, the construction and maintenance of major roads have been centralized and are taken care of by public authorities. Only in exceptional cases is the use of roads not free to everybody.

For a long time in history, this was not the case. Until the 20<sup>th</sup> century, the construction of roads was primarily a task of local and regional communities. Long-distance transport, in many cases, took place on waterways, in the 19<sup>th</sup> century on railways. The task of financing local roads

was mainly left to the local municipalities. A very common way of acquiring resources for road construction and maintenance was the use of compulsory labor from local farmers (*Fronarbeit* in German). (Longen 2010)

Another common way of financing road construction and maintenance was, and still is, the collection of tolls. For almost all engineered roads in the 18<sup>th</sup> and 19<sup>th</sup> century, it was necessary to pay a toll in order to be granted access. The etymology of the word 'turnpike' is derived from this process. Around 1900, some cities collected road tolls for access to inner cities. In many countries,

## Roads and Commodity Theory

driving on the newly constructed motorways was only possible after paying tolls. Some European countries, like Italy or France, have, since then, collected tolls at the entry or exit of their motorways. Some, like Switzerland, Austria, Slovenia, Hungary, the Czech Republic, or Slovakia, have, during the last decades, introduced motorway stickers – drivers are charged a lump sum for a certain period of time and may then use all the motorways without paying an additional charge. Trucks are usually charged a toll depending on the distance driven, even in Germany, where motorways are still free for passenger cars. Even road taxes for inner cities have been re-introduced in

some European cities, like in Oslo, Bergen, or London, and are currently discussed in many other cities which want to reduce congestion of their inner city roads and want to make them more attractive to pedestrians and cyclists. (Hascher 2010)

A reason for that is that different kinds of roads may be managed in different ways and may be classified as different types of goods, which looking at a macroeconomic classification of goods and Commodity Theory (a psychological concept in economics which demonstrates that the scarcity of goods increases their value in the eyes of their users) explains. (Meretz 2009; Helfrich 2009)

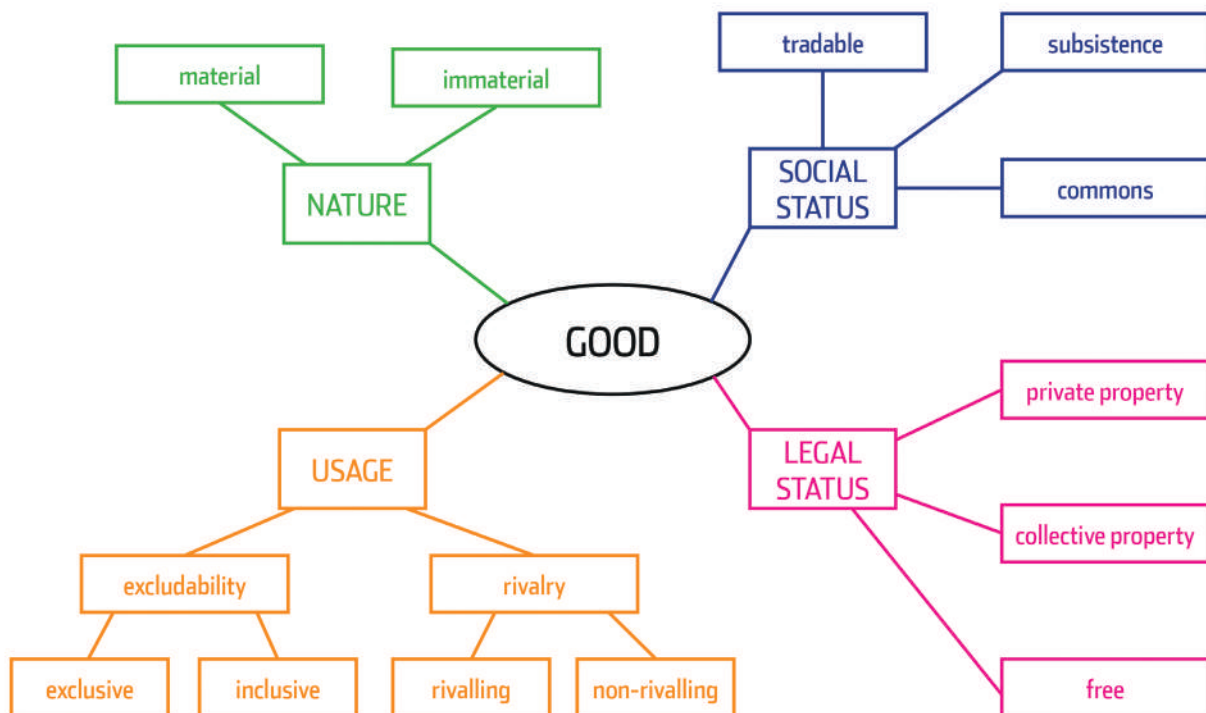


Fig. 47: A classification of goods.

Source: Meretz 2009, own translation

Without a doubt, roads as infrastructure are material goods by nature. They may, at the same time, also have some immaterial value, for example, by creating more freedom of choice in terms of the place somebody lives at and is still able to commute to work because better roads allow quicker travel, or by accessing places which would

otherwise not be accessible. Most roads will have the social status of commons, though, at least in theory, they might be tradable, too, or some might have the character of a subsistence good, like private roads leading to private land which are closed for the public by a barrier.

More variation can be considered when looking at

the legal status and the usage of roads. Many roads are collective property, like most roads owned by the state, but some – especially many of the scenic roads built for tourism purposes – are still privately owned, thus being private property.

The character of roads varies significantly when looking at them from the point of view of their usage. Motorways usually are exclusive goods, since not any vehicle may ride or drive on them (on European motorways, bicycles or tractors are usually excluded from using them) or because drivers are required to pay a fee for using them. Many privately owned scenic roads have put up regulations on how to, at least theoretically, exclude certain kinds of users, by paying a charge or by restricting access for trucks and agricultural traffic. Even on some collectively owned roads truck transit has been banned by law, like in the World Heritage cultural landscape Wachau in Austria.

### 3.3. Cultural Roads

#### 3.3.1. Cultural Roads in Europe (Michael Schimek)

Road construction was, for a long time in European history, a matter of low importance. For most of European history, only the Romans created a road network with roads kept in a good condition. Many contemporary roads still follow the old Roman roads, especially in the Alps. The Romans had a high standard of construction. On many roads, the Romans used a technique using rocks as pavements, atop a foundation of mixed sized pieces of rocks and gravel. Many Roman roads also were cambered in order to make sure that precipitation could run off quickly.

The Romans established trade routes with people outside their empire, too. The most famous ones are the Amber Roads, trade routes that connected the North Sea and the Baltic Sea to the Roman Empire. These routes are important, but they may not be viewed as constructed roads but rather as long sequences of transport routes on rivers and some shorter passages on land where river transport was not possible. Generally speaking, long-distance trade was, until the 19<sup>th</sup> century, preferably done

The usage of roads may even include a rivalling component, like when two roads with different excludability run parallel to each other. This happened, for example, after the introduction of tolls on certain roads which sometimes caused a shift of traffic from exclusive roads, like motorways, to inclusive roads, like conventional cultural roads running through cities and villages. In many places, even in historic or protected areas, this has led to a significantly reduced quality of life and touristic attractiveness and to a loss of immaterial qualities.

This differentiation becomes important when looking at the options of different road owners to maintain the historic and scenic character of their roads and to manage their roads in a way which is at least not detrimental to their specific qualities. It is especially important when considering the potential of a road to become enlisted as a World Heritage site.

by ship, on the seas and on rivers for inland crossings. Roads, in most cases, kept their local character.

It was not until the 18<sup>th</sup> century that road building began to reach the standards of the Romans again. In the interim, the Roman knowledge of road construction fell into oblivion. Only some inner city roads were paved, most of the other roads stayed unpaved and badly maintained. The existing Roman roads were still in use but more and more fell into decay because of wars, neglect, disuse, and the fact that most of Europe was divided into a large number of small sovereign entities, especially in modern-day Germany and Italy. These sovereigns had “little benefit from good roads, but more from bad ones, since the farmers had a good income from providing carriage horses, the blacksmiths and cartwrights from repairing broken carts, and the landlords from accommodating travelers. This means that all prerequisites were there to [deliberately] keep roads in a bad shape.” (Kappel 2016)

Road maintenance was a job with low prestige for

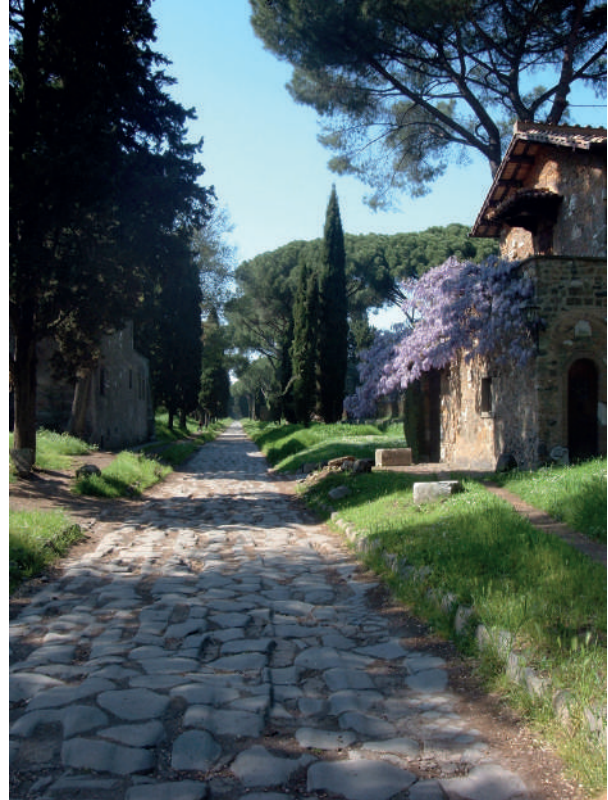


## Cultural Roads

another reason. In many European countries, it was not private companies who were in charge of keeping up roads, rather the responsibility typically fell to local farmers who were obliged to set aside a certain amount of their working time to their sovereigns as compulsory labor. In the Electorate of Trier, an ecclesiastical principality in Western Germany, for example, 72 % of the necessary labor was done by compulsory services of the rural population around 1780. The people were only allowed to reduce compulsory labor during July and August, and during wine harvest. The system was only replaced by a combination of new taxes and toll charges by 1792. (Longen 2010)

New impulses to road construction techniques in Europe started with the establishment of the *École nationale des ponts et chaussées* in Paris in 1747. The French style of road construction was quickly exported to other European countries since road engineers networked on an international level already in the 18<sup>th</sup> century. In Germany, timber was on occasion used for road construction. But this method created roads which were not durable and some regions, such as the Duchy of Silesia and the County of Glatz, chose to abolish the method. In 1737, officers in Swabia had introduced new standards of road construction. They used rocks and stones as the pitching and lined the roads with large curbstones. “The pitching was carefully filled with smaller stones and hammered down with heavy pushers. This was topped with a six-inch layer of smaller stones and finally coated with a layer of gravel.” (Kappel 2016) This way of construction was similar to the style the French engineers proposed and by and by became a standard all over Central Europe.

Road construction still remained mainly the job of local and regional authorities and communities well into



**Fig. 48:**

**Part of the Roman *Via Appia Antica* at the Rome city quarter Quattro Miglio.**

© Kleuske / Creative Commons BY-SA 3.0

the 19<sup>th</sup> century, though, when the railway became the most important means of transport. Road construction at a larger scale started only with the beginning of motorization at the end of the 19<sup>th</sup> century.

### 3.3.2. Cultural Roads in the United States (Dan Moore)

For thousands of years, indigenous Americans from thousands of tribes crisscrossed from east to west and north to south what is now the United States. There is evidence of trading occurring between communities as far away as what is now Alaska and communities in Central America. But unlike Europe, where established roads

have been around since at least the Roman Empire, land routes in North America were primarily foot paths until Europeans began to colonize the continent in the 17<sup>th</sup> century. Well into the 19<sup>th</sup> century, large expanses of the continent remained wild and roadless. Several characteristics of this continent factor into this: First, the relative-

## Cultural Roads

---

ly short amount of time from when Europeans arrived, compared to the thousands of years of development in Europe, and second, the major mountain ranges in North America run from north to south and are separated by arid and semi-arid territories difficult to cross. Even in modern days, the mountains in the Western United States make east-west travel treacherous, especially in winter.

Into the 19<sup>th</sup> century, the United States' population was primarily on the East Coast. A lot of travel between the cities was done on water, not land. Steamboats, invented in the late 18<sup>th</sup> century, came into prominent usage by the early 19<sup>th</sup> century. Steamboats connected cities and towns on rivers and lakes, and the Erie Canal, completed in 1825, allowed ship travel from the east out to the Great Lakes. Where there were roads, they were dreadful, and they were primarily built to complement the waterway transportation system.

To finance the construction of improved roads and their ongoing maintenance, private companies were formed, called turnpike companies, named for the historical turnstile entrance to the roads. To travel on these roads, travelers would pay a toll. By the end of 1845, approximately 1,500 turnpikes were registered across 11 states. (Klein/Majewski 2008)

Starting in the mid-1840s, a movement to improve the roads called for the building of wooden roads, or

plank roads. Plank roads incorporated the turnpike system of privately funding roads and were purported to be a cheaper alternative to more costly macadam road technology also gaining popularity. Although they fared better than dirt and gravel roads, because they ended up lasting only about half the duration that promoters claimed, the construction boom quickly ended by the end of the 1850s.

During this time, the federal government first started to become involved in road construction. This was primarily done to speed up the development of interior lands, to facilitate a U.S. Postal System, and to defend the remote territories from both the indigenous people being displaced by this settlement as well as competing European settlers. The first federally funded road, the National Road, now known as Route 40, was built between 1811 and 1834 to reach the western settlements. (Longfellow 2017) The road would eventually connect Cumberland, Maryland, to the Ohio River.

Early road building investment declined with the advent of railroads. By 1850, 14,000 km of railroad lines had been built in the United States. (van Oss 1893) Railroads were cheaper to build and maintain than roads and could carry much greater cargo loads at once. Railroads also outcompeted steamboats, which were more susceptible to poor weather and couldn't be operated in the winter due to canals freezing. However, it wouldn't be until

**Fig. 49:**

**A plank road on St George Island, Alaska, in 1938.**

© National Oceanic and Atmospheric Administration / Public Domain



## Cultural Roads

the transcontinental railroad was completed in 1869 that railroads would see their full potential of connecting the vast territory of the United States.

Prior to the transcontinental railroad, to go west of Ohio and the Northern Great Lakes territories by land was primarily accomplished by wagon 'trail,' such as the Oregon Trail. In 1804, Meriwether Lewis and William Clark embarked upon a two-year expedition to map a land route across what is now the United States. Following Lewis and Clark, the explosion of the fur trade, to support the popularity of beaver-pelt hats, led many travelers to explore the many rivers and streams of the western United States. Many of these trappers kept diaries of their travels, and when the fur trade wound down around 1840, due to a change in that fashion, these former fur traders offered their services as guides to guide emigrants to homestead sites in the West.

In addition to the Oregon Trail, other routes include the Santa Fe Trail, the Chisholm Trail, the California Trail, the Mormon Trail, and the Old Spanish Trail. Travelers came west for homesteading, to escape religious persecution, for mail delivery, and in 1849, to strike it rich in the California Goldrush. Despite depictions in movies of several wagons traveling in a straight line, the reality is wagons spread out, whenever possible, perpendicularly to minimize the dust. Additionally, as the popularity of the route increased, travelers would have to spread out to obtain sufficient food and fuel. Still, many sections of these trails required extensive clearing of timber, and as time went on, bridges and ferries were constructed funneling travelers on specific routes.

The first actual wagon road to cross the Rocky Mountains to the inland Pacific Northwest was the Mullan Road. It was built by U.S. Army troops between 1859 and 1860. Despite frequent washouts from flooding, it was used by an estimated 20,000 people in just its first year. The road helped the town of Walla Walla to become the largest town in Washington Territory. A major growth in immigration spurred western migration, and by the late 1880s, there were many established routes within and between cities, as well as established routes for interstate and transcontinental travel. (Transportation Research Board 2005)

The first transcontinental railroad was completed 1869, which shortened the travel time to seven days and



Fig. 50:

1904 editorial cartoon urging for funds for the Good Roads Movement.

© E.A. Bushnell / Public Domain

reduced the cost significantly. This improvement dramatically increased the number of people to travel west and reduced the number of people traveling by wagon.

The interest in road improvement got a new set of advocates with popularity of bicycle riding. By the late 19<sup>th</sup> century, bicycles innovations allowed for much faster travel between destinations and without the required care and feeding of animals. Starting in the 1870s, riding clubs were popping up throughout the nation. As people started to use bicycles to travel between cities for both pleasure and transportation, riders became agitated by the condition of dirt and gravel roads. Citing government support of road construction in many European countries, bicycle riders organized what became known as the 'Good Roads Movement,' a movement to advocate for the improvement of the nation's roadways, specifical-

ly through government funded projects. The movement united not just bicycle riders, but also farmers and others who lived in rural areas.

By the end of the 19<sup>th</sup> century, the United States had witnessed several transportation advancements that en-

abled the expansion of the nation to all corners of its territory. The dawn of the 20<sup>th</sup> century was going to quickly elevate a new form of transportation, the automobile, which would radically change the look and feel of the entire nation, from cities to rural areas.

### 3.3.3. Cultural Roads in Other Parts of the World

(Kurt Luger, Natasha Martin, Michael Schimek, Kristina Skåden)

The exchange between countries and cultures has always played a big role in Asia. The continent therefore features a number of traditional cultural roads and routes that crisscross the continent - most notably the famous Silk Road, which in turn has a number of branches and secondary routes, as described in a separate thematic study. (Williams 2014) There is a number of major east-west connections as well as connections that served the purpose of north-south exchange and have been of great importance for centuries. Their common overarching goal has always been trans-Asian and trans-continental trade, although many roads were also built for strategic military and security reasons.

What many of these connecting lines have in common is that they have taken on an additional function with the advent of tourism. Muslims have always used these routes to make the Hajj, the pilgrimage to Mecca, Hindus used them to get to the sources of the holy rivers, and Buddhists to the sacred mountains, and the first overland travelers made their long journey from Europe to the Far East on these roads. However, it was not until the end of the 20<sup>th</sup> century that tourists were truly using these routes for leisure purposes. Applying the general concept of categorizing roads into cultural, engineered, and aesthetic roads, most of the roads that in recent times acquired a certain function as aesthetic roads in an emerging tourist market have their roots in ancient trade and cultural relationships. Some of them stem from colonial times or were built when the Soviet Union controlled many of the now independent Central Asian states. Roads have mostly been planned and engineered for military and strategic purposes. If there are some examples of roads that have been constructed primarily for aesthetic reasons and for touristic use,

those are typically very recent. Still, since especially the mountainous regions of Central Asia belong to the most spectacular landscapes in the world, we can expect that these roads will become more interesting as scenic leisure and tourism roads in the future, which indicates that it is worth having a closer look at them. This redefinition of purpose took place in an extremely speedy way during the last decades - some sections of the routes have even lost their original meaning and are now more relevant from a tourist point of view.

This is the case, for example, with some Trans-Himalayan routes that were used for bartering between Tibet and India. In particular, salt, grain and spices, goats and sheep, art objects, fabrics, religious artefacts, and precious metals like gold were traded. But also ideas, knowledge, and cultural and artistic practices were transported and conveyed on a large scale via these routes. Many of them – not all of which are roads in the modern sense – are also pilgrimage routes. Not only a large number of people travelled on these routes, but also knowledge about life contexts, and settlements along these routes became early hubs of intercultural exchange. (Fürer-Haimendorf 1988; Lewis 2011)

Wherever the topographical conditions allowed, routes led over the Himalayan passes, of which only a few have been upgraded to metaled roads recently. An important one is the connection between Tibet and India, crossing the former Himalayan kingdom of Nepal. In the Kathmandu valley, a blend of cultures developed a unique high culture, as can still be admired at the numerous World Heritage sites today. From there, the trade route continued to India. The first motorable roads were built in Nepal from the 1950s onwards along the historic pathways and established a connection to the Indian rail-

## Cultural Roads

way network. At that time, there were no automobiles in the landlocked country. The first one was actually carried over the mountains from India by porters in disassembled state. Until the 1980s, there were only a few large connecting roads. The remote areas were only accessible on the historic trade routes, which were used by foot or with horses, mules, or yaks as pack animals. This ramified road network grew slightly, but it was only after the introduction of the Republic in Nepal in 2008 that there was an accelerated expansion of roads even into remote mountain regions.

A typical example of this is the Lamjung Road, an important part of a network of roads in the central mountain region. It was once an important trade route, but like other pass routes, it lost more and more of its importance because north-south trade came to an almost complete standstill after China had annexed Tibet. Just recently, this old system of cultural roads was amended with a feeder road which deviates from the main route and was built in order to bring thousands of tourists to the upper part of the Annapurna Circuit, the most popular trekking destination of the Nepalese Himalayas. Partly blasted out of the rock like many other narrow mountain and pass roads in the Himalayas, it leads up to the highest settlements at 3,500 m.

Another historical trade route leads south to Pokha-

ra from the Tibetan plateau, through the small kingdom Mustang/Lo Manthang and the river valley of the Kali Gandaki. It has become motorable during the last ten years and can be travelled by cars during the dry season. It connects the high-altitude villages and pilgrimage sites with the lowlands and thus serves tourism. Trucks and jeeps have taken over the supply of goods along the trekking route from porters and mule caravans. This road also leads through an impressive mountain landscape and through the deepest gorge in the world, as the peaks of Annapurna and Dhaulagiri, two of the highest mountains in the world, are only 25 km apart.

One of the most famous historic routes in the world is the network of the Silk Road. The extensive trade routes between China and Central Asia comprised of 35,000 km, many of them dating back several millennia. One of the sections of the road network is the Chang'an-Tianshan Corridor. It connected the historic city of Chang'an, near present-day Xi'an in central China, with the Zhetysu region south of Lake Balkhash in present-day Kazakhstan. The 7,500 km long network of trade roads gained importance during the 2<sup>nd</sup> century BC and stayed in operation as a major trade route for almost 2,000 years, until the 16<sup>th</sup> century. It crosses a huge diversity of landscapes, from deserts to some of the highest peaks in the world outside the Himalayas. The road network reached eleva-

**Fig. 51:**

The Kizil Caves in Xinjian province, China. A series of 236 Buddhist temples is carved into the rock. The site is part of the World Heritage property ,Silk Roads: The Routes Network of Chang'an-Tianshan Corridor.'

© Hiroki Ogawa / Creative Commons BY 3.0



tions of 154 m below and up to 7,400 m above sea level. The corridor was nominated as a transnational site by China, Kyrgyzstan, and Kazakhstan and inscribed as a World Heritage site in 2014. (whc.unesco.org 2020)

In the Middle East, most cultural roads are ancient and historically served two purposes: pilgrimage and trade. They have been used for centuries and continue to be used today.

The Hajj is the pilgrimage to the Holy City of Mecca. The word 'hajj' literally means 'heading to a place for the sake of visiting,' though today it refers mainly to the pilgrimage. The journey to the holy site is a pillar of Islam, and Muslims are required to complete it once in their lifetimes. Muslims have been doing this journey since the 7<sup>th</sup> century, as a result various routes from major Islamic cities have developed and been used for hundreds of years. Some pilgrims travelled to port cities on the Red Sea, before continuing overland to Mecca, but most made their way on camel caravans from various corners of the Levant and the Arabian Peninsula. The routes were also trade routes that merchants would use throughout the year. For most of the routes' history, making the pilgrimage was an arduous journey through a tough and unforgiving landscape. Along the routes, wealthy donors would build infrastructure to ease the journey for pilgrims, including wells, rest stops, bridges, castles, and mosques, as well as provide protection along the routes. Patrons also paved over obstacles along the route. Like any routes that are used continuously over centuries, they have changed, shifted, and adapted according to the political climate and improving technology. The Egyptian and Syrian Hajj routes are protected as UNESCO World Heritage Sites.

The Way of the Patriarchs is a north-south divide that cuts across modern-day Israel and Palestine and connects Hebron to Jerusalem. It is also referred to as 'Hill Route' as it runs on the crest of two mountain ranges. The road is mentioned in the bible, and Abraham, Isaac, and Jacob are believed to have travelled on this route. There are Roman markers along the route, proving it was also a Roman road. For a long time, it was mainly a pilgrimage route for believers to visit holy temples in Jerusalem. The Way of the Patriarchs is now highway 60 in modern-day Israel/Palestine.

Kings Highway (not to be confused with a road by the same name in the United States) has been an im-

portant trade route connecting Africa and the Middle East through most of history, including for ancient civilizations and the Romans, when it was part of *Via Regia*. The Kings Highway is also mentioned in the bible, as a road that the King of Edom prohibited Moses from using when he was leading his people. Crusader castles were built close to the road to spot enemies. For several centuries after the Islamic conquest, it also served as the main Hajj route, when alternative routes were too dangerous. Today, the Kings Highway is Highway 35, a 280 km route in the country of Jordan, and connects Irbid to the coastal town of Aqaba. The route is popular with tourists for the access it provides to Jordan's main attractions.

The Incense Route is more of a network of various routes which were for trading, as the name suggests, bringing incense to the Mediterranean region from Arabia, and especially *Arabia Felix* (modern-day Yemen). The total network is around 2,000 km. Incense refers specifically to frankincense and myrrh which were sought after as signs of wealth, used as perfume, and for use in worship in the ancient world. But over the years, other items were traded along these routes, including spices, pearls, silk, and more. The route was most active for the five hundred years between the 3<sup>rd</sup> century BC to the 2<sup>nd</sup> century AD, under control of the Nabateans. The Roman author Pliny the Elder wrote that the route took 62 days. As with other ancient routes, built infrastructure slowly emerged along the roads to facilitate travel in a harsh land, including wells, canals, pools, forts, and places of worship. Desert cities in the Negev which are part of the Incense Route are preserved as a World Heritage Site. The route is now only a tourism attraction in modern-day Israel.

Trade played a major role for the historic development of Northern Africa. A number of trade routes from the Sahel zone through the Sahara Desert to the Mediterranean Sea can be traced back over millennia. Unfortunately, there are insufficient archaeological remains to discuss the existence of important trade routes in Central and Southern Africa. (Kottke 2019)

Some ancient routes from the Nile to the Red Sea coast in Egypt date back to predynastic times, so they exist longer than 5,000 years. The most important trade route from Egypt to the south is the *Darb el Arba'in* Road, or the 'Road of the 40 Days.' It ran parallel to the Nile,

## Cultural Roads



**Fig. 52:**

**A worker at the Bilma saltworks in Niger.**

© Alessandro Vannucci / Creative Commons BY-NC 2.0

but with a distance of at least 100 km to the west, from Middle Egypt via some oases to the now abandoned city of Kobbei in western Sudan. For a long time, transport through the desert was preferred to transport on the Nile since the desert routes were more reliable than transport on the water. (Morkot 1996) The route was so important that it was even fortified during Roman times.

Another route of note through the Central Sahara was the *Ghadames* Road. It led from Gao and Timbuktu (modern-day Mali) via Ghat and Ghadames to Tripoli on the Mediterranean (all in modern-day Libya). A route located between the Ghadames route and *Darb el-Arba'in* was the Garamantean Road. It also started at the Mediterranean, in Tripoli and Sirte, and led through Murzuq and in between the Hoggar and Tibesti Mountains to the salt mines of Bilma (in modern-day Niger) and from there on to Lake Chad. The main north-south routes were connected with a number of west-east roads to a grid of roads crossing the Sahara.

Western Africa saw the rise and fall of four important empires from around the 7<sup>th</sup> to the 16<sup>th</sup> century. The empires, to a certain extent, followed each other in succession and ruled over similar parts of Africa, mainly located in the modern-day states of Mauretania, Mali, Niger, Nigeria, Senegal, Gambia, and Guinea. The Gao, Ghana, Mali, and Songhai Empires owed their wealth and high

cultural level mainly to gold mining in the mountainous areas of the southern part of Western Africa. Most of the empires' larger cities, like Timbuktu and Gao (in modern-day Mali), were located along the Niger river.

Trade in the region was organized in triangular systems. An important intra-regional trade triangle took place between trade hubs in the Sahel zone, the Saharan oases, and the salt mining areas in the Sahara, in the modern-day states of Niger and Nigeria. Goods were transported on caravan routes. The traders, mainly Tuareg from western Niger, around the Air Mountains, brought sorghum from the Sahel to the oases in the Southern Sahara and collected the salt mined in the desert. The salt was sold in the Sahel zone and traded for sorghum.

Another trading triangle crossed the Sahara from north to south, between Sijilmasa, south of the Atlas ridge in modern-day Morocco, the salt mine in Taghaza, in the north of modern-day Mali, and trade centers like Oualata (in modern-day Mauretania) or Timbuktu, both now at least partly recognized as UNESCO World Heritage sites. The caravans traded gold from Western Africa for a variety of goods in Sijilmasa, which were sold for salt in Taghaza, which was sold for gold again in the Sahel, where farmers needed the salt for their livestock. Another route to Sijilmasa was established more to the west,



**Fig. 53:**

**A street scene from Timbuktu, Mali, 1895.**

© Félix Dubois / Public Domain

## Cultural Roads

between the Senegal river near Kumbi Saleh and Oualata.

A dark side of the ancient trade routes in Northern Africa is the slave industry that partly supported the system. A lot of slave trade from Central Africa took place by ship on the east of the continent, with Zanzibar as the hub of trade to the mainly Arabic slave holders. Some slave trade took place along the trans-Saharan trade routes as well.

All ancient trade routes through the Sahara lost importance during the colonialization of Africa, when the main trading relations were shifted towards the colonial ports on the sea.

People in South America settled down and started agriculture between 5000 BC and 2500 BC in and around present-day Peru, and the emerging societies ultimately developed into major civilizations. The most sophisticated of them was the Inca Empire, which ruled vast parts of the continent. Historical and cultural roads in South America were first and foremost built during the period before the continent was conquered and colonized by Europeans during the 16<sup>th</sup> century.

Argentina, Chile, Bolivia, Peru, Ecuador, and Colombia share a common cultural heritage route: the *Qhapaq Ñan*, or Andean Road System. It was the backbone of the Inca Empire's political and economic power. The whole network of roads, over 23,000 km in length, connected various production, administrative, and ceremonial centers, built during more than 2,000 years of pre-Inca Andean culture. The main axis of the route, also known as the Royal Road, runs along the peaks of the Andes. The part which is still most visible is the stretch from Quito in Ecuador to Mendoza in Argentina. In addition to this backbone along the highest peaks, other roads also ran in a north-south direction along the Pacific coast.

The Inca Empire organized its network on a continent-wide scale. Its roads are an invaluable expression of the organizing and planning spirit of the available labor force and constituted a key instrument in unifying the empire physically and organizationally. The Incas of Cuzco created this unique infrastructure in less than a century, making it functionally coherent and establishing additional centers for commerce, exchange, production, and worship. They adapted production sectors to topography and climate, in each of the various environments along the road. The road also expressed these peoples'



Fig. 54:

A part of the historic *Qhapaq Ñan* road network in Peru.

© Laurent Granier / Creative Commons BY-SA 3.0

harmonious relationship with and their adaptation to the complex Andean natural settings.

Today, the Andean cultures which live in the cultural landscapes of *Qhapaq Ñan* continue to send out a universal message: how human ability may turn one of the harshest geographical environments of the American continent into a place for living. In 2014, *Qhapaq Ñan* was protected as a UNESCO World Heritage Site. (whc.unesco.org 2020; Pointecker 2015)



## 3.4. Engineered Roads and Their Relationship to Landscape Issues

### 3.4.1. Early Designed Roads in Europe (Kristina Skåden, Kurt Luger)

With the exception of Napoleonic times, the map of Europe showed a very fragmented picture for most of the 18<sup>th</sup> and 19<sup>th</sup> centuries, especially in modern-day Germany and Italy. After the Congress of Vienna in 1814/15, there were over 100 sovereign states all over Europe. This means that road administration and the design of roads in Europe were subject to a wide range of different national rules and regulations. At the same time, varying factors such as the financial situation, location, and terrain impacted road building. In many countries, road construction and maintenance were the responsibility of local communities. Labor on the roads was not paid but was part of the annual compulsory labor of the local population, mainly farmers. Road construction, therefore, was seldomly done following a plan or with skilled work forces. Until the 19<sup>th</sup> century, most people rarely travelled more than a day's walk from home, and the settlement pattern in many regions of Europe developed in line with this basic travelling distance. (Lay 1992)

The most important impulse for a more scientific and systematic approach to road construction started in France, with the establishment of the *École nationale des Ponts et Chaussées* in 1747. The school and its graduates had a huge impact on road construction not only in France, but all over Europe. Still, the implementation of the newly developed techniques and the improvement of the road surfaces took place rather slowly. Even though the main radial highways around Paris were eventually completed, much of the 40,000 kilometers of French road network planned in 1738 existed only on paper.

The most important innovation in road construction in England was the building of turnpike roads and their organization in turnpike trusts. John Metcalf (1717–1810), one of the first of England's pioneer road builders and a contemporary of the French engineer Pierre-Marie-Jérôme Trésaguet (1716–1796), was in fact initially a travelling fiddler and horse-dealer. In 1754, he set up a stage-wagon route between Knaresborough and York. In 1765, he secured his first roadbuilding contract and constructed a part of the turnpike between Harrogate and

Boroughbridge. Over the next 37 years, he built more than 180 miles of English turnpike roads and bridges. In his road building philosophy, he emphasized the use of ditches for adequate drainage and special precautions for distributing the load on the road surface by using baled undergrowth as a subbase in marshy areas. (Benson 1989)

By 1750, only a few major roads mostly around London were organized as turnpikes but already by the mid-1770s, the provincial towns and London had been connected by a national network of improved roads. Turnpikes were the direct reason for British roads being transformed from uneven muddy swamps into more useable roads allowing horses to haul larger loads and travel faster. "In 1754, the journey from London to Manchester took four and a half days, but 30 years later just over a day." The scheme worked like this: "First, an entrepreneur applied to Parliament for permission to improve a section of a road. Once Parliament had approved this by passing an act, the road was privatized, typically for a duration of 21 years. The new owners were allowed to set up a turnpike at each end of the section and charge all travelers who passed through it." (Hearfield 2012)

By the creation of turnpikes, road quality improved, and it therefore became cheaper to transport goods on land. From 1751 to 1772, a 'turnpike mania' developed, leading to the establishment of 389 turnpike trusts, more than during the 40 years before or the 60 years after. By the mid-1830s – at the beginning of the railway age – turnpike trusts controlled more than 20,000 miles of main roads, collecting in total over £ 500,000 in tolls.

Many new *chaussees* were built in Northern Germany, in the various parts of the Kingdom of Prussia, and in Southern Denmark. Especially fine roads were built around the Prussian court in Potsdam, referred to as *Lust-Chaussee* (pleasure chaussee), different to a *ohne Pracht anzulegende Chaussee* (a chaussee without splendor) (Lüder 1779). The new roads showed clear advantages: Formerly, a coach took 16 hours to travel from Altona (a part of the City of Hamburg since 1938) to Kiel

in present-day Northern Germany (formerly a part of Denmark). A ride on the somewhat longer newly built *Altona-Kiel-Chaussee*, opened in 1832, only took 9 hours. A messenger on horseback managed to travel in six hours, and horse carriages could carry a three times heavier load than before.

On January 19<sup>th</sup>, 1779, the German poet, author, humanist, and natural scientist Johann Wolfgang Goethe (1749–1832) was appointed as ‘Director of the Local Country Road Construction’ by the Duke of Sachsen-Weimar-Eisenach. From 1782, Goethe focused on the creation of new chaussees. Still, it took years to create a road network connecting all existing and new road sections. The only continuous, all year open west-east connection between the trade centers of Frankfurt am Main and Leipzig ran past Weimar. The north-south connection along the old ‘copper road’ did not affect the provincial residence. According to an article by Karl-Daniel Küster in the *Encyclopaedie* (1774), the best roads in Europe were actually located in the Austro-Hungarian Empire: the road from Vienna to Trieste, from Vienna to Linz, from Vienna to Prague, and from Vienna to Bratislava and further on into Hungary. (Preisendörfer 2015)

During the second half of the 18<sup>th</sup> century, graduates from the *École nationale des Ponts et Chaussées* worked all over Europe. In 1761, the French road engineer Jean Rodolphe François Marmillod (1720-1786) was appointed chief inspector in Zealand in Denmark. He undertook a large-scale development of the road network in Denmark and introduced the French principles of road construction without any major difficulties. Great emphasis was put on improved foundations of the roads. The situation was quite different in Norway. In a country with mountains and valleys, applying the French principle of chaussee construction became a challenge. The straight roads had to climb steep gradients, and high stonewalls were required to support the roads. The roads were secured with stave stones, which was both a way to prevent descents as well as a decorative element. (Statens vegvesen 2002) One very good example of a French-style road in Norway is the *Krokkleiva* road next to the Tyri-fjorden lake, about 50 km northwest from Oslo, finished around 1805. The road is constructed as a straight line, cutting through the landscape, without a lot of regard for the steepness of the terrain. Throughout the 19<sup>th</sup> cen-



Fig. 55:

‘A Hiker in the Krokkleiva Gorge on His Way to Oslo’ (Eduard von Buchan, 1833).

© Public Domain

tury, Krokkleiva became famous throughout Europe for its beautiful views and its dramatic descent. It attracted painters, poets, and tourists alike and has been designated as the first Norwegian tourist road. (Gjestvik 2011)

The first planned highways in the Netherlands were built at the beginning of the 19<sup>th</sup> century, when Napoleon had annexed the country. They were part of the 229 paved *Routes Impériales* (Imperial Roads) from Paris to the border of Napoleon’s empire, which was the first network where roads were numbered. Amsterdam was connected to Paris by Route Impériale No. 2. The motorway from Amsterdam to Utrecht still uses that route. After the end of Napoleon’s empire, the Netherlands continued the project, but with Amsterdam at the center. By 1850, 42 *Rijksstraatwegen* (Imperial Paved Roads) were constructed.

Already at the middle of the 18<sup>th</sup> century, the French

## Engineered Roads and Their Relationship to Landscape Issues

writer Denis Diderot was impressed about the beautiful road from the imperial city of Den Haag to Scheveningen on the North Sea coast. It ran right through the dunes. It was an avenue-style road, with a central lane for carriages and two promenades to the side, lined by wonderfully

cultivated trees and equipped with benches that invited to sit down and enjoy the scenery. Others also expressed their enthusiasm about this wonderful road and enjoyed travelling to the coast on it. (Corbin 1994)

### 3.4.2. Early Designed Roads in America (Sally Pearce)

Despite the picturesque landscape of the United States, unlike in Europe, the sensibilities of landscapes were not considered in the design of early roads. Carefully planned and constructed routes were not built to honor and take in the panoramic views of the countryside. In most cases, roads were built to meet basic transportation needs, partly due to the limited funds and the fact that road building was an ambitious undertaking.

Some of the earliest roads in the United States evolved from following animal trails. Early Native American civilizations likely used animal trails to travel from villages to hunting grounds and sacred ceremonial sites. During the middle and late 800s through the 1150s, Ancient Puebloans in the area around Chaco Canyon in New Mexico developed a sophisticated regional system of roads covering over 160 km (100 miles) and linking 75 communities and more than 150 complexes throughout

the region. These roads were generally 9 meters (30 feet) wide with rock edges, masonry walls, or boulders lining the roads. Following the contours of the land, these ancient roads were likely built with respect for the land and environment. (NPS 2015)

In Hawaii, there were highway construction programs as early as the 16<sup>th</sup> century. One early paved road was the *Alaloa*, built in 1516 on the island of Maui. This 222 km (138 mile) road was paved with one of several available materials including lava rock, rounded stone, or coral and was 1.2 to 1.8 meters wide (four to six feet). The *Alaloa* was used primarily for military, tax collection, and communication purposes. (Marriott 2004)

During colonial times, overland transportation was not easy. Travel was dirty, dusty, extremely long, and generally unpleasant. In truth, transportation on water, if it was available, was more comfortable and reliable. There

Fig. 56:

Pueblo Bonito, Chaco  
Canyon National Park.

© Sally Pearce



## Engineered Roads and Their Relationship to Landscape Issues

was no formal construction of early roads, and the few roads that existed were not maintained. Travelers followed native paths that may have been only 0.6 meters (2 feet) wide in places. These paths eventually became parts of post roads, which were used by post riders to deliver mail to the early colonists.

One of the earliest roads, The Boston Post Road, was first used in 1673. The road served as a postal delivery route between New York City and Boston, Massachusetts. There were three different alignments including the Upper Post Road, Lower Post Road, and Middle Post Road. “Parts of these postal roads were eventually incorporated into more substantial trails and pathways, ultimately leading to portions of several U.S. and interstate routes.” (Federal Highway Administration 2017)

“In 1753, then-Deputy Postmaster Benjamin Franklin traveled the Boston Post Road to standardize postal rates based on distance.” Stone markers were placed at mile points along the route, a few of which still remain today. “Starting in 1783, the Boston Post Road carried the United States’ first long-distance stagecoach service from New York to Boston, corresponding with improvements in the road’s surface that resulted in a faster, safer, and more efficient transportation system. The success of the stagecoach service along this route convinced Congress to send mail by stagecoach instead of lone rider.” (www.fhwa.dot.gov 2020)

After the American Revolution, in the late 18<sup>th</sup> century, overland transportation consisted of toll roads and turnpikes. Many were authorized by state legislatures. In 1785, a route between Alexandria, Virginia and the Blue Mountains to the south was established. It was soon followed by the Philadelphia to Lancaster turnpike in Pennsylvania in 1793. This turnpike saw a modest profit in its first five years. It was called an ‘artificial road’ because the roadbed was built with either wood, stone, gravel, or other hard surfaces, compacted to form a solid foundation and an even surface. (Marriott 2011)

The National Road was the first federally funded highway, authorized in 1806 and constructed from Maryland to Virginia in 1818 and on to Illinois by 1850. George Washington envisioned this ‘national road’ as a way to open up the western frontier of the United States to commerce. The first segment from Cumberland, Maryland to Wheeling, Virginia (now West Virginia) was built using the state-of-the-art process developed by France’s Pierre-Marie-Jérôme Trésaguet, which consisted of laying a base layer of stone, covered with a thin layer of smaller stones. (Marriott 2011)

The origins of modern pleasure driving date to carriage driving in the 1800s, beginning with the carriage drives in Central Park and the roads around George Washington’s estate, Mount Vernon in Virginia. Here, the picturesque landscape was the prominent feature, the

**Fig. 57:**

**An original milepost marker in Ohio.**

© Angel Crance



## Engineered Roads and Their Relationship to Landscape Issues

---

roads showcasing the natural beauty of the estate. Other early examples of roads designed for leisure and enjoyment in the United States were actually found in cemeteries. These bucolic retreats were the perfect locations for leisurely Sunday afternoon drives.

Similar patterns were happening in the Western United States. Westward expansion in the 19<sup>th</sup> century began soon after the Louisiana Purchase in 1803. President Thomas Jefferson was anxious to know more about the west and sent military explorers including Lewis and Clark and Zebulon Pike out to explore the mountains and find transportation routes to the west coast.

Soon, settlers were following in large wagon trains, leaving behind 'roads' which were nothing more than a pair of ruts cut deep into the earth. In 1820, the Santa Fe Trail was established to haul freight between Kansas City, Missouri and Santa Fe, New Mexico. The Oregon Trail followed in 1830, connecting the Missouri River to valleys in Oregon along routes first traveled by mountain men and fur traders. These trails tended to follow water sources and veered hundreds of miles to avoid having to climb over the Rocky Mountains.

The 1850s Gold Rush led to the establishment of stagecoach routes through the Rocky Mountains to reach

the mining camps. Private wagon transport companies constructed their own toll roads to carry supplies to the camps and bring the ore out for transportation to mills. Private entrepreneur Otto Mears built 383 miles of toll roads in western Colorado in the 1870s and 1880s. He is best known for the route over 3,358 m (11,018 ft) Red Mountain Pass which is now part of the San Juan Skyway, a designated All-American Road. (Clarion 2013)

In the 1870s, the expansion of railroads to the west ended the dominance of stagecoach lines, although they continued to be used to access rural and remote areas. The Union Pacific Railroad completed the transcontinental route in 1869 at Promontory Point, Utah. By the 1890s, toll roads disappeared as local communities started building their own roads, funded by poll taxes. (Clarion 2013)

After the Civil War, the prominence of the railroad system in the United States led to the idea that roads for foot and horse travel were no longer necessary. It would not be until the early 20<sup>th</sup> century, after the invention of the automobile and the start of the Good Roads Movement, that roads would take on a greater importance both for commerce and leisure travel.

### 3.4.3. Sub-Urban Carriage Parkways in the United States from 1860 to 1920 (Dan Moore)

The 19<sup>th</sup> century saw a dramatic shift in the U.S. population from agrarian to industrial. In 1790, 90 % of Americans lived in the countryside and worked on farms. Between 1870 and 1920, eleven million people migrated from rural to urban areas, so by 1920, more Americans lived in towns and cities than in rural areas. (Kennedy/Cohen 2013) Initially, this rapid growth of cities led to huge social problems such as poverty, violence, and disease. Industrialization allowed for the increased wealth accumulation of a very few who benefitted from government land giveaways for railroads and lax labor laws for manufacturers. These tycoons were given the term 'Robber Baron' for their insatiable appetite for accumulating wealth by any means necessary. While most residents of American cities during this time worked for starvation wages in factories or sweatshops and lived in crowded

barely inhabitable housing, industrialization also required a workforce of educated bookkeepers, managers, and secretaries. This burgeoning middle class had some extra income to spend on consumer goods as well as leisure activities.

This modest increase in wealth for the middle class, combined with improvements in transportation and road building, opened up settlements just outside of cities to development. These areas are referred to as suburbs. In general, suburbs have lower population densities than the inner cities, and most residents commute to their workplace in city centers. Initially, commuting was made possible due to the construction of street cars and commuter rail. But as the automobile became more affordable, and therefore more popular, suburban growth increased dramatically.

The rise of suburbs coincided with the park movement of the late 1800s. Influential planners and designers, such as Frederick Law Olmsted and his sons, were contracted to not only design dramatically landscaped parks, but also the connectors to and from the parks and the cities. The concept of *chaussées* for horse carriages was taken up by other planners of the 19<sup>th</sup> century landscape gardens in and around New York City. Olmsted Sr. coined the phrase ‘park way’ in an early proposal to the Brooklyn Park Commission. Olmsted and his partner at the time, Calvert Vaux, created so-called ‘parkways’ in their plans for Prospect Park in Brooklyn. They had adopted the concept from French avenues, like nowadays *Avenue Foch* (formerly *Avenue de l’Impératrice*), which connected the *Place de l’Étoile* (at Arc de Triomphe, now *Place Charles de Gaulle*) with the *Bois de Boulogne*. It consisted of a carriageway in the middle, accompanied by a pedestrian way on one side and a bridle path on the other. Additional side roads gave access to the villas that lined the avenue. The strips between the single lanes were equipped with trees. Today, Avenue Foch is, with its 120 meters, still the widest road in Europe.

Olmsted personally informed himself about the avenue during a visit in Paris. Initially, he planned four parkways from Prospect Park out to important recreational areas around Brooklyn. Two of them were really built, the Ocean Parkway to Coney Island and the Eastern Parkway to Crown Heights. The concept of the parkway was similar

to the avenue. It was similarly wide and consisted of five different lanes – a carriageway in the middle, reserved for recreational traffic, a pathway for foot passengers on both sides of the carriageway, and two service roads giving access to the residential lots along the parkway. The Eastern Parkway was finished in 1874.

In a way, the concept wasn’t different to other important avenues of the 19<sup>th</sup> century, like the Ringstraße in Vienna. This road constructed at the former site of the walls of the city of Vienna followed the same scheme (traffic road in the middle, pathways on both sides and service roads next to the houses along the road).

The two first Brooklyn parkways were very well received by the citizens of the city. Until 1925, the City of Brooklyn had built additional 38 miles of parkways. Reserving the central lane of the parkway for recreational carriages enabled them to go at a higher speed, so the carriage users were transported rather quickly into the recreational areas and didn’t spend more than half a day going out and back, thus leaving more time for recreational purposes at the carriage’s destinations.

In Olmsted’s vision, a parkway would be a sort of mini park that provides a pleasant route to a designated park. Olmsted’s parkways contained broad landscaped medians that separated each mode of travel – carriages, pedestrians, bicycles, equestrians.

With the advent and popularity of the automobile in the early 20<sup>th</sup> century, the meaning of parkway was

**Fig. 58:**

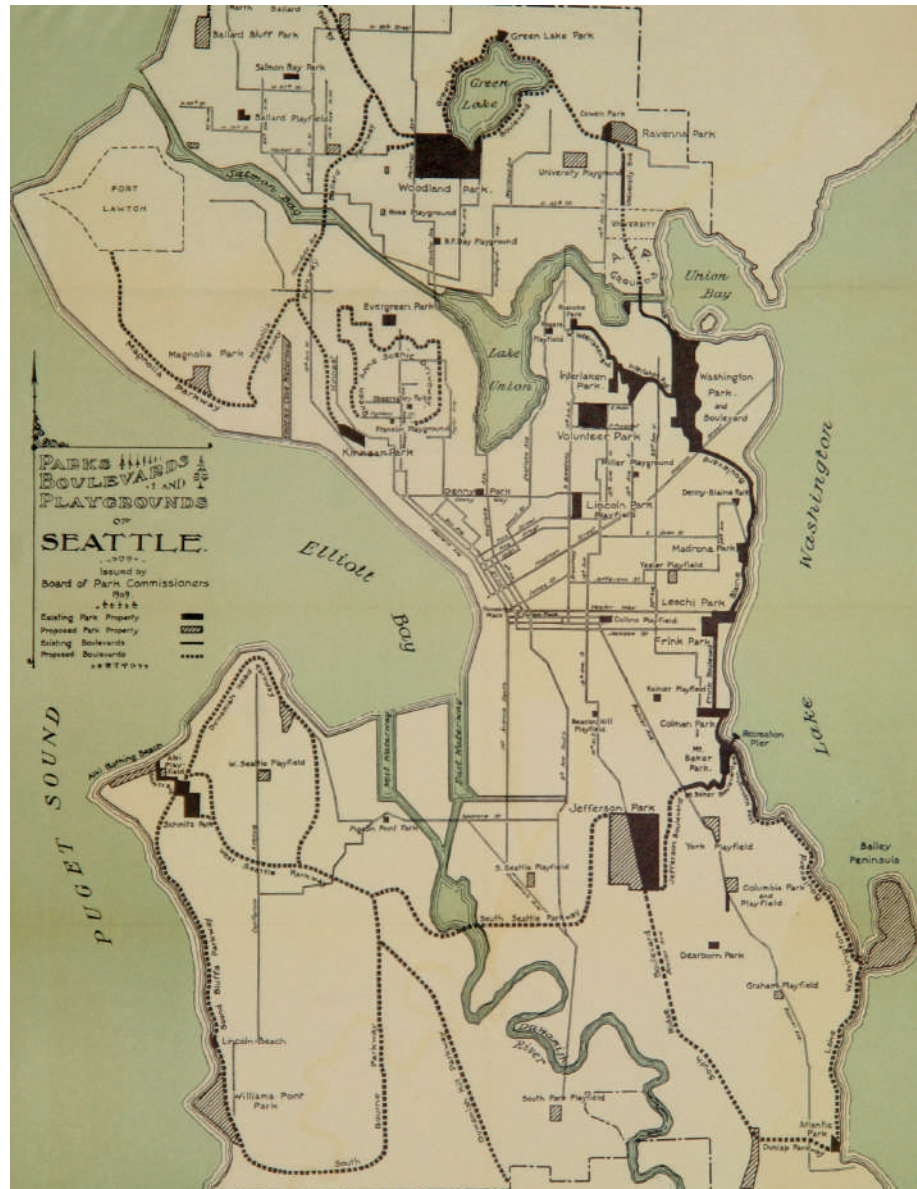
**Stone bridge over  
Beargrass Creek in  
Cherokee Park, Louis-  
ville, Kentucky.**

© Diane Deaton /  
Creative Commons  
BY 2.0



Fig. 59:  
Seattle parks, boulevards, and playgrounds map from 1909.

© Seattle Municipal Archive / Creative Commons BY 2.0



expanded to be a highway with limited access for recreational, versus commercial, vehicles. Similar to parkways of the 19<sup>th</sup> century, these parkways were designed to showcase the scenic beauty and included decorative landscaping. In addition to being routes for transportation, parkways became attractions to visitors as well seeing out a place to recreate through driving ('Sunday drive').

One of the most extensive Olmsted designed parkway systems is in Louisville, Kentucky, where his firm designed six parkways to connect three flagship parks. This was the last park system of his career and is emblematic

of how his park designs ended up shaping the look and feel of the city it was designed for. These parkways contained the characteristic Olmsted wide rights-of-way and the spatial organization of the trees, sidewalks and drives that flank them. Following Olmsted's retirement, Olmsted's sons, John and Frederick Jr., were contracted to complete a total of 18 parks and six parkways in Louisville.

In addition to Louisville, the Olmsted Brothers went on to design hundreds of networks of parks connected by parkways. One of the most intact series of Olm-

sted Brothers park systems is the Seattle Parks system in Washington State. In 1902 the Seattle Board of Park Commissioners voted to invest in creating a more elaborate park system. To achieve this goal, they reached out to the country's most renowned landscape architect, Frederick Law Olmsted. Olmsted would not only provide the commissioners with a world-class park plan, he would also add an element of distinction to the young city – something highly sought after by the city leaders at the time.

Frederick Law Olmsted was nearing the end of his life at this point and instead the firm sent John Charles Olmsted, the adopted son of Frederick Law Olmsted, the senior partner in the firm. John Charles Olmsted already had a distinguished career working with his father for over 25 years and was the perfect fit for Seattle. The city was flush with money due to many successful prospectors in the Klondike Gold Rush embarking from and returning to Seattle, which matched the Olmsted tendency to think big and cover lots of ground within a city. The Seattle City Council approved the Olmsted Brothers' 'A

Comprehensive System of Parks and Parkways' in 1903. (seattleolmsted.org 2020) Just over 50 years since Seattle's occupation by white settlers, it is incredible to imagine the foresight these early civic leaders had to set aside and dedicate so much land to a park system. They recognized the rapidly changing real estate market and realized without swift action they may never have the opportunity again to design the shape and feel of the city with these park values in place.

The Olmsted plan for Seattle included a 25-mile parkway connecting parks, the University of Washington campus, world-class vistas, and lakeshore drives. The Olmsted Brothers firm created designs for all the parks the city currently owned and created park plans for new land it had recently acquired – 15 parks in total. Despite being almost 80 years since the last project was completed by the Olmsted Brothers firm, the modern legacy is that so much land was protected in these early years of Seattle, and the holistic design connecting these parks was so well thought out that most of these parks and parkways are still around today with little change. (Williams 1999)

#### 3.4.4. Motor Roads in the United States from 1900 to 1940 (Sally Pearce)

At the turn of the century, in the United States, roads were no longer being used just for economic and military purposes. The advent of increased bicycle use and the start of the automobile era, along with an awareness of conservation and the development of the first national parks led to a rise in the number of every-day Americans taking to the road to explore.

Scenic driving gained wider popularity with the automobile and the construction of early 1900's automobile routes like the Bronx River Parkway, The Columbia River Highway and the Going-to-the-Sun Road at Glacier National Park. California, Maine, Minnesota, New York, Vermont, Virginia, Washington, Wisconsin, and others were among the first states to designate scenic routes or highways. Developed by automobile elite, scenic and tourist roads became the source of civic and state pride and provided the foundation of the tourism industry.

In the early years of auto touring in the United States, there was no such thing as a formal road system. In fact,

no state or county had completed a highway system. Residents in rural areas did not share in the economic and social benefits of paved streets and rail systems enjoyed by urban dwellers. Outside major cities, roads were, for the most part, dirt or gravel. In the summers, travel was dusty, in the winter and rainy months, the roads were basically impassable due to mud.

Oddly enough, it would be bicyclists who would lead the charge to improve roads for automobiles in the U.S. In the early 1890s, the League of American Wheelman, a Rhode Island bicycle organization founded in 1880, began advocating for the development of a national network of hard surfaced roads, and launched the Good Roads Movement. In 1892, the organization went national and began publishing 'Good Roads Magazine' to promote the creation of local good road associations that would lobby the U.S. Congress for road improvements. Farmers, journalists, politicians, and service organizations such as the American Automobile Association, which was organized



## Engineered Roads and Their Relationship to Landscape Issues

in 1902, also emerged as advocates for good roads. (Marriott 2004)

The state of New Jersey became the first state in the United States to pass a law calling for road building projects. Soon after, in 1893, the Office of Roads Inquiry was established to initiate a review of existing highway systems, including management and road building technologies. In 1905, the Office of Roads Inquiry was reorganized as the Office of Public Roads with funding from Congress. But the funding did not include actually building roads, so the office mostly issued pamphlets on how to build good roads.

Automobile ownership was still a rich people's game but by 1903 interest was building for cross country road projects. The first auto venture from San Francisco to New York City was driven by Horatio Nelson Jackson and his partner Sewell K. Crocker. Jackson did not believe that automobiles were a passing recreational fad. He agreed to a \$ 50 bet that a four-wheeled auto could make it across the country. Despite no driving experience and no maps to follow, the pair made it to New York 63 days later. (Marriott 2004)

The same year, Frelan Stanley, the inventor of the Stanley Steamer, believed the Rocky Mountains should be the highlight of auto owners' cross country travels. He built the Stanley Hotel in 1909 and turned Estes Park into the gateway to Rocky Mountain National Park. (Clarion 2013)

Henry Ford made the automobile available to a mass

audience by building and selling affordable cars. The 1908 Model T sold for \$ 850, although the windshield, top, and headlamps were extra. The car was designed with high axles and wide tires to travel the rutted roads cut deep by farm wagons. In 1914, the Ford Company developed the chassis moving assembly line which led to even higher mass production and increasingly cheaper cars. Still, it took a few years before the impact of the Model T opened the nation's roads to all classes of drivers. After initial distrust of the auto as a rich-people's toy, rural Americans enthusiastically took the wheel once cars became more affordable. (Clarion 2013)

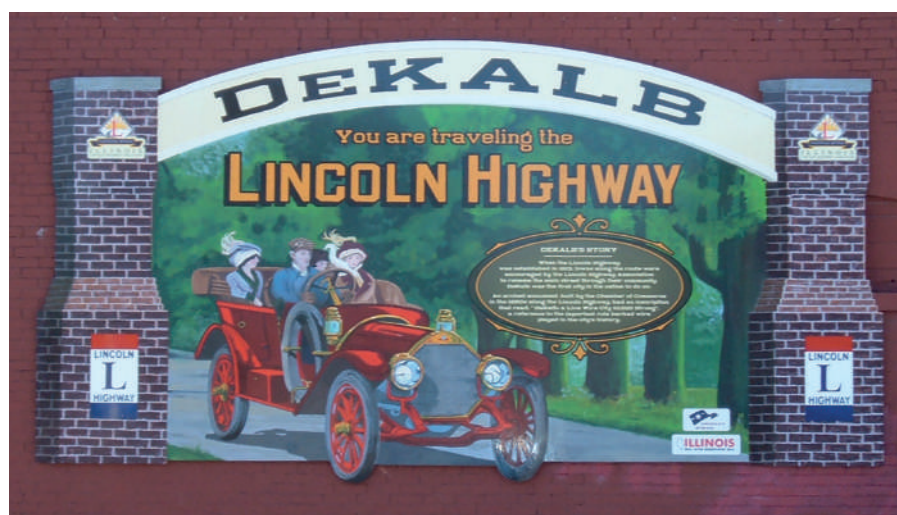
In 1912, various groups of motorists, auto industry executives, and community boosters began to envision the construction of a transcontinental highway. The Lincoln Highway was first proposed in 1912 by Carl G. Fisher, who built the Indianapolis Motor Speedway. The coast to coast route was proposed to run from Times Square in New York City to Lincoln Park in San Francisco, following the most direct route possible. The first segment in New Jersey was completed and dedicated at the end of 1913. Although there were numerous realignments and improvements to the route, the first officially recorded mileage was 5,454 km (3,389 miles). The Lincoln Highway Association was established in 1913 to raise the funds necessary to build and promote the road. Donors included Presidents Theodore Roosevelt and Woodrow Wilson, and Thomas Edison.

Soon, other cross-country roads were being pro-

Fig. 60:

Interpretive mural on the Lincoln Highway.

© Illinois Lincoln Highway Coalition / Public Domain



posed. The National Old Trails Road Association promoted a paved road between Washington D.C. and Los Angeles also in 1913, linking the Old National Road and the Santa Fe Trail. The National Road was built between 1811 and 1834 to reach the western settlements of the United States. It was the first federally funded road in U.S. history. “In 1912, the road became part of the National Old Trails Road, and its popularity returned in the 1920s with the automobile.” In 1926, the road became part of the coast-to-coast highway from Atlantic City to San Francisco. ([www.fhwa.dot.gov](http://www.fhwa.dot.gov) 2020)

By 1916, the Lincoln Highway and the National Old Trails Highway were joined by routes like the National Roosevelt Middle Trail and Victory Highway as transcontinental highways, all marked by distinctive colored bands painted on telephone poles and fence posts. Named highways would remain until 1925 when the numbered highway system was created. (Clarion 2013)

By the mid-1910s, the influence of auto clubs in constructing and maintaining good roads had started to decline. But the federal government took an increased role in construction. In 1916, the U.S. Congress considered a number of measures related to federal funding toward building a national highway system. Passage of the Federal Highway Act of 1916 required the U.S. government to provide federal funds for highway construction that matched funds collected by each state’s highway commission. The legislation also asked each state to select seven percent of their total road mileage and identify which roads would be eligible for federal funds. Each state designated their most important roads as either ‘primary’ or interstate and labeled the remainder ‘secondary.’ One additional element of the 1916 Federal Act required every state’s highway commission to meet certain minimum organizational requirements in order to receive and distribute aid. (Clarion 2013)

By the 1920s, early regional planners saw parkways as an attractive, viable solution to growing populations, rising ownership of cars, and suburbanization. Innovations created by parkways, park roads, and scenic drives provided comfortable, sustainable, and pleasant transportation. But they were still a bit of a novelty. People continued to rely on streetcar, interurban lines, and railroads for their daily transportation needs.

The 1920s were a ‘golden age’ for road building. In

1922 alone, federal-aid projects totaling 16,500 km were completed at a cost of \$ 189 million, three times as much roadway as had been improved since the start of the federal-aid highway program in 1916. The projects usually involved providing graded earth, sand-clay, or gravel surfaces.

With post World War I affluence and automobile ownership increasing – in 1920 there were 9.5 million cars and trucks registered nationally – metro parkways and scenic drives transitioned from leisurely weekend pleasure drives to scenic corridors leading to new suburban homes. Suburban parkways also became good commuter routes because they provided limited access, separated grade intersections, and good engineering. These modern parkways were safer, better designed roads, built to handle increased traffic with multiple lanes that allowed for higher speeds. And yet, in most cases, the designers remained loyal to the scenic and conservation principles of the previous era. (Marriott 2011)

In New York City, the late 1920s Regional Plan endorsed a system of major and minor routes, separating traffic according to function. Traffic would flow on roads categorized as express highways, boulevards, and parkways. Parkways were considered the most desirable because they enhanced adjacent property values and led to higher tax revenue than either boulevards or highways. As such, parkways became the model highway design for modern auto travel. (Marriott 2011)

In the 1930s, the federal-aid highway program felt the impact of the Great Depression. Federal funds were diverted from projects that served transportation needs to projects that could provide work for the unemployed. At the same time, calls were increasingly heard, in and out of Congress, for transcontinental superhighways – often coupled with calls for toll financing – to accommodate the powerful new automobiles of the day. During the Great Depression of the 1930s, many states went on a road-building binge funded by a succession of federal back-to-work programs for the country’s unemployed. The years between the stock market crash of 1929 and the beginning of World War II were a time of standardization and modernization for the nation’s highways.

Automobile ownership and the rapidly expanding infrastructure were defining the American landscape in the 1930s. Cars and trucks were fully integrated into Ameri-



**Fig. 61: Historic Route 66 near Peach Springs, Arizona**

© Sally Pearce

can life as the novelty of ownership faded. As part of the National Recovery Act of 1934, the Federal Bureau of Public Roads required each state to expend not less than 1 % of the total federal aid apportionment for appropriate roadside landscaping. (Clarion 2013)

Throughout the 1930s, federal work programs improved roads across the United States, provided work to thousands of citizens desperate for a job and left a legacy that benefits today's drivers. President Franklin D. Roosevelt implemented a number of programs collectively named the New Deal. One of the programs, the Public Works Administration (PWA), was a large-scale public works construction agency. By 1934, 26,280 km (16,330 miles) of new roadway projects were completed. By the close of 1939, there were hundreds of thousands of enrollees building highways and streets across the country.

One of the most famous roads in the United States was completed as part of the 1930s New Deal. "Stretching from Chicago, Illinois to Los Angeles, California,

Route 66, commonly known as 'The Mother Road' and 'The Main Street of America,' was one of the country's major thoroughfares for nearly a half century." During the Dust Bowl era of the 1930s, some years of droughts in the agricultural areas of the Midwest, it was the primary route for the migration of farm workers from the Midwest to California. Due to the efforts of the Route 66 Association, the road was the first highway to be completely paved in 1938. Route 66 would become one of the most famous roads in America, popularized in American culture through books, music, movies, and television. "The construction of the Interstate Highway System resulted in the eventual decline of Route 66, and many of the iconic roadside attractions along with the road itself soon disappeared." Portions of the original road still remain in several states including Arizona, New Mexico, Illinois, and Missouri and have now been designated as National Scenic Byways. ([www.fhwa.dot.gov](http://www.fhwa.dot.gov) 2020)

### 3.4.5. The Italian *Autostrade* (Michael Schimek)

After the unification of Italy in 1861, the country only slowly continued towards industrialization. Similar to elsewhere in Europe, efforts to create new augmented traffic infrastructure focused on the construction of a railway system. Industrial centers started to develop at the end of the 19<sup>th</sup> and the beginning of the 20<sup>th</sup> century mostly in northern Italy, in the provinces of Piedmont, Lombardy, and Venetia. Among the newly established companies were the famous Italian car producers, like Fiat, Alfa Romeo, and Lancia. Still, private motorization was among the lowest in Central and Southern Europe, only in the Austro-Hungarian empire and its successor states motorization was even lower than in Italy. (Kreuzer 2010)

When Benito Mussolini and the Italian fascists rose to power in 1922, eradicating democracy by 1926, a quick industrialization and modernization of Italy was a pillar of the new government's focus. The old-fashioned road network facilitating a mix of carriages, horse carts, and new automobiles, was seen as an obstacle to this goal. The Italian state had little resources left to support the creation of an augmented high-capacity road network, both in money and centralized organization, since most

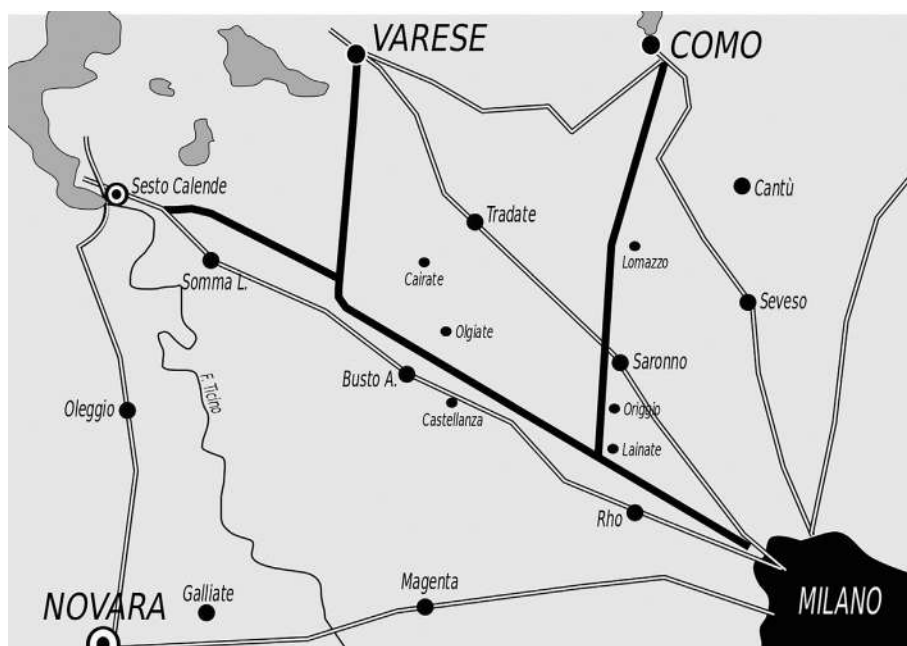
competencies for road construction still were taken care of by regional and local authorities in the formerly independent parts of the unified nation state. The first all-Italian authority for road construction, the *Azienda Autonoma Statale per la Strada*, was established as late as 1928. (Moraglio 2008)

Private initiatives for constructing high-capacity roads with primary car use were therefore highly welcome in Italy. The Milanese entrepreneur and engineer Piero Puricelli, who owned a construction company and some quarries and had just finished the construction of the Monza automobile racetrack, found support from Mussolini immediately after he rose to power. Puricelli was granted the right to construct a highway from Milan to three of the North Italian lakes, to Lake Como, Lake Varese, and Lake Maggiore (the *autostrada Milano-Laghi*). Works on the new road began in 1922 and were finished by 1924 or 1925. The road was first built from Milan to Varese and then got side branches to Como and Sesto Calende on Lake Maggiore. In total, the three branches were approximately 85 km long (Moraglio 2008; Albalade 2014: 84 km; Kreuzer 2010: 86 km). The road was restricted to motorized vehicles which enjoyed the modern

Fig. 62:

A map of the original location of the *autostrada Milano-Laghi*.

© Cigillo83 / Creative Commons BY-SA 3.0



## Engineered Roads and Their Relationship to Landscape Issues

concrete pavement, although it had no separated lanes and was not totally free of crossings.

Puricelli was granted the right to construct and maintain the new road and collect road toll as a revenue. The state supported him by guaranteeing the bonds that were issued and by providing an annual, reimbursable subsidy. (Moraglio 2008) Puricelli estimated that 2,000 cars per day would use his new road. He expected that many of the city dwellers from Milan would use the road to quickly get to their favorite holiday areas, and he believed that extending the road to the nearby Swiss border would attract tourists from the other side of the border into Italy. (Kreuzer 2010) In the end his project was rather ambitious, given that the total number of cars, trucks, and busses on Italian roads amounted only to 117,500 by 1925, even if about half of them were owned by people from Lombardy. (Moraglio 2008)

Puricelli proposed to create a network of *autostrade* all over Italy and continued with similar projects, either constructed by his own company or other companies with a close connection to his own. By 1933, seven more roads had been built: Milan-Bergamo (1927), Rome-Ostia (1928) (Albalate 2014), Naples-Pompei (1929), Bergamo-Brescia (1931), Turin-Milan (1932), Florence-Viareggio (1932), and Padova-Mestre (1933). (Kreuzer 2010) Except for the road from Rome to Ostia, which was controlled by the City Council of Rome, all roads were toll roads. (Albalate 2014) A different concept was applied at the so-called *autocamionale* from Genova to Serravalle, owned by the Azienda Autonoma Statale per la Strada. It was a public road with priority for truck transport and facilitated a cargo connection from the seaport of Genova to the industrial centers of Milan and Turin, crossing the Apennine ridge separating the Northern Italian plains from the sea. The section from Serravalle to the north was only built after World War II. In order to alleviate the steep gradients from the port to the hills in Genova, special circular ramps were applied. (Kreuzer 2010)

The primary economic success of the privately owned and maintained roads did not turn out as expected. Traffic was insufficient to cover the costs of construction and maintenance. (Albaete 2014; Kreuzer 2010) Many of the companies set up to run the motorways declared bankruptcy. In the end, it was not the ultimate goal of Puricelli and his associates to run companies providing road



Fig. 63:

Toll gate zone of the autostrada Milano-Laghi in 1929.

© Gran Sport / Public Domain

traffic services. They saw the construction of the roads as an investment into their primary businesses, such as construction, car production, rubber and cement manufacturing, and the production of fuel, tar, and bitumen, and the quickly developing tourism industry of Italy. (Moraglio 2008)

At the beginning of the 1930s, the Italian state revoked the private concessions due to the low profitability of the motorway maintenance companies. Except for the road from Milan to Turin, the Italian state took control of road maintenance itself. This also marked the end the construction of pre-World War II motorways in Italy. Still, the 510 km of autostrade constructed in less than 15 years made a huge impression on the international road planning community. (Kreuzer 2010) Puricelli was a talented promoter of his business, not only in front of Mussolini, but also at an international level, most notably at the 7<sup>th</sup> International Congress on Road Construction held in Munich in 1934. (Albaete 2014) This coincided with Mussolini's interest in presenting Italy to the world as a modern and innovative country, shaped by his leadership at a remarkable speed, despite Italy's national road network remained small and incoherent and was more the result of private entrepreneurship than state intervention. (Moraglio 2008)

The Italian autostrade were different to other countries, as they never were considered as something that

needed careful integration into the landscape. This is surprising given the fact that Italy had been considered an ideal of the sublime and beautiful over the centuries and admired for its careful integration of landscape and urbanity. In the 20<sup>th</sup> century, these values were not considered as important as the need for quickly catching up with more industrialized and modern countries. (Moraglio 2008) Radical cultural movements like Filippo Marinetti's futurism, which glorified speed, war, and disruption, had a major influence on the philosophy of fascism. As such it directly influenced the politics of Mussolini's Italy and contended with more conservative art forms all through the 1920s and 1930s, having a greater influence on society than many other forms of modernist art. (Apollonio 1973)

The little money available for the new roads, the lack of public control over the construction of the autostrade, and the private economic interests led to a disregard for the impact on the landscapes these roads passed through. Planners and the public were aware of the special quality of the Italian landscape but simply put a higher priority on modernization and economic issues. In addition, the

road planners of the 1920s and 1930s were used to the successful components of railway construction during the 19<sup>th</sup> century. As such, they preferred long straight sections with wide curves in between that followed the arc of a circle, not using clothoid segments as a smoother transition between the straights and the circles, which would have made driving more pleasurable and less dangerous.

In the end, constructing autostrade focused on making transport as cost-efficient as possible. Until today, drivers pay a road toll on most Italian motorways which is calculated by the kilometers driven. Curved lines and a road better adapted to the landscape would mean longer distances, more fuel consumption, and slower speeds on steeper gradients for cars and trucks alike. Therefore, Italian motorways were rather considered a tool for the modernization of the country. Careful integration of the roads into the Italian landscape or upholding old-fashioned values were not given priority as they were not considered economically viable during most of the 20<sup>th</sup> century. (Moraglio 2008)

#### 3.4.6. The German *Reichsautobahn* (Michael Schimek)

In the 1930s, the idea of special high-speed roads for motorized traffic was nothing new. The Italian engineer Giuseppe Spera had proposed the idea of an *autovia*, a road for the exclusive use of cars, from Rome to Naples already in 1906. It is likely that Spera had been inspired by an article in a specialized magazine of the time about the plans for a car road from London to Brighton, though the first part of a contemporary-style motorway in the United Kingdom was opened as late as 1959. (Merriman 2008) In the United States, the concept of the parkway had already been well developed during the 1910s and the 1920s, and the first freeways were about to be built. And finally, Italy had already completed his first parts of a countrywide motorway network with the early autostrade. (Kreuzer 2010)

Because of the aftermath of World War I, Germany had entered the era of motorization with delay. In 1929, the U.S. car producer General Motors had commissioned

a study into the potential of the German car market, concluding that Germany was trailing the development of motorization in the United States by 18 years. In 1932, the Germans owned 8 cars per 1,000 people, at the same time, the ratio in the United States was at 183 cars per 1,000 people. Speedy cars were almost only circulating on the racetracks built in Germany at the beginning of the 20<sup>th</sup> century, like the AVUS in Berlin and the Nürburgring. Some people in interwar Germany interpreted the situation as a clear statement of the lack of modernization of the country. (Zeller 2002)

Ideas to create a new augmented network of car roads developed more or less all over the world between 1920 and 1940. Mexico implemented a larger network of long-distance roads. (Wagner 2010) In European countries like The Netherlands, Switzerland, France, Spain, Austria (Kreuzer 2010), or Czechoslovakia (Oliva 2010), and in Southern America (Wagner 2010) projects for

new special car roads began. In the end, all of these were not completed for a number of reasons. In many cases, it proved impossible to finance the construction of the roads because of the worldwide economic crisis at the end of the 1920s and the beginning of the 1930s. In addition, the low grade of motorization in many of the countries at that time meant little political support. The bureaucratic system of many of these countries had not established a centralized planning authority for state-wide road construction yet which proved to be another impeding factor. (Kreuzer 2010)

The largest road project activities during the short phase of German democracy after World War I (*Weimarer Republik*) were because of the foresighted political activities of the City of Frankfurt am Main. Frankfurt had for centuries been one of the most economically vital cities in Germany, supported by its role as a traffic hub in the center of the German territories. After the city had become a part of the Prussian Kingdom in 1866, Frankfurt ended up at the outskirts of the empire and lost some of its key functions to other cities, like Berlin. This meant that the mayors of the city looked for a re-definition of Frankfurt in order to maintain its role as an important economic center. In the 1920s, Frankfurt branded itself as the 'City of Roads' (*Stadt der Straßen*) and started activities with the purpose of becoming the most important traffic hub of Germany again. The city could offer its location next to major railways and waterways and had also started investing in aviation. It was clear to the mayors of Frankfurt that road traffic would play a key role in the future of society, therefore they made sure that future major road networks would serve the city. (Ruppmann 2010)

The city also played a major role in establishing and managing the 'HaFraBa Association' in 1926. The association pursued the idea to build a *Nur-Autostraße* (car-only road) from north to south through Germany, connecting the Hanseatic cities of Hamburg and Lübeck (Ha) with Frankfurt (Fra) and Basel in Switzerland (Ba). It was not the only motorway project in Germany – Puricelli, the person behind the Italian autostrade, had, at the same time, lobbied for a first motorway from Munich to Lake Starnberg, as a replica of the autostrada Milan-Laghi, and had even developed the idea of a longer road from Berlin via Leipzig and Munich to Rome, but both projects failed.

The only motorway built before 1933 was the road from Cologne to Bonn, which was opened in 1932 and found political support from Konrad Adenauer, at that time Lord Mayor of Cologne and later the first federal chancellor of West Germany after World War II. (Hascher 2010)

The main problem for all these projects was lack of finance. The German parliament had on a number of occasions voted down the right of the motorway companies to collect road tolls, which would have been crucial for their construction and maintenance. Looking at the low degree of motorization in Germany, motorways were seen as "roads for the pleasure of the rich", as the German economist Werner Sombart put it. Therefore, investing into motorways was not considered a key contribution to the German economy. Instead, focus was on issues considered more serious such as the Great Depression. The last attempt to change legislation in favor of the motorway lobby in 1931 was recalled before a vote in parliament could take place because of the resistance both by the Communist Party and the National Socialist Party (NSDAP). (Kreuzer 2010; Hascher 2010; Ruppmann 2010; Zeller 2002)

HaFraBa had at that time refined its plans to build a trial motorway from Frankfurt via Darmstadt to Heidelberg, at a length of 85 km, the same length as the role model motorway Milan-Laghi. These plans were well received at the two first International Motorway Congresses in Geneva (1931) and Milan (1932), and HaFraBa had always stressed the significance of motorway construction for relieving unemployment, but in the end not even the trial stretch between Frankfurt and Heidelberg was built under the auspices of HaFraBa. The association had an important impact on the later program of the *Reichsautobahn* in Nazi times, though, since by 1933 they had prepared a total of 70 volumes of documents on future motorways, containing detailed plans for the construction of a Germany-wide motorway network which also featured accurate cost estimates and technical guidelines. (Kreuzer 2010)

On January 30<sup>th</sup>, 1933, Adolf Hitler was appointed as Chancellor of the *Reich* and began the transformation of the German republic into a dictatorship. During the 23<sup>rd</sup> International Motor Show (IAA) in Berlin just some days later, he defined the motorization of Germany as a key goal of his government, highlighting that it was neces-



Fig. 64:

Gas station at the *Reichsautobahn Göttingen-Bad Hersfeld* in 1937 or 1938.

© Dr Wolf Strache / Public Domain

sary to “provide car traffic with feasible car roads.” Hitler was aware of the impact on public opinion those roads might yield and had studied the way Mussolini used the autostrade for his personal propaganda. This led to the marketing of the Reichsautobahn as *Straßen des Führers* (Roads of the Führer), linking the construction with his personal effort. Critique by German army representatives feared that motorways built too close to the borders of Germany could easily become a danger in case of a hostile invasion, but this was neglected by Hitler. (Ruppmann 2010; Kreuzer 2010; Zeller 2002)

Hitler was likely well-informed about the plans prepared by the HaFraBa Association, since they informed all parties in parliament on a regular basis, including the NSDAP. (Kreuzer 2010) Hitler had received two additional memoranda from engineers who were well established members of the NSDAP with relative power within party structures. One of them was Dr Fritz Todt, who specialized in road construction and authored a ‘brown book’ about the status of roads in Germany. This memorandum was forwarded to Hitler in April 1933. The other one was Gottfried Feder who used to influence Hitler already during early days of the formation of Nazi ideology in the 1920s. Feder had also participated in the Beer Hall Putsch attempt in 1923. Todt’s memorandum em-

phasized the political significance of building new roads for supporting defense, transport, and the diffusion of the country with the new ideology. As such, Hitler could quickly achieve a goal that the former democratic republic didn’t accomplish over years. Feder concentrated on technical issues, the layout of the future roads, and their integration into the landscape, issues that Todt addressed only little in his memorandum. (Zeller 2002)

It was Todt who proved most successful, and in June 1933 he was appointed *Generalinspektor für das deutsche Reichsstraßenwesen* (Inspector General for the German Roads) and manager of a newly established authority. He also could make use of two other institutions: The HaFraBa Association was transformed into a corporation called GEZUVOR (*Gesellschaft zur Vorbereitung der Reichsautobahn*, Corporation for the Preparation of the Reichsautobahn), and the *Deutsche Reichsbahn* (German Railways) which had formed an affiliate called *Reichsautobahnen*. Todt utilized the staff and experienced partners, allowing him to keep his promise to Hitler that a few additional members of staff would be sufficient to implement a country-wide network of motorways. Broadly, GEZUVOR was in charge of planning and the Reichsautobahn-Gesellschaft of construction and maintenance, although the system proved much more complicated. Any plan drafted by the GEZUVOR first had to be approved by Todt, who sent the plans on to the Reichsautobahngesellschaft. The Reichsautobahngesellschaft then sent the plans on to one of its 15 regional construction offices (*Oberste Bauleitungen*), who had to find consensus with the federal state police authorities who had control over the plans and issued a permit, which was to be finally approved by Todt himself before construction could start. This complicated system created a lack of clarity between the various stakeholders and for personal interests to run rampant, since Todt did not have direct command over the institutions not integrated into his authority. (Ruppmann 2010)

The detailed plans prepared by the HaFraBa proved to be a big asset for the Reichsautobahn program. The construction of the first stretch of motorway from Frankfurt to Heidelberg, which the HaFraBa had been lobbying for for years already, officially started on September 27<sup>th</sup>, 1933, only three months after the establishment of the General Inspectorate. (Kreuzer 2010) The goal to create



## Engineered Roads and Their Relationship to Landscape Issues

1,000 km of new motorway every year was successfully achieved until 1938, when resources, including Todt himself, were shifted to the preparation of the war. The motorway program came to a halt in 1942. At this time, 3,625 km of motorways were finished and about 800 km still under construction. (Zeller 2002)

At the end of 1933, Todt issued guidelines for the planning and construction authorities. The most important rules were the following:

- The key job of the planners is to find the best possible locations for the new roads, taking into account all relevant traffic planning and economic issues.
- It is not desirable to plan a motorway in close vicinity to an existing railway.
- Valuable agricultural land should not be used if possible. It might be necessary to locate the motorways on slopes and prioritize forest areas.
- The roads consist of two 7.5 m wide driving lanes for one-way driving, separated by a protective zone of 3.5 m in between. On the outside of the driving lanes protection lanes with a width of 1.5 m follow, then trenches, and a trimming of about 1 m.
- The road must be framed with longitudinal hedges-rows.

The new roads should, in addition, provide the best possi-

ble connection to other means of traffic and to local economic centers, and they should include the most beautiful views of the landscape and important buildings, for the sake of tourism.

Even though one of the goals of the new motorways was to relocate some of the total traffic volume to the newly built roads, Hitler didn't want to interfere with the protected status of the railways that had been assigned to them during the Weimar Republic, given the railways were the key traffic infrastructure of their times. In the end, many of the new motorways were, violating Todt's guidelines, built parallel to major railway lines, one reason being the topography of Germany didn't allow for alternative routes for feasible motorways. Most notably, the railway was indispensable for transporting raw materials, equipment, and heavy machinery to the construction sites of the motorways. (Ruppmann 2010)

Arguably, landscape issues played an important role in the planning and construction of the motorways due to Todt's sympathy for the Heimatschutz movement. Todt was also influenced by the U.S. standards of parkway planning, and he was aware of the concept through studying articles in the many professional journals of the time. When the U.S. Department of Agriculture issued a bulletin called 'Roadside Improvement' in 1934, he found

**Fig. 65:**

**Reichsautobahn  
Berlin-Munich at  
the Elbe and Mulde  
Lowlands southeast  
of Dessau. The trees  
in the central median  
were deliberately kept  
for landscape reasons.**

© Dt. Bundesarchiv /  
Creative Commons  
BY-SA 3.0 de



it so impressive that he had it translated into German and re-issued. (Davis 2010)

Heimatschutz had lost a lot of its influence during the Weimar Republic. Therefore, its proponents put a lot of hope into the rise of National Socialism, since many of their values were familiar to Nazi ideology. The German Association for Heimatschutz organized a conference in Kassel in September 1933 and a few days later decided to join the newly established Nazi organization “*Reichsbund Volkstum und Heimat*” (The Reich’s Association for Folklore and Heimat). One of the speakers at the conference was Alwin Seifert, an architect and self-educated landscape gardener who also held an academic position at the Technical College in Munich. Seifert’s mindset was deeply rooted in fascist ideologies, and he was very happy about the political change in Germany. The conference gave Seifert the opportunity to boast the importance of Heimatschutz values in Nazi Germany. Following the conference, Seifert produced a treatise about the significance of the integration of landscape issues into the planning and construction of the motorways, which was handed out to Todt.

For Seifert and the promotion of his ideas, this proved successful. After a few meetings, Todt created the new function of the *Landschaftsanwalt* (Landscape



**Fig. 66:**  
Bridge over the river Saale at Hirschberg, 1938-1940.

© Dt. Bundesarchiv / Creative Commons BY-SA 3.0 de

Attorney) who was to consult the engineers in charge of the technical planning and construction in regard to the motorways’ integration into the landscape, with the clear directive that technical issues always had to come first. Seifert was appointed as Chairman of the Landscape Attorneys. To his support, a landscape attorney was located at the 15 regional construction offices of the Reichsautobahngesellschaft. Seifert was granted the right to personally choose each of them. In most cases, he appointed professional companions who matched his personal ideological views.

Like Seifert, many Landscape Attorneys were fans of biodynamic gardening and favored esoteric ideas, vegetarianism, and the Anthroposophical Society. Those who were not were either chosen by professional competitions or came into the position through the NSDAP. Seifert defined key features of the future motorways: that their layout should not resemble the way that railways were built but should form a swinging line through the landscape, with bends frequently following rather short straights, ‘typical German species of trees and shrubs’ should be preferred over non-autochthonous ones, the embankments should be smoothly rounded, and advertisement along the roads should be banned. These demands made sure that the new roads represented a ‘typical German character.’

It proved difficult to enforce these guidelines as the 15 regional Landscape Attorneys constantly fought to be recognized by their fellow engineers. Most of the engineers had been constructing railways before and stuck to the ways of construction and layout they were used to, using straights and corners instead of clothoid elements. The pressure to make speedy progress in order to achieve the desired propagandistic impact of the new roads was an additional reason for the engineers to stick to practices that were well-tested and successful in the past. It was only in 1939 that Seifert’s guidelines had become state of the art and were mostly followed by the regional engineers.

Another issue was the goal to balance technically viable motorways with the touristic goal of leading the drivers through the most beautiful and scenic parts of Germany. In the beginning, the landscape advocates even insisted on personally walking the future motorway stretches together with the engineers to make sure that



**Fig. 67: Passage over the Irschenberg hill in 2017.**

© HerrAdams / Creative Commons BY-SA 4.0

the roads were located on the best scenic spots available. This practice was given up after a few years.

One famous example for the relocation of the motorway in favor of the beauty of the landscape impression is the Irschenberg section west of Rosenheim on the motorway from Munich to Salzburg. Technically, it would have been much easier to build the motorway in the valley of the river Mangfall, a few kilometers to the north, which would also have meant a more direct connection between the two cities. Instead, the motorway now climbs a ridge next to the village of Irschenberg, 200 m higher than the Mangfall river. The Irschenberg hill offers the drivers a spectacular view of the Bavarian Alps yet still today constitutes a challenge during winter, especially for truck drivers. For similar reasons, the motorway follows the shores of Lake Chiemsee. Similar to the autostrada Milan-Laghi, the motorway meant to make the recreational area around Bavaria's largest lake and the splendid castles and monasteries on its islands more easily accessible for

visitors from Munich. Some more panoramic places are now visited by the twisting motorway. The layout of the road clearly takes up design elements of the landscape gardens of the 19<sup>th</sup> century and, with the additional sensation of fast movement through the landscape and the motorway itself, represents an accomplishment of technology to date. Therefore, the road effectively transformed the 19<sup>th</sup> century way of landscape perception into an experience of the 20<sup>th</sup> century.

Similar approaches were taken in mountain regions in the center and south of Germany. Even on the short motorway from Frankfurt to Heidelberg, which could easily have been located in flatter areas, a passage with a gradient of 7 % was chosen in order to increase the landscape value of the road. The climb on the motorway from Stuttgart to the south, traversing the Swabian Jura, even features a maximum gradient of 8 %. Also the motorway from Würzburg to Kassel features a lot of similar passages which impose problems for heavy trucks until today.

The work of the landscape attorneys was not always fully supported by Todt and the engineers for cost reasons. Quite often, Seifert and his team were criticized for planting too many trees and shrubs, imposing unnecessary additional costs to the construction of the roads which, despite their propagandic function, were supposed to be built as cost-efficient as possible. Seifert had the explicit goal to equip the roads with plants so to contribute to his restorative plan to “end a century of aberrance between nature and technics” and to stop the depletion of German landscapes into ‘cultural steppes.’ The choice of species used for the road plantations was discussed frequently, since Seifert opposed typical garden plants like syringa or jasmine, posing additional stress on the tree nurseries of Germany to produce the necessary number of autochthonous trees. The costs of the landscape advocates themselves were also frequently questioned. As they never became employed by the Reichsautobahngesellschaft but worked as freelancers, it was quite easy for the engineers responsible for cost control to cut the costs spent for landscape consultancy. (Zeller 2002)

In summary, the landscape advocates managed to make some difference compared to other similar road construction plans. Their romantic approach matched the Nazi ideology behind the motorway program well. At the same time, their ideas faced obstacles during Nazi times already and, being an integral part of Nazi ideology, became discredited after World War II, weakening the position of landscape architecture significantly during the ongoing motorway construction after the war.

A myth frequently connected to the Reichsautobahn program is that it was responsible for tackling the massive unemployment of 1930s Germany. Although the construction of the motorways provided income and

work for a number of formerly unemployed people, this was to a much smaller extent when compared to huge investments into the armaments industry during the same time. For example, in 1938 the *Reichsarbeitsdienst*, a service program for young Germans created in addition to the compulsory military service, only sent 122 out of 95,000 people to the motorway construction sites.

Most of the workers came from public employment centers. Many were dislocated from all over Germany, staying in low-standard work camps near the construction sites. They were poorly paid and sometimes even malnourished, due to extremely hard labor many of the new workers weren't used to. During the first years of the program, almost no heavy machines were used for the construction in order to keep the demand for workers high. Earthworks and the preparation of gravel was done manually, without the aid of diggers and excavators. This also caused a high casualty rate at construction sites. Protests and strikes were suppressed by the infamous German Secret Police. When the unemployment situation in Germany improved during the second half of the 1930s, many unemployed chose better paid and less strenuous jobs closer to their homes, making recruitment of a workforce for the motorways more difficult. From 1940 to 1942, when the motorway program came to a halt, Todt was permitted to make use of prisoners of war and forced labor, mainly by Polish Jews, to keep construction going. (Zeller 2002)

The construction of the motorways, like any infrastructure project before and after, could not make a long-term impact to the job market. Instead, it created short-term employment for a relatively small number of unskilled workers, and in the case of the German motorway program, in very questionable working environments.

### 3.4.7. Highway and Interstate Construction in the United States from 1930 to 1970

(Sally Pearce)

Many of the modern highway concepts such as innovations in pavement technology and engineering advancements have been directly related to the design and construction of 19<sup>th</sup> century pleasure driving and early 20<sup>th</sup> century automobile parkways. Both contributed to

what became the modern interstate system in the United States. (Marriott 2011)

In 1939, President Franklin D. Roosevelt addressed Congress with a call for action on the development of “a special system of direct interregional highways, with all

## Engineered Roads and Their Relationship to Landscape Issues

necessary connections through and around cities, designed to meet the requirements of the national defense and the needs of peacetime traffic of longer range.” This call to action would later lead to the design and construction of the nation’s nearly 47,000 miles of Interstate. (Federal Highways Administration 2017)

The National Interregional Highway Committee was appointed in 1941 to investigate the development of a limited-access, national system of highways to improve interregional transportation. The completed report, issued in 1943, proposed six possible combinations of routes within a nearly 34,000-mile system of multi-laned roads. Rural roads were expected to carry much less traffic, so they would be built with only two lanes.

“The interregional highway was one of a number of postwar highway proposals used to develop the federal-aid highway system. The Federal-Aid Act of 1944 authorized a 42,500-mile national system of Interstate Highways but did not provide funds for its construction. The interstate would retain many elements of the federal-state partnership and satisfy the public’s demand for long-distance highways. However, it would not be until 12 years later that such a system would be built.” (Federal Highways Administration 2017)

Beginning in the 1940s, motor car parkways were designed for higher speed travel and increased capacity

at the expense of landscape considerations and commuter use. In 1940, the State of Pennsylvania sold enough bonds to construct and open a 261 km (162 mile) stretch of highway called the Pennsylvania Turnpike. It was the first long-distance stretch of four-lane, limited-access, high-speed highway in the United States. On opening day, cars lined up to race across the state rather than enjoy the scenic Pennsylvania countryside. Clearly, changing public perceptions on the role of the automobile in American life shifted to speed and economy over scenery and recreation.

“The toll road was successful in drawing ridership and set the standard for the future design and construction of the superhighway, although many accidents occurred because of reckless speeding as the speed limit was not initially enforced. Other states began considering construction of turnpikes, but America’s entry into World War II put the ideas on hold for the duration.” The Pennsylvania Turnpike set the design standard for the modern interstate system with its 3.4 m (12 ft) wide lanes paved in concrete. (Federal Highways Administration 2017)

The Merritt Parkway in Connecticut opened in 1938, with the final section opening in 1940. The primary purpose of the Merritt Parkway was to relieve traffic congestion in southwestern Connecticut, especially on the old Boston Post Road, which had become increasingly more

**Fig. 68:**

The ‘Heroes Tunnel’ on Wilbur Cross Parkway, Connecticut, an extension of Merritt Parkway built at the same time.

© Wasted Time R / Creative Commons BY-SA 3.0



congested with motor vehicles. The parkway is known for its scenic layout, its uniquely styled signage, and the architecturally elaborate overpasses along the route. At the time of its construction, the bridges were designed primarily in the *Art Moderne* and *Art Deco* styles, and no two bridges on the parkway looked alike. (Federal Highways Administration 2017)

The Merritt Parkway quickly emerged as a national model. “To ensure a natural appearance, long, gradual, vertical curves were designed. Rock cuts were rounded and landscaped to produce a natural setting. As one of the first oldest parkways in the United States, it is designated as a National Scenic Byway and is also listed in the National Register of Historic Places.” (Federal Highways Administration 2017)

At the same time, road construction in southern California was undergoing a transitional period in auto travel and highway design. The traditional parkway concepts found in the eastern United States blended into the emerging California roads culture and led to the development of the modern freeway. A prime example of this new style was the Arroyo Seco Parkway, also known as the Pasadena Parkway.

In 1930, engineers were looking to build a safe, scenic high-speed highway connecting Los Angeles with Pasadena, running along the side of the Arroyo Seco, a seasonal river. The idea was to build a serpentine two-lane park-

way winding in the hills, lined with trees, parks, and the quiet waters of Arroyo Seco valley. However, by the time it was completed, the parkway was a six lane, quasi-parkway prototype freeway, and the tranquil waters of the seco were encased in a concrete and stone channel. The designers did include in their landscape plan a variety of native plants and elegant modern bridges, but the parkway concept had changed – the road was more popular for speed than pleasure driving. (Marriott 2011)

Making up for years of sacrifice, after World War II the United States went on a consumer goods spending spree. On top of the list of new purchases was the automobile. As more people took to the road, the states began asking Washington D.C. to improve the nation’s highways. The federal government responded with the last, greatest, and most expensive round of highway construction of the 20<sup>th</sup> century.

One of the early parkways built in this era was the Palisades Interstate Parkway, started in 1947 and completed in 1958. The idea came in 1930 as a way to connect metro New Jersey with Palisades Interstate Park at Bear Mountain, New York. During the 1930s, John D. Rockefeller had been purchasing land in the hope that a parkway would be built in this area. In 1933, he donated 700 acres on top of the Palisades to the Palisades Interstate Parkway Commission for use in building a parkway. But the war intervened.

Fig. 69:

Arroyo Seco Parkway,  
California.

© Steve Devorkin,  
Caltrans / Public  
Domain



## Engineered Roads and Their Relationship to Landscape Issues

After World War II, the design and construction began. Landscape architects Gilmore Clarke and Michael Rapuano designed the parkway. Clarke had experience working on the Bronx River Parkway, the Westchester Parkway system, and Skyline Drive. Construction began on the New York side in 1947 and in New Jersey in 1948. Shortly after the 67.5 km (42 mile) scenic parkway opened, the New York Times wrote an article about the changing perception of the American parkway as the concept evolved from pleasure driving to commuter traveler: “Across the river, winding its way northward along the left bank of the Hudson, is a very nice road indeed. It is called the Palisades Interstate Parkway [...] It has a number of uses. On the near, or New York side, end commuters take it to and from their metropolitan offices. A little farther north it crosses the New York Thruway, and thus can be used as a step in the shufflin’ off to Buffalo and the Falls [...] In the summer, and during that part of the autumn before coldness awkwardly settles in, the Palisades Interstate Parkway is the route of the charcoal briquet, the road of the picnic hamper.” (Marriott 2011)

The Federal-Aid Highway Act of 1944 established the National System of Interstate Highways but it did not provide financial resources for its construction. The act did specify that all designs should, at a minimum, feature four-lane divided highways, expanding to six to eight in and near large metropolitan areas. The Federal-Aid High-

way Act of 1952 authorized the first \$ 25 million funding specifically for the Interstate System.

Prior to the introduction of the Interstate Highway System, many states built their own controlled access highways by floating bonds and collecting tolls. Starting with the Pennsylvania Turnpike in 1940, other roads included the New Jersey Turnpike in 1952, Garden State Parkway (New Jersey) in 1954, the New York State Thruway in 1954, the Massachusetts Turnpike in 1957, and the Illinois Tollway in 1958.

Typical of the style, the Denver-Boulder Turnpike in Colorado, completed in January 1952, featured fully controlled access with two 3.6 m (12 ft) lanes traveling in each direction. Eight bridges spanned the turnpike to accommodate cross-traffic. Twelve major structures, primarily the tollbooths, lined the turnpike. Many thought it would be part of the local scene for years to come. (Clarion 2013) An unexpected windfall of spare change paid off \$ 6.3 million in bonds plus \$ 2.3 million in interest by 1967. Honoring a promise future generations of Colorado politicians later regretted, the state removed the last tollbooth on September 14<sup>th</sup>, 1967. The Denver-Boulder Turnpike was one of the first toll roads located on the U.S. public highway system ever to revert to a free highway. (Wiley 1976)

The Federal-Aid Highway Act of 1954 authorized \$ 175 million for the Interstate System. During the sign-

**Fig. 70:**

### Denver-Boulder Turnpike.

© Barry Dale Gilfrey /  
Creative Commons  
BY-SA 2.0



ing ceremony at the White House, President Dwight D. Eisenhower said: “This legislation is one effective forward step in meeting the accumulated needs.” However, he knew the step was not big enough, and he decided to take further action. (Federal Highway Administration 2017)

The U.S. Congress passed the Federal Aid to Interstate Act, and President Dwight D. Eisenhower signed the Act into law in 1956. The proposed 42,500-mile Interstate and Defense Highways program would connect important centers of population and areas of national strategic importance and establish uniform national and military building standards. The new interstates would feature four-lane divided highways with a grade separation at points of crossing and interchanges at points of ingress and egress.

Toll road construction in the U.S. slowed down with the establishment of the Interstate Highway System, since the new freeways were predominantly government-financed, and collecting tolls was not allowed on them. Older toll roads were allowed to continue collecting tolls and were partly integrated into the Interstate System. Some of them, like the Connecticut Turnpike and the Richmond-Petersburg Turnpike, stopped collecting tolls later on, whereas others still maintain the tolls.

In August 1957, the American Association of State Highway Officials (AASHO) established the tri-color federal shield designating the nation’s Interstates and reversed the numbers of the routes originally established in 1926. During interwar times, north-south routes would ascend numerically in odd numbers from Route 1 on the East Coast to 101 on the West. Routes running east-west descended numerically in even numbers from Route 2 in

the north to Route 90 in the south. Now, Interstate 95 is the east coast’s main thoroughfare from Florida to Maine while Interstate 5 runs along the west coast from Washington State through the length of California. Interstate 90 crosses the nation’s northern border while across the southern United States, the primary highway is Interstate 10. (Lewis 1997)

The 1950s and 1960s in the United States saw the rise of suburbia with the development of sprawling but close-knit communities located outside major metropolitan regions. People still continued to seek pleasure drives on Sundays, but those driving trips moved to more secondary roads which provided a more relaxing pastime than driving on the super-highways.

By the late 1960s, the desire of many states to sell and promote the wonders of their state to the rest of the nation ran headlong into a new spirit of environmentalism laced with non-commercialism. In the battle to preserve the natural wonder that made a state special in the first place, developers and environmentalists fought many skirmishes on a new battleground – the interstate highway.

In 1965, the Highway Beautification Act, signed by President Lyndon B. Johnson, called for control of outdoor advertising, including removal of certain types of signs, along the Interstate Highway System and the existing federal-aid primary highway system. “It also required certain junkyards along interstate or primary highways to be removed or screened and encouraged scenic enhancement and roadside development.” (Federal Highway Administration 2017)

### 3.4.8. Highway Construction in Europe since 1945 (Kristina Skåden)

In this chapter, ‘highway’ is used to define a long-distance transport car-only road between cities, like a motorway. After the end of World War II, the development and construction of highways took off in many European countries, especially those countries less affected by war damages. For others, it took many years of reconstruction of other issues in society before new roads were given priority.

In July 1948, representatives from Belgium, Denmark, France, the United Kingdom, Italy, the Netherlands, Poland, Czechoslovakia (which was one country at that time), the United States, Sweden, and Switzerland drafted a plan for an international highway network within the framework of the United Nations Economic Commission for Europe. “By the end of 1950, 18 countries (now including occupied Germany) were involved



## Engineered Roads and Their Relationship to Landscape Issues

in planning a network with Berlin as its central point, three east-west and four north-south routes, at a length of 42,000 km. One of the instruments for achieving this was the Marshall Aid Plan.” (Mom 2005) This plan, formally called the European Recovery Program, started in 1948, initiated by the U.S. President Harry S. Truman and named after his Minister of Foreign Affairs, George C. Marshall, gave a boost to the development of 15 European countries. Norway alone received a total of 439 million dollars from 1948 to 1951, when the plan ended. (Pharo 2019)

The Marshall plan was not specifically dedicated to building roads, but rather to stimulate the economy in general. As such, the plan also contributed indirectly to strengthen transport and trade opportunities. Most of the funds went into agriculture. “Because of the cold war, the second European highway plan (1950) was reduced to 23,000 km. In 1963, the system was already 6,700 kilometers long, most of it in nations that had started highway networks before the war, such as Germany (3,000 km), Italy (1,400 km). and the Netherlands (500 km).” Soon after, the United Kingdom and France undertook or planned major domestic highway projects, and by 1972, each had added nearly 6,000 km to the network. (Mom 2005) The quick construction of new motorways

in Germany after World War II may be explained by the preparatory work done during Nazi times. Many of the officers already in charge during Nazi times stayed in the system until the early 1970s. (Dienel 2005)

In the United Kingdom, the first large highway project was the M1 motorway. This road was opened by the Minister of Transport Ernest Marples on November 2<sup>nd</sup>, 1959. (Merriman 2006) The first section was commonly referred to as the London to Yorkshire Motorway, stretching from Watford (Hertfordshire) to Crick (Northamptonshire). Government plans proposed in 1946 had been delayed due to economic conditions in the late 1940s and early 1950s, but with the start of detailed planning and surveying in 1955 and 1956, attention turned towards the latest project in the reconstruction of post-war Britain. The Newspaper ‘The Times’ reported in 1959 that after the opening of the M1 in 1959, hundreds of drivers made detours to test their sedans and sportscars at high speed, while the motorway soon became a popular route and destination for Sunday afternoon family drives and tourists who travelled out of London. (Merriman 2009)

In 2019 and 2020, The Victoria and Albert Museum (V&A) in London produced the exhibition ‘Cars: Accelerating the Modern World,’ covering the 130-year long history of cars. One part of this exhibition was an interactive

**Fig. 71:**

**A two-lane section of the original Yugoslavian ‘Highway of Brotherhood and Unity’ near Otočec na Dolenjskem in Slovenia in 2008. The bridge of the newly built motorway A2 is under construction in the background.**

© Andrej / Creative Commons BY-SA 3.0



map showing the development of highway construction. “For cars to become successful, they first needed places to go.” V&A points out that “while rail networks helped modernize empires in the 19<sup>th</sup> century, it was through national highway construction programs that many burgeoning 20<sup>th</sup> century states sought to modernize. Today, hundreds of thousands of car-only-expressways criss-cross the world, making highways collectively one of the largest building projects in human history.” The motorways have reshaped landscapes around the world, how we are connected, and how we practice the landscape. The overview below is taken from the website of the V&A exhibition, which also presents an interactive visualization of the development of highways ([www.vam.ac.uk](http://www.vam.ac.uk) 2020):

- Immediately after World War II, the Yugoslavian Prime Minister (later President) Tito initiated the construction of a motorway which was designed to link the major cities of the country, the first section connecting Zagreb with Belgrade. Eventually it would stretch 1,182 km from Austria to Greece. In 1950, the first section of the ‘Brotherhood and Unity Highway’ in Yugoslavia was completed.
- In 1958, the first stretch of motorway was built in the United Kingdom. The 13.3 km Preston Bypass skirts around the east side of Preston.
- In 1960, the French government published a plan that would massively expand its motorway system, building 3,558 km of *autoroutes* by 1975.
- In 1961, the A2 Autoroute in France from Comblès to the Belgian border was completed.
- In 1975, the ‘European Agreement of Main International Traffic Arteries’ was signed. This agreement formalized a trans-national system of ‘E-roads,’ originally conceived in 1950, that should connect the nations of Europe. Many of these roads are not technically motorways, but still serve as a vital contribution to automobile traffic.
- In 1984, Spain embarked on a major motorway building plan. From 1984 to 1992, the country released a national plan leading to the construction of 3,500 km of new *autovía* over the next several years.
- In 1994, after the fall of the Berlin Wall, ten pan-European transport corridors were identified, designed to spur more investment for targeted road-building programs in Central and Eastern Europe.
- In 1996, the European Union established the Trans-European Transport Network (TEN) to improve connectivity across Europe.
- In 2013, the EU identified several different pan-European corridors where transport, including motorways, needed to be improved. The same year, the EU announced nine new Trans-European Transport initiatives.
- In 2019, the plan for the Russian ‘Meridian Highway’ was announced. The highway is projected to stretch from the Belarussian border to Kazakhstan. It will eventually become part of a new Russia-China highway, stretching over 8,000 km and ultimately connecting the ports of Hamburg and Shanghai.

### 3.4.9. Road Construction and Environmental Issues in the United States

(Dan Moore, Michael Schimek)

Road construction in the United States is responsible for a diverse range of environmental issues. They can be divided up into the following categories:

- Climate change,
- construction,
- runoff,
- impacts on wildlife,
- environmental justice.

The most universal of environment impacts of road

construction is the fact that the construction of roads leads to the expansion of automobile use. Automobile use in the United States accounts for nearly one fifth of all U.S. carbon emissions. (Union of Concerned Citizens 2014) Roads cost tremendous amounts of money that could be used for mass transit, a lower carbon transportation source. And mass transit is not efficient with the sprawling road networks frequently designed in the United States. Consequently, 85 % of Americans drive

## Engineered Roads and Their Relationship to Landscape Issues

to work. Finally, one of the main materials used in many modern roads is concrete. Cement, the key ingredient in concrete, accounts for 8 % of the world's carbon dioxide emissions. The climate impacts of roads need to be factored in when determining the true environmental impact of road building.

As already mentioned above, the construction of roads has a significant environmental impact. Several factors contribute to the situation during road construction, including the fuel consumption and emissions of vehicles transporting materials, and machinery used for road construction. There is often increased traffic congestion with most road construction projects, which leads to increased emissions. Communities situated near road construction sites need to deal with an increase in noise and the creation of dust and particulates. For new road construction, there is the damage to a loss of natural areas and habitats. And when land is cleared for roads, it often facilitates the spread of invasive species. (Hill 2020)

The vast majority of roads being built are impervious surfaces. This means when water hits the surface, rather than being absorbed by the road, the water runs off. This has a few negative aspects. The first is that a greater amount of water is entering nearby watersheds at a faster rate. Runoff leads to flash flooding in watersheds, scouring stream beds, and causing erosion. Runoff also brings contaminants deposited on the road into

natural areas and watersheds. Contaminants come from the vehicles themselves, such as leaking oil, as well as chemicals applied to roads for safety, such as deicer.

Roads have a significant impact on wildlife. Road construction fragments wildlife habitat and cuts animals off from resources they need for survival. Without safe alternatives, animals often venture across roads and get hit by oncoming vehicles as roadkill. Most roadkill is barely noticed by the motorist, but some larger animals cause significant damage to cars and also lead to injury and death. The U.S. Federal Highway Administration estimates that there are between one and two million collisions between vehicles and large animals each year, leading to about 200 human deaths. (Federal Highway Administration 2008) A solution to reduce wildlife fragmentation and collisions are the creation of wildlife underpasses and overpasses. These provide safe routes for animals to travel from their habitats to another without having to cross a road. They are becoming more and more popular in the United States, as the positive effects are being studied.

Finally, in the 1960s and 1970s, highways were routed through neighborhoods predominantly made up of poor people. This has had a significant impact on the health, both mental and physical, of these communities. For example, until the late 1970s, and as late as 1996, when it became illegal, gasoline contained lead, a known

Fig. 72:

A wildlife overpass over the motorway near Stuttgart, Germany.

© JuergenL / Creative Commons BY-SA 3.0



neurotoxin that has especially detrimental impacts on children. The highway design did not take into consideration the communities that they passed through. As a result, entire communities were cut in half, and often isolated from services needed by the community. And the massive roads themselves gobbled up homes, stores, churches, and schools that were the foundation of the communities.

A modern example of this neighborhood fragmentation is the proposal to widen sections of the Capital Beltway, a circular highway surrounding Washington D.C., built in the 1960s. The highway was initially built to be a bypass around the city, however, as has occurred throughout the nation, once the highway was completed, developers moved in to build homes, business parks, and shopping malls. Now the Beltway has some of the worst traffic in the United States. The road became a social border. Contacts between people from inside and outside the belt diminished. An inhabitant of Alexandria, inside the beltway, put it like this: “Most people I’ve talked to who live ‘outside the beltway’ look at ‘inside the beltway’ as something scary. People outside don’t like to travel in. It’s a separate culture.” Instead of connecting people, the road rather developed a separating character after its opening. (Korr 2008)

The beltway has significantly shaped the lives of the people around Washington D.C., not only of those who live close to the highway and suffer from a reduced quality of life. As traffic has worsened significantly in recent years and residents are less interested in long commutes into the city, a reverse migration has occurred where people who grew up in suburbs are choosing to live

in the city center, closer to work and without the need to drive on congested highways. As a consequence, formerly disinvested urban neighborhoods have been revitalized and it is now very expensive to live in areas that do not require commuting via the Beltway.

Due to a lack of affordable housing within the city center, a large part of the work force still lives in the sprawling suburbs surrounding D.C. and must commute into the city for work, though. To address the traffic congestion, politicians and highway engineers have proposed widening the highway numerous times. Fierce opposition has formed from residents who live in neighborhoods that would see homes and businesses wiped out by the widened highway. Environmentalists have also joined the opposition due to the fact that driving actually increases following highway expansion, despite the claims from proponents that expansion will ease congestion.

Even though new public consultation processes have been introduced, a lot of residents are still dissatisfied with the way the processes were handled and with the fact that they still had very little say. It seems that many of these residents have learned from the history of past highway development that destroyed the fabric of communities and led to increased crime and poverty. It is yet to be seen whether neighborhood activists or proponents of highway widening will win out in this case.

The automobile is still a prominent part of modern society, and likely will be for a while. It is important to address the environmental issues caused by road building and vehicle use in general and mitigate these impacts by changing behavior and increasing technology.

### 3.4.10. Road Construction and Environmental Issues in Europe since 1970 (Michael Schimek)

The nationalist-romantic view of motorways and the landscape during Nazi times was largely discredited after World War II. The need for economic rehabilitation after the war led to numerous new road projects all over Europe. Landscape issues were no longer the focus, rather to build efficient roads for the exploding motorization. Even Alwin Seifert, the man behind the landscape integration of the Nazi motorways, had changed his opinion.

In 1971, one year before his death, he suggested: “The age of the beautiful views out of the driving car is over. (The Irschenberg stretch as a descriptive example for a romantically intended, but, from our current point of view, misleading plan.) The man at the steering wheel may not take away his sight from the bumper of the man ahead of him. A second of lacking attentiveness may cause serious trouble.” (Zeller 2002)

## Engineered Roads and Their Relationship to Landscape Issues

By 1970, new motorways had been planned in detail or already built. Public unrest arose only with plans to build motorways deep in the core of historic cities. It was rather the neglect of ecological and landscape issues within other types of large infrastructure projects that led to the rise of the environmental movement in the 1970s. Public unrest mainly focused on large hydroelectric and nuclear power stations. Some of the proponents of the new movement in Germany and Austria had roots in a new version of the Heimatschutz movement and received support by a number of scientists who had started their career during Nazi times and still followed a biologicistic view of ecology.

Many public protests demonstrated to the authorities that a new style of planning needed to be implemented, for example, during events like the occupation of the alluvial forests at Hainburg, Austria, in 1984 and 1985. Here hundreds of activists stood up against the destruction of an ecological valuable area for the sake of energy production. Similarly, the demonstrations against the construction of a nuclear reprocessing treatment plant at Wackersdorf, Bavaria from 1986 to 1989 successfully stopped the plans from going ahead.

In 1985, the European Community passed the Environmental Impact Analysis (EIA) Directive which subse-

quently was transferred into national laws in all member states. With some delay, Brussels considered the U.S. National Environmental Policy Act (1969) as a model for the European context. Following this, any plans of a certain scale were checked for their compatibility with a wide range of environmental issues. The new acts in Europe also granted environmental NGOs and local initiatives influence in the design of new projects. Austria passed its EIA act in 1993, two years ahead of its accession to the European Union. Until recently, this act was the only law at a national or federal state level that explicitly mentioned the World Heritage – the threshold for projects to become subject to an EIA is lowered if those projects are within a World Heritage site.

The EIA focuses on exploring alternatives to the plans under analysis. These alternatives may also include the option to cease project implementation ('do-nothing alternative'). Doing nothing at all does not refer to questioning the overarching goals of development, though. This is not part of an EIA. For example, if the overarching goal of a state is to enhance the quality of waste treatment at a national level, analyzing the do-nothing alternative within an EIA does not mean questioning this overarching goal of waste treatment. Doing nothing would only be possible if the overarching goal of waste

Fig. 73:

Construction site of the Austria Motorway A5, one of the recent projects that was evaluated by an EIA.

© My Friend /  
Creative Commons  
BY-SA 3.0



treatment at a national level could be achieved by different means. This is why in almost all cases where an EIA was undertaken the do-nothing alternative was not the alternative of choice in the end. (Peters et. al. 2017)

Only some of the EIAs dealt with road projects. Many EIAs focused on other types of infrastructure, like large power stations, high-speed railway lines, or large quarries. In Austria, up until 2010, 36 projects for new motorway stretches or new motorway exits underwent an EIA. Within 10 of these projects, stakeholders participating in the EIA filed a protest at the Austrian Supreme Court. In

the end, only one project was overturned by the Supreme Court, and one was still pending as of 2010. One additional plan was withdrawn by the project applicants.

The history of these projects demonstrates an important impact of the EIA system: Project applicants were forced to prepare plans with a greater respect for environmental issues from project initiation. Many concerns of local stakeholders and NGOs were taken into account, and this contributed to an increased quality of the implemented projects, at least from a juridical point of view. (Rose/Frank 2011)

### 3.4.11. Engineered Roads in Other Continents (Kristina Skåden, Dan Moore, Michael Schimek)

Roads are still being built all over the world. Even though the creation of new roads in Europe is often controversial and accompanied by citizen protests, the trend of widening the road network of the globe is not over, especially in emerging markets. The following chapter will describe examples for some remarkable road construction programs around the world in other parts than Europe and North America.

Africa is the continent with the lowest road density worldwide. (Beck/Klaeger/Stasik 2017) The road network in Africa grew slowly over the 19<sup>th</sup> century and, in comparison, has flourished during the last twenty years, which some have dubbed the 'African economic renaissance' in the new millennium. There was no simplistic diffusion model in Africa. Rather, automobility and the motor roads have not been developed autonomously like at the beginning of motorization in the North Atlantic region, instead Africans drew inspiration and learned from models in the North Atlantic and, at some places, the Gulf states. The imported technologies have been adapted and modified for the African environment in multiple ways, with great creativity for differing approaches to construction, transport, and traffic.

Historically, roads in most places in Africa follow landscape structures – roads are formed by the landscape, not the other way. 'The Making of the African Road' presents four observations about African roads: Firstly, long-distance road networks in the North Atlantic region tend to be differentiated according to their function. The African

road is often multifunctional, a shared area for pedestrians, animals, street merchants, slow moving vehicles, and cars. Secondly, descriptions of North Atlantic road users are usually centered on single drivers and their cars, as a sort of hybrid creature – the 'driver-car.' Road travel in Africa, in contrast, is largely collective and often a crowded experience on trucks, pick-ups, mini-busses and *taxi brousse*. Thirdly, North Atlantic public transport tends to be centrally and formally regulated by fixed routes and timetables. The African equivalent is rather characterized by informal and often improvised collective management by a wide range of participants. Finally, North Atlantic long-distance roads have been separated from off-road space, whereas African roads and roadsides offer a variety of opportunities of interaction between travelers and roadside communities. (Beck/Klaeger/Stasik 2017)

Like in other parts of the world, the economic and political desire to connect hitherto remote areas drove the increase in road construction in Africa. However, many roads remain unpaved and underutilized. For example, in South Africa, the country with the largest tourism industry in sub-Saharan Africa, featuring some of the most interesting scenic roads of the continent (Shubic 2019), about 75 % of the road network still consists of gravel roads. Most of these unpaved roads are classified as 'rural collectors' (class 4), providing local access, or as 'provincial trunk and main roads' with a certain transit function. On these roads, still relatively little traffic takes place. For example, 93 % of the gravel roads in the Western Cape

## Engineered Roads and Their Relationship to Landscape Issues

province carry less than 250 vehicles per day. (Ross/Townshend 2017)

During early colonial rule, roads and motor vehicles helped colonial powers to spread their message and enforce their will. Across the continent, colonial states required local labor for the construction of roads. If this was not available, prisoners were used for this work. In Portuguese Guinea (modern-day Guinea-Bissau), the director of the Department for Development, which was established in 1917, provided a lengthy summary of the colony's needs in terms of modernization: "Without roads villages do not form, land is not cultivated, industry does not develop, and trade does not exist. [...] The impact of man-made communication such as roads and motorways, as well as of those on natural means such as riverine and maritime connections [...] is a token of the extent to which progress depends on them." (Havik 2009) "Great emphasis was put on the need for good drainage which was extremely relevant in a country with a tropical climate, a problem that would impose continued trouble on the hardened surfaces until roads started to be tarred in the second half of the 1950s." (Klaeger 2009)

Roads were not built just for the practical purpose of



Fig. 74:

A ,mammy truck.‘

© eggi / Creative Commons BY-SA 3.0

transporting goods and people but also as a measure of control. They were of personal interest to the colonizers as well. Finalizing new roads was a boon to the status of colonial officers, since they were a symbol of speed and modernity and internally proved the good governance of the colonizers. (Havik 2009) Where new roads were constructed, patronage systems evolved, which in turn led to economic development. Neglecting roads also meant economic decline. "New forms of corruption and taxation have also developed on Africa's roads, with roadblocks having become an important source of income for underpaid police and civil servants in many countries." (Gewald/Luning/van Walraven 2009)

The need and use for roads developed as export industries expanded. For example, in Ghana, driving as an occupation emerged with the construction of roads accessible to motorized vehicles, connected to the boom of the cocoa industry at the beginning of the 20<sup>th</sup> century. "Transport historians describe this period as the beginning of the 'lorry age' with its ever-increasing number of African owners and drivers of commercial motor vehicles, the so-called 'mammy trucks.' Today, the public transport system in Ghana is organized by multi-sectoral transport enterprises but predominantly by private-sector operators." (Klaeger 2009)

"The introduction of the motor vehicle in Africa during the 20<sup>th</sup> century led to far-reaching and complex transformations in the continent's economies, politics, societies, and cultures and affected all aspects of African life." At the time when human caravan portage was more and more considered inefficient, motor cars radically transformed Central African transport systems. From one day to the other, the way goods and people were transported over distances longer than 25 km was transformed. Settlements and villages that had been at a day's walk from each other along the route and therefore played a vital role in the former transport system were now bypassed and abandoned for the new nodal points that better fitted the new forms of travel. (Gewald 2009) At the same time, motor vehicles could get to the smallest villages even in the most remote areas of Africa, providing access and eliminating isolation. Busses, mammy trucks, cars, pick-ups, and lorries were able to reach places where railways, ferries, and boats could not get to. Motor vehicles, therefore, were not only linked solely to the state and the

## Engineered Roads and Their Relationship to Landscape Issues

political and economic elite, but they also had an impact on the everyday lives of people.

From 1971 onwards, a network of nine highways all over Africa was planned, with a total length of 60,000 km. One of these planned highways would run over 8,000 km between Cairo and Dakar, another one over 8,000 km from Cairo to Cape Town, a third one over 6,000 km from Lagos to Mombasa, and another one over 4,700 km from Dakar to Lagos. The only one completed so far, though, is the 4,500 km long trans-Saharan Highway from Dakar in Senegal to N'Djamena in Chad. The other ones are only half-finished, although countries are progressively opening new stretches section by section. The African Development Bank, one of the financing authorities of the project, names conflicts and climate conditions as reasons for the slow progress,

especially in countries like Angola or the Democratic Republic of Congo. Some highway sections that have already been built now lie damaged as a result. (www.webuildvalue.com 2020)

The Pan-American Highway is a network of roads that extends from Prudhoe Bay, Alaska, in North America to the southern tip of South America, excluding a small section in Panama and Colombia that is pretty much impassable. In Southern Chile, the highway takes on the name *Carretera Austral*, which means 'Southern Highway.' The highway travels through the southern part of the Lakes region and the length of the Aysén region, a very sparsely populated part of Chile. The area has historically been very isolated, containing dense forests, steep mountains, expansive glaciers, and deep fjords.

Construction of the highway began in 1976 during



Fig. 75: The still unpaved *Carretera Austral* near El León.



the dictatorship of Augusto Pinochet. The decision to build the road was more strategic than practical. Historically, most of the land access to Southern Chile came in overland from Argentina. As tensions rose between the two governments at various points, it was determined that Chile needed its own land route to its territory in the south of the country. More than 10,000 soldiers provided the workforce for this road, and it took over ten years until the highway was open to traffic. The final section of road, connecting to the town of Villa O'Higgins, was opened in 2000. After its construction, the highway was almost entirely unpaved, but more parts are paved every year. As of 2018, about two thirds of the road were paved.

Despite the initial geopolitical motivations for the road, the road provides access to incredible tourism assets as well. The region of Aysén is full of lakes, glaciers, rivers, and jagged mountains. The adventure travel potential in the area is being developed to increase economic benefits to the region.

Because of its turbulent history during the 19<sup>th</sup> and 20<sup>th</sup> century, China started its development to a global economic superpower only recently. The People's Republic of China's Prime Minister Zhou Enlai had already in 1963 postulated that the country had to undergo 'Four Modernizations' – meaning in agriculture, industry, defense, and science and technology – but the implementation of the program started only in 1978, when Deng Xiaoping took over leadership in the Communist Party and the country.

The implications of this policy on the transportation networks of the world's most populous country have been immense. In only 40 years, from 1978 to 2018, China extended its railway network by 150 %, to a total of 127,000 km, making it the second largest railway network in the world behind the United States. Out of these 127,000 km, more than 20,000 km are High Speed Railways, the largest high-speed system in the world.

Even more impressive are the effects on road construction. The total length of Chinese roads and highways (mostly meaning two-lane roads) amounted to 4.77 million km in 2018, compared to about 1 million km in 1990. The highest-capacity roads among these highways are the so-called expressways, officially called the National Trunk Highway System (NTHS). Construction on roads that are similar in layout to motorways in Europe

or interstates in the United States started in 1988 only, when the first 17.6 km of expressway between Shanghai and Jiading were opened. Since then, the total length of expressways had reached 136,400 km by the end of 2017, and numbers are still increasing. The total length of expressways in China surpassed the total length of the interstate network in the United States already in 2011. (Khor/Khor 2019)

The current construction program was started by Chinese transport minister Zhang Chunxian in 2005. It was initially called the '7918 program' and was quickly renamed to '71118 program.' The numbers stand for a grid of 7 radial expressways from Beijing, 9 (later increased to 11) north-south expressways and 18 east-west expressways. The ambition of this project is for all provincial capitals and cities with more than 200,000 inhabitants to be connected to an expressway by 2035. The construction of expressways was fast-tracked in 2016 when rules and regulations for their examination, evaluation, and approval were simplified. The five-year plan from 2016 to 2020 planned to invest roughly 1 trillion EUR into the construction and modernization of the Chinese road system. (Khor/Khor 2019)

There is an interesting parallel between modern day Chinese road construction and 19<sup>th</sup> century European or American road construction, in the use of toll roads. In China today, the construction and maintenance of Chinese expressways is not done by public authorities but by a number of private companies. The reason is the same as it was in 19<sup>th</sup> century Europe: public budgets in the provinces, who are in charge of roads, are small, with little power to collect taxes on their own and even less power to borrow money for the construction of the many roads that impose significant technical challenges. The private companies have the right to collect tolls in return. Almost all expressways are tollways, which means that around 70 % of all tollways worldwide are located in China. Fees are, at the moment, collected in a similar way as in Italy – drivers receive paper cards when entering the expressways and pay upon leaving them depending on the distance driven. Currently, one km driven costs about 6 Eurocent plus a general charge of 60 Eurocent for entering the expressway, so tolls are relatively high – 300 km on an expressway cost almost 20 EUR.

Given the fact that a significant part of China is rather



**Fig. 76:**

**Construction of a part of the bridges and one of the artificial islands along the route Hongkong-Zhuhai-Macau.**

© Lwr1016 / Creative Commons BY 3.0

mountainous, the integration of the newly constructed expressways into the landscape was not that much a concern as it was to find technically advanced and audacious solutions for road construction. One example is the 240 km long Yaxi Expressway in southwestern China. It runs through an area which is more or less unfit for the construction of a major roadway because of its extremely steep slopes and narrow gorges. More than half of the 240 km long expressway were built as tunnels and viaducts, some of them literally covering a whole river valley. (www.youtube.com 2020)

Another example is the bridge from Hongkong to Zhuhai and Macau. It crosses the Pearl River Delta at a length of about 55 km. The core part of the road consists of a 22.9 km long bridge and a 6.7 km long underwater tunnel. As of 2017, only 30,000 drivers could actually use the new road connection, since it requires drivers to hold two driving licenses for right-side traffic in mainland China and left-side traffic in Hongkong and Macau. (Sha 2017) It currently holds the record for the longest bridge in the world running over water and is considered to be even longer than the bridge over Jiaozhou Bay in north-eastern China. Construction of the six-lane expressway started in 2009 and was finished in 2017.

Another spectacular construction is the so-called Over-Water-Highway in a rather remote part of central China, about halfway between Wuhan and Chongqing. Out of the 11 km long two-lane highway, 4.4 km is located on a bridge above a river that runs through picturesque mountains. The bridge does not cross the river but follows it longitudinally, so drivers are literally travelling above the water. The road was constructed between 2013 and 2015. (www.mostdangerousroads.org 2020)



# **LEISURE AND TOURISM-ORIENTED ROADS**



## 4.1. The Transition of Cultural and Military Roads to Leisure Roads in the 19<sup>th</sup> and Early 20<sup>th</sup> Century

### 4.1.1. Early Examples of Mixed-Purpose Alpine Roads (Michael Schimek, Kristina Skåden)

The Alps are the biggest mountain range in Europe and stretch like an enormous bow from the French and Italian Riviera in the west to Vienna in the east, including the countries France, Italy, Switzerland, Liechtenstein, Germany, Austria, and Slovenia. The mountain range is 1,200 km long and covers an area of 200,000 km<sup>2</sup>. (Askheim 2019)

Ötzi, also called the ‘Iceman,’ is the natural mummy of a man who lived between 3400 and 3100 BC in the Alps, found near the Similaun peak and the Hauslabjoch pass on the border between Austria and Italy. (www.ice-man.it 2016) This early evidence of human life in the Alps demonstrates a little about the early history of the area as a living space. Crossings have probably occurred for thousands of years. Still, in the Universal-Lexikon from 1732, the Alps are described as a “wall made by nature,” dividing northern Europe from the southern part. (Mathieu 2015) Furthermore, since the Alps stretch over several countries, the mountains are not just a topographic challenge, but also a diverse and multinational region, with a long military history, including different versions of borders and nations involved. Thus, there is a complex road history related to the area. Despite all barriers, humans and their need for travel have sought to find a way to cross the mountains, to explore, to attack, and to travel.

Alpine passes have, since ancient times, been important crossroads. The first ones to upgrade and frequently use them as transit roads were the Romans, though not from the beginning of the Roman empire. “While Roman trade relations had already expanded from Aquileia since the 1<sup>st</sup> half of the 2<sup>nd</sup> century BC into the Eastern Alps, the leading political groups in Rome showed little interest in that area and followed a very defensive policy which defined the Roman border along the mountain ranges of the Carnic and Julian Alps. That policy was changed only towards the end of the 1<sup>st</sup> century BC and between 15 BC and the middle of the 1<sup>st</sup> century AD, when the Eastern

Alps were integrated into the Roman Empire. From that moment, the first large road building programs were carried out, beginning with the renowned *Via Claudia Augusta*. Until the first Marcomannic invasions 160-180 AD, a huge road network was built, mainly determined by economic considerations. During this period, archaeological traces were left not only on the most important passes used by the *cursus publicus* but also on many less important passes used by local traffic.” (Gietl 2004) In the Western Alps, troops and traders predominantly used the Col de l’Argentière, the Col de Montgenèvre, and the two St Bernard passes (Little St Bernard and Great St Bernard).

Before 1800, carriage roads that made travel easier were only built over the Semmering, Brenner, and Arlberg passes in Austria and the Col de Tende on the trade route between Nice and Turin (from France to Italy). In the beginning of the 19<sup>th</sup> century, additional carriage roads were constructed on the great alpine passes mainly to facilitate the moving of Napoleon’s army. Many Alpine pass roads were enhanced over a long period of time, and extensively in the beginning of the second half of the 19<sup>th</sup> century. Their main purposes were communication, strategic military transport, and trade. The history of settlement in the Alps, the history of roads, and the development of traffic routes may not be separated from the issue of rivers and bridges. “Rivers have always been important in this context. Their valleys lead from the Alpine foothills into the inner Alps and up to the passes that are crucial for transit roads that cross the Alps. While rivers can be used for transport, they can also constitute a barrier that needs to be bypassed or crossed. Bridges tell the story of a challenge that builders and architects had to face for millennia.” (Doswald 2019)

Since the rise of tourism throughout Europe, the main function of many alpine passes shifted. Instead of primarily serving professional transit and trade, they mainly became tourist and leisure roads. Modernized

## The Transition of Cultural and Military Roads to Leisure Roads in the 19<sup>th</sup> and Early 20<sup>th</sup> Century

road infrastructure and means of transportation opened up the mountains, boosted Alpine tourism, and the Alps were described as ‘The Playground of Europe’ by the English author Leslie Stephen in 1871. (Mathieu 2015) Re-defining the Alpine passes from trade and military routes to tourist routes was – and still is – done by a wide range of different actors (tourist industry, public authorities, organizations, and businesses), and by a number of different means. An early example that may be interpreted as a starting point for the re-definition of the Alps as a tourism destination is the poem *Die Alpen* (“The Alps”) written by the Swiss scholar Albrecht von Haller (1708–1777) in 1729. Haller describes the beauty of the landscapes with florid sensual language: “the plum of honied flavor,” or “circling peaks create a rim of gleaming blue.” (Stoffel 2018) From the beginning of the 19<sup>th</sup> century, picturesque Alpine sceneries were created and extensively circulated by pictures, postcards, books, maps, and poems. (Rohrer 2010)

Economic prosperity in the second half of the 18<sup>th</sup> century was a driving factor for creating ways to cross the Alps and to connect the economic and commercial centers of northern and southern Europe. This was later influenced by Napoleon’s conquest of wide parts of central Europe and Italy, the restoration of many of the old kingdoms after the Congress of Vienna in 1815, and the

increasing industrialization on both sides of the Alps. Almost all traditional passes remained daring and adventurous roads resembling mule paths and footways rather than roads able to carry carts, carriages, and heavy loads.

The most important pass road in the Eastern Alps has always been the Brenner Pass. At a height of only 1,374 m, it is the lowest of all routes through the Alps from Germany to Italy. The existing pass road, rooted in Roman times, was improved in 1777 in order to be trafficable all year long. Afterwards, the Brenner route remained an important site of transit through the Alps, even after South Tyrol had become a part of Italy after World War I. Similar to other Alpine road passes, the Brenner road lost importance after a parallel railway was built from 1864 to 1867 (von Röhl 1912) by the privately owned *Südbahngesellschaft*, since the Austrian monarchy could not afford investment in new railway lines. Most of the shareholders in *Südbahngesellschaft* were French investors (Mehrl n.d.). The old road was downgraded after the construction of the Brenner motorway during the 1960s and 1970s, one of the first mountain motorways in Europe. The old road is now closed for truck transit. (Mitterer 2014)

Numbers of cars and trucks using the Brenner route have exploded since then, up to more than 10 million cars and more than 2.5 million trucks a year, which is three times as many as on all Swiss Alpine passes in total. This

**Fig. 77:**

**Near the Brenner pass in North Tyrol: The old road to the right, the Brenner motorway to the left.**

© Arnulf zu Linden / Creative Commons BY-SA 3.0



## The Transition of Cultural and Military Roads to Leisure Roads in the 19<sup>th</sup> and Early 20<sup>th</sup> Century

is not a desirable situation for the local people, both for health and environmental reasons. They have organized in citizen groups and are ready to take action when even more liberalization for transit traffic over the Brenner is discussed, like they have done a number of times before. (www.tt.com 2018) A 55 km long railway base tunnel from Innsbruck to Franzensfeste (Fortezza) is currently under construction. It is planned to be opened in 2028. When combined with another tunnel built in the North Tyrolean Inn valley in the 1990s, it would be the longest underground railway line in the world, at a total length of 64 km. (www.bbt-se.com 2020)

From 1796 to 1799, Napoleon conquered Savoy, Piedmont, Lombardy, and Venetia and created the Helvetian Republic after occupying Switzerland. In order to maintain and consolidate his power, he needed quick and efficient roads to shift troops over the Alps. Napoleon chose the shortest connection from Paris to Milan over the Simplon pass. This first newly created engineered road through the Alps connects Brig in the Swiss Valais with Domodossola in northern Piedmont. It was built from 1800 to 1805 by 2,000, sometimes even up to 3,000 men per day (Broch 1848) and was never used by Napoleon himself, since it was finished too late for his travel to and from his crowning of the King of Italy. However, it was used by the Austrian and Russian armed forces on their

way to France at the end of the Napoleonic wars in 1815.

The Simplon Pass was used as early as during the Stone Ages but “it was not until the mid-13<sup>th</sup> century that the pass attained any importance as a route.” (www.britannica.com 2019) “During the 17<sup>th</sup> century, mainly smugglers and mercenaries used the pass, because the narrow Gondo gorge was considered by Roman era architects to be impassable.” (www.dangerousroads.org 2020) “It was the Brig merchant Prince Kaspar Jodok von Stockalper who began to use the Simplon Pass in the middle of the 17<sup>th</sup> century for bringing salt on the backs of mules from the Mediterranean. The monumental Baroque Stockalper Palace in Brig bears witness of his legacy.” (www.myswitzerland.com 2020)

The Simplon road crosses the Alps at an elevation of 1,995 m. It contains eight larger bridges and seven avalanche screens, a number of shelter huts, a hotel in the village of Simplon, and a hospice at the pass summit which was first mentioned in 1235 as ran by the Order of St. John. One of the special places along the road, both from an engineering and a touristic point of view, is the *Galleria del Gabbio*, on the Italian side of the border. The Galleria del Gabbio became a well-known viewpoint, described in many travel books. In ‘The People’s Magazine’ (1834), the road is described as spectacular, the bridges and countless galleries were, according to the journal,

**Fig. 78:**

**The Simplon pass road,  
picture taken around  
1916.**

© Schweizerisches  
Bundesarchiv /  
Public Domain



considered to be the most remarkable monuments of their kind in the world.

Following its opening, a post carriage route was created which was operated with horse sleighs during winter until 1953/54. The road lost part of its significance after the first trans-Alpine railways had been built in Austria and Switzerland during the second half of the 19<sup>th</sup> century. In 1906, the Simplon railway tunnel was opened and at the time was the longest railway tunnel in the world. The road re-gained its importance with the increased motorization of the 20<sup>th</sup> century, both as a transit and a tourism route. In 1957, the road was improved for modern car traffic, and in doing so lost the substance of the original Napoleonic road. (Arnold 2012)

After the restoration of the Kingdom of Sardinia-Piedmont following the Congress of Vienna, both Switzerland and the re-established Kingdom had an interest in creating a powerful transit road over the Alps. The newly engineered road over the San Bernardino pass was built from 1818 to 1823 and jointly financed by the Kingdom of Sardinia-Piedmont, the Canton of Grisons, and the freight transport guild from Chur, the capital of Grisons. At an elevation of 2,067 m, the San Bernardino pass connects the Upper Rhine Valley at Hinterrhein in the Swiss Canton of Grisons with the Valle Mesolcina (Misox in German), one of the valleys belonging to Grisons where Italian is the predominant language. The pass route extends on to Bellinzona in the Canton of Ticino and further to Piedmont.

Based on old connecting trails, the new road required the bridge over the Rhine at Niederrhein to be relocated. The hairpins following the bridge managed to bypass some slopes with high avalanche risk. The road quickly became important, both for transit and for tourism. Like at the Simplon pass, a hospice was opened at the pass summit. Not all local people benefitted from the road economically. Farmers of the valley had established a porter guild during medieval times, which had acquired a monopoly for freighting goods over the pass and through the Mesolcina valley and provided income to the region. The guild was finally abolished in 1861. Like many other mountain passes, the road lost importance during the second half of the 19<sup>th</sup> century after the construction of the trans-Alpine railways. This was despite no parallel railway built next to the San Bernardino pass. Since the

end of World War II, the road is closed in winter. In 1967, a 6 km long road tunnel was built between the villages of Hinterrhein and San Bernardino, creating a winter-safe connection between the Mesolcina valley and the rest of the Canton of Grisons. (Simonett 2011)

A second pass road was built just 10 km east of Hinterrhein in order to connect Grisons with Lombardy, which had become Austrian again following the Congress of Vienna. The road begins at Splügen in the Upper Rhine Valley and crosses the Alps at the Splügenpass, at an elevation of 2,113 m, into the Lombardian Val San Giacomo (St. Jakobstal in German) and on to Chiavenna. It was also built from 1818 to 1823, against the interests of the local porter guild. The planner, Italian engineer Carlo Donegani, bypassed an avalanche slope on the northern side of the pass and a gorge on the southern side. In the Val San Giacomo, a number of avalanche screens provided for increased security along the road, such as some shelter huts. Like the San Bernardino pass, the Splügenpass lost importance during the second half of the 19<sup>th</sup> century, despite no parallel railway line constructed. Likewise, the pass is closed during winter since the end of World War II. (Simonett 2013)

Arguably the most iconic Alpine pass road built in the 1820s is the Stilfser Joch road (Passo di Stelvio in Italian). After the Congress of Vienna, Austria re-gained control over Lombardy and was interested in building a direct connection between Lombardy and the rest of the empire. After studying possible alternatives, the Austrian authorities made the decision to create a new road from Prad in the South Tyrolean Vinschgau valley to Bormio in the Lombardian Valtellina valley (Veltlin in German). Like the Splügenpass road, it was planned by Carlo Donegani. The road was built from 1820 to 1825.

The eastern ramp to the pass starts at the village of Trafoi, close to the highest peak of the Austro-Hungarian Empire, the Ortler. The road then climbs to an elevation of 2,757 m, making it one of the highest Alpine pass roads to this day. Between Trafoi and the pass summit, the 27.5 km long stretch contains 48 switchbacks, signed with number plates. For the 21.7 km long western ramp to Bormio, 34 switchbacks proved to be enough. It also features six short tunnels. A few years after the opening of the road, the eastern ramp was amended with a number of wooden avalanche shields, as it proved to be dan-



Fig. 79:

The east ramp of the  
Stilfser Joch pass road.

© Armin Kübelbeck /  
Creative Commons  
BY-SA 3.0



gerous in winter.

The road was operated in winter up until 1848. During the Revolution of 1848, Lombardian rebels proved that the road was very vulnerable and could not serve as the main line for shifting troops from Austria to Lombardy, as intended. The Austrian army leader Radetzky therefore decided to improve the road over the Passo del Tonale, about 30 km south of the Stilfser Joch

and 900 m lower, as a bypass to the Stilfser Joch. After 1859, Lombardy became part of Sardinia-Piemont, which a few years later joined the newly unified Italian Kingdom. Since then, the Stilfser Joch had been located at the border between Austria and Italy and had lost any function for the internal purposes of Austria. As a result, the Italians were required to ask Austria to keep the road open during summer at least. After World War I, South

## The Transition of Cultural and Military Roads to Leisure Roads in the 19<sup>th</sup> and Early 20<sup>th</sup> Century

Tyrol became part of Italy, and so the road finally ended up entirely in Italy. (Pernter 1925)

The Stilfser Joch (Passo di Stelvio) road is renowned as one of the hot spots of Alpine tourism. In 1935, parts of the road were included in the Stelvio National Park, which, together with the bordering Swiss National Park, represents one of the largest protected nature areas in Europe. The pass summit can be reached by a regular bus line, despite the narrow, winding road, which is difficult to drive. On a number of occasions, the Stelvio was part of the Giro d'Italia bicycle race. At the pass summit, a monument stands for the five-time winner of the Giro d'Italia and Italian bicycle racing legend Fausto Coppi.

Initiatives to make Stelvio pass a toll road, given the increasing tourism traffic, so far have not come to fruition. In 2015, the presidents of the South Tyrol and Lombardy regions signed a memorandum to analyze the potential of a railway tunnel under the pass. Additionally, they have committed themselves to investigate a World Heritage recognition for the Stilfser Joch pass road.

The Sankt Gotthard Pass at 2,106 m is a mountain pass in the Alps traversing the Saint Gotthard Massif and connecting northern and southern Switzerland. The pass lies between Andermatt in the German-speaking Canton of Uri and Airolo in the Italian-speaking Canton

of Ticino. It connects Lucerne, Basel, and Zürich in the north to Bellinzona in the south, making it an important north-south axis in Europe. Some parts of the route rank among the most important monuments for the role of Alpine transit in Switzerland. The *Teufelsbrücke* ('Devil's Bridge') is a monument commemorating the opening of Central Switzerland in the Middle Ages, the *Tremolastraße* a similar achievement of art road construction techniques through the Alps like the Stilfser Joch, the *Gotthardbahn* railway stands for industrialization, the highway tunnel for mass motorization, and the *Neue Eisenbahn-Alpentransversale (NEAT)* with its 57 km long base tunnel is a forward-looking transfer of transit traffic back to railways. (www.myswitzerland.com 2020)

Starting in the 13<sup>th</sup> century, a mule track ran over the Gotthard. With the construction of a continuous road from Flüelen to Ticino, the age of post coaches began on the Gotthard Pass. In 1830, the road was ready for the use by horse-drawn carriages. The Gotthard Mail Coach, a new three-horse carriage, ran once a week from 1832 and three times a week from 1834. In 1842, a daily connection from Lucerne to Milan was established, which at that time took 31 hours. The journey was now considerably shorter, but it was still extremely difficult. "The next major step forward came with the arrival of the train,

Fig. 80:

A picture of Axenstrasse taken in 1905 for a photo catalogue produced in Detroit, Michigan.

© Ashley van Haeften / Creative Commons BY 2.0



## The Transition of Cultural and Military Roads to Leisure Roads in the 19<sup>th</sup> and Early 20<sup>th</sup> Century

which completely transformed the journey from northern to southern Switzerland. The first Gotthard tunnel was opened in 1882, a double-track tunnel, 15 km long, linking Göschenen in the north, in the Canton of Uri, to Airolo in the south, in the Canton of Ticino.” (www.houseofswitzerland.org 2019)

In 1883, its first full year of operation, around 250,000 passengers and 300,000 tons of goods passed through the new tunnel. In 1909, the Swiss Federal Railways (SBB) took over the operation of the railway line. The new Gotthard base tunnel took 17 years to complete, and it is the currently longest railway tunnel in the world. It is over 57 km long and lies some 2,300 meters under rock. In just 20 minutes, trains can travel from Erstfeld, north of the Alps, to Bodio on the south side. (www.houseofswitzerland.org 2019)

Not all of the St Gotthard route was done by 1860. Until then, a 13 km long part of the road, between the villages of Brunnen in the Canton of Schwyz and Flüelen in the Canton of Uri along the eastern shore of the southernmost part of Lake Lucerne, had not yet been built. All transport from Milan to Zürich had to be reloaded to ships on the lake. People from Schwyz had been negotiating with the Canton of Uri about the construction of a road already during the 1830s, but for the next twenty

years the plan had been turned down because of the technical challenges it imposed and because a new steamboat connection on Lake Lucerne had made travel considerably shorter from 1837 onwards.

Construction of the new Axenstrasse along the lake (the road is named after the mountain it lies in front of) finally started in 1862 and was finished in 1865. The road was carved and blasted into the rocks, creating numerous galleries and tunnels, similar to the *Gardesana Occidentale* along Lake Garda in Italy built at the end of the 1920s. At the grand opening, a cart drove from Brunnen to Flüelen showing the sign “*Sei gegrüsst, mein Bruder! Heut komm ich zu dir ohne Ruder!*” (“Greetings my brother! Today I come to you without oars!”). The road constitutes a milestone in road construction technique and served as a role model for similar projects, like the Columbia River Highway in Oregon. It also marks the start of the tourism industry in the remote parts of the Canton of Schwyz. Many hotels were built straight after the opening of the road, and tourism provided work for the farmers of the region during winter. (Hodel 2016)

A similar, though shorter road was built in Austria a few years before. Formerly, the salt mined in the Inner Salzkammergut salt mines and processed at the salt refinery in Ebensee was loaded on ships on Lake Traunsee

**Fig. 81:**

**Juf near Septimerpass, continental Europe’s highest permanently inhabited village.**

© Roland Zumbühl / Creative Commons BY-SA 3.0



on its way north, bypassing the steep mountains between Traunkirchen and Ebensee. Until the end of the 18<sup>th</sup> century, when a parish was established at Ebensee, all children from Ebensee had to take a boat trip to Traunkirchen for their baptism, a procedure which many of them didn't survive during winter. ([www.dioezese-linz.at](http://www.dioezese-linz.at) 2020) From 1856 to 1861, the remaining 5 km of road were carved and blasted into the rocks along the lake, featuring numerous galleries and short tunnels. Similar to the Axenstraße, the road gained immediate significance for transporting tourists to the summer resort of the Austrian Emperor at Bad Ischl, especially because of the fact that the Salzkammergut Railway was only opened 16 years later, in 1877. (Brandner 2011) A monumental statue of a lion, representing the courage and the will of the local population for hard labor, marks the beginning of the road. It was bombed in 1963 by Italian fascists during the South Tyrol conflicts of the time and re-erected. Similar to the Axenstraße, many historic parts of the road, including the historic center of Traunkirchen, were bypassed by a series of tunnels at the end of the 20<sup>th</sup> century. The old road is now used as a bike path. ([www.traunsee-almтал.salzkammergut.at](http://www.traunsee-almтал.salzkammergut.at) 2020)

Many other upgrades on existing Alpine pass roads underline the widespread development during the 19<sup>th</sup>

century. For example, the inner Swiss pass road of the Julierpass in the Canton of Grisons, an old Roman pass route, was adapted to carriages around 1820, or the Albulapass, 15 km to the northeast from the Julier, around 1860. The Furkapass between the Reuss and Rhône river valleys was enhanced from 1864 to 1866 mainly for military reasons. Passes like the Septimerpass, just a few kilometers from the Julier, remained mule tracks, on the other hand, and lost their importance as Alpine pass routes. Also some of the important pass routes between modern-day France, Switzerland, and Italy, like the Col du Grand Saint-Bernard, the Col du Petit Saint-Bernard, or the Col du Mont Cenis, were enhanced or re-built during the 19<sup>th</sup> century.

Many of the written descriptions of the scenic pass roads, and the many pictures and paintings of Alpine passes, galleries, tunnels, and roads stretches are interpretations of the road as an interconnection between the art of engineering and the sublime landscape. Thus, we can say that the images highlight a 'technological sublime.' David Nye calls this an indescribable "affection for spectacular technologies" (Nye 1996; Larsen 2010). The multi-faceted interpretation of Alpine passes still continues, contributing to an ongoing re-definition of the area.

#### 4.1.2. First Mixed-Purpose Roads for Motorized Leisure Traffic (Michael Schimek)

By 1900, tourism had become a significant source of income for many rural areas, such as the Alps. As a result, many scenic Alpine pass roads were improved to meet the requirements of increased tourism traffic. These roads were primarily for the newly established post bus traffic, although planners already had an eye on private motorization, which was taking off in Europe at the time.

One example is the road over the Umbrailpass in south-east Switzerland, connecting Santa Maria in the Val Müstair valley over the Swiss border with the western ramp of the Stilfser Joch road. At an elevation of 2,501 m, it is Switzerland's highest Alpine pass road. Built in 1901, the road was initially used by carriages and carts, as the canton of Grisons banned motorized road traffic from 1900 to 1925. Today, the road has more or less kept

its original layout and is still fit for the demands of contemporary leisure car traffic. (Bundi 2013)

Another similar pass road in Switzerland is the Grimselfpass from Guttannen, near the source of the Aare river in the canton of Berne, to Gletsch, near the source of the Rhône river in the Canton of Valais, where it connects with the Furkapass road. The pass was considered an important connection from the Swiss cities to Piedmont since medieval times. However, Grimselfpass lost its transit function after the building of the first railway tunnels, as many other Swiss passes had. Already during the 18<sup>th</sup> century, the pass and its surroundings were preferred tourist destinations during the 'classic Swiss journey' and were regularly visited during the 19<sup>th</sup> century. Moreover, the mountain inn at the pass summit (*Grimselfhospiz*) has

Fig. 82:

Flexenstraße,  
Hölltobel passage.

© Gsigi / Creative  
Commons BY 3.0



a significantly longer tradition than many other similar inns. When the pass road was finally made fit for carriages and carts with an engineered road in 1894, it already had a mainly touristic purpose. (von Rütte 2006)

Another iconic Alpine scenic road which has its roots at the end of the 19<sup>th</sup> century during the time of winter tourism establishment in the Arlberg region, at the border of Tyrol and Vorarlberg, is the Flexenstraße road in Vorarlberg, Austria. At an elevation of 1,793 m, the Arlberg pass separates the Austrian federal states of Tyrol and Vorarlberg and continues to be the most important transit route between the two states. The pass road was built by 1824, whereas the 10.6 km long Arlberg railway tunnel was constructed between 1879 and 1884. Both remain important transit routes to date. Currently, the pass road is still used by heavy trucks as an alternative to the Arlberg road tunnel, built in the 1970s, in case the tunnel is closed.

The tiny villages of Zürs, Lech, and Warth, north of the pass, are now some of the most important and high-class winter tourism resorts in Vorarlberg. The villages were almost inaccessible, although their vicinity to the Arlberg resorts had begun to increase their visibility as a destination for Alpine tourism. Therefore, the Austrian state, the province of Vorarlberg, and the municipalities

of Lech, Warth, and Klösterle (which held land along the future road) agreed to jointly finance the construction of a new and safer road from the Arlberg pass to the villages.

From 1895 to 1897, the existing mule track over the Flexenpass to Zürs (named after the local dialect term for swingbacks, *Flexen*) was replaced by a new, 3 m wide carriage road with a maximum gradient of 10 %, literally dug into the vertical rocks of the region. In order to avoid rockslide and avalanche areas, numerous tunnels and avalanche shields were constructed. These continue to contribute to the scenery and make the road appear like it is an integral part of the mountains it was built within. The road was significantly improved during Nazi times, when it was widened, many of the wooden avalanche shields were replaced by concrete structures, and some tunnels were relocated. The road leaves a breathtaking impression to all people who visit this region, which has, because of the construction of the road, turned from a remote Alpine pasture area into one of Austria's most important tourism hotspots. (Kaiser 2000)

A famous example of a multi-purpose Alpine road built around 1900 is the Great Dolomite Road (*Große Dolomitenstraße*). Now a part of Italy, it was still located entirely in the Austrian Empire at the time of its construction. The background of its construction relates to

## The Transition of Cultural and Military Roads to Leisure Roads in the 19<sup>th</sup> and Early 20<sup>th</sup> Century

the military. After 1859, Austria had lost Lombardy and Venetia to the newly established Italian state. This also meant that the most direct railway connection between Vienna and Bozen (Bolzano; the Italian names are given in parentheses since they were not the original names but given to the cities by the Italian fascists after 1922), via Venice and Verona, was now partly located in a foreign country. That is why around 1870 a parallel railway line was built, running entirely inside Austria, through Carinthia via Toblach (Dobbiacco) and Bruneck (Brunico) to Franzensfeste (Fortezza). This line was still located close to the Italian border, though. Therefore, a new military road was set to be built south of the railway line in order to serve as a protective line to the railway in case of a war.

Over time, a number of different road layouts have been given the name 'Great Dolomite Road.' Sources from 1909, the year of its opening, attribute the name to a 142 km long road winding from Bozen (Bolzano) via Canazei and Arabba to Anpezo (Cortina d'Ampezzo) and on to Toblach (Dobbiacco). It crosses the Karerpass (1,752 m), the Pordojoch (2,239 m), and the Falzarego-pass (2,105 m). Some stretches of the road already existed, but some parts required construction, particularly the stretch from Canazei to Anpezo over the Pordoi and the Falzarego passes. Construction started in 1897 and was finished in 1909. The maximum gradient of the road is 6 to 7 %, which clearly indicates that it was designed with an eye for military units to be shifted using the road.

Many of the villages the road runs through were al-

ready important Alpine tourism destinations by 1909. Like in many other Alpine resorts in Austria, affluent people had chosen Bozen, Anpezo, or Toblach for their summer vacation. Some luxury hotels were built, attracting a demographic who could already afford a car of their own. Newspapers reports of the opening ceremonies in Anpezo and at the Falzarego-pass focused on describing the tourism appeal of the region and the newly built road. The road's military purpose or effect on local employment were not mentioned at all.

Tourism businesses increasingly focused on automobile tourists in the years after the opening of the road. Even though a lot of the visitors still arrived by post bus or by horse carriage, more and more people used their own car. Creative business owners offered car rental services for self-driving for pleasure, or with a driver. Automobile tourists increased in numbers. In 1914, Karl Felix Wolff, in his travel guide, advised motorists to drive slowly, as there were no parallel roads to be used. This should allow for local farmers to keep herding their cattle across the road and for drivers for a greater enjoyment of the splendid landscape. The Baedeker travel guide of 1926 even advised hikers not to use the road because of the amount of car traffic. This is remarkable taking into account that both Austria and Italy were among the least motorized countries of Western and Central Europe at the time.

The road did not only access places which were already significant tourism destinations. As a result, smaller plac-



Fig. 83: The summit of Pordojoch, Great Dolomite Road.

## The Transition of Cultural and Military Roads to Leisure Roads in the 19<sup>th</sup> and Early 20<sup>th</sup> Century

es along the road profited enormously. For example, Buchenstein (Livinallongo del Col di Lana) only featured a single inn in 1910. A year later, an additional hotel and three more inns had opened. Canazei developed as a preferred spot for mountaineers, because of its vicinity to Marmolata, the highest peak of the Dolomites. In 1910, it had only two inns. By 1926, four hotels had opened with a total of almost 200 beds. The Baedeker travel guide also mentioned the addresses of nine mountain guides who lived in Canazei and described a number of mountain tours and the Alpine refuges along the hiking and climbing routes. (Pöll 2013)

The success of the Great Dolomite road proved that a focus on automobile tourism could be a successful model for other tourism destinations. This explains the investment in similar road infrastructure despite the economic

crises and the slow increase in private motorization of the interwar times in many countries in Europe.

A road from that time in France is the Col d'Izoard at the northwestern face of the Queyras Massif. It runs from Briançon to Château-Ville-Vielle, where it connects to the border pass of Colle dell'Agnello to Italy which was improved as a road during the 1970s. The Col d'Izoard is older. It was constructed from 1893 to 1897 by the French General Henri Baron Berge after he retired from active service. The pass summit features an exceptional landscape called *Casse Déserte* (Deserted Breakage) which reminds some people of the surface of the moon. Its main geological features are so-called *cagneules*, limestone columns which appear when dolomite portions of the rocks are washed off. In 1989, a museum for the regional nature park of Queyras was opened at the summit.

### 4.1.3. Ocean Drives Turned Scenic Routes (Dan Moore)

Many ocean roads originally began as utilitarian solutions to difficult to travel routes. In the case of California State Route 1, the initial motivation was to get from Los Angeles to the difficult to reach Santa Barbara, a city tucked into the mountains on the Pacific coast. Initially, what later became known as the Rincon Point Road, the route was just an unimproved route along beaches that skirted the rock outcroppings at low tide. But this route was impacted by high tides and storms as well as mud and rockslides. (Redmond 2011) To not be bogged down

these frequent and occasionally lengthy delays, an alternate route was established in 1878 over Casitas Pass. But this was still a long and treacherous route and was designed for stagecoach. The increased popularity of the automobile in the early 20<sup>th</sup> century spurred a movement to construct an actual road in the area around Rincon Point. The road would be financed mostly by the recently developed State Highway Commission. The majority of the funding would be used to construct three raised wooden causeways over the high-tide areas of the beach

Fig. 84:

Bixby Creek Bridge, viewed from the northern side near Big Sur on the Central Californian coast.

© David Iloff / Creative Commons BY-SA 3.0



## The Transition of Cultural and Military Roads to Leisure Roads in the 19<sup>th</sup> and Early 20<sup>th</sup> Century

in the Rincon region.

State Route 1 would go on to be a total of 650 miles and connect Orange County to Mendocino. Not all of it is right on the water, but the sections that are most famous today travel on roads that seem to cling to the rocky cliffs towering above the Pacific Ocean. An example is Bixby Bridge, one of the most photographed bridges in California and rated one of the most 'Instagram-Worthy Destinations for 2019.' What was originally designed as a way for remote communities to be accessed is now an important travel experience for travelers from around the world.

Another ocean drive turned scenic route is the Amalfi drive in Italy. The Strada Statale 163 Amalfitana (SS 163), as it is known in Italy, is an Italian coastal road that connects the towns of Sorrento and Salerno and passing by or through thirteen picturesque villages. These villages seem to be carved out of the rocks and cling to the edges of cliffs above the Tyrrhenian Sea. The most scenic part of the route runs from Meta di Sorrento to Vietri sul Mare. The drive lies completely within the Italian region of Campania and is 50 km long, and the entire coast is listed as a UNESCO World Heritage Site.

Work on the road commenced in the year 1832, com-

missioned by Ferdinand II, the King of the Two Sicilies, and ended on April 26<sup>th</sup>, 1850. At the time of its design and construction, its purpose was exclusively to create connections, not the opportunity for scenic driving along the narrow road. Prior to the construction of SS 163, locals reached the towns by footpaths, which are still enjoyed today by trekking enthusiasts.

The automobile was not yet present at the time of the road's construction. Planning the road for automobile tourism was therefore unimaginable. All subsequent development, as well as its marketing as a scenic or panoramic road, were not part of an original concept, but rather only came later. Because of its pre-auto origin, the road is very narrow and winding. The narrowness of the road still requires rules for passing traffic, and certain areas are closed to camper vans and motorhomes daily from 6.30 a.m. to midnight.

The Road to the Isles is scenic road in the Scottish Highlands which was completed in 1812. Until 2009, the section between Arisaig and Lochailort was the last single-lane trunk road in the United Kingdom. It is located in the Highland Council Area and connects the towns of Fort William and Mallaig. The road is approximately 65

**Fig. 85:**

**Driving on the Amalfi coast.**

© Costas Tavernakis / Creative Commons BY-ND 2.0





**Fig. 86:**

**U.S. Highway 101 on the coast of Oregon, north of Florence.**

© JT Perreault / Public Domain



km long and was originally a cattle-droving track. The Road to the Isles' original route corresponds closely to the route of the A830. The road opens up a scenically unique region and is extensively advertised for tourism. Its planning, however, focused on the development of this region, especially for the local inhabitants.

The Oregon Coast Highway is a nearly 600 km road in the United States stretching from the border of California to the Mouth of the Columbia River along the coast of the State of Oregon. Similar to many of the other coastal roads mentioned, prior to the creation of the Oregon Coast Highway many villages and attractions were virtually inaccessible by land and even difficult to reach by sea. After a failed attempt to get federal money to build the highway after World War I, the road finally was able to muster enough state funding so that construction could be started in 1921. The road was formally opened in 1926 as U.S. Highway 101, with many large infrastructure projects lasting into the 1930s. In 1931, it was formally

named the Oregon Coast Highway.

A notable characteristic of the Oregon Coast is, thanks to the advocacy of former Governor Oswald West, the declaration in 1913 by the Oregon legislature that the entire length of the ocean shore is a state highway. This declaration, later codified into law by the Oregon Beach Bill of 1967, allowed free beach access to everyone and inspired the coast to be named 'the people's coast.' Shortly after designation as a state highway, the Parks and Recreation Department bought land along the coastal highway to create 36 state parks – an average of one every sixteen kilometers. This aspect has impacted the development of the coast, providing many accessible sites to attract visitors, and consequently has made the Oregon Coast Oregon's top tourist destination.

In all the examples above, the coastal roads provide equal parts of scenic beauty, engineering marvel, and increased access to formerly inaccessible areas.

## 4.2. Historic Carriage and Car Parkways in the United States (Sally Pearce)

### 4.2.1. 19<sup>th</sup> Century Carriage Parkways

Attractively landscaped roadways have a long tradition in European urban planning. The concept of broad boulevards and tree-lined avenues found in Europe, like a number of European roads that were built around 1850,

like the Avenue Foch in Paris or the Ringstraße in Vienna, set the stage for the late 19<sup>th</sup> century parkway movement in the United States. The idea of building parkways grew out of the 1890s City Beautiful Movement, which sought

## Historic Carriage and Car Parkways in the United States

---

to create beautiful cities with grand, landscaped boulevards for the purpose of recreational walking, riding, and driving carriages. These roads became engineering marvels and beautifully landscaped works of art. They were designed for horse and buggy speeds and served as the first known acknowledgement of driving for pleasure on scenic roads.

Central Park is widely known for its formative influence on early park development, but it was equally important to parkway design in the United States. Planned by landscape architects Frederick Law Olmsted and Calvert Vaux, Central Park employed many design approaches later adapted to parkway design. These included limited roadway access, informal design, and attractive grade-separated bridges at intersections. “The separation of different types of traffic was also exceptional, with pedestrians and equestrians provided with separate circula-

tion networks and utilitarian cross-park traffic restricted to inconspicuous secondary roads.” (NPS 2001)

Olmsted and Vaux are often credited with introducing the term ‘park-way’ in the late 1860s. “The term ‘park-way’ captured the concept of an urban area that combined the functions of a ‘park’ and a ‘way’. Olmsted and Vaux designed their first parkways to provide access to Prospect Park in Brooklyn, New York. Eastern and Ocean Parkways were lined with trees and turf to provide attractive environments for walking, riding, and carriage driving. Parallel secondary roads accommodated utilitarian traffic and access to houses. The Brooklyn parkways were clearly influenced by the boulevards in Paris and were formally developed with regularly spaced plantings in parallel rows.” (NPS 2001)

In his Ph.D. dissertation entitled ‘Mount Vernon Memorial Highway and the Evolution of the American



Fig. 87: Separate ways for carriages and pedestrians in Central Park. Bridge designed by Calvert Vaux.

## Historic Carriage and Car Parkways in the United States

Parkway,' landscape historian Timothy Davis writes that during the 1880s Olmsted and his associates designed a series of park improvements in Boston, Massachusetts that connected the city to its outlying districts by a combination of boulevards, carriage drives, and informal linear parks. As Davis points out, Olmsted's Boston projects helped redefine the basic concept of a parkway from a tree-lined but essentially urban avenue into a park with a road as its principal design feature. (Davis 1997)

"The advent of the automobile and subsequent rise in recreational driving substantially altered the concept of parkway. By 1925, Frederick Law Olmsted [Jr.] described the four types of roads that in his view fit the definition

of parkway. They were the 'elongated park' or linear park that possessed the landscape features of two parks it might connect; the 'ornamental street' designed to enhance property values; any thoroughfare with a more aesthetically pleasing appearance, in a landscape sense, than an ordinary street; and finally a combination of an elongated park and landscaped thoroughfare." (Soulliere 1995)

In many cases, the parkway was used to replace polluted commercial and industrial areas with picturesque landscapes which were more attractive to leisure driving. The earliest parkways in the United States were in Westchester County, in the state of New York.

### 4.2.2. The Bronx River Parkway

The first of the modern parkways, the Bronx River Parkway, was built primarily for pleasure and recreational driving. "The 13-mile-long road was part of a larger effort to save the Bronx River from further degradation through land reclamation, provide a park-like connector between Westchester County and New York City, and create a park on both sides of the river." It introduced features such as grade-separated interchanges, grassy medians, landscaping that screened adjacent buildings, lights, and the concept of limited access to the roadway. "In addition, the

varying width of the entire parkway corridor created additional visual interest." (Soulliere 1995)

The Parkway was first suggested around 1895 in legislation creating the Bronx Valley Sewer Commission. The Bronx Parkway Commission was appointed in 1906 but did not receive acquisition funding until 1913. Despite the lack of public funds, construction on the parkway began in 1907 and was completed in 1925. The Commission's primary goal was to restore the Bronx River with the parkway as a secondary benefit. "The roadway would

Fig. 88:

Bronx River Parkway.

© Doug Kerr / Creative Commons BY-SA 2.0



be a scenic area also used for recreational opportunities including swimming, walking, skating, bird-watching, and various organized athletic activities.” (NPS 2001)

Aside from the parkway drive itself, the Bronx River Parkway’s outstanding engineered features were bridges and viaducts. The Bronx Parkway Commission insisted that prominent man-made features be designed to harmonize with the parkway’s natural appearance. “Other structural elements designed to complement the parkway’s natural features were guardrails, light standards, and the rock work used in retaining walls and riverbank protection.” (NPS 2001)

“The Bronx River Parkway Reservation was a success long before the parkway was completed. The project

strongly influenced public sentiment in favor of supporting additional parkways, recreational facilities, and improved transportation routes. As early as 1913, a similar treatment was proposed for the nearby Hutchison River.” By 1932, three more parkways had been built including the Hutchison River Parkway, completed in 1928, the Saw Mill River Parkway, completed in 1929, and the Cross County Parkway, completed in 1931. (NPS 2001) Some of the additional parkways in and around New York City were planned by Robert Moses, a city planner and Commissioner of the New York City Planning Commission from 1942 to 1960 who later became a controversial personality because of his plans to construct highways within the city.

#### 4.2.3. Mount Vernon Memorial Highway / George Washington Memorial Parkway

Urban landscapes were the focus early on in parkway design, but soon parkway designs were being adapted for rural areas. “Completion of the Mount Vernon Memorial Parkway in 1932 fulfilled an idea that started in 1886. Citizens from Alexandria, Virginia proposed this parkway as a memorial to the first president of the United States.” 19<sup>th</sup>-century Americans regarded Mount Vernon, the historic home of George and Martha Washington, as a national shrine. The journey to Mount Vernon, located on the Potomac River 15 miles south of Washington D.C., “was seen as a patriotic pilgrimage that would improve the visitor’s character and strengthen the nation by fostering greater appreciation for the ideas, events, and values of the early republic.” (www.fhwa.dot.gov 2020)

The McMillan Plan of 1901/02 was the United States’ first attempt at city planning. The plan, however, went beyond planning in the urban area. Members of the McMillan Commission envisioned “drives along the palisades of the Potomac above Georgetown to Great Falls and down the River to Mount Vernon.” These drives had certain definitions: “Parkways or ways through or between parks; distinguished from highways or ordinary streets by the dominant purpose of recreation rather than movement; restricted to pleasure vehicles, and arranged with regard for scenery, topography and similar features rather than for directness.” (NPS 1993)

“Preserving the palisades had been advocated for a number of years as part of a design to protect the entire Potomac corridor past the capital to Great Falls. The McMillan Commission report stated the landscape should be ‘safeguarded in every way.’ It went on to add that scenic vistas, and historic sites and ‘the uncultivated hilltops of the Virginia Palisades,’ along the route, could be viewed better by travelers and local residents from a parkway on the Maryland side.” (www.dhr.virginia.gov 1995)

“The Mount Vernon Memorial Parkway stretched from Arlington Memorial Bridge to Mount Vernon along the Potomac River in Washington D.C.” Construction started in 1929 and incorporated the concepts from Westchester County’s parkway system with new ideas and technologies in road geometrics, bridges, pavement, and construction techniques. The road was opened in 1932 as part of the George Washington Bicentennial Celebration. (www.fhwa.dot.gov 2020)

“As the first modern motorway built by the federal government, the Mount Vernon Highway popularized advanced highway engineering and landscape design features and strongly influenced parkway and highway construction throughout the country. The right-of-way for the Mount Vernon Memorial Parkway had a 60.96 meter / 200-foot minimum width, except through the city of Alexandria. Additional rights-of-way were acquired to

Fig. 89:

**George Washington Memorial Parkway.**

© Mario Roberto Duran Ortiz / Creative Commons BY-SA 3.0



protect the scenic features and restrict encroachments.” (NPS 1993)

Like the parkways in New York, the Mount Vernon Memorial Parkway was designed for recreational driving. “The design included scenic overlooks and historic features. Subsequent construction of a parallel pedestrian walkway and bicycle path along the length of the parkway increased the recreational use and enjoyment of this historic parkway.” It also provided links to historic sites that commemorate important episodes in U.S. history as well as preserved habitats for local wildlife. Today, the Mount Vernon Memorial Parkway, incorporated into the George Washington Memorial Parkway, provides a relaxed scenic environment with multiple overlooks and dramatic vistas for both commuters and tourists. ([www.fhwa.dot.gov](http://www.fhwa.dot.gov) 2020)

#### 4.2.4. The Colonial Parkway

“The Colonial Parkway is a 37 km / 23-mile scenic roadway stretching from the York River at Yorktown to the James River at Jamestown.” Built between 1930 and 1957, the parkway provides motorists with a scenic drive connecting the State of Virginia’s ‘historic triangle’ anchored by the sites of Jamestown, Williamsburg, and Yorktown, within the boundaries of what is now known

As authorized in the Capper-Cramton Act of 1930, the George Washington Memorial Parkway was to consist of two parkways. One was built in the State of Maryland from Fort Washington to the Great Falls of the Potomac River. The other one was located in the State of Virginia and traveled from George Washington’s Mount Vernon estate to the Great Falls. These two segments were added to the already-under-construction Mount Vernon Memorial Parkway (24.46 km / 15.2 miles) as part of the legislation. “The northern section of the parkway runs on opposite sides of the Potomac River from Arlington Memorial Bridge to the Capital Beltway (Interstate 495), a distance of 15.61 km (9.7 miles) in Virginia, and the 10.62 km (6.6-miles) Clara Barton Parkway (renamed 1989) in Maryland.” ([www.dhr.virginia.gov](http://www.dhr.virginia.gov) 1995)

as the Colonial National Historical Park.

“Central to the original legislation which created the Colonial National Historic Park was a plan for a scenic highway to link the sites into a single coherent reservation. Free of any modern commercial development, the parkway was designed to provide continuity to the visitor experience of motoring through nearly 400 years of

## Historic Carriage and Car Parkways in the United States

---

American colonial history. Traversing a diverse environment, the parkway provides visitors with dramatic open vistas of rivers and tidal estuaries as well as shady passageways through pine and hardwood forests.”

National Park Service engineer Oliver G. Taylor and NPS landscape architect Charles E. Peterson “were assigned to design a roadway that adhered to modern standards of parkway aesthetics developed by the builders of the Bronx River Parkway. Peterson toured both the Bronx River Parkway and the federally built Mount Vernon Memorial Highway, which provided him with a model of a limited access highway with broad sweeping curves, set in a carefully landscaped right-of-way free of commercial development. These features, derived from 19<sup>th</sup>-century romantic landscape theories, created a safer and more pleasant drive compared to the increasingly congested urban roadways.”

“The Colonial Parkway’s construction presented the National Park Service with a unique challenge: build a thoroughfare unifying culturally distinct sites crossing several pristine natural environments while still maintaining the National Park Service’s prime directive ‘to

conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same.”

Parkway design began in the spring of 1931. National Park Service landscape architects were responsible for the overall architectural and landscape treatment, and the roadway and bridge construction specifications were prepared by engineers from the Bureau of Public Roads in the Department of Agriculture. Unfortunately, design and routing conflicts, limited funding, and World War II stretched construction over a 26-year period. “It was not until 1955 that funds were finally available to complete the parkway to Jamestown Island in anticipation of the 350th anniversary of Jamestown’s founding.”

“Today, Colonial Parkway is a meticulously crafted landscape that integrates the region’s natural and cultural resources into a memorial roadway of the colonial experience in the United States.” It marks an important change in the history of National Park Service road-building traditions as the first NPS-designed parkway that unifies dispersed sites as part of a cohesive national park. (NPS 2020)



**Fig. 90: Brick underpass on the Colonial Highway.**

© NPS, Colonial National Historic Park / Public Domain

#### 4.2.5. A Case Study: Denver Parks and Parkway

Other cities throughout the United States developed park systems and various types of parkways, including Chicago, Illinois and Minneapolis, Minnesota. In Denver, Colorado, a group of civic, business, and government leaders began talking about a citywide park and parkway system starting around the City Beautiful Movement after the Silver Panic in 1893.

Charles M. Robinson, champion of the City Beautiful Movement, was hired to develop a master plan for Denver in 1905. Among his suggestions were a series of boulevard connections and a parks system. Mayor Robert Speer outlined his own plan to make a blighted and trashed area along Cherry Creek into a magnificent tree-lined boulevard, with vine-covered retaining walls bordering the creek.

In 1907, Mayor Speer brought in George Kessler, who had worked with Frederick Law Olmsted Sr. on Central Park and developed a parks and parkway system in Kansas City, Missouri. He understood Olmsted's vision for the United States' public parks and how to extend that to parkways and parkway systems. Olmsted believed that parks allow people to escape the crowded urban life. Parks allow people to be immersed in scenery, to enjoy spaces

that are open to sunlight and fresh air. (Etter/Etter 2006)

Kessler's plan for Denver brought scattered parks and parkways into a single, city-wide master plan. Rather than suggest dramatic new boulevards, he superimposed parkways on the existing street grid. Taking into account the city's dramatic mountain backdrop, Kessler planned parks with high points that showcased the mountain views and connected those parks with parkways. (Noel/Norgren 1987)

Mayor Speer's vision also include a collection of mountain parks, connected to the city by a continuation of the parkway system. Frederick Law Olmsted Jr. helped influence the development of the parks and parkways in the city of Denver, and now extended the vision to the surrounding mountains. The Denver Mountain Parks system was created in 1912, and Olmsted Jr. developed the Mountain Park Preliminary Plan in 1914. This plan created a coherent system where mountain views were protected by purchasing canyon walls, open meadows, and distant peaks. (Etter/Etter 2006) The Denver Mountain Parks System, which now includes 22 developed parks, is recognized as a unique tourist attraction and gateway to the Rocky Mountains.

### 4.3. National Park Parkway in the United States

#### 4.3.1. Accessing the Scenic Wonders of the United States (Sally Pearce)

Federal agencies in the United States have been building and operating scenic roads, byways, and parkways for more than a century. But the Federal Government of the United States has been in the business of building roads for a lot longer. Under a law passed by the U.S. Congress in 1803, "one-tenth of the net proceeds of public land sales would be applied to road building, as long as the state through which the road passed gave its consent." Ohio was the first state to start this process, taking three-fifths of the money from its public land sales to build roads to and around Ohio. This was the beginning of federal and state support for road construction.

Early roads were built mainly for the purpose of

commerce and settlement. In the eastern United States, wagon roads connected cities to shipping ports or in rural areas made it easier to bring meat and produce from farms to market. "In the west, routes like the Santa Fe Trail connected towns, villages, trading posts, and forts, following rivers and streams across the central lowlands, the Great Plains, the southern Rocky Mountains, and the high plains and deserts of the Southwest. These arteries kept the heart of a country's economy pumping." Few roads were built for the purpose of tourism.

Around the middle of the 19<sup>th</sup> century, Andrew Jackson Downing, a landscape architect, began writing volumes dealing with natural landscape gardening principles

## National Park Parkways in the United States

---

and design. “Most of his work concentrated on landscape issues on private estates, but he also included sections on road construction within parks. He stressed laying out roads following the topography and the natural curves of the landscape. Frederick Law Olmsted expanded on Downing’s ideas and took them a few steps further in his designs of Central Park in New York and Franklin Park in Boston, placing picturesque loop drives within the natural landscape.” These design concepts for road construction would come into play as the country moved into the 20<sup>th</sup> century.

By 1905, approximately 78,000 automobiles existed in the United States, nearly all of them in major cities. “Most of the country’s roads were traversed by steel-wheeled, horse-drawn wagons that moved along at about six miles per hour.” Automobiles, however, had started to push far beyond the boundaries of the cities at considerably higher speeds. The numbers of automobiles increased dramatically, so that by 1915 there were 2.33 million automobiles on the road.

As the numbers of vehicles increased, so did the interest in expanding into new territories. In 1903, Dr H. Nelson Jackson and his chauffeur Sewell K. Crocker drove from San Francisco to New York, completing the first transcontinental trip in the United States. “As more well-to-do people acquired automobiles, they quickly adopted the recreational aspects of driving, and they began look-

ing for new places to explore.” The national parks were obvious choices.

National Parks are large areas of public lands set aside by the government for the protection and preservation of native plants and animals, and historic sites. More often than not, they protect areas of natural beauty. Yellowstone National Park was the first park created by the United States Congress in 1872 and led to an international movement to create national parks and preserves. Early management of the parks, mostly located in the western United States, rested within the U.S. Department of Interior while other monuments, historic, and natural sites were managed by other federal agencies such as the War Department and the Department of Agriculture’s Forest Service.

“In the early 20<sup>th</sup> century, the official stance of the U.S. Department of the Interior was that no automobiles would be allowed in the national parks.” That started to change in 1907. Pressure from automobile clubs to gain access to national parks was exceedingly strong. “The Automobile Club of America started as a social club of people who enjoyed touring in their vehicles and participating in long-distance road races.” Another group formed just after the turn of the century was the American Automobile Association (AAA), founded in 1902. “AAA furthered the cause of auto-tourism, working with the National Automobile Chamber of Commerce to standardize

**Fig. 91:**

**Chinook Scenic Byway,  
Mt Rainier National  
Park, Washington.**

© Jim Culp





Fig. 92:

Going-to-the-Sun  
Road, Glacier National  
Park, Montana.

© NPS / Public Domain



motor vehicle laws in the different states and to improve road access.” They wanted access to the national parks.

Hot Springs Reservation, located in the state of Arkansas, was the first federal reservation, set aside in 1832 for its natural resources. During the 1890s, the reservation underwent considerable landscape development and improvement under the auspices of the War Department. Part of that development included the construction of carriage roads that wound up the mountainsides to overlooks and an observation tower. Patrons of the spa at Hot Springs Reservation could enjoy tranquil excursions on horseback or by carriage on the roads within the park.

The superintendent of Hot Springs Reservation recommended that automobiles should not be allowed in the park, in part because there were only three autos in town and only one would have the motor capacity to make it up the mountain, not to mention that the noise would be distracting to those enjoying the spa experience. But the Secretary of Interior rejected the recommendation, and Hot Springs became the first federally protected area to officially allow automobiles in 1907.

“In 1908, the chairman of a group called the California Promotion Committee officially requested that automobiles be allowed in the national parks. In response to that request the first assistant secretary replied that automobiles were only allowed in Mount Rainier National Park, and that their use was limited by a series of regulations.” Furthermore, it remained the general rule of

the Department of Interior that the use of automobiles in the other National Parks would be prohibited.

In Yellowstone, one of the most popular national parks, the park’s superintendent stated: “The character of the roads, the nature of the country, and conditions of the transportation in this park render the use of automobiles not only inadvisable and dangerous, but to my mind it would be practically criminal to permit their use.” He based his reasoning on the potential conflicts between horses and automobiles.”

But the exceptions at Hot Springs and Mount Rainier had opened the door. Soon, the Department of the Interior would admit automobiles to, among others, Crater Lake National Park, Oregon in 1911, Glacier National Park, Montana in 1912, California’s Yosemite and Sequoia National Parks in 1913, Mesa Verde National Park, Colorado in 1914, and Yellowstone National Park, Wyoming in 1915. “By 1916, the department allowed them on a limited basis in Rocky Mountain National Park, Colorado, Wind Cave National Park in South Dakota and other smaller parks.” The automobile would rule the parks from now on. “In fact, Yellowstone National Park’s concessioner phased out the horse-drawn stages and replaced them entirely with automobiles during the 1917 season, only two years after automobiles were allowed into the park.”

In 1914, Europe was at war, and in August of that year John Wilson, president of the American Automobile Association, realized that Americans might want to stay

## National Park Parkways in the United States

---

home and spend their time traveling to the scenic wonders of their own country. “He understood that access to Yellowstone, Yosemite, and the Grand Canyon was difficult, but he believed that more use by motorists would increase the demand for greater federal involvement in road construction and improvement. The ‘See America

First’ campaign encouraged Americans to spend their money at home. This accomplished two goals: the money that stayed in the United States boosted the economy, and Americans became acquainted with the natural wonders of their own land.” (Soulliere 1995)

### 4.3.2. The National Park Service (Sally Pearce)

As early as 1905, the Office of Public Roads was assisting the U.S. Forest Service in the development of roads in national forests. They also worked with private organizations to improve roads in the national parks. In an effort to consolidate management of parks and preserves, President Woodrow Wilson established the National Park Service within the U.S. Department of Interior in 1916 with the role of preserving the ecological and historical integrity of the places it managed while making them available and accessible for public use and enjoyment. Wilson also charged the organization with the job of creating a highway system that would make national parks more accessible to automobiles.

The National Park Service would eventually become the most prolific federal agency in terms of parkway construction for tourism purposes. There was so much work to be done that the head of the Office of Public Roads

established a separate Division of National Park and Forest Roads to handle the projects, and selected T. Warren Allen to be the head of the new division.

In addressing the 1915 National Park Conference, T. Warren Allen outlined his philosophy of park roads. He believed that there was a need for the construction of a great number of roads in and around national parks. “Park entrances needed to be accessible during the early spring and late fall for long visitor seasons and, in order to attain the highest and best use for which they were established, they should be accessible to all people. In his view, after the roads were constructed to the park entrances, they should continue on to the primary points of interest in the parks. Allen wanted to build roads that harmonized with natural features, that were inconspicuous, and that showed the natural beauty of an area to its best advantage.”

Fig. 93:

South entrance sign,  
Yellowstone National  
Park.

© Julie Boyd



Horse-drawn stagecoaches still served many of the national parks, but the automobile quickly became the vehicle of choice for most park visitors. “Touring in the national parks provided new and exciting experiences for early motorists. The automobile club magazines gave detailed descriptions of drives through the parks, and they often included information on regulations as well as suggested itineraries. The layout of the road and the spectacular scenery gave motorists a new view of the natural wonders of their world.”

Shortly after the National Park Service was created, Secretary of the Interior Franklin Lane issued the first official policy statement governing the management of the parks. The memorandum described the development of the parks as the construction of ‘the national playground

system.’ “It also contained the oft-quoted paragraph on park development: ‘In the construction of roads, trails, buildings, and other improvements, particular attention must be devoted always to the harmonizing of these improvements with the landscape. This is a most important item in our program of development and requires the employment of trained engineers who either possess a knowledge of landscape architecture or have a proper appreciation of the esthetic value of park lands. All improvements will be carried out in accordance with a preconceived plan developed with special reference to the preservation of the landscape, and comprehensive plans for future development of the national parks on an adequate scale will be prepared as funds are available for this purpose.’” (Soulliere 1995)

### 4.3.3. The Parkway Concept in the National Parks (Sally Pearce)

Many of the roads in the existing national parks were started before the establishment of the National Park Service in 1916. “Some park roads were built by states, counties, or private enterprises. Some were old mining roads that were suitable enough to be upgraded into wagon and motor roads.” The army constructed others for patrolling purposes that were then expanded into touring roads. As more parks were added, some of them had existing road systems, while others had no roads at all.

In the early 20<sup>th</sup> century, parkway design focused initially on urban landscapes, but then the attention turned to the development of more rural parkways. The National Park Service carried on the parkway concept, that is scenic driving on roads that were fully integrated into the landscape, with a respect for natural features, scenic views, and an attention to detail.

As previously described, the first federally funded parkways were built in the 1930s and included the Mount Vernon Memorial Highway, the George Washington Memorial Parkway and the Colonial Parkway. In May 1934, the legislation for Natchez Trace Parkway was passed to construct a national road along an old native American trail. The Natchez Trace extended more than 710 km (440 miles) from Nashville, Tennessee to Natchez, Mississippi along the Cumberland, Tennessee, and Mississipp-

pi rivers. The trail was created by Native Americans and was later used by explorers, traders, and settlers in the late 18<sup>th</sup> and early 19<sup>th</sup> centuries. The Natchez Trace Parkway followed the approximate route of the path.

During the 1930s, there was some confusion about the difference between parkways and highways in the United States. To help resolve the confusion, the National Park Service distributed a document that provided their view of the distinction between the two types of roads. “The document stated that a parkway was different than the usual highway because:

- It was designed for passenger car traffic and was largely for recreational use, aiming to avoid unsightly buildings and other roadside developments, which marred the ordinary highway.
- It was built within a much wider right-of-way in order to provide an insulating strip of park land between the roadway and the abutting private property. It thus eliminated frontage and access rights and protected and preserved the natural scenic values. In other words, an elongated park was provided to contain the roadway.
- It was preferably located through undeveloped areas of scenic beauty and interest and avoided built-up communities and intensively farmed lands.

Fig. 94:

Natchez Trace  
Parkway.

© Bill Herndon



- It aimed to make accessible the best scenery in the country it traversed. Therefore, the shortest or most direct route was not necessarily a primary consideration. Grade crossings between the parkway and main intersecting highways and railroads were eliminated.
- Points of entrance and exit were spaced at distant intervals to reduce the interruptions to the main traffic stream. A secondary parallel road was frequently provided to carry local traffic to an access point.”
- Scenic easements were introduced in order to secure a maximum of protection without increasing the

amount of land to be acquired in fee simple. (Soul-  
liere 1995)

These became the standards that the National Park Service followed as they continued to build parkways in the national parks. Early examples include ‘Going-to-the-Sun’ Road in Glacier National Park, Montana (1921-1933), Trail Ridge Road in Colorado’s Rocky Mountain National Park (1929-1938), Skyline Drive in Virginia (1932-1940) and the Blue Ridge Parkway which travels through North Carolina and Virginia (1936-1987).

#### 4.3.4. The Blue Ridge Parkway (Sally Pearce, Michael Schimek)

The Blue Ridge Parkway is perhaps the premier example of the National Park Service’s vision of the parkway concept. Begun in 1935, the first stretch was opened in 1936, but it was not completed until 1987. (Mitchell Whisnant 2008) Its construction was started for two principle reasons: to alleviate unemployment during the Great Depression of the 1930s, and to provide the physical connection between Shenandoah and Great Smoky Mountains National Parks.

Designer Stanley Abbott and his team identified certain principles to guide the development of the parkway and to provide a framework for the construction. These principles clearly followed those identified by the National Park Service in its discussion of parkways and highways. First was the acquisition of a protected right-of-way to allow for preservation and restoration of the surrounding roadside landscape. Second was an uncomplicated character that encouraged harmony with the

Fig. 95:

Green Knob Overlook  
on Blue Ridge Park-  
way, North Carolina.

© Ron Cogswell /  
Creative Commons  
BY 2.0



natural environment.

The planners of the Blue Ridge Parkway had adopted the principles of landscape integration from the suburban parkways of the east coast, but instead of creating roads which allowed for quicker and smoother travel, they deliberately slowed the allowable driving speed for the sake of a pleasurable leisure experience. Driving the parkway at a maximum speed of 54 kph (35 mph), later at 72 kph (45 mph), would provide a unified experience though its design elements while providing some variety to avoid monotony. (Zeller 2010) In addition, heavy traffic was banned on the road and stayed so, except for some years during World War II. (Mitchell Whisnant 2008) “Finally, the parkway was to provide the traveler with frequent opportunities to experience the scenic qualities of the country through waysides, overlooks, picnic areas, and lodging.” (Soulliere 1995)

The experience of the parkway presented a carefully integrated landscape, but in fact, there is documentation to prove that local people were not always included in the decision-making process and were unhappy with some of the rules around parkway usage. For example, farmers complained in letters to President Franklin D. Roosevelt that they were no longer allowed to build buildings near

the parkway and weren’t granted the right to cross the parkway with their vehicles in order to access their land on the other side. (Mitchell Whisnant 2008) Authorities also closed some existing access roads to farms close to the parkway, generating further ire. It is also worth noting that the members of the Cherokee nation were prohibited from using the parkway, even though it crossed some of their lands. They were also not given alternate routes. (Mitchell Whisnant 2008)

With support from the state highway officials in North Carolina and Virginia, the National Park Service was granted an unprecedented right-of-way width along the parkway, amounting to at least 61 meters (200 feet) and, in some places in North Carolina, up to 305 meters (1,000 feet). For some farmers along the parkway, this meant that they lost a significant part of their land. Some landowners were successful in bargaining with the National Park Service and earned the right to connect their houses or existing holiday resorts to the new road. Sometimes this caused a delay of the construction of certain stretches of the parkway by 10 to 20 years.

In order to provide for a sufficient quality standard both for the landscape and the retail qualities of the parkway, the National Park Service created their own retail

## National Park Parkways in the United States

---

zones along the road. The franchises were operated by a company called 'National Park Concessions, Inc.,' which had already gained some experience in Kentucky's Mammoth Cave National Park and was partly owned by staff members of the National Park Service. (Mitchell Whisnant 2008)

Numerous contemporary buildings along the parkway, even a long-established hotel which had always worked in symbiosis with the nearby farms, were demolished. The parkway plan concentrated on preserving the pioneer cabins, the grist mills, and the traces of old fences associated with a way of life that was "swiftly passing, and, but for the parkway, had already passed" in other places. Thus, instead of presenting the landscape around Blue Ridge Parkway as it was, the National Park Service chose to transform the land around the road into a kind of an open-air museum.

Despite its unquestionable role of being at the center of U.S. parkway construction, the Blue Ridge Parkway

was different from other examples because of the way the landscape was altered and transformed into a 'tourism product.' The traveler's experience was shaped not by the local stakeholders but rather by the concepts of the managing authorities. (Mitchell Whisnant 2008) Creating a linear national park in the eastern United States where the population was greater than in the west was certainly a challenge.

"Federal involvement in the Blue Ridge Parkway design enhanced some of the legal tools for acquisition, design development, and management of parkways." (Soulriere 1995) Many of the design principles developed for the parkway were later applied in highway and interstate development. The same is true for the public involvement process. Lessons were learned about the need for working with local landowners and allowing public comment. This contributed to changes regarding the public process for future planning and design of roadways throughout all levels of government.



Fig. 96: Mabry Mill on Blue Ridge Parkway, Virginia.

© Torsten Henning / Public Domain

#### 4.3.5. The Carriage Roads of Acadia National Park (Sally Pearce)

Not all national park roads in the United States were constructed as motor car parkways. Wealthy philanthropist John D. Rockefeller, Jr., whose family owned a summer home on Mount Desert Island along the coast of the Atlantic Ocean in the state of Maine, is credited with the construction of a network of carriage roads in what is now Acadia National Park. Rockefeller, a skilled horseman, wanted to travel on motor-free byways by horse and carriage into the heart of Mount Desert Island. From 1915 to 1940, he financed, designed, and directed the creation of the network which originally encompassed about 92 km (57 miles) of crushed stone carriage roads winding up and down the hills of Mount Desert Island.

Considered the best examples of broken stone roads, commonly used at the start of the 20<sup>th</sup> century, the roads featured stone faced, steel reinforced concrete bridges and two gate lodges, one at Jordan Pond, the other near Northeast Harbor. Granite coping stones along carriage road edges served as guard rails. They are nicknamed 'Rockefeller's Teeth.' (NPS 2007) Landscape architect Beatrix Farrand, who was known for her work with Frederick Law Olmsted in New York and whose family also owned a summer home nearby, designed the planting plans for the carriage roads around 1930.

"Rockefeller, naturally gifted with the eye of a landscape architect, aligned the roads to follow the contours of the land and to take advantage of scenic views, refer-

ring to 19<sup>th</sup> century park architecture. He had the roads graded so they were not too steep or too sharply curved for horse-drawn carriages." The roads were also engineered to survive Maine's wet weather. "Stone culverts, wide ditches, three layers of rock, and a substantial six to eight-inch crown ensured good drainage. Rather than flattening hillsides to accommodate the roads, breast walls and retaining walls were built to preserve the line of hillsides and save trees." (NPS 2015)

The car could not be kept out of the park forever. Although not officially designated as National Park Service parkways, two scenic automobile roads were built in the park during the 1920s. Jordan Pond Road was started in 1922 and completed as a scenic motor highway in 1927, and the Cadillac Mountain Summit Road, begun in 1925, was completed in 1931. (NPS 2015) Today, about 72 km (45 miles) of carriage roads still remain within the park boundaries.

The first American national park east of the Mississippi River, President Woodrow Wilson first established the national park as Sieur de Monts National Monument in 1916. Congress renamed the national monument as Lafayette National Park in 1919, after Marquis de Lafayette, an influential French participant in the American Revolution. Finally, in 1929, the name of the park was changed to Acadia National Park, in honor of the former French colony of Acadia, which once included Maine.

**Fig. 97:**

**A carriage road in Acadia National Park, with granite coping stones called 'Rockefeller's Teeth.'**

© Kevin A Trostle / Creative Commons BY-SA 3.0



#### 4.3.6. Other National Park Parkways (Sally Pearce)

Additional examples of National Park Service parkways worth mentioning include Going-to-the-Sun Road in Glacier National Park, Montana (1921-1932), Trail Ridge Road in Colorado's Rocky Mountain National Park (1929-1938), and Skyline Drive in Virginia (1932-1940).

The Going-to-the-Sun Road, originally called the Transmountain Highway, was the first automobile road built by the National Park Service in a national park. Located in Glacier National Park in Montana, the road was first proposed in 1915 by Stephen Mather, the first director of the National Park Service, who personally assisted with the design of the road. Construction started in 1921 with the western end of the road completed to Logan Pass by 1928 and opened in 1933 although con-

struction continued on bridges, tunnels, and retaining walls through 1937. (NPS 1997)

Construction of the Going-to-the-Sun Road was the most ambitious road project ever undertaken by the National Park Service and the Bureau of Public Roads due to its extreme terrain and weather conditions. The project became a test of innovative road engineering practices and policies and led to the development of construction standards for national parks as well as other federal lands and parks. The road also became a prototype for the successful preservation of scenery through the implementation of the most advanced engineering. (NPS 1997)

The road travels 80 km (50 miles) across the park from east to west, crossing the Continental Divide at Lo-



Fig. 98: Skyline Drive, Shenandoah National Park, Virginia.

© Neal Lewis, NPS / Public Domain



## National Park Parkways in the United States

---

gan Pass at an elevation of 2,026 m (6,646 ft.). In 1983, the road was included in the National Register of Historic Places and was named a National Historic Civil Engineering Landmark in 1985 and a National Historic Landmark in 1997.

Trail Ridge Road reaches a maximum elevation of 3,713 m (12,183 ft.). The 77 km (48 mile) entirely paved road is located in Rocky Mountain National Park, Colorado. The route followed an old path over the mountains used by Arapaho Indians to connect their homelands and hunting grounds. The road travels through montane forests of aspen and ponderosa pines followed by thick subalpine forests of fir and spruce, then continuing for 18 km (11 miles) above timberline through the windswept alpine tundra.

The first road built in the national park was the Fall River Road, a single-track road which opened in 1921 and quickly proved to be inadequate for automobiles due to its steep grade (up to 16%) and tight curves. It was apparent that a new road had to be built to meet the needs of the ever growing traveling public.

Construction on Trail Ridge Road began in 1929 and was completed in 1938. The grade on Trail Ridge Road varies between 5 % and 7 %, making it a much easier drive for automobiles. A series of overlooks along the route provide ample opportunity for visitors to take in the mountain views. Building a road through the sensitive alpine tundra was opposed by some planners in the National Park Service but their concerns were overruled by Director Horace Albright who wanted to encourage park visitation. Although controversial, the road was ulti-

mately designed according to the Park Service standards, avoiding as much intrusion on the landscape as possible, its curves designed to sweep across but not dominate the landscape.

Trail Ridge Road/Beaver Meadows Road was among the first roads in the country to be named All-American Roads as part of the National Scenic Byways Program. It was also listed on the National Register of Historic Places in 1984.

Skyline Drive is a 169 km (105 mile) scenic road that travels along the ridge of the Blue Ridge Mountains through Shenandoah National Park in Virginia. The national park was planned in 1924, and the road was to be the most prominent feature, providing sweeping views of the surrounding valley. Construction started in 1931 and the first section opened in 1934 with extensions opened in 1936 and 1939. Improvements continued well into the 1960s.

Like many of the National Park Service roads, the Civilian Conservation Corps (CCC) played a part in the construction of the road as part of the effort to create work during the Great Depression of the 1930s. The first CCC camps to be set up in a national park were established along Skyline Drive. (NPS 1995) The CCC crews worked on grading the road slopes on both sides, building guardrails and stone walls, constructing overlooks and planting trees and shrubs along the route.

Skyline Drive is designated as a National Scenic Byway, a National Historic Landmark, and is listed on the National Register of Historic Places.

### 4.3.7. Similar Parkways Outside the National Parks (Michael Schimek, Sally Pearce)

Many of the best examples of leisure-oriented parkways and scenic roads in the United States are located in National Parks. However, not all early scenic roads built in the United States between 1910 and 1940 were built by the National Park Service. Many of these non-federally constructed roads are equally as scenic and showcase similar qualities to the National Park parkways.

The first planned scenic road in the United States was the Columbia River Highway in Oregon. It follows a 19<sup>th</sup>

century wagon road built as a byway to a dangerous river passage on the Columbia River through the Columbia River Gorge. The historic 119 km (74 mile) long highway was constructed from 1913 to 1922 and planned by landscape architect Samuel C. Lancaster. He was inspired by examples of 19<sup>th</sup> century connecting roads in the Swiss Alps like the Axenstrasse along Lake Lucerne, which featured one of the world's first windowed tunnels. "Lancaster's intention was not only to create a transport road,

Fig. 99:

Summit of Mt  
Evans Scenic  
Byway.

© Sally Pearce



but to make the landscape of the place, including waterfalls, canyons, cliffs, and mountain domes, accessible to ‘men from all climes.’” (Dille 2015)

Other examples from the same era include Mount Evans Scenic Byway in Colorado (1923-1930), the highest paved road in the United States at 4,350 m (14,271 ft.), Pikes Peak Highway, Colorado (1915), constructed as a private investment toll road and leading up to almost the same height as Mount Evans Scenic Byway, and road projects that combined existing roads with newly created stretches to form a scenic byway, like State Route 12 in Utah (1914-1923).

The Needles Highway and the Iron Mountain Road, both located in Custer State Park in the Black Hills in South Dakota are good examples of parkways located outside of national parks. The southwestern corner of South Dakota, located north of the major transport line crossing the continent and at a distance from urban centers, had not been considered by travelers and motorists until the construction of the roads. To Peter Norbeck, (South Dakota’s governor from 1917 to 1921 and senator from 1921 to 1936), Custer State Park, established in 1912 for similar reasons as the National Parks, seemed a good tourism destination, bringing economic development to a remote area of his state.

The first scenic road, built from 1921 to 1922, is the so-called Needles Highway, a 23 km (14 miles) long twisting mountain road built straight through one of the most scenic parts of the Black Hills, a granite formation made up of narrow spires, known as the Needles. The core part is a 2 km (1.2 miles) stretch carved through the Needles, providing drivers not only a view of the Needles, but a scenic road with switchbacks and tunnels twisting around the spires. Norbeck was personally concerned with landscape issues, and he had a close look at the details, successfully negotiating the use of logs instead of conventional guardrails with the highway authorities. Driving the road requires the purchase of a Custer State Park entrance pass.

The second road was planned in order to provide access for motorists to the most famous landmark of the Black Hills, Mount Rushmore National Memorial. Work on the sculpture of the four presidents George Washington, Thomas Jefferson, Theodore Roosevelt, and Abraham Lincoln started in 1927 and was finished in 1941. The Iron Mountain Road was built from 1930 to 1932 and has a length of 59.5 km (37 miles). It features scenic views, including on Mount Rushmore, and spectacular design elements like tunnels and ‘pigtail bridges’, where the road comes out of a tunnel and onto a bridge, directly

Fig. 100:

Needles Highway,  
South Dakota.

© Stephen Keegan



leading into a 270-degree turn passing under the bridge. (Julin 2008)

In the 1990s, the Needle Highway and the Iron Mountain Road were, together with some other roads in the Black Hills, combined into the Peter Norbeck Scenic Byway. This byway now forms a loop through Custer State Park and its surroundings. The byway is 8 km (5 miles) from the Crazy Horse Memorial which remains under construction as of writing. The memorial commemorates the Oglala Lakota warrior Crazy Horse.

Another famous parkway in Northern America, is the Icefields Parkway in Jasper National Park in Alberta, Canada. In 1931, the Canadian government, during the

Great Depression, recruited 600 unemployed people to build a 230 km long, single-lane gravel track through the Rocky Mountains from Lake Louise to Jasper. In order to create employment for as many people as possible, similar to the German motorway, the workers built the road almost entirely with their own hands and the aid of horses and very little machinery. Work was completed in 1940. The road crosses several passes with an altitude of more than 2,000 m and leads past a number of glaciers, waterfalls, and lakes. The most famous part is the passage along Columbia Icefield and Athabasca Glacier. The road was in full tourist operation from the 1950s on. (www.pc.gc.ca 2019)

#### 4.4. The Role of Car Racing at the Beginning of Motorization (Michael Schimek)

One of the main reasons for the success of motorization is the sensation of speed. Cars allowed their drivers to personally operate a machine which could run at speeds only previously reached by collective means of transport, like the railways. However, in the beginning of car traffic, reliability was a big issue. The new vehicles were poorly tested, and around 1900, it was yet not clear

which type of motor would prove to be the best technical solution. The situation was worsened by the often rather ruthless and daring driving style of the few affluent people (so-called Herrenfahrer) who could afford a car at the time. People were not used to the new kind of vehicle on weakly constructed roads featuring a mix of foot passengers, cyclists, horse carts, and other slower means of

## The Role of Car Racing at the Beginning of Motorization

transportation. (Koshar 2008) The Austrian writer Marie Holzer described the situation as follows: “The automobile is the anarchist among the vehicles. It bolts through the world, spreading panic, uncoupled from traditional conventions.” (Iken 2019)

People who believed in the future of the new technology, therefore, looked for ways to enjoy the speed of their cars in safer environments than driving among other road users. At the same time, they wanted to prove that car driving may also be done in a more reasonable and respectful way. In 1893, the French journalist Pierre Giffard published a call for the first car race in history in his newspaper *Petit Journal* for a competition among all types of cars with a different power unit than horses. The race would take place on July 22<sup>nd</sup>, 1894, from Paris to Rouen, over a distance of 126 km. It was not primarily intended to be a speed test, but a reliability competition. The prize money of 5,000 Francs was not awarded to the quickest driver, but to the driver who drove the “least dangerous, most easily operated and cheapest vehicle.” To some extent, the concept was similar to the later introduced rally competitions, which started in 1911 with the first Monte Carlo Rally.

102 drivers from four different countries registered for the race. They brought an incredible variety of power unit concepts to Paris: Petrol driven cars, electric cars,

steam engine cars, cars driven by gravity, obscure mixtures of different gases, feather mechanisms, pendulums, and even by the weight of their passengers. Only 21 constructions were finally allowed to participate in the race after a technical check. Some more rules made sure that maximum speed was not the ultimate goal. Drivers were obliged to take a 90-minute lunch break halfway between Paris and Rouen and had, in addition to that, to stop two more times for ten minutes each in order to take a rest.

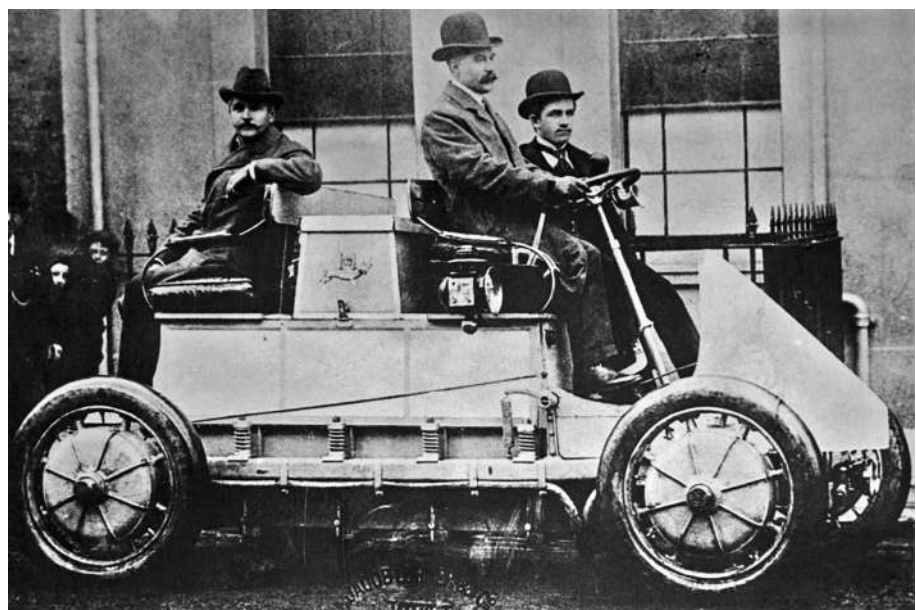
The quickest time was set by the Frenchman Comte Albert de Dion. He was not awarded the prize money, though, since he used a steam engine car which had to pull a trailer which made the car difficult to maneuver, and it had to be operated by two people at the same time at a rather high total cost. Instead, the race was won by the German Daimler family, founders of the Daimler-Benz Company, and their petrol driven cars. This race remained one of the few where this price-giving procedure was applied. As from 1895 on, car races awarded the quickest car the prize. (Iken 2019) Races took place from Torino to Asti and back, from Paris to Bordeaux and back, and from Chicago to Evanston, Illinois, and back.

The most important car racing events around 1900 and onwards proved to be the so-called hill climb races. They took place in all countries in Europe and North America where a car industry was established, on rather

**Fig. 101:**

**A Lohner-Porsche electric all-wheel-drive race car from 1902. Constructor Ferdinand Porsche to the right, as co-driver.**

© Public Domain



## The Role of Car Racing at the Beginning of Motorization

---

short tracks along mountain roads, many of them having scenic qualities. Sometimes, these races were also held in larger cities, which made it easier for a large number of spectators to attend. Hill climbs were the ultimate test for the newly developed cars, since their drivers had to prove their driving skills at the same time as it was important that the cars were easy to handle.

One of the first hill climb races in Austria took place in 1899 on the Exelberg road, a scenic road in the outskirts of Vienna, connecting the city with the Wienerwald hills. One of the first winners was Ferdinand Porsche, who later became the man behind Hitler's *Volkswagen* program. He won his races with electric cars he produced for the Viennese Lohner car manufacturer. ([www.austria-motor-veterans.at](http://www.austria-motor-veterans.at) 2020) One of the most traditional hill climb races in the world is the annual Pikes Peak International Hill Climb. It is also called 'Race to the Clouds.' The road on Pikes Peak, a 4,301 m high peak in the Rocky Mountains of Colorado, was built in 1915 by the local ore processing entrepreneur Spencer Penrose who replaced an old carriage track with a new scenic mountain toll road. The remaining unpaved stretch at the top of the mountain was asphalted in 2011 because of environmental issues of the annual repairs on the unpaved segment. The hill climb has taken place almost every year since 1916, only interrupted by the two World Wars. The current track record on the 20 km long track with 156 turns is held by a Volkswagen all-electric car. ([ppihc.org](http://ppihc.org) 2020) Also on the Großglockner-Hochalpenstraße, some hill climbs took place, the first one on the day after the grand opening of the road.

Soon it became clear that racing can be organized more efficiently on tracks that started and ended at the same spot. The first two races held on circular tracks both date back to 1906. In May, the first edition of the *Targa Florio* sports car race took place on a 148 km long circuit in the north of Sicily. It was organized by the local entrepreneur Vincenzo Florio who owned the twisting narrow mountain roads over the Madonie mountain range south of the city of Cefalù on which the race was held. The *Targa Florio* took place until 1977 and was won by many of the greatest race drivers of their times. The concept was later copied for the *Mille Miglia* race around Brescia in Northern Italy, which was held for the first time in 1927, and to some extent by the *Carrera Panamericana* in Mex-

ico, which took place during the 1950s. The other race of 1906 held on a race circuit was the French *Grand Prix* at Le Mans. It took place on a 103 km long triangular circuit around the city of Le Mans. It has laid the ground for the great motorsport tradition of Le Mans with its 24-hour race held since 1923. Other important races in 1906 took place in Cuba, Belgium, and the United States, which shows the worldwide impact of motorization already at its beginning.

Safety issues and the ambition to attract more spectators to car races encouraged the idea to create permanent racetracks. Interestingly, two of the first ones constructed followed the concept of Olmsted's parkways and were created not only for racing purposes but also as car-only motorways that should enable people to access recreational areas in a quick and safe manner.

The first person to build such a motor parkway was William Kissam Vanderbilt II, the great-grandson of Cornelius Vanderbilt, one of the richest men in the history of mankind, who earned his wealth by building railroads and waterways in the 19<sup>th</sup> century. William Vanderbilt took up the legacy of his family in a rather logical way. He organized the first Vanderbilt Cup race in 1904. After an incident in 1906, when a spectator was killed during the race, he looked for an alternative.

In 1908, William Vanderbilt privately built a 10-mile motor parkway from Queens out to Long Island which was by 1911 extended to Lake Ronkonkoma, located in the central part of Long Island. The final parkway was 45 miles long. It was only open to automobiles and featured many overpasses and almost no intersections, so it can also be seen as a first version of present-day motorways. People who wanted to use the parkway had to pay a toll. Mainly, the parkway served as a racetrack for *Herrenfahrer* drivers of that time. It showed quickly, though, that the road was a little narrow, and some of the bridges were too steep. It stayed in use until the 1930ies and now is part of the normal road system on Long Island.

A very similar construction was planned in Germany. The *Automobil-Verkehrs- und Übungsstraße (AVUS)* in the western outskirts of Berlin connected the Westend city quarter with the recreational landscape around Lake Wannsee through the Grunewald Forest. It was mainly meant to be a test and racetrack in order to support the development of the German car industry. In addition to

Fig. 102:

One of the remaining banked turns at Brooklands.

© Michael Schimek



that, it was also used as a testing ground for different ways of road construction. Most of the AVUS was already finished before World War I, but it was only finalized in 1921 with the financial support of the German entrepreneur Hugo Stinnes, the father of Clärenore Stinnes, the first person to drive around the world from 1927 to 1929. It was a toll road for affluent drivers – a single drive on the AVUS cost more than the equivalent of 11 Euros. The road became a part of the German Reichsautobahn network in 1940. Racing events took place until 1998. Today, the former finish line judge tower is used as a motel, and a part of the finish line grandstand is still left.

Hill climbs and sports car races on circuits consisting of existing roads was not the only kind of motor racing that developed during the 1900s. The other way was to create tracks that were designed to push forward the limits of speed and power performance. For this purpose, the races on existing roads seemed not suitable. The first paved racetracks that were entirely planned for the purpose of motor racing were constructed between 1907 and 1924. Two of them are still used as racetracks today. Their common feature was that they consisted of just a few turns with an extremely wide radius, long straights, and banked curves.

The first one was Brooklands Motor Circuit in Weybridge, Surrey, in England, opened in 1907. It was 4.43

km long and 30 m wide. It featured only three turns with a up to 9 m high banking. Because it proved difficult to put tarmacadam on the banking, it was entirely built in uncoated concrete. It also became a major location for the construction and testing of military airplanes. The race-track was operated until 1939, when the area was taken over by the army because of World War II. The track was partly hit by German bombs and dismantled for military reasons, so it wasn't reopened after World War II. Today, it houses a museum with historic race cars and airplanes. Part of the track is used as a showcase ground for Mercedes-Benz.

The most iconic racetrack in the United States is the Indianapolis Motor Speedway at Indianapolis, Indiana. It was built in 1909. Its layout has been more or less unchanged since then. It is a 4 km long rectangular oval with two 1 km long and two 200 m long straights and four turns of 400 m length in between. The turns have a banking of 9.2 degrees, the straights are flat. After a short trial phase with a crushed stone surface, the track was paved with bricks, giving the track its nickname 'The Brickyard.' As of today, one yard of bricks is left at the start-finish line as a nod to its history. Since 1911, it has hosted the legendary Indianapolis 500. With a spectator capacity of more than 250,000 people, it is the largest sports venue in the world. It has been placed on the Na-

## The Role of Car Racing at the Beginning of Motorization



Fig. 103:

A 1909 advertisement poster for Indianapolis Motor Speedway.

© Otis Lithograph Co. / Public Domain

tional Register of Historic Places in 1975 and designated a National Historic Landmark in 1987, the only automotive racing site on those lists.

The *Autodromo Nazionale di Monza* is a racetrack which was built in 1922 within the Royal Park of Monza, a city close to Milan in Lombardy. It consists of a 5.8 km long conventional racetrack and an about 4 km long oval track with a steep banking. It was constructed by Piero Puricelli, the inventor of the Italian autostrade. The layout of the track has remained almost unchanged over the years, except for three chicanes that were integrated into the racetrack in order to reduce speeds and provide more safety, because since its opening, the track had witnessed a lot of casualties both among drivers and spectators. The

combination of racetrack and oval track was jointly used for some races during the 1950s, when the banking of the oval curves was increased significantly. Since 1961, the oval is out of use. Until today, the Monza circuit hosts a number of races in different car racing formulas, including the annual Formula 1 Grand Prix.

The youngest of the four first permanent racetracks is the *Autodrome de Linas-Montlhéry*, 20 km south of Paris in France. Its original layout was an oval track with a length of 2.55 km and a width of 18 to 21.5 m. It only featured two short straights of 180 m each, the rest was made up of two extremely long banked curves. The layout enabled the drivers to go along the circuit at very high speeds. Different to Brooklands, the enormous noise of the cars was not an issue due to its remote location, which meant the speeds driven on the oval were higher than at other places. After 1935, one of the two banked curves was replaced by a conventional race track layout. Racing took place until 1971 and then again for some years in the 1990s and 2000s. In 2005, the track was sold to a real estate company who wanted to demolish the racetrack and build housing estates instead. As of 2020, this has not yet happened.

Even some years older than Brooklands, but initially built as a dirt track and only paved in 1954, is the Milwaukee Mile Circuit in West Allis, Wisconsin. It is a 1.6 km long oval circuit and was previously used as a private horse racing track. The two turns have a banking of 9.25 degrees and the straights a banking of 2.5 degrees. It hosted at least one race per year from 1903 to 2015, only interrupted by World War II. Since 2016, no major race has taken place on the track.

Another iconic racetrack from the 1920s is the *Nürburgring* in Germany. It is, in a way, a shorter version of the Targa Florio layout. It was constructed from 1925 to 1927 in the remote rural region of the Eifel mountains in Western Germany, partly for employment reasons. The idea behind the layout was to create a test track for the German car industry which could simulate different kinds of public roads in Germany. In its original shape, it consisted of the 22.8 km *Nordschleife* (Northern Loop) and the 7.75 km long *Südschleife* (Southern Loop) which shared the start-finish straight and the back straight opposite the start-finish straight. The two straights could be combined to the 2.3 km long *Start-Ziel-Schleife* (Start-

## The Role of Car Racing at the Beginning of Motorization



Fig. 104: Starting grid at the French Grand Prix 1934 at Linas-Montlhéry.

© Agence de presse Meurice / Public Domain

and-Finish Loop). Since this third loop was paved with concrete until the 1950s, it was also nicknamed *Beton-schleife* (Concrete Loop). The Südschleife was less often used than the famous Nordschleife and stopped being operated in 1974. It was, like the Start-Ziel-Schleife, demolished when a new Formula 1 circuit was built at the beginning of the 1980s.

The Nordschleife was shortened to 20.8 km, which still makes it the longest permanent racetrack in the world. Nordschleife and Formula 1 circuit may be raced as one even longer circuit, amounting to 26 km of length. The current layout of the Nordschleife features 73 turns, two of them banked, and the more than 2 km long Döttinger Höhe straight. Different to the oval tracks, it has a

minimum width of only 8 m. The maximum uphill gradient is 17 degrees, the maximum downhill gradient 11 degrees. In addition to that, a short straight with a gradient of 27 degrees, the so-called *Steilstrecke* (steep stretch) was built which never became part of the normal racetrack layout.

The construction of these early racetracks contributed to the popularity of motor cars and started a huge number of other racetrack constructions all over the world, some of them, like Donington Park (1931) or Cadwell Park (1934) in England, dating back to interwar times. Some of them have similar features to other engineered parkways of the time and constitute an interesting sub-category of historic roads of the 20<sup>th</sup> century.



## 4.5. Tourism Parkways in Europe from 1918 to 1945

### 4.5.1. Austrian Examples (Michael Schimek, Thomas Mitterecker)

World War I had set an end to the huge Austro-Hungarian Empire. A state that once had 676,000 km<sup>2</sup> and more than 51 million inhabitants was separated into a number of independent smaller national states. By 1923, when the borders of the new country had been clarified, the remaining Austria only had 12 % of the area and population of the former empire. Out of the 6.54 million people in Austria almost one third, 1.92 million people, lived in the City of Vienna. In addition, Vienna had ended up in the north-eastern corner of a much smaller but still rather long country (almost 600 km from west to east). Different parts of the country followed different development paths in a time when economic pressure endangered the young and weak Austrian democracy. Whereas Vienna, during the 1920s, became a worldwide role model for social democratic city management, the rural parts of Austria mostly stayed agricultural land with conservative leadership. Many places in rural Austria, especially in the Alps, started to invest in the development of the tourism industry.

From 1918 to 1920, the national government was dominated by the Social Democrats, followed by the Conservatives. As other parts of the world, Austria was hit hard by the Great Depression. At an estimate, in 1930 26 % of the Austrian workforce were unemployed (although this number was likely much higher since not all unemployed people were formally registered). In 1933, Federal Chancellor Engelbert Dollfuß took the opportunity to get rid of parliament and turn Austria into a fascist dictatorship, which it stayed up until 1938 when Austria was invaded by Nazi Germany. Austria had always functioned as a federal state, with nine federal states remaining after World War I and their respective governors as important political actors. This is an important factor when considering the history of road construction during interwar times.

In Austria, three panoramic roads in parkway style built during interwar times are most notable: The *Wiener Höhenstraße* (Vienna High Road), a road built for city excursionists at the outskirts of Austria's capital, the

*Gaisbergstraße* (Gaisberg Road), a road a little outside the city of Salzburg, created both for the purpose of city excursionists and tourists, and the *Großglockner-Hochalpenstraße* (Großglockner High Alpine Road) in the federal states of Salzburg and Carinthia, created exclusively for tourism.

The city of Vienna features a lot of nearby natural recreational areas. In the west of the city lie the Wienerwald (Vienna Forest) hills, the north-easternmost part of the Alps. Some of the hills at the Danube, like the Kahlenberg and the Leopoldsberg, offer a beautiful and undisturbed view of the whole city. In 1905, the City Council of Vienna passed a law that protected a zone surrounding the urban parts of the city called the *Wald- und Wiesengürtel* (Forest and Meadow Belt). This law ensured that urban sprawl was limited and the recreational areas around Vienna were preserved, given these areas were important for providing fresh air to one of the world's largest cities at the time. The city even invested in a significant amount of land when it was available for purchase, including two hotels, vineyards, and wide areas of natural value.

For some time, the area was well-connected with the city by public transport. In 1873, the year of the Vienna World's Fair, a funicular railway had been built from the Danube to the top of the Kahlenberg. It was only in operation for three years and was given up after a landslide. The cog railway on the Kahlenberg came one year too late for the World's Fair but lasted longer. It started in Nussdorf, a village straight outside Vienna in 1874 (now part of Vienna's 19<sup>th</sup> district), and wound its way up the hill 300 m higher than the city, extending for 5.5 km. From 1885 onwards, the cog railway was perfectly connected to the city by a tramway line between Nussdorf and the city center, making it a favorite excursion destination for the Viennese. The privately owned cog railway fell into decay after World War I and was shut down in 1922.

First plans for a parkway road along the Wienerwald had been drafted in 1905 but were never implemented due to the little significance of motorization at the time. After the cog railway shut down, the Kahlenberg recre-

Fig. 105:

Cobblestone paved stretch of the *Wiener Höhenstraße* between Cobenzl and Kahlenberg.

© Manfred M Wiesinger / Creative Commons BY-SA 2.5



ational area was no longer easily accessible. Therefore, plans for building a car road were discussed again, even by the social democratic mayor of Vienna, although construction did not begin. The plans were opposed within the Social Democratic Party, mainly by the *Naturfreunde* (Nature's Friends), the party's own association for nature protection.

Plans for the road were finally implemented in 1934 following the establishment of the Fascist government both in Austria and Vienna. The first part of the *Höhenstraße*, between the Cobenzl Hotel and the Kahlenberg, opened in 1935. The connection from the Kahlenberg to the Leopoldsberg was ready by 1936, and the road between the Cobenzl and the village of Neuwaldegg in Vienna's 17<sup>th</sup> district by 1938. In total, the road is almost 15 km long. From 1938 to 1940, an additional 4 km connection was built from the Leopoldsberg to the city of Klosterneuburg in the federal state of Lower Austria, which is now officially a part of the *Höhenstraße*, too.

The *Höhenstraße* was planned as a panoramic parkway for motorized vehicles and cyclists. Pedestrians were not allowed on the swinging road with its many sharp turns and vistas. Instead, they had and still have to use footpaths which were built along the car road, separated from the roadway. Likewise to other road projects during that time, job creation was used to justify implementa-

tion. Approximately 600 workers were employed during the first phase of road construction, digging the road into the ground mostly with their bare hands, with the aid of horses, and small machines. At one stretch between Cobenzl and Kahlenberg the road re-used the old trail of the former cog railway. In contrast to other parkways built at the time, the *Höhenstraße* was paved with cobblestones, which resulted in additional work for the cobblestone industry. (Sowa 2008)

The Austrian Monument Protection Act previously included a rule that any property of public authorities is considered a protected monument unless proven different. Therefore, the *Höhenstraße* was an automatically protected monument until the end of 2009, when this general rule was abolished. The Federal Authority for Monument Protection wanted to re-list the road as a monument, which was opposed by the City of Vienna because they feared the high costs of having to maintain the remaining stretches with original cobblestone pavement. The issue was brought forward to one of Austria's Supreme Courts, which ruled in favor of monument protection in 2019. Parts of the *Höhenstraße* have become protected monuments under the Austrian Monument Protection Act again since the beginning of 2020. (wien.orf.at 2019)

The Gaisberg Road close to the city of Salzburg has

Fig. 106:

The Gaisberg peak and a part of the Gaisberg road.

© Ewald Ehtreiber /  
Creative Commons  
BY-SA 4.0



many similarities to Vienna's Höhenstraße. Like Vienna, Salzburg is located at the fringe of the Alps, albeit at a place where the Alps are still much higher. At an elevation of 1,287 m and 800 m above the city, the Gaisberg peak, on the eastern side of the city, is one of Salzburg's most important recreational areas. From the beginning of tourism in the Austrian Alps, the Gaisberg was a tourism destination for the high society summer tourists. Well into the 19<sup>th</sup> century, litter services were on offer in the city center of Salzburg. Affluent tourists were carried up the Gaisberg mountain by local chairmen and spent the night at Alpine huts on the peak to watch the sunrise the following morning.

Like at the Kahlenberg, a cog railway took over the transport of people up the hill at the end of the 19<sup>th</sup> century. It was inspired by the very first of its kind in Europe, the cog railway on the Rigi mountain in Central Switzerland, opened in 1871. It took until 1887 for the 5.3 km cog railway to the Gaisberg peak to be completed. It started at the railway station in Parsch, a kilometer from the historic city center of Salzburg, and was privately operated. Like the cog railway in Vienna, the Gaisberg railway suffered from economic hardship following World War I.

Dr Franz Rehrl was the figurehead behind the planning and construction of the Gaisberg road, like in the case of the Großglockner High Alpine Road. In 1922,

Rehrl became governor of the federal state of Salzburg at only 31 years old, and he stayed in this position until 1938, through the years of Austrian fascism as well. Faced with ongoing economic crises, Rehrl supported the development of tourism as a new key industry, both for the state and the city of Salzburg. The newly established Salzburg Festival had begun to attract affluent people, many of whom drove their own cars into Salzburg in summer. Rehrl wanted to offer tourists an opportunity for excursions within the vicinity of Salzburg.

For the first time in February 1928, newspapers reported of Rehrl's plans to create a combination of panoramic road and cable car to connect the Gaisberg peak with the city. In the end, only the road could be financed. Construction works began just a few days after the newspaper reports, in February 1928. The road was opened 15 months later, replacing the former cog railway. Up until 1938 it was operated as a toll road, and by 1929, the bus company Albus offered scheduled bus services along the Gaisberg road using special busses with convertible roofs for a pleasurable ride on days with good weather.

The road starts at the village of Guggenthal, just outside the perimeter of the city of Salzburg. It begins with two long straight sections that were previously curvier but were rectified after the opening of the road. It takes only two hairpin turns to climb up to the Gaisberg peak

## Tourism Parkways in Europe from 1918 to 1945

along the 9 km road. Following a Swiss standard of Alpine road construction, the turns of the road are slightly banked.

Since its renovation at the beginning of the 1950s, the road has been open to the public free of charge. On sunny weekends in autumn, the road is a perfect escape from the fog in the city. As such, an increased number of people using the road makes it difficult for sufficient parking, and many people ignore parking rules. Discussions about reestablishing a road toll for the Gaisberg road, introducing a more frequent bus service, and closing the road for private cars in case of overuse are still in progress. (www.sn.at 2020)

The third, and arguably the most famous, panoramic road of interwar Austria is the Großglockner-Hochalpenstraße (Großglockner High Alpine Road).

People have been crossing the main ridge of the Alps since ancient times. Along many of the old trade routes, excavations have uncovered artefacts from Celtic and Roman times. Farmers from the South Tyrolean Ahrn valley (Ahrntal) still herd their animals twice a year over passes higher than 2,600 m to their pastures within the Salzburg side of the Alps. The mountain inn along the Krimmler Tauern pass dates back to 1389. (www.krimmler-tauernhaus.at 2020)

The Hochtor passage next to Austria's highest peak, the Großglockner (3,798 m), is one of those Alpine crossings with thousands of years of history. Archaeological finds in the area date back to the Bronze Age and Roman times, including the remnants of a four-meter-wide merchant road. During the 16<sup>th</sup> century, locals were searching for gold in the area. (Mitterecker 2020) Since the 15<sup>th</sup> or 16<sup>th</sup> century, the people of Rauris in Salzburg used the pass for pilgrimage to the medieval parish church of Heiligenblut in Carinthia. Even during Nazi times, the pilgrimage didn't come to a complete stop. It was only in 2020 that the pilgrimage was cancelled because of Covid-19. (www.raurisertal.at 2020)

The Großglockner peak was for the first time successfully climbed in the year 1800. During the 19<sup>th</sup> century, the Großglockner region was one of the imperial hunting grounds of the Austrian Emperor. Because of that, touristic infrastructure developed in and around Heiligenblut. From 1875 to 1876, the Klagenfurt branch of the Austrian Alpine Association built a mountain inn (*Glocknerhaus*) at an elevation of 2,132 m next to Austria's longest glacier, the Pasterze, south of the Hochtor pass, with a wonderful view over the Großglockner. The house was located at a site visited by Emperor Franz Joseph I and Empress Sisi in 1856 and renamed *Elisabethruhe* (Elisabeth's

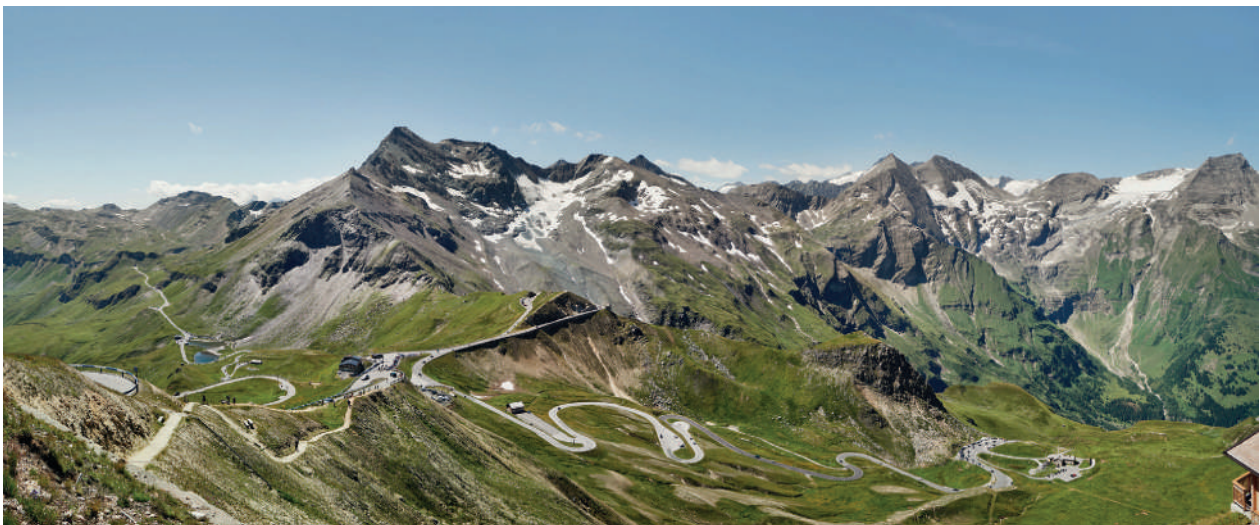


Fig. 107: Panoramic view of the Großglockner High Alpine Road.

## Tourism Parkways in Europe from 1918 to 1945

Rest) to commemorate the royal visit. As visitor numbers increased rapidly around 1890, the need for a road from Heiligenblut to the Glocknerhaus became evident. From 1900 to 1908, a 11.4 km long road with a maximum gradient of 10 % and an average width of 2.5 m was constructed. It was named *Kaiserin-Elisabeth-Glocknerstraße* (Empress Elisabeth Glockner Road). Both the financing of the road and the negotiations with the landowners along the road proved difficult. In 1917, 2 km of the road was destroyed during a landslide. After 1922, the road became a toll road in order to maintain both the road and the Glocknerhaus. At the beginning of the 1930s, the road was purchased by the developers of the future Großglockner-Hochalpenstraße. (www.alpenverein.at 2020)

First steps to build a new road over the Hoctor pass were taken in 1922, when officials of the Austrian Ministry of Traffic and Tourism met on-site with delegates from the federal states of Salzburg and Carinthia. They inspected the geography to verify the possibility of road construction over the Hohe Tauern between the villages of Fusch in the north (Salzburg) and Heiligenblut in the south (Carinthia). Even at this early stage, there was agreement that a road at this place would be beneficial for tourism and tackling unemployment.

In 1924, a second meeting was held, and a committee to build a road across the Großglockner was founded. The first concept was to build a parkway-style road for car tourism which should blend harmoniously with its surroundings, providing as many beautiful viewpoints as possible. Franz Wallack, an engineer who had graduated from the Technical College of Vienna and who was one of the delegates at the first meeting, was entrusted with drafting the road project. Wallack devoted his whole life to building and maintaining this road, with the conviction that this project was worth every effort. Thankfully, he left behind very detailed documentation of his work and wrote a book about the Großglockner-Hochalpenstraße which summarizes his memories and recordings.

Shortly after his assignment, Wallack and two assistants drafted the future location of the road. Following official instructions, he developed the project for a 47.8 km long connection (56.4 km including adjoined roads) between two toll stations at Ferleiten (Salzburg) and Heiligenblut (Carinthia) and extending on to the Franz-Josefs-Höhe viewpoint near the Glocknerhaus along the



**Fig. 108:**

**Original massive coping stones at the Großglockner High Alpine Road. The layout of the road directs the car passenger views on the Großglockner peak.**

© Großglockner Hochalpenstraßen AG

existing Kaiserin-Elisabeth-Glocknerstraße (8.5 km). The road was, in the beginning, planned to be six meters wide, but on his own account, Wallack also planned a ten-meter-wide road that was chosen as the final design. His considerations during planning included the orientation of the slopes, which should be facing the sun as long as possible, passing the best spots for viewpoints and going the way of least resistance so that the road would naturally blend in with the landscape. Even though when engaging investors Wallack would argue for the importance of the road as a connection between north and south, it

never was his intention to only create a simple and efficient connection over the Alps but to create a scenic masterpiece. (Mitterecker 2020)

After presenting the project to the public challenges began to arrive. Wallack had to face the fact that the road project was well received, yet the Austrian government could not finance the project, due to the restrictions imposed by the League of Nations, a result of Austria's loss in World War I. Wallack refused to give up and sought out investors by sending out memorandums, delivering more public presentations, and even expanding the project to include the existing road owned by the Klagenfurt section of the Austrian Alpine Association leading up to the Glocknerhaus.

In 1925, Wallack visited other examples of Alpine roads in Austria, Switzerland, Italy, and France. He travelled nearly 5,000 km and 60 km in altitude and reported his conclusions. Wallack's observations included technical aspects like roadway widths, gradients, curve radius, bridges, the quality and variety of guard rails, road surfaces, altitude, air humidity, and time of closure due to snow. He also recorded how the roads were utilized and frequented, their special features, and access fees. The different kinds of hotels along the way were thoroughly investigated as well and put into categories.

Without a doubt, Wallack incorporated his findings in future ideas, the planned annual car races are one example. Following his observations across Europe, Wallack concluded that if the Großglockner-Hochalpenstraße were to be specifically built for tourism, it would be the 'shining star' of all Alpine roads. He calculated that approximately 120,000 visitors per year would inject half a million schillings from access charges alone. In the first year after its completion, the Großglockner-Hochalpenstraße had over 130,000 visitors, exceeding Wallack's calculations and undermining the critique of his allegedly optimistic calculations.

During the same time, Franz Rehr, the Governor of Salzburg, had his own vision. He proposed the construction of a massive hydroelectric power plant in the Hohe Tauern. Rehr suggested that the Großglockner-Hochalpenstraße could become an access road for the plant. The two projects could be jointly financed. This method would avoid problems with the League of Nations given the street would be privately financed. The plan was to

repurchase the road for public use later on. (Mitterecker 2020)

On August 4<sup>th</sup>, 1930, shortly before the peak of the economic crisis and after Austria received a government loan from the United Kingdom, Rehr convinced the Austrian Finance Minister Otto Juch to take over 60 % of the shares of the still to be founded Großglockner-Hochalpenstraße Corporation (*Großglockner Hochalpenstraßen AG, GROHAG*). The second biggest stakeholder should have been AEG Berlin, which was at the time a very important electricity company that had declared interest in building a power plant in the Alps.

Rehr immediately rushed the project with Wallack as lead engineer. He argued that the road needed to be finished before the plant, thus construction needed to begin as soon as possible. On August 12<sup>th</sup>, 1930, the project was declared beneficial for the government and thus escaped the usual bureaucratic procedure. Conditions imposed were for 80 % of workers to come from the pool of unemployed, and that Austrian companies, workers, and machinery were to be used for the project. The project officially started on August 30<sup>th</sup>, 1930, less than a month after Rehr received approval from the minister. The corporation was founded on February 19<sup>th</sup>, 1931.

Wallack divided the road into seven building segments. The lower parts at the northern and the southern ends, the *Nordrampe* (northern ramp) and *Südrampe* (southern ramp) were the first to be constructed. The remaining segments were called *Scheitelstrecke* (peak track), representing the high-alpine parts (roughly everything above 2,000 m in altitude) of the road. Wallack, who managed both construction sites at the same time, quickly became famous for travelling back and forth over the Alps by foot at an astonishing speed. He also considered secondary infrastructure for the supply, lodging, and daily needs of the workers. Wallack even planned small settlements in the higher regions of the Alps with barracks, canteens, laundry, workshops, depots for explosives, electrical, medical, and water supply, a supply lift, and leisure time facilities. These settlements were temporary, so nothing is left of them today except for a variety of photos and written entries. The construction made fast progress. Wallack's approach – humane working conditions, a little competition between construction sites, and the best possible equipment – paid off.

## Tourism Parkways in Europe from 1918 to 1945

Rehrl, on the other hand, had his fair share of problems regarding finances. In order to quickly start the project, he used Wallack's cost estimate of 12.5 million schilling from 1925 to acquire the necessary number of shareholders. But Wallack had to correct this estimate after detailed planning, due to the increase in car travel and widening of the original version. The new estimate amounted to 21 million, and therefore a greater budget was needed. To make matters worse, AEG left the consortium as they were not granted the construction of the power plant. They planned to pump water that would normally run to the south, to Carinthia, through the mountain range to the northern side, to Salzburg. A plant of the desired scale would have had a serious impact on the water supply not only in Carinthia, but in Yugoslavia, too (since the water from the Großglockner runs into the Drava river, which runs from Austria into former Yugo-

slavia).

The contract stated that the Austrian government was required to pay the remaining, although the economic crisis had consumed all the money the government had to share. Only 6.7 million schillings had been paid up until that point. Despite this, Wallack and Rehrl continued with construction works, hoping that a half-finished road would pressure the government to pay for the rest. The Großglockner Hochalpenstraße Corporation was about 1.5 million schillings in debt until they were forced to stop working after the summer of 1931. At that time, a significant amount of construction was done – 30.2 km of road was finished and a further 20 km started. The high-alpine parts were the only segment not started yet. (Mitterecker 2020)

While Rehrl continued searching for foreign investors, the media were informed about the financial issues.



Fig. 109: The Großglockner peak, the Pasterze glacier, and the end of the High Alpine Road at Franz-Josefs-Höhe.

© Großglockner Hochalpenstraßen AG

## Tourism Parkways in Europe from 1918 to 1945

They created a big scandal. In response, Rehr declared that Wallack was a very professional engineer and his estimations for the two projects were accurate, both for the small high alpine road considered in 1924 and the final Großglockner-Hochalpenstraße, which was much more ambitious. But Rehr could not prevent the negative image that accompanied this campaign, the more disheartening because the public had previously viewed the project positively. The immediate result was that any chance to find additional investors was lost, and the only alternative left was to persuade the government.

At least the dispute over the two versions of the road led to a positive outcome in form of a report comparing the two versions of the track. It was written by Leopold Örley, a professor at the Technical College of Vienna. This report was sent to Finance Minister Emanuel Weidenhoffer, Juch's successor. Weidenhoffer, who until this point thought of the Großglockner-Hochalpenstraße as a 'still-born child,' changed his mind and sent a letter to the new federal chancellor, Engelbert Dollfuß, in April 1932, praising the road as "the scenically most beautiful and technically most perfect road across the Central Alps" (Mitterecker 2020). Stating that a failure of the project would be a national humiliation, Weidenhoffer agreed to finance the project. The parliament still needed to be convinced. Increased protests by unemployed people and extended closure periods on the old road to the Glocknerhaus due to construction caused losses in tourism, making local people nervous. In June 1932, Rehr invited Dollfuß on site, and a week later the government finally decided to finance the road.

Once the decision was made, the construction proceeded smoothly. In August 1933, everything besides the peak track was finished. Wallack even had some money left. He used it to connect the road with the Poneck peak, which he renamed into *Edelweißspitze*. It is the highest viewpoint of the Großglockner-Hochalpenstraße, with an altitude of 2,571 m. By building the 1.8 km long road to the peak, an additional highlight on the Salzburg side was created, which served as a complement to the Carinthian Franz-Josefs-Höhe, so Rehr was also satisfied. Since the government was now officially the patron of the Großglockner-Hochalpenstraße, the road immediately became part of its propaganda. Overly praised for its importance as a connection between north and south, for

tourism, and for employing so many Austrian workers, there was hardly a newspaper that would not report on the progress of the construction works.

In September 1934, the northern ramp was officially opened, with around 8,000 people present, among them many Austrian politicians. At this occasion, Rehr, together with Wallack, crossed the Hohe Tauern with a car for the first time in history by driving on the half-finished peak track. On August 3<sup>rd</sup>, 1935, the entire Großglockner-Hochalpenstraße finally was opened to the public. The opening ceremony was intentionally held on the opening day of the Salzburg Festival to have more potential visitors available. For the same purpose, a hill climb race was organized on August 4<sup>th</sup>. The media reported on thousands of visitors coming from all different parts of the world to join the celebrations. The government had invited around 200 journalists to promote the Großglockner-Hochalpenstraße as the pride of a new technically advanced Austrian nation. The fascist government wanted to deliver the message to its people that, like the Großglockner-Hochalpenstraße, they would overcome the crisis and prevail in the end. (Mitterecker 2020)

With the completion of the road, Wallack's work was still not done. He understood the power of marketing to



Fig. 110:

One of the original snowplows from the 1950s.

© Papa1234 / Creative Commons BY-SA 3.0



## Tourism Parkways in Europe from 1918 to 1945

drive visitation and created a corporate design for the Großglockner-Hochalpenstraße and advertised it in journals, newspapers, travel guides, and on postcards. He also designed the famous sticker for cars that served as a kind of recognition for driving across the Hohe Tauern and which proved to be a very effective way of advertisement for the Großglockner-Hochalpenstraße. The logo did not change much over time, and the stickers and other merchandise products are still sold today. In 1953, Wallack also invented a special snowplow which enabled a quicker clearing of the snow at the beginning of the annual season and contributed to increasing the opening period for the road. The snowplows are still in use today.

The government had its own concepts for promoting the Großglockner-Hochalpenstraße. In 1935, although still having financial troubles, Austria took part in the World's Fair in Brussels with a very modern and world-open design for a pavilion by the architect Oswald Haerdtl. The pavilion had a tourist section with a 10 m wide painting of the Großglockner-Hochalpenstraße and its most interesting viewpoints. This was four months before the road was even finished. Two years later, at the World's Fair in Paris, Austria went a step further. The same architect designed a pavilion with a big showcase-like glass facade. This strongly and intentionally contrasted the monumental and heavy architecture of the German pavilion. Inside, a 30-meter wide and 8.5-meter high photomontage was displayed, showing the Großglockner-Hochalpenstraße and the Pasterze glacier. It was the biggest photomontage in the world at that time.

On top of the facade they just simply wrote *Österreich*

### 4.5.2. German Examples (Michael Schimek)

Only a small section of the Alps is located in German territory, at the southernmost fringe of the country. When Alpine tourism started becoming a big business in interwar times, some people in Germany thought about opportunities to create a touristic experience in the German Alps similar to those in other Alpine countries, like Austria, Switzerland, or Italy.

Ideas for scenic routes revolved not only around short singular projects like in Austria or Switzerland, but they

(Austria). The road had become *the* prestige project of the Austrian government. Their idea was to promote technical capability, economic accomplishments, Austrian landscape, hospitality towards visitors, self-confidence for the Austrian people, culture, tradition, motor sports, and even how the road contributes to building bridges between different peoples who all peacefully come together at the Großglockner-Hochalpenstraße. The last idea was allegedly unintentionally highlighted by Wallack's idea to raise flags at the parking lot of the Kaiser-Franz-Josefs-Höhe for each nationality visiting the Großglockner-Hochalpenstraße.

During construction, 3,200 workers were employed. 67 bridges between 2 to 32 m long were erected, two tunnels built, 115,750 m<sup>3</sup> wall stacked, and 12 gas stations and 4 houses for collecting the street tolls were built. The number of workers to participate on the project was only a small fraction of the hundreds of thousands of unemployed people during the 1930s. So at least during construction time, the actual impact on unemployment is far-fetched. However, the Großglockner-Hochalpenstraße gave a significant boost to the development of Austrian tourism especially after World War II. The road attracts 750,000 to 900,000 visitors per year. 1963 was the road's most visited year, with 1.3 million tourists. This makes the Großglockner-Hochalpenstraße the second largest tourism destination in Austria, after Schönbrunn Castle in Vienna. So without any doubt, the whole region has profited and continues to profit economically from the road. (Mitterecker 2020)

rather dealt with creating an attraction that would encompass everything that Germany's Alps have to offer. Initial ideas were described in a report about a journey by Bavarian King Maximilian II from 1858, who travelled along the German Alps on a route which is very similar to what is called 'German Alpine Road' (*Deutsche Alpenstraße*) today. The idea of an all-Bavarian scenic route was taken up again by Chief Medical Officer Dr. Knorz from Prien am Chiemsee in 1927. He drafted a route of 450 km

## Tourism Parkways in Europe from 1918 to 1945

from Lindau at Lake Constance in the west to Schönau at Lake Königsee in the east, running along most of the Bavarian lakes, climbing some lower passes (most of them around 1,000 m), and visiting many of the most famous sights in Southern Bavaria. (www.deutsche-alpenstrasse.de 2018)

In 1932, the German Touring Club had taken up the idea and prepared a more detailed draft. These plans were taken up by the Nazi government from 1933 on. Hitler called the route a project of 'utmost national interest' and commissioned Dr Fritz Todt, the person managing the Reichsautobahn program, with constructing the scenic route. Also in this case, Todt relied on landscape architect Alwin Seifert in terms of landscape integration issues.

The authority in charge of creating the final plan was the Bavarian State Government.

The plan intended to create a route of about 450 km of standardized parkway-like roads from west to east. Some stretches were planned to be new constructions, many stretches should be adapted and improved. The road was supposed to wind its way all along the fringe of the German Alps. The twisting layout and the fact that, different to e.g. the Blue Ridge Parkway, heavy traffic was allowed on the route, made sure that slow and pleasurable driving was the norm. (Zeller 2010)

The first construction site along the route started in 1933 near Inzell. Some more venturesome stretches, like an Alpine passage over the 1,722 m high Wallberg moun-



Fig. III: The harbor of Lindau on Lake Constance, starting point of the German Alpine Road.

Fig. 112:

Roßfeld Panorama Road,  
the Hoher Göll massif in  
the background.

© Ewald Ehtreiber /  
Creative Commons  
BY-SA 3.0



tain near Rottach-Egern on Lake Tegernsee, were finally not implemented, mostly because of lack of finances, and bypassed by less technically demanding solutions. Instead, a 4 km long side road up to an elevation of about 1,100 m on the Wallberg was built which is now a toll road only open during summer. Another part of the road that was already prepared but finally not built is the passage through the so-called *Gletschergarten* (Glacier Garden) near Schneizlreuth, a geologically valuable area with rare traces of glacier activity from the Ice Ages which was, because of the plans, made accessible for visitors but not destroyed by the construction of the road.

By 1939, only a part of the route was finished ('about 25 %' according to Zeller 2010; 60 % according to [www.deutsche-alpenstrasse.de](http://www.deutsche-alpenstrasse.de) 2018). Works on the route were laid down in 1939 because of World War II and started again after 1945. By 1960, the whole 450 km were finally finished ([www.deutsche-alpenstrasse.de](http://www.deutsche-alpenstrasse.de) 2018).

The full route was never planned as an entirely new construction, like many of the interwar parkways in the United States or in the Austrian and Swiss Alps, but as a combination of a number of existing, improved, and newly constructed stretches. Today, the route is centrally marketed and branded by the Bavarian Association of Highways (*Bayerische Fernwege e.V.*), similar to the U.S.

Scenic Byways.

A road which actually is, from its concept, much closer to the parkways created during interwar times, is the *Roßfeld-Panoramastraße* (Roßfeld Panoramic Loop) in the southeastern corner of Germany. During the 1930s, it was meant to be the eastern end of the German Alpine Road and to be connected to the city of Salzburg via the *Alpenstraße*, a 7 km long straight boulevard in the south of the city of Salzburg. Construction of the *Alpenstraße* was started in 1937, when Salzburg was still Austrian, and finished in 1939 as a panoramic road by the Nazis. ([www.sn.at](http://www.sn.at) 2020)

The road climbs up to an Alpine pasture area north of the Göll mountain on the Austrian-German border, east of Berchtesgaden and south of Hallein. Construction started in 1938. Part of the road is, since 1945, located on Austrian territory. It is a privately maintained toll road. It starts at Unterau, north of Berchtesgaden, and runs through the villages of Oberau and Gmerk and up to the Roßfeld plateau. At the southern end of the plateau, it runs down again and ends at Obersalzberg, near Hitler's summer residence. The loop is connected with its starting point at Unterau by another road which is not part of the panoramic road.

The road was not finished during Nazi times. An 800

m long stretch on the plateau could not be constructed. The 16 km loop with a maximum gradient of 13 % was finished after World War II, from 1953 to 1955. The initially planned connection from Obersalzberg to Lake Königsee was never constructed. (Kruse et al. 2017)

Another German road which is to some extent similar to the German Alpine Road is the *Schwarzwaldhochstraße* (Black Forest High Road). It has a length of 60 km and runs from Baden-Baden to Freudenstadt, at an altitude of 800 to 1,000 m, along the higher lying regions of the Black Forest, through a similar landscape to the Blue Ridge Parkway. (www.schwarzwaldplus.de 2020) The core

part of the mountain road was constructed in small portions between 1930 and 1937. The name Schwarzwaldhochstraße was already assigned to the first newly built stretch between Hundseck and Unterstmatt.

An additional part was constructed as a military road in 1941. Construction works continued after World War II, when parts of the road were widened to 7.5 m and some hairpins rectified. The whole road was continuously drivable in 1952. Road improvement works continued until 1972. (www.nationalparkregion-schwarzwald.de 2020)

#### 4.5.3. Swiss, Italian, Spanish, and French Examples (Michael Schimek, Kristina Skåden)

During interwar times, the construction of new scenic roads, very often planned with the dual ambitions of access and tourism, was not restricted to the United States, Austria, or Germany. Similar roads were built in many other mountainous areas, some of them ranking among the most spectacular constructions and having a significant touristic impact today. The following examples give an impression over the variety of such roads in different environments.

The Sustenpass road in Central Switzerland is one of the few Swiss pass roads that was constructed with a focus on tourism. It is 45 km long and connects the Cantons of Uri and Berne from east to west. It starts at the northern ramp of the most important north-south route over the Swiss Alps, the Gotthard pass. Like with most other passes, it had been used for a long time but never gained the same importance like many other pass routes, mainly those crossing the Alps from north to south in order to connect France and Switzerland with northern Italy. Nevertheless, in 1810, during Napoleonic times, a new carriage road was planned, since the Canton of Valais was French at the time and Switzerland wanted to create a connection which was located entirely on Swiss territory. Construction went on until 1823, but the road was never finished. (von Rütte 2012).

In 1935, Switzerland started a program to improve its Alpine pass roads for touristic, employment, and military reasons alike. The largest construction was the new Sus-

tenpass road, which was built from 1939 to 1946. Like many other roads of the time, much of the construction was completed by manual labor, in order to increase the employment effect of the project. Local materials were used, and concrete structures were covered with granite rocks to better integrate the road into its surroundings. (von Rütte 2012) The layout of the road provides for many different views for the drivers, which also explains the use of a number of short tunnels along the western ramp and the many parking lots along the road. Even an artificial waterfall was created. Another special feature are the many wells that were dug all along the road and which were supposed to provide fresh cooling water for the car engines that, at this time, still frequently overheated when driving along a mountain pass road. (Schneider/Schneider 2015)

Both ramps of the pass have a gradient of maximum 9 %. Another similarity to the Großglockner-Hochalpenstraße is that the pass summit, at 2,224 m, runs through a tunnel. Obviously, the road was primarily built as a scenic parkway-like mountain road similar to the other Alpine parkway roads that were constructed a little before the Sustenpass road and could serve as a role model. (Kruse et al. 2017) Although the road was extremely well received in the beginning, when about an eighth of all cars registered in Switzerland drove over the pass on the day after its opening, it never gained the same touristic significance like other Alpine pass parkways since then.

Fig. 113:

Strada della Forra.

© Christian Peters /  
iStock



Unlike to most other pass routes with newly built parkways, the new road didn't replace the old ones. Visitors to the area can visit all three historic roads built over the Sustenpass at the same time – the ancient mule track, the non-finished carriage road from Napoleonic times, and the contemporary parkway. This co-existence

of historical routes is fairly unique. In 2008, the monument protection authority of the Canton of Berne issued guidelines for the future preservation of the road. The Sustenpass is the only Swiss road monument which is under control by monument protection. The 'traffic landscape Sustenpass,' including all three roads, has, in addi-

## Tourism Parkways in Europe from 1918 to 1945

tion to that, been included into the Swiss Inventory of Historic Traffic Routes. (Schneider/Schneider 2015)

In Italy, which features a wealth of historic cultural scenic roads all over the country, new scenic roads were built before and after World War I to create better connections to formerly remote villages. One of these roads is the *Strada della Forra*. Before 1900, many of the villages on the Tremosine plateau, on the west shore of Lake Garda, were only connected to the lake with mule tracks. In 1908, the priest of the village of Vesio commissioned the construction of a new road which was constructed through the narrow and steep gorge of the river Brasa. This remains one of the most breathtaking mountain roads in Italy, highly appreciated by motorists, even though some of the oddest parts of the road are now bypassed by tunnels for safety reasons. Straight

after its opening in 1913, the German *Frankfurter Zeitung* newspaper called it nothing less than “the most beautiful road in the world,” which clearly indicates that the road, already before World War I, was regarded as more than a local connecting road and had a touristic impact right away. Winston Churchill is even said to have called it “the Eighth Wonder of the World.” (Wenderlein 2018)

Today, the *Strada della Forra* starts at another spectacular scenic road built in interwar times, the *Gardesana Occidentale* from Gargnano to Riva del Garda. From 1859 to 1919, Lake Garda belonged to two different countries. Most of the lake was Italian but the northernmost end of the lake, had, being part of the Trentino, belonged to Austria since medieval times. Until the beginning of the 20<sup>th</sup> century, no road along the shore and over the border between Austria and Italy existed. Transport between



Fig. 114: The Nus de Sa Corbata turn („necktie“), Sa Calobra Road, Mallorca.

## Tourism Parkways in Europe from 1918 to 1945

the villages on the western side of Lake Garda was done by boat. Now that all of the lake was Italian after World War I, the Italian state planned to fill the gap. The new road was constructed from 1928 to 1931. Most of its 29 km from Gargnano to Riva del Garda consist of a total of 74 tunnels which were blasted into the mountain rocks along the lake. It developed its full touristic significance after World War II, when Lake Garda became one of the favorite tourism destinations for Italians, Austrians, and Germans alike. (Kruse et al. 2017)

A real gem among the interwar mountain roads is the road to Sa Calobra, nicknamed ‘The Snake’ by the locals, on the island of Mallorca in Spain. The tiny village of Sa Calobra lies on a remote bay on the northwestern coast of the island. Until the 1930s, it was only accessible by ship from neighboring villages. Probably with an eye on the increasing importance of tourism and the high unemployment of the times, the Mallorquin-Italian engineer Antoni Parietti Coll constructed a 12 km long access road, with an average gradient of 7 % and a maximum gradient of 11.5 %, to the bay from the Tramuntana mountain ridge. It features more than 50 turns, most of them hairpins. The most famous one is the so-called ‘necktie turn,’ where the road leads into a 270-degree curve and undercuts itself at the end, similar to the ‘pigtail bridges’ on Iron Mountain Road in South Dakota. As many other

roads of the time, construction was completed by manual labor, without the aid of machines. Another scenic road on Mallorca built by Parietti in 1925, though not as spectacular, is the 20 km long access from Port de Pollença to Cap Formentor, the northernmost point of the island. Parietti planned some more scenic roads on Mallorca, but their construction was halted by the Spanish Civil War. (www.mostdangerousroads.org 2020)

One Alpine pass road built during interwar times in France is the *Col de l’Iseran*. It connects the French skiing resort of Val d’Isère with the Col du Mont Cenis road, one of the French mountain passes near the border to Italy that played an important role as an Alpine crossing during Roman times and the Middle Ages and which was enhanced during Napoleonic times. When finished in (depending on the source) 1936 or 1937, it closed one of the remaining gaps along the *Grandes Routes des Alpes* tourism route. (Kruse et al. 2017) The Col de l’Iseran is the highest Alpine pass road in Europe, at an elevation of (depending on the source) 2,764 or 2,770 m. (Moss 2007) There are two Alpine roads that even reach higher – the Ötztal Glacier Road in Austria and the Cime de la Bonette loop in France – but they are not pass roads. The core of the pass road between Bonneville-sur-Arc and Val d’Isère features gradients between 7 % and 12 %. The road is closed in winter, when part of it is temporarily

Fig. 115:

Part of the *Lacets de Montvernier* during the Tour de France cycling race in 2015.

© Florian Pépéllin /  
Creative Commons /  
BY-SA 3.0



transformed into a ski slope.

Another spectacular scenic mountain road in France built during interwar times is the *Lacets de Montvernier* road. It connects the village of Pontamafrey in the valley of the river Arc with the villages of Montvernier, Montbrunel, and Montpascal, located on a terrace 300 m above the Arc valley. Since the paving of the Col de Chaussy pass after Montpascal, the road connects the Maurienne valley, as the valley of the Arc is called in the region, with the Col de la Madeleine, one of the iconic passes of the Tour de France cycling race, providing a connection from the Arc to the Isère valley. *Lacet* means ‘shoelace’ in French, and indeed, the road does resemble its namesake. At a length of 3.4 km, the road climbs an elevation difference

of 270 m. Seventeen of the 18 switchbacks are within a 2 km road stretch, which means that there is no more than about 100 m of more or less straight road between each hairpin. The 17 hairpins lie within a horizontal distance of about 270 m, which means that the road has been built into a slope with a gradient of around 80 to 90 %. The road itself has a gradient of only 8 to 9 %.

Construction of the Lacets de Montvernier started in 1931 and was finished in 1933. Thirty-six workers built the road manually, without the aid of larger machinery. Construction proved so difficult that the first contracted company had to give up. Only the second construction company was skilled enough to do the job. (www.alpine-cols.com 2015)

#### 4.5.4. Norwegian Examples (Kristina Skåden)

Topography determines Norwegian roads – and this creates a scenic opportunity, indeed. When roads have to pass steep mountains or follow the length of a fjord, where the mountains seem to drop from sky into the water, they quite quickly become tourist attractions even if their purpose primarily was transportation.

The most well-known tourist routes in Norway were “mainly established on roads built between 1880 and 1940, an era when Norwegian views on nature, like North American ones, were moving from romantic idealization towards a more geographically and topographically informed approach.” (Larsen 2011) Many of the routes consist of many iterations of roads, which eventually became accessible to cars and attractive to tourists.

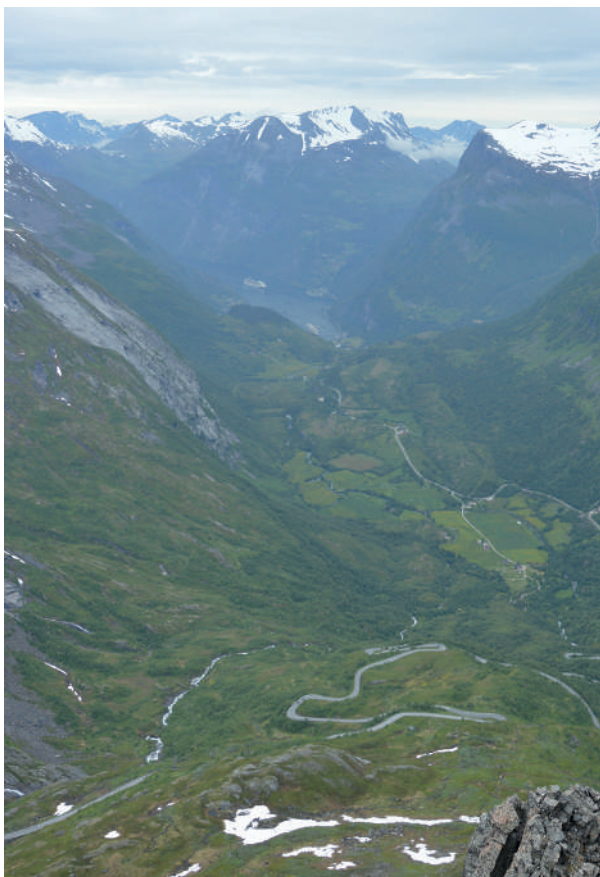
In the beginning of the 19<sup>th</sup> century, during the discussions about building a new road for horses and carriages from the eastern to the western side of Norway over the Haukelifjell mountains, Niels Hertzberg (1759–1841), a priest and an advocate for the ideas of Enlightenment, argued that such a road would serve the artists, the scientists, and the tourists alike. The road would provide better access to nature and to viewpoints where one would be able to enjoy the view of a glacier, mountains, waterfalls, and even the sea – at the same time. This was more than even Switzerland, and most of the Alps, could offer. (Skåden 2018) Many of the Alpine passes were well

known in Norway and described in teaching books for engineers, as the *Lærebog i Bygningskunsten*, published in 1848.

The book became a guide for the Norwegian engineer Hans Hagerup Krag (1829–1907), who went on a study journey to Switzerland to learn about Alpine roads and passes. Interestingly, he was not terribly impressed by the roads, but rather it was the tourism industry of the Swiss Alps that caught his attention. (Skåden 2013) Krag’s findings became the starting point of an ongoing relationship between road authorities and tourism interests. In 1886, the Norwegian Tourist Association was established, with Krag, now Director of the Public Roads in Norway, as a founding member. Their second statute describes how the association should contribute to building and maintaining roads and paths to scenic areas. (Hvattum 2010) Norway gradually became a tourist country. Germans, Dutch, and Swedes were the most common tourists, and occasionally Norway also received French and Italian visitors. They did not only travel to the mountains and fjords on the West Coast but also up to the North Cape. The roads on the Helgeland coast and in the Lofoten region were and are spectacular adventure routes for tourists. Today, many of these 19<sup>th</sup> century roads are listed as National Heritage by the National plan for roads, bridges, and road-related cultural monu-



## Tourism Parkways in Europe from 1918 to 1945



**Fig. 116:**  
Geirangervegen and Geirangerfjord from Dalsnibba.

© Olaf Meister / Creative Commons BY-SA 4.0

ments (Statens vegvesen 2002). Some are also included in the ‘Tourist Route Project,’ initiated in 1994. ([www.nasjonaleturistveger.no](http://www.nasjonaleturistveger.no) 2020)

From the end of the 19<sup>th</sup> century, roads with a clear focus on tourism, leading to panoramic views and places of natural and scenic value, like glaciers and waterfalls, were constructed. One of these roads, involving early motorization, is the *Strynefjellsvegen* road in Western Norway. It consists of two parts. *Strynefjellsvegen* itself was finished in 1896, its other part, *Geirangervegen*, already in 1889. *Geirangervegen* was presented at the World’s Fair in Paris in 1900 and was awarded a gold medal. A side road to *Geirangervegen* up to the viewpoint *Dalsnibba*, which provides an awesome view on the *Geirangerfjord*,

was opened in 1939. This road was only built for touristic purposes. A gravel road in the beginning, it was paved some years ago when a visitor center was opened next to the viewpoint.

An extremely old scenic road in the Western Fjorlands is the *Stalheimskleiva* road, started already during the 1840s, at the end of *Nærøydalen*, near the UNESCO World Heritage site of the *Nærøyfjord*. *Haukelivegen*, one of the main transit routes from the Oslo area to the west coast, connecting *Drammen* and *Haugesund*, runs south of *Hardangervidda* National Park. It was finished in 1889 and contains scenic historic stretches like the *Austmannali* passage (built in 1880, in 1982 replaced by a tunnel) and the *Seljestadjuvet* (1859-1865). The road along the *Måbødalen* valley up to the 183 m high waterfall *Vøringsfossen*, on the northern edge of *Hardangervidda*, was finished in 1916.

Two famous scenic roads in Norway were built at the same time as many of the Alpine and U.S. parkways during interwar times:

The winding road *Trollstigen* is a part of *Geirangervegen*. It rewards drivers with a view of the 320 m high *Stigfossen* waterfall. *Trollstigen* is the most visited tourist road in Norway. Part of the road from *Åndalsnes* to *Vall-*



**Fig. 117:**  
The *Vøringsfossen* waterfall.

© Michael Schimek



Fig. 118: Trollstigen.

© Stefan Krause / Creative Commons BY-SA 3.0

dal, the road is considered an engineering masterpiece, which reinforces the impression of the surrounding nature. The road has 11 sharp hairpin turns circling along steep mountains. Every turn has its own name, named after the leader of the working team which was in charge of building built just that particular turn. At some places, the road is carved into the mountainside, at other places it is built on artificial stonewalls. Because of the narrow turns, there are restrictions on the length of busses on the road.

Historically, Trollstigen was an old mountain pass for packhorses over the Stegafjell mountains in Western Norway. An important reason for building this connection was an annual farmers market at the Devoll farm in Romsdalen. Trollstigen was built from 1928 to 1936, and just after the opening as a road for cars, it became a major tourist destination. The book 'Norway in Maps' (1947) describes the road as "The most famous part of the road, the Trollstigen (The Gigant's Ladder)." (Sund/

Sømme 1947) After 1960, when the car became available without restrictions in Norway, automobile tourism increased. Actors in the tourist business addressed this new consumer group by providing travel advice, including descriptions of the Trollstigen. (Welle-Strand 1968) The packhorse road is today restored for hiking. Trollstigen is one of the 18 'Norwegian Scenic Routes' and is open from the end of May to the end of October.

"Sognefjellsvegen, route 55 across the Sognefjell mountain area in Jotunheimen National Park between Luster and Lom, is the highest and most impressive mountain pass in Northern Europe (highest point at 1,430 meters), and it has been awarded the status of National Tourist Route because of the spectacular and wild mountain scenery it passes through." (www.visitnorway.com 2020) The road was built from 1936 to 1938. In 1938, the opening of the new road was mentioned by the *Landslaget for reiseliv* (the National Association for Tourism in Norway) as one of the most important events favoring tourism

## Similar Tourism and Multi-Purpose Roads after 1945 and in Other Continents

---

(Landslaget for reiseliv 1943). In addition to that, bus trips were offered on the road (Lillehammer-Gudbrandsdalen Turisttrafikkforening 1953). Works on the road were part of a program providing labor to unemployed youth (Hegdalstrand 1996; Nagell 1950). “In winter, weather is extremely harsh, and the snow masses are so

enormous that it is impossible to keep the road open. Taking the trip just after the road opens in spring, the almost ten-meter high banks of snow at the side of the road will tell a story about winter in the mountains.” (www.nasjonaleturistveger.no 2020)

## 4.6. Similar Tourism and Multi-Purpose Roads after 1945 and in Other Continents

### 4.6.1. Additional Austrian Examples (Michael Schimek)

The successful model of the Großglockner-Hochalpenstraße and the general boost tourism contributed to the national economy of postwar Austria ensured that the concept of the interwar scenic parkways was adopted also during the 1950s, 1960s, and 1970s.

As of today, the Großglockner Hochalpenstraßen AG (GROHAG) manages four more panoramic mountain parkways in Austria that were built after World War II. All of them are toll roads and have a very similar concept to the original parkway at the Großglockner. Some were even planned by the same engineer as the Großglockner-Hochalpenstraße, Franz Wallack, and first plans to construct those roads date back to interwar times.

The road with the longest history is the *Villacher Alpenstraße* in Carinthia. It is a 16.5 km long and 6 m wide scenic parkway which runs up to a height of 1,732 m on the 2,166 m high Dobratsch mountain, a limestone massif close to the city of Villach which offers an awesome view on its surroundings and even into Slovenia and Italy. The first idea to build some kind of access to the mountain was put forward at the end of the 19<sup>th</sup> century, although the people of the time primarily had a railway line or a cable car in mind. In 1912, the first version of a motor car road up on the mountain was drafted.

For a number of reasons, it took another 50 years until the idea was finally implemented. Franz Wallack had updated the old plans for the road and lobbied for its construction. In 1953, the Carinthian parliament decided to finance the road, but it took another eight years, until 1961, for works on the road to really get started.

Constructing the road proved to be a real challenge. Because of the very peculiar geology of the limestone rock – the Dobratsch witnessed the largest rockslide event in historic times in Austria in 1348, after an earthquake in Northern Italy, which dammed up the Gail river and created a lake which only disappeared again after 400 years – blasting works had to be done in a very sensitive way. In such an environment, it was difficult to operate large machines, so also the Dobratsch road was mainly built by manual labor. After four years of construction works, the road was officially opened in July 1965. (www.villacher-alpenstrasse.at 2020)

Another panoramic road in Carinthia is the *Goldeck Panoramastraße*. It was built in the 1960s from the village of Zlan, near the Drava river, up to an elevation of 1,895 m on the Goldeck peak. The road climbs the mountain from the southeast, is 14.5 km long, and features 10 hairpin turns and a maximum gradient of 10 %. The road was primarily built to create access to a skiing resort on the Goldeck. Since the construction of a cable car to the Goldeck skiing resort from the north, from the district capital Spittal an der Drau, the road’s function has been shifted to a panoramic road open only during summer. (www.goldeck-panoramastrasse.at 2020)

The *Gerlos Alpenstraße* (Gerlos Alpine Road) has a long history as an important Alpine pass. Already 3,500 years ago, people settled on both sides of the pass in the Salzach valley and the Zillertal valley. Around 1600, gold was mined near the village of Zell am Ziller. The Zillertal belonged to the independent Archbishopric of Salzburg,



Fig. 119:

Part of the Krimml Waterfalls.

© Daniel / Creative Commons BY-NC 2.0

which formally became a part of Austria only after the Congress of Vienna, when the Zillertal, in return, became a part of Tyrol (readers may be interested to know this associated historical fact: Wolfgang Amadeus Mozart was actually neither of German or Austrian origin but born as a citizen of the Archbishopric of Salzburg).

The reason for that exchange of land was the same as around 1600: There was no connection between the mainland of Salzburg and the Zillertal, which was only accessible through Bavaria and Tyrol. This is why the archbishops of Salzburg were interested in creating a connection within their domain to the gold mines. In 1630, a 30 km long and 3.5 m wide carriage track was built over the

Gerlospass, in order to be able to cart the gold from Zell am Ziller over the pass to the smelteries in the Salzach valley. The road could not be maintained for a long time, though. After a number of flood and rockslide events, it quickly fell into decay.

The current pass road was constructed at the beginning of the 1960s. Franz Wallack had drafted a plan for the road in 1949, construction started in 1960. The road was opened in 1962. It starts at the village of Krimml and is 12 km long, at a maximum gradient of 9 %. Since it was entirely financed by the federal state of Salzburg, it was, at the beginning, only built until the border between Salzburg and Tyrol. The 2 km long gap between the pass summit and the village of Gerlos in Tyrol was closed a few years later when the Durlaßboden reservoir and power plant were constructed.

The road provides access to the Krimml Waterfalls, which are 380 m high and rank among the highest waterfalls in continental Europe. In 1967, the waterfalls became the first site in Austria to be awarded with the European Diploma for Protected Areas by the Council of Europe, a similar scheme to the UNESCO World Heritage list (the cultural landscape Wachau in Austria is both a European Diploma and World Heritage site). Today, the privately managed toll road is bypassed by a public road located north of the Alpenstraße. ([www.gerlosstrasse.at](http://www.gerlosstrasse.at) 2020)

The youngest of its kind is the *Nockalmstraße* in Carinthia. It has a length of 34 km and runs through the Nockberge mountain range in the north of Carinthia from Innerkrems in the north to Winkl in the south, over an elevation of more than 2,000 m. The term *Nockberge* describes a kind of mountain that is grassy on top and has a rather smooth shape, which certainly defines the mountains in the region, though their name is more likely to have derived from the Slovenian names for many of the mountains ending with -nik, due to the Slovenian history of Carinthia (Pohl n.d.).

The decision to build the road was taken by the parliament of Carinthia in 1971. The road was opened in 1981. The Nockberge region was declared a National Park by Austria in 1987 but never recognized by IUCN. Since 2012, it is part of a Biosphere Reserve under the UNESCO Man and the Biosphere Program and borders the Lungau Biosphere Reserve in Salzburg which was estab-

## Similar Tourism and Multi-Purpose Roads after 1945 and in Other Continents

lished at the same time. ([www.nockalmstrasse.at](http://www.nockalmstrasse.at) 2020) In 2006, each of the 52 hairpin turns of the road was given the name of a typical plant of the region, in Carinthian German dialect, and many celebrities have taken on the patronage of individual turns. (Radner 2006)

The first Alpine scenic road to be built in Austria after World War II is the *Timmelsjoch Hochalpenstraße* (Timmelsjoch High Alpine Road). The Timmelsjoch pass is an old connection over the main ridge of the Alps. It connects the Passeiertal valley in South Tyrol (Italy) with the Ötztal valley in North Tyrol (Austria). Similar to other passes, farmers from the Passeiertal used to drift cattle over the pass to their pastures in the north. As the shortest connection from the Upper Inn valley to the former capital of Tyrol, Meran, and as the lowest lying pass route between the Reschenpass and the Brenner, it had a huge significance as a historic trade route over the centuries.

First plans to build a modern road over the Timmelsjoch date back to 1897, when the parliament of Tyrol voted for a program to create a number of new roads over the Alps within the federal state. The program was stopped short by World War I and the fact that South Tyrol became Italian in 1919. At the beginning of the 1950s, the Ötztal tourism pioneer Angelus Scheiber successfully lobbied for the creation of a new road from north to south, which would enable tourists “to enjoy lunchtime skiing on the glaciers of the Ötztal and relax sitting under the palm trees of Meran in the afternoon.” In 1955,

the construction of the new Alpine road from the village of Hochgurgl to the Austro-Italian border started. It was financed by a joint venture of the Republic of Austria, the federal state of Tyrol, and 25 regional municipalities.

The core part of the road, from Hochgurgl to the border, is 7 km long. At the same time, the connecting road between Sölden and Hochgurgl was improved. Due to the relatively flat terrain, which only required the construction of a small number of hairpins, heavy machinery could be used on the construction site. The road was opened in 1959 and proved to be a major touristic attraction immediately. The connection to the Passeiertal was stalled for a few more years, even though a road from St. Leonhard im Passeier up to Passo del Rombo, as the Timmelsjoch is called in Italian, actually already existed. It had been built as a military road by Mussolini in 1939 as a preparation for a potential invasion of North Tyrol but had fallen into decay after World War II. By 1968, the Italian part of the pass road had been improved in a way that the whole connection was motorable again, even though the old military road is still narrower and with significantly more turns, since St. Leonhard lies almost 700 m lower than Sölden.

In 2010, a program called ‘Timmelsjoch Experience’ launched. It aims to create a kind of themed road by equipping the Austrian part of the Timmelsjoch road with open-air museum facilities built in a contemporary architectural style telling about the cultural and historical

**Fig. 120:**

**Restaurant and museum at the Timmelsjoch pass summit.**

© Adrian Michael /  
Creative Commons  
BY 3.0



### Similar Tourism and Multi-Purpose Roads after 1945 and in Other Continents

background of the pass. It is financed by the EU transborder project financing tool Interreg. ([www.timmelsjoch.com](http://www.timmelsjoch.com) 2020)

Another famous scenic Alpine road constructed during the 1960s and 1970s is the *Looser Panoramastraße*, featuring a similar history as the Goldeck Panoramastraße. The Loser is a very distinctive mountain peak next to the village of Altaussee in the Styrian part of the Salzkammergut region, just a few kilometers north-east from the UNESCO World Heritage cultural landscape

Hallstatt-Dachstein/Salzkammergut. Until 1965, the only touristic attraction on the mountain, which lies in one of Austria's most traditional tourism destinations, was a mountain hut run by the Alpine Association near the peak. In 1965, a company was established to make the Loser accessible for skiers. Instead of building cable cars and drag lifts, a panoramic road was built which was opened in 1973. The positive effect on the local economy was obvious to the people of Altaussee, so almost every inhabitant became a shareholder of the new road



Fig. 121: The Wachau valley at St. Michael, right of the Danube. The railway line in the background, the old road in the middle of the vineyards, the new road close to the Danube.

## Similar Tourism and Multi-Purpose Roads after 1945 and in Other Continents

construction company. Skiers were transported on the mountain by busses on the road. This service was replaced by ski lifts during the 1990s.

An example for a main road in a lowland tourist area which was created in parkway style is the *Neue Wachaustraße* (New Wachau Road). It has a length of about 35 km and runs along the left bank of the Danube from Emmersdorf to Krems-Stein through the scenic valley of the Wachau, a historic tourism destination in eastern Austria, in the federal state of Lower Austria, about an hour west of Vienna. Built during the 1950s and planned by Alwin Seifert, the landscape architect in charge of the German Reichsautobahn during Nazi times (Weiss 2015), it is a part of the Austrian *Bundesstraße 3* (National Highway No. 3). The new road replaced the historic cultural road connecting the many wine growing villages of the valley. The extremely narrow village tracks were proven unsuitable to modern needs of increased motorization and tourism in Austria after World War II. Seifert planned a scenic road offering views on the many cultural and natural sights of the valley to be enjoyed at a leisurely driving speed of 60 to 70 kph. In the case of the medieval town of Dürnstein, the local people successfully lobbied for the relocation of the road into a tunnel under the city. In the other villages, though, the road was located closer

to the Danube than the old road, which had the negative impact of separating the villages from their immediate connection with the banks of the river.

The road has a width of only six meters and was initially paved with concrete slabs which were eventually replaced by a tarmac surface since the gaps between the concrete slabs made driving a rather bumpy experience. Since the Wachau constitutes a significant shortcut for drivers travelling westwards, more and more heavy trucks used the road, jeopardizing the scenic character of the valley and its winegrowing and tourism industry. In 1985, truck transit was banned from the valley by a decree of the Lower Austrian parliament – the first of this type of regulation to pass in all of Austria. Because of the huge amount of bicycle tourists in the area, cycling on the road is prohibited as well – the cyclists have to use the bicycle route which was built parallel to the road and partly uses the old Wachau road through the villages.

The Wachau, including the New Wachau Road, have been awarded the European Diploma for Protected Areas by the Council of Europe in 1994 and is a UNESCO World Heritage cultural landscape since 2000. The Wachau is the only site in Austria and one of the few in Europe which holds both designations.

### 4.6.2. Alpine Roads to Skiing Resorts with Scenic Aspects in Europe

(Kristina Skåden, Michael Schimek)

The Alps currently welcome over 120 million visitors annually. There has been a rapid growth in Alpine ski tourism in the postwar era. This is largely due to the democratization of skiing – as more people adopted the sport, the industry that supports it grew accordingly. It is today a pillar of the Alpine economy. “As the sport became more popular and profitable, skiers, businesses, and state officials all had a reason to make the mountains more suitable to their common needs for convenience, safety, and efficiency.” (Denning 2014)

“Alpine skiing rapidly rose to popularity in Central Europe in the late 19<sup>th</sup> and the beginning of the 20<sup>th</sup> century, partly because middle-class Europeans idealized the Alps as a ‘natural’ landscape that served as a refuge

from modern, mechanized civilization.” (Denning 2014) Starting in the 1930s, many Alpine farming communities were transformed into ski destinations to combat the crises the traditional economies of the villages had to overcome. When the first ski lifts were developed in the 1930s, skiing turned into an infrastructure-driven mass spectacle during the second half of the 20<sup>th</sup> century. (Gross 2017) Until the late 1920s, the love of skiing was not dependent on human interventions in landscape, like roads and railroads or hotels and larger ski lifts. (Denning 2015) “Beginning in the 1930s and at an even higher speed during the postwar decades, public authorities and private business interests remodeled wide parts of the Alps to create what geographer John Bale calls



**Fig. 122:**

**One of the *Colonia Fiat* towers in Sestriere, built in 1930.**

© SurfAst / Creative Commons BY-SA 3.0

‘sportscares,’ or ‘monocultural sites given over solely to sports, rather than multifunctional landscapes.’” (Denning 2014) These developments in winter tourism have transformed the landscape in the Alpine regions since 1930 and until today.

“The opening of the winter resort in Sestriere, Italy, in the winter of 1934, provided the French and Italians with a model to challenge Swiss and Austrian supremacy in the competition for tourist visits. Sestriere was the first successful winter station created solely to serve the needs of alpine skiers. Built from zero under the direction of Giovanni Agnelli, head of Fiat Automobiles, this development in northwestern Italy focused on access via an integrated network of infrastructure. The new Alpine

station benefited from the extension of the *autostrada* from Turin.” (Denning 2014)

In France, the government, pressured by business interests, undertook massive transportation projects to connect the Alps to the lowlands. The efforts of the French government to close the gap between French winter resorts and their rivals in Switzerland and Austria for tourist visits reveal an alliance between public and private actors that is typical of the development of the skiing industry. After 1945, the state railway company amended its train schedules to create better connections for tourists traveling to the Alps from major urban areas such as Paris and Marseille, and the state’s engineering corps completed projects to widen roads, build bridges, and dig tunnels to increase car and rail transport to the mountains. (Denning 2015)

“In 1956, a German-language guide to ski destinations in the Alps described the ideal characteristics of a winter station as follows: ‘First-class motorways that are also cared for in winter; high-altitude winter sports centers that are guaranteed to have snow; treeless, long, obstacle-free downhills; groomed slopes in combination with all sorts of mountain railways and ski lifts; [and] modern, well-managed hotels.’” In the postwar era, the turn-of-the-century charm of Chamonix could not compensate for the fact that the village no longer matched the touristic ideal of an Alpine ski destination. (Denning 2014) The Winter Olympic Games in Switzerland, Austria, France, and Italy after 1945 generated massive infrastructure improvements for the Alpine areas, including roads, railways, sewage systems, street lighting, and parking lots.

The internet hosts endless commercial descriptions of scenic destinations in the Alps and of winter sport resorts, and of some scenic routes in the Alps as well. Nevertheless, there is one thing one will hardly find: descriptions of scenic routes leading to the winter sport resorts. Scenic qualities on the route to skiing resorts are seldom mentioned, and if they are, only as a side note. Promotion is focused on how get to the ski resorts and all the facilities, slopes, and scenery you can enjoy there.

This way of promotion neglects the fact that, especially after World War II, a lot of new road links to newly established skiing resorts were built, not only in the Alps, but everywhere where Alpine skiing has become a part of



## Similar Tourism and Multi-Purpose Roads after 1945 and in Other Continents

Fig. 123:

L'Alpe d'Huez in summer 2005.

© Raphodon /  
Creative Commons  
BY-SA 3.0



the tourism industry – in the Pyrenees in France, Andorra, and Spain, in the Sierra Nevada in Spain, in the Tatra in Slovakia and Poland, in Sweden and Norway, and, more recently, in Romania, Bulgaria, or the Caucasus Mountains. Many of these roads are not only access roads to high Alpine tourism resorts but also have a high scenic value. Some have become icons in professional cycling history, being part of one of the three Grands Tours of cycling in Italy, France, and Spain, like the famous climb to L'Alpe d'Huez in France. Europe's highest paved road leads to an elevation of 3,384 m on the Pico del Veleta in the Sierra Nevada in southern Spain. It connects the city of Granada with the alpine skiing resort of Sierra Nevada and then goes on almost to the summit of Pico del Veleta at 3,396 m, only 12 m above the end of the road. Since the establishment of the Sierra Nevada National Park in 1999, the road is closed for individual car traffic from the skiing resort to the peak at an elevation of 2,550 m.

Still, the short period of time spent on these roads in cars when traveling to and from the skiing resorts is usually not considered an asset of the overall tourism experience, since a skiing holiday enables travelers to enjoy the mountain panoramas of their destinations not just for a few minutes on the road, but for a number of days

from ski lifts, mountain huts, and on the slopes. Another reason for that may be that many of the newly built skiing resorts do not offer the same scenic qualities as many of the historic Alpine villages and therefore do not have the assets that are required to become year-round tourism destinations.

The excessive way that skiing tourism is organized in many Alpine resorts, which is increasingly questioned, not least in the wake of the Covid-19 pandemic, may lead to different interpretations of the skiing experience in the future. Already now, there are some exceptions. The travel agent 'Travel Supermarket,' for example, promotes 'Five great European ski driving routes' and emphasizes the relationship between the landscape and the road. One example is the Venice-Cortina route: "Two classic Italian destinations in one trip and some magnificent driving scenery between the two – this is a ski trip to be savored, not rushed. Head to the town of Cortina first, enjoying an ever more spectacular drive into the Dolomites en route. This mountain range is so beautiful it has been designated a UNESCO World Heritage Site – try to time your journey to catch the glorious display of pastel shades across the peaks as the sun sets." ([www.travelsupermarket.com](http://www.travelsupermarket.com) 2020)

### 4.6.3. Roads with Different Purpose Turned into or Created as Scenic Roads in Europe

(Kristina Skåden, Michael Schimek)

While most roads are built for communication and trade, some shift profile and purpose due to changes in transport systems, new inventions, economic development, politics, or changes in mobility. The transformation of a 'normal' road into a scenic road is a process created by different actors and comes in many versions in time and place. Countless websites describe so-called scenic roads, and on many maps, roads with a special relationship to the surrounding landscape are marked with a green line next to the road.

Often the aim is to create a 'motive landscape.' The concept of motive landscapes refers to the visual perception of the landscape when the observer is in motion and interacts with the landscape. (Noltsi 2013) Scenic routes are roads where the visual perception of the landscape by driving is essential. Most likely, there are relevant examples of such transformations of roads all over Europe, and even worldwide.

The *Silvretta-Hochalpenstraße* (Silvretta High Alpine Road) is a 22.3 km long toll road connecting the two valleys of Montafon in Vorarlberg and Paznaun in Tyrol over the Bielerhöhe pass at 2,032 m. The 6.5 km long road from the eastern tollgate near Galtür in Paznaun only climbs an elevation difference of about 300 m and is fairly straight. The toll gate in Partenen in Montafon lies almost 1,000 m lower than the Bielerhöhe, which means that more than 30 hairpins had to be built over a distance of 15.8 km.

Already during the 1920s, a big hydroelectric reservoir lake, the Vermuntsee, was dammed up. Transport to the construction site was done by cargo cable cars. In 1938, the system of reservoirs and pipelines was amended with the even larger Silvrettasee reservoir directly next to the pass summit of the Bielerhöhe. For this construction site, a connecting road between Vermuntsee and Silvrettasee was built, constituting the first part of the future pass road. The road from Bielerhöhe to Galtür was built in the 1940s, straight after World War II, for additional works on the water management system of the reservoir lakes. The final part, the road from Vermuntsee down to Partenen, was built in 1951. After the construction of the Sil-

vrettasee dam, a huge digger was left at the pass summit. Instead of dismantling it and sending the parts down by cable car, engineers decided that the digger should simply go down to Partenen by itself and create the final part of the road while travelling.

The road, which was in the beginning meant to be a maintenance road of a power dam system, was opened to the public in 1954 and enlarged to two lanes in 1961. It quickly became one of the best-visited Alpine scenic roads in Austria. It is managed by the electricity producer which is also in charge of maintaining the hydroelectric dams and the reservoir lakes, illwerke vkw AG, and is visited by around 400,000 people every year. ([www.silvretta-bielerhoehe.at](http://www.silvretta-bielerhoehe.at) 2020)

The Glaubenbielenpass in Switzerland has an elevation of 1,565 m. "The crossing from Schüpfheim in the Entlebuch valley in the Canton of Lucerne via Flühli, Sörenberg, and Glaubenbielen to Giswil in the Canton of Obwalden already existed in medieval times as a trading route used by the locals and was not of big importance until the beginning of World War II." In 1939, the Swiss military wanted connecting roads at the foothills of the alps. "Initially, the Glaubenberg road was given priority, as a rough road already existed, but as more and more alpine fortresses were built the need for connecting roads became urgent." The first stage of the road work began with the forced labor of Russian and Polish prisoners. They did not, however, get far during the war. "After the war ended in 1945, a high amount of unemployment was expected, and the Glaubenbielen project was to be prepared as a means of creating employment. This idea was not supported by the government in Berne. Local politicians were persistent with their demands to offer better connections for the Alpine and forest areas and the many far-flung farms around the pass and were able to reactivate the idea in 1956. In 1960, the construction plans were ready, and work began." The new 17 km long road from Giswil to the canton's border at Sörenberg was officially opened in 1965. "The engineers did a good job of blending the road into the landscape, therefore, it is commonly known as a 'panoramic road,' popular among

## Similar Tourism and Multi-Purpose Roads after 1945 and in Other Continents

locals and tourists alike.” (Hickel + Werffell 1966)

The so called ‘Ceașescu’s folly,’ the *Transfăgărășan* Highway in Romania, is a road that exemplifies a situation where the initial purpose was subtracted but which experienced a transformation to a new function. (Markowitz 2005) According to the British motoring magazine and the television program ‘Top Gear,’ a tour on the *Transfăgărășan* is nothing less than the world’s best road trip. The *Transfăgărășan* mountain road or national road 7C is 90 km long and runs through the Făgărăș mountains, a part of the Transylvanian Carpathian Mountains. The road connects Transylvania with Muntenia. The *Transfăgărășan* starts at Bascov, near Pitești. It follows the valley of the river Argeș, and after reaching its highest point, it descends to Cârțișoara in the Olt valley, where the road ends. The *Transfăgărășan* pass rises to a height of 2,042 m (according to other sources 2,134 m) and has

sharp hairpin turns. The average speed on the road is around 40 kph. The road is normally closed from October to June due to snow.

The road features more tunnels and viaducts than any other road in Romania, including the longest (884 m) and highest-lying tunnel of Romania near Lake Bălea. The *Transfăgărășan* was built between 1970 and 1974 by military forces. “After the 1968 invasion of Czechoslovakia by the Soviets, Nicolae Ceaușescu decided to build a strategic military route to cross the inland mountains in the event the Soviets attempted a similar move into Romania. Forty soldiers lost their lives during the construction.” (www.losapos.com 2020) The climb up to the pass summit starts a few kilometers behind Curtea de Argeș and leads through a typical mountain landscape with alpine meadows.

After the end of Communism, the *Transfăgărășan*



Fig. 124: A part of the *Transfăgărășan*.

### Similar Tourism and Multi-Purpose Roads after 1945 and in Other Continents

quickly became a famous scenic road in Europe. (www.losapos.com 2020) The road is highlighted as one of the main tourist attractions of the country, along with the famous Romanian castles, wine routes, the Danube river, the UNESCO World Heritage site Horezu Monastery, or Cozia National Park. (Dulău/Coros 2010)

The geographer Tim Creswell writes about the six parts that constitute mobility: motive force, velocity, rhythm, route, experience, and friction. They are connected with each other in a complex way and help define each other. Routes become the channels through which we move. They define our movement and our speed and cut through the landscape, thus changing it, creating, according to Creswell and referring to Stephen Graham and Simon Marvin, a ‘tunneling effect’. They also connect different landscapes with each other and define our own interaction with them by defining when and where we can

access or leave them. The notion of the ‘tunneling effect’ is related to contemporary urban landscapes. Examples include the highways that pass through the landscape but only let you get off at major hubs. (Creswell 2011) Scenic roads may be understood as ‘tunnels’ of landscapes.

A good example for them are the 18 National Scenic Routes in Norway. One of them is the road *Atlanterhavsveien* at the west coast of Norway. The road is 8.3 km long and connects a number of small islands and reefs. “Few roads bring a driver closer to the ocean. The road is regarded as a visual delight as it curves elegantly from islet to islet over its seven bridges. It combines natural surroundings and modern engineering to create a unique driving experience. The road moves from the fertile cultural landscape of the coast across moorland to bare crags along the weather-beaten, open bay of Hustadvika.” Also the *Atlanterhavsveien* has already been entitled



Fig. 125: Storseisund Bridge, part of the *Atlanterhavsveien*.

## Similar Tourism and Multi-Purpose Roads after 1945 and in Other Continents

---

the world's most beautiful car drive, in this case by the British newspaper 'The Guardian.' ([www.nasjonaleturistveger.no](http://www.nasjonaleturistveger.no) 2020)

The main industry of the region of the Atlanterhavsveien is fishing. For some time already, the fishing industry called for better road connections to strengthen trade and export. The route was originally planned as a railway in the early 1900s, but that idea was dismissed in 1935. The planning of the road section began in the 1970s. "The islanders on Averøy worked hard to put a road in place but it was not until 1983 that work commenced. Working conditions were very demanding, and the construction workers experienced a total of twelve storms during the six-year-long construction period. The road was opened in 1989, and in 2005 it was chosen as the Norwegian construction of the century." ([www.nasjonaleturistveger.no](http://www.nasjonaleturistveger.no) 2020)

Havøysund is a fishing community in Finnmark county, in the far north of the Norwegian mainland. "The road out to Havøysund is very varied and even though it

is only a couple of hundred meters above sea level at the highest point, you get the feeling of driving above the tree line. Parts of the road traverse a barren rocky landscape with the Arctic Ocean on one side and rugged rocks on the other. The landscape is dramatic, and there are only few signs other than the road to show that somebody else has been here before. But in the middle of this apparently barren land you can spot both sea eagles and reindeer. The drive offers a varied and thrilling experience that is without comparison – with a picturesque, unique final stop. Havøysund village, located at 71 degrees north, is literally the end of the road. The village suddenly and surprisingly appears. Strange to think that there is a viable community situated at the spot where the northernmost point of the Norwegian Scenic Routes ends on the edge of the ocean." ([www.nasjonaleturistveger.no](http://www.nasjonaleturistveger.no) 2020) The Scenic Route project designed two picnic areas, a foot-bridge at the start of a trail along a river which heads up to the 'Love bench' at the waterfall in Lillefjord, and some 'sitting-boxes' for relaxing and looking at the ocean.

### 4.6.4. Additional Examples from Northern America (Natasha Martin)

In North America, leisure and multi-purpose roads built in the second half of the 20<sup>th</sup> century were constructed predominantly to provide year-round access or connect remote communities that had hitherto been isolated, at least during some part of the year. Over time, we see that these roads, for their access to remote areas as well as their unusually beautiful surroundings, turn into mainly tourism attractions. As proof, the byways or highways listed below (with the exception of the Trans-Canada Highway) have their own websites, which provide multiple downloadable brochures for the keen road-trippers to plan their journey. Additionally, a number of them are loops – conveniently allowing tourists to return to their starting point without doubling back. But ultimately through tourism, the byways are helping to preserve the economy of those remote places they once connected.

Begun in 1923 and completed in 1951, Seward Highway on Kenai Peninsula in Alaska was designed to connect two major Alaskan cities, Seward and Anchor-

age. Previously, the city of Seward was only accessible by sea, rail, or air. The 127 mile / 204 km route is stunningly beautiful, passing rivers, lakes, and snow-capped mountain passes. The road is built upon an ancient route, which was first carved by glaciers, and throughout history used by Native hunters and gatherers. In 1952, it was paved over in its entirety, making it a much easier road to drive. The Seward highway benefits from three major designations: it is a National Forest Scenic Byway, a State Scenic Byway, and an All-American Road. With so many accolades, it is of course a tourism destination in and of itself. To cater to visitors, there are a multitude of points of interest along the way, including museums, trails, and abandoned mines turned into tourism attractions.

Still along the West Coast, but further south in the state of Oregon, is the Hells Canyon Byway, another All-American Road and National Forest Scenic Byway. The 213 mile / 342 km road is a loop around the Wallowa Mountains that passes small towns, scenic views of the mountains, and an element of the 'Old West' with access



Fig. 126: Seward Highway, Alaska.

© Maomeija / iStock

to the ranching lifestyle and connection to the Oregon Trail along the route. It gets its name from the deepest freshwater gorge in Northern America, Hells Canyon. Its website proudly proclaims that the byway is also one of the ‘7 Wonders of Oregon,’ a further tourism marketing strategy to attract travelers in search of ‘bucket-list items.’

San Juan Skyway, along and in the San Juan Mountains in the state of Colorado, was established in 1988. The 233 mile / 375 km loop passes through mountain towns, abandoned mines, a national park, and breathtaking scenery. It is often referred to as the most scenic drive in the United States. Within the San Juan Skyway is a stretch referred to as the Million Dollar Highway (so named possibly for the cost to construct, possibly for the ‘million-dollar views’). The Skyway crosses over many high passes, including Molas Pass (10,899 ft) and Red Mountain Pass (11,075 ft). In 2000, a Tourism Initiative funded by the San Juan and Uncompahgre National Forests invested in additional tourism infrastructure along

the route, including trails, parking lots at viewpoints, interpretation centers, camping grounds, as well as additional safety features, such as retaining walls. This mountain road has three designations: National Forest Scenic Byway (1988), Colorado Scenic and Historic Byway (1989), and All-American Road (1996).

The Creole Nature Trail is located in southwestern Louisiana and is designated as an All-American Road and a Louisiana Scenic Byway. The scenic loop runs 180 miles / 290 km through a natural corridor referred to as ‘Louisiana’s Outback’ for its prairie and marshland environment. Built in 1975, the road passes through four distinct wildlife habitats and estuaries, allowing visitors to see a variety of wildlife and birdlife (the byway features ‘Alligator Crossing’ road signs). The route has a number of tourism attractions, including Wildlife Refuge centers, walkways over wetlands, and beaches along the Gulf of Mexico.

One of the longest uninterrupted highways in the

## Similar Tourism and Multi-Purpose Roads after 1945 and in Other Continents



**Fig. 127:**

**Tourists planning their journey at a roadside stop, 1952.**

© Chris Lund / Creative Commons BY 2.0

world, the Trans-Canada Highway, stretches interminably (4,860 miles / 7,821 km) from one coast of Canada to the other. The Trans-Canada Highway was approved through the Highway Act of 1949. Construction began

just one year later in 1950, and the road opened in 1962, although construction was not finalized until 1971. It travels through all ten provinces, and each province is responsible for their respective sections. The provinces were mainly responsible for bearing the costs of construction, though the federal government funded sections that passed through National Parks. Unsurprisingly for such a vast country, different sections require vastly different maintenance, with some areas (in the middle) having very low traffic, and others (especially at the coasts) being busier. All major upgrades to the Trans-Canada Highway have taken place in tourist heavy areas. When the city of Vancouver won the bid to host the Winter Olympics in 2010, the road was expanded in some places in British Columbia to accommodate the anticipated influx of tourists for the games. Similarly, in 2008, the popular route between Banff National Park and Golden, British Columbia underwent upgrades to accommodate the increasing number of tourists to Alberta. In 2012, 80 electric vehicle charging stations were installed, making the Trans-Canada Highway the longest electric-vehicle-ready road in the world. The economic impacts of these valuable connections created by the Trans-Canada were immediate and long-lasting – the highway improved trade, created jobs, and increased access to remote communities. It is also a popular leisure route for Canadians, keen to explore their own country. In fact, young Canadians consider it a ‘rite of passage’ to drive the entire route over a summer.

### 4.6.5. Examples from Asia (Kurt Luger)

One of the greatest challenges in road construction is the crossing of mountains. The highest and longest mountain range in the world, the Himalayas and Hindukush, is located in Asia and is crossed by a series of mountain passes that lead to extreme heights. These passes used to be trade routes or pilgrimage routes and they continue to serve these purposes today – by facilitating the transport of goods between the north and the south of the continent. In the last decades, they also have an additional purpose: for tourists to explore these regions.

The most important road connection between Kath-

mandu and Lhasa is the Arniko Highway, which like many roads in Nepal was financed by China. Not the least because of this fact it is also called ‘Friendship Highway’ and leads through fantastic mountain and river landscapes. The approximately 130 km on the Nepalese side are mostly impassable during the rainy season. This overland route has a length of about 1,000 km and is used for the transport of goods, but more and more also for tourist purposes. Some of the most famous Buddhist monasteries are on the route, and a recently paved turn-off leads up to Rongbuk Monastery and ends just before Mount Everest Basecamp. Tibet and the Tibetan plateau

Fig. 128:

Arniko Highway from Kathmandu to the Tibetan border after the earthquake in 2015.

© Kurt Luger



(Changtang), with their high altitude and with magnificent views of the Himalayan peaks and salt lakes, are a popular destination for Chinese tourism.

China's highway mileage rose moderately over the centuries but the enormously expanding economy accelerated a fast growing 'car culture' during the last 30 years. This has also greatly increased the interest of the urban population in the country's more peripheral and scenic regions. Since 2006, Lhasa can be reached also via the Qinghai-Tibet railway (2,000 km from Golmud to Lhasa), since 2014 it runs via the Changtang to Xigatse. ([www.tibettravel.org](http://www.tibettravel.org) 2020; Kotan Publishing 2000)

The development of the road network in the mountainous regions of Nepal is often pushed on in a rather ruthless manner, neglecting nature. Sometimes the traditional and breathtaking old pedestrian trails of the Himalayan trade, which would be ideal for trekking tourism, are replaced by dusty and inhospitable roads. But there are also examples where an environmentally friendly and labor-based Green Road Concept is being implemented, in which a footpath is gradually transformed into a road over a longer period of time, significantly reducing the risk of landslides. Many of these mountain roads make villages much easier to reach and are particularly import-

ant for trekking and community-based tourism in some districts. (Meyer 2009)

The Great Himalayas mountain range is a natural border between China and the southern neighbors of India, Nepal, and Bhutan. Many of the mountain roads were built for military strategic or other important reasons but are located in military restricted areas and can only be used by tourists with special permits. The condition of the roads is strongly dependent on the weather situation, some are basically only usable before the monsoon season (in the summer dry season) and not all of them are asphalted or in a well drivable condition. Among them are mountain pass roads that lead over an altitude of 5,800 meters. They allow spectacular views of the mountain world but can only be used at great risk. ([www.dangerousroads.org](http://www.dangerousroads.org) 2020)

"Considered as one of the most spectacular drives in the world, the road from Chengdu, the provincial capital of Sichuan Province in Southwest China, to Lhasa, the capital of Tibet, is a winding route that leads through some of the most stunning countryside in China and Tibet Autonomous Region (TAR)." This vast journey crosses more than 2,000 kilometers over a southern and a northern route. The Southern Route is the more popular one,



## Similar Tourism and Multi-Purpose Roads after 1945 and in Other Continents

using a more or less straight line from Chengdu to Lhasa. “Praised to be the most beautiful road to Tibet, the Southern Route passes through an ever-changing landscape on its long journey to Lhasa, through canyons and valleys, over mountain passes and endless grasslands, to reach its destination.” In recent years, it has become more and more popular to travel this route on motorcycles or bicycles. (www.tibettour.org 2020)

The Sichuan-Tibet routes partly run along the ancient tea and horse road. This is an over 1,000 years old trade route between Yunnan, Sichuan, and Tibet. Already in the 10<sup>th</sup> century, tea and spices were brought to Tibet from the provinces of Yunnan and Sichuan via the eastern Himalayas. On the way back, breeding and war horses were transported from Tibet to China.

Further examples of these roads, which have only recently been discovered by the tourism industry, are the Sichuan-Tibet Highway, the Qinghai-Tibet Highway, and the Xinjiang-Tibet Highway. From Lhasa to Kashgar overland, an important highway leads into Xinjiang Uyghur Autonomous Region. The construction of this road started in 1951 and was completed in 1957. “It passes through the disputed area of Aksai Chin, an area administered by the People’s Republic of China but also claimed by India.” It is a very important border highway for China, also one of the highest roads in the world. (www.tibetravel.org 2020)

The Burma Road linking Myanmar (previously called Burma) with the southwest of China features a great history, too. Its terminals were Kunming, Yunnan, and Lashio, Myanmar. “It was built within 14 months in 1937/38, while Burma was a British colony, to convey supplies to China during the Second Sino-Japanese War.” (Webster 2004) Close-by is one of the most spectacular roads in China – the 24-Zig Road. “This winding mountain road is located near Qinglong town in Guizhou Province, in the southwest of the country. It’s one of the most famous hairpinned roads in the world.” The road was built by the Chinese during World War II to transport supplies to help resist the Japanese invasion. “The road is named after the 24 bends ascending from the valley bottom to Qinglong town. Contrary to popular belief, this stretch is not part of the Burma Road, Ledo Road, or Stilwell Road but part of the road that connected Kunming (the end of the Burma Road) to Chongqing (the capital of China

during World War II).” At present, it is no longer actively used but it serves tourist purposes and is used as a shortcut by motorbikes and three-wheelers. (www.dangerousroads.org 2020)

In recent years, motorbike road trips have also become very popular in Ladakh, a region administered by India as a union territory since 2019, previously constituting a part of the larger region of Kashmir. Several of the high mountain passes in the border region to Tibet are therefore in politically sensitive areas and only of limited use for tourism. One of the most popular ones is the road from Ladakh’s capital Leh to Lake Pangong, about 220 km with magnificent panoramic views. The book *1001 Traumstraßen* lists a whole series of such spectacular roads, all of which lead through impressive landscapes and, with the growing domestic as well as international tourism, have also gained importance as ‘roads of pleasure.’ Among them are the Three Level Zigzag in Sikkim, India, the 210 km gravel road from Kylong to Kishwar in Jammu/Kashmir and Himachal Pradesh, India, considered one of the most dangerous roads worldwide, the road from Paro to Thimpu in Bhutan, the scenic toll road to Japan’s sacred mountain, Mount Fuji, and the Irohazaka Winding Road in Chubu, Japan, which follows a traditional pilgrimage route to Chuzenji lake and was expanded in the 1980s. (Sleath 2020)

Certainly not intended as a tourist road, but more and more frequented by all-wheel-drive car tourists, motorcyclists, long-distance cyclists, and silk road romantics, are sections of the Pamir Highway. Often called the ‘mother of all high mountain roads’ in the heart of Central Asia, this route leads through the Pamir region, over the ‘roof of the world.’

The first section of the Pamir Highway was completed in 1932 and led from the old oasis city of Osh in the Fergana Basin to Khorugh, the most important city in the Tajik Pamir, in order to open up the region economically for the young Soviet Union and to secure it militarily. The *Pamirskii Trakt*, as it is called in Russian, is considered a masterpiece of engineering, as several passes well over 4,000 m high had to be overcome and difficult climatic conditions had to be mastered. A large part of the route leads over the Pamir Plateau and never falls below 3,500 m. The second section from Khorog to Dushanbe, the capital of Tajikistan, was opened to traffic in 1940.

## Similar Tourism and Multi-Purpose Roads after 1945 and in Other Continents

In contrast to the eastern section, this part of the road mostly leads through narrow valleys in a spectacular way, often nestling high above thundering rivers on steep rock faces. For many kilometers, the route follows the course of the Panj River, which marks the border between Tajikistan and Afghanistan. Detours from the main route lead into the Wakhan, a wide valley through which Marco Polo is said to have passed on his way to China. Fortress ruins and stupas are evidence of an eventful history. “This is also the quintessential crossroad of empires – including the fabled Russo-British 19<sup>th</sup> century Great Game.” (Escobar 2019) As a narrow natural corridor, it was supposed to separate British India and Russian Central Asia and is still visible on our contemporary maps as the narrow strip of land belonging to Afghanistan, separating Tajikistan and Pakistan.

“Countless trade caravans, military units, missionaries, and religious pilgrims also made the Pamir Silk Road known as the road of ideologies.” (Escobar 2019) British explorers like Francis Younghusband and George Curzon discovered the upper Oxus river (Amu Darya) and mapped high passes into British India. Russian explorers tracked the Alay mountains and the great peaks of the northern Pamir. The first Russian expedition arrived in the Pamir mountains in 1866, led by Wassili Fedchenko, who discovered and lent his name to the largest glacier

in the world outside the poles. (Flechter/Schreiber 2018) “And then there were the legendary Silk Road explorers Sven Hedin (1894/95) and Aurel Stein (1915), who explored its historical heritage.” (Escobar 2019)

There is no doubt that a number of phenomena of social development, such as the growth of cities, changes in lifestyles, the increase in prosperity and leisure, the growing mobility infrastructure, and thus the possibility of travelling, have contributed to the fact that many of the traditional trade and cultural routes were incorporated into tourism in the second half of the 20<sup>th</sup> century. Many remote and even inhospitable regions, such as deserts or inaccessible mountainous areas, were increasingly discovered as attractive and as landscapes worth visiting. Over the years, they developed into destinations of interest because tourism redefined the concept of beautiful landscapes. Some roads, especially in the European Alpine regions, were built explicitly for tourism reasons, in order to be able to experience the size and beauty of an area to the fullest extent or to allow access to remote mountain areas.

One similar example in Asia is the road to the base camp of Nanga Parbat in the Karakoram Mountains, the ninth-highest mountain in the world. It is a so-called ‘feeder road,’ a side branch from the Karakoram Highway. This dangerous road with no passing zones leads from

Fig. 129:

Salam aleikum -  
the Pamir Highway  
in Kyrgyzstan.

© Kurt Luger



## Similar Tourism and Multi-Purpose Roads after 1945 and in Other Continents

the Indus valley to the Fairy Meadows, a high alpine pasture in the national park of the same name at an altitude of about 3,300 m. The road was built by the local people and is a private toll road. It is a steep and unstable gravel road hacked out of the barren hills and rocks, just at the width of a Jeep. (Sleath 2020) Since the 1920s, Nanga Parbat had been on the bucket list of many expedition and high-altitude mountaineers, and in 1953, the Austrian Hermann Buhl succeeded in the first ascent.

Tourism has changed the life of the ethnic local population in Baltistan, and roads do the same by re-characterizing the social, cultural, economic, and ecological relationships of a region and putting them together again to form a special configuration. This also applies to the Karakoram Highway, which shapes life in Gilgit-Baltistan, in the northern province of Pakistan, through its connective role. „The highway actively participates in shaping the ways in which people of Gilgit-Baltistan conceptualize their position within Pakistan, understand their past, and imagine their future.“ (Rest/Rippa 2019) The road leads from Kashgar, Xinjiang, over the 5,100 m high Kunjerab Pass into the famous Hunza Valley and further into the valley of the Indus. It ends after 1,300 km in Havelian, near Pakistan’s capital Islamabad. After twenty years of construction, the highway was completed in 1978 and has been open to tourists since 1986. Af-

ter a landslide in 2010, the debris created a 20 km long reservoir, which destroyed a section of the highway. For some time, the transported goods had to be transferred to ferry boats until a bypass road with several tunnels, completed in 2015, could be opened.

The ‘China-Pakistan Friendship Highway,’ as the Karakoram Highway is also named, is one of the highest-lying highways in the world. It follows the course of the Indus River and one of the southern routes of the Silk Road. As an all-weather road, it provides a link from Pakistan’s capital to the northern provinces, for China it provides access to the Indian Ocean. (Buschmann 1988) Like many other roads, it brought many changes in people’s lives, strengthening the local economy while making it dependent on national development. The highway dominates life in its catchment area, but also contributes to the erosion of local ethnic communities that were once isolated from the outside world, challenging their culture by opening up and inviting new influences and ideas. International tourism, however, is hardly involved in this, because after 9/11 and terrorist attacks in their own country, hardly any foreign tourists – apart from venturesome long-distance cyclists – came to Pakistan, and only a small number of expeditions seek their fortune today in the alluring mountains of the Karakoram.



#### 4.6.6. Other Scenic Roads Worldwide (Natasha Martin, Michael Schimek)

In Australia, roads that were originally designed to transport cattle, such as the The Gibb River Road, sometimes turn into scenic roads. The Gibb River Road is a nearly 700 km long road in Western Australia. The area has long been inhabited by aboriginal people, but in 1898, non-aboriginal people managed to travel over the King Leopold Ranges and began to use the area for cattle farming. In the early 1900s, provisions for the farms came on ox and donkey carts. The animals were able to navigate narrow paths and passes in the challenging backcountry. As the country developed and the farmers expanded production, there was a need to develop a route to the market. The farmers initially considered flying the beef out (The 'Air Beef Scheme') but this was extremely costly, and that limited expanding the industry. So, road construction on the Gibb River Road began in 1960, with the main purpose of taking the live cows to an abattoir. The road was part of a broader project called 'Beef Roads Scheme.' Until 1996, maintenance of the road was the remit of the farmers along the road, and as a result the southern portion (which had bigger, richer famers) was better maintained. The Main Roads Authority took over in 1996, and subsequently both sections of the road have been equally maintained. This is no easy feat, as damage caused during the rainy season each year requires recon-

struction, especially at creek crossings. Even with consistent maintenance, the road is a tough one, often flooded, and a four-wheel drive car is recommended. The road drives through spectacular landscapes, including notable geological formations like rock outcrops and limestone reefs. It is popular with tourists seeking an 'authentic outback adventure.'

The Great Ocean Road is a 243 km stretch of road along the south coast of the Australian state of Victoria, from Torquay, near Geelong, to Allansford, near Warrnambool. Until the beginning of the 20<sup>th</sup> century, many of the settlements along the southwest coast of Victoria were only accessible by sea or by rough bush tracks. After World War I, the chairman of the Country Roads Board, William Calder, addressed the State War Council and proposed the construction of a road along the coast in order to provide work for soldiers returning from war.

Construction of the road started in 1919 and was finished in 1932. In its original shape, the road was mostly only wide enough for one vehicle, which made driving along sheer cliffs rather treacherous. 'Public-spirited citizens' were encouraged to donate five pounds and could request that a crossover be cut into the road. For some years after its opening, the road was administered as a toll road. The toll was removed after it had been handed

Fig. 130:

Entrance gate to  
Great Ocean Road,  
Australia.

© Bobak Ha'Eri /  
Creative Commons  
BY 3.0





**Fig. 131: Mount Cook Road, New Zealand.**

© Glen Sinclair / Creative Commons BY-NC-ND 2.0

over to the State Government of Victoria in 1936. In the following decades, parts of the road were widened. Still, over time, the road had to face the adverse effects of a variety of natural disasters, like bushfires, landslides, parts of the road being washed away during heavy storms, or overhanging cliffs collapsing. Today, the roads hosts cycling races and marathons. In 2011, the road was added to the Australian National Heritage List. It has also received an Engineering Heritage National Marker from Engineers Australia. For a road that was created as a simple access road for the communities along the Victorian coast, it has become a major tourism asset for the state of Victoria.

In New Zealand, there were three main catalysts for road creation and building. The first was the British military, who, especially on the North Island, built roads to neutralize the threat from Maori tribes in the mid-1800s.

The roads were needed to more effectively move troops and goods around. The second was access, which includes for rural communities as well as tourists. A third catalyst was the gold rush. Prospectors required broader routes than just footpaths to move their diggers and other equipment to gold producing regions. One of New Zealand's highest roads is State Highway 8, which forms a half loop through Mackenzie Basin and the Central Otago regions of the South Island. It is an example of a gold rush road. The road passes through a scenic Alpine area, famous for the Lindis pass which sits at 971 m above sea level. This pass was used by the Māori people for generations and was surveyed by the British Civil Engineer John Turnbull Thomson for the first time in 1857. He named the pass after Lindisfarne, his hometown in England.

The southern part of modern State Highway 8 was first used by prospectors during the Otago Gold Rush in

### Similar Tourism and Multi-Purpose Roads after 1945 and in Other Continents

---

the 1860s. During those days, prospectors would have used bullocks and carts, and parts of the road may have been paved over with stone. However, it was not until after World War II, when poor roads were seen as a barrier to economic growth, that State Highway 8 was properly built and paved over. Today, the road is popular with tourists who can spot multiple endemic bird species, enjoy the scenic hikes, fishing, climbing on glaciers, or even stay at one of the world's most luxurious hotels, 'The Lindis.'

Branching off of State Highway 8 is State Highway 80 or Mount Cook Road. The short road, only 55 km long, leads to New Zealand's highest mountain, Aoraki or Mount Cook, and the views of Lake Pukaki, a shining turquoise body of water. The region is renowned as

the spectacular backdrop in the 'Lord of the Rings' trilogies, which is a tourism draw in itself. This road was built for the purpose of tourism. As early as the mid-1800s, intrepid travelers were climbing Aoraki. In 1864, a ferry was established to take travelers up Lake Pukaki. After crossing the water, the travelers would take the rest of the journey on foot. By 1890, the plans for a road to Aoraki were in place, and it was built as a gravel road. To build the road, a large number of explosives was used to move large boulders. However, in 1970, as part of the initiative to increase the hydro-electric power on the South Island, the volume of water in Lake Pukaki increased and the first road went under water. Construction on a new highway was therefore started in 1970. Today, the drive is often referred to as one of the 'best coastal drives in the



Fig. 132: Chapman's Peak Drive, South Africa.

Fig. 133:

The Chilean climb  
to Paso de los  
Libertadores.

© Karora /  
Public Domain



world.’ ([www.dangerousroads.org](http://www.dangerousroads.org))

In Africa, the second half of the 20<sup>th</sup> century coincided with an end of colonial rule, and nascent post-colonial governments finding their feet - some more successfully than others. Scenic roads were not a major priority on the continent. Still there are some examples, predominantly in South Africa, which maintained apartheid rule until the beginning of the 1990s.

Chapman’s Peak Drive is a scenic drive carved out of an imposing ocean-side cliff just outside of Cape Town. It connects the towns of Hout Bay and Noordhoek. It was built between 1915 and 1922, at the request of the administrator of the province, Frederick de Waal - and at that time was considered a major feat of engineering indeed. In 1962, the route was widened. In 2005, the road became a toll road. It has its own dedicated website, which promotes activities to do around the road, as well as informs drivers of the road conditions. It is often closed during inclement weather. The route today is a popular scenic drive, for locals and tourists alike. Two of South Africa’s most prominent adventure races, the Cape Argus Cycle Race and the Two Oceans Marathon, pass Chapman’s Peak Drive.

Further to the West is the Garden Route which is a stretch of coast that connects a series of small towns along the coast, across a distance of about 300 km. Ar-

chaeologists have found stone age tools in the area, indicating a very long human history. The earliest versions of today’s route were probably created by employees of the Dutch East India Company who established itself in present-day South Africa in 1652. As they explored the land, they walked along the coast with horses and wagons, they also set down roots, buildings, homes, and farms, as well as trading posts. This turned out to be a smart place to settle down, the area was rich in timber, and eventually gold was found here, too. In 1813, John Campbell, a missionary from London, summarized as much when he said: “Of the area, a more pleasant one I have not seen in Africa, it abounds with wood, water, and majestic scenery.” ([www.sahistory.org.za](http://www.sahistory.org.za) 2020) The same three qualities are what continue to draw tourists to this scenic route. The region surrounding the road is a UNESCO biosphere reserve.

Another scenic road in the area is Montagu Pass, named after John Montagu, an administrator keen on building roads. It was opened in 1848. Convict labor took three years to build the 17 km long gravel road, which is still in use today, making it one of the longest roads continually in use in Africa. The road includes 126 corner bends over the Outeniqua Mountains. When it opened, it was only for wagons and animals - but it was still a toll road, and in fact the old toll house still stands.

The Outeniqua Pass is another pass in the same range that was built almost one hundred years after the Montagu Pass, between 1943 and 1951, specifically to offer an alternative route to the Montagu Pass, which was too narrow for traffic needs. The pass connects the town of George with Oudtshoorn and Little Karoo. Since its construction, it has been widened again, though the traffic these days is predominantly touristy.

South America features a wide range of scenic landscapes, especially along the Andean Mountains on the western side of the continent. The more than 5,000 km long border between Argentina and Chile is crossed by more than 40 border passes through the Andes. Arguably the most spectacular and scenic one is the *Paso de los Libertadores*. It connects three important economic centers of both countries: the two largest cities of Chile, Santiago de Chile and Valparaíso, and Mendoza, the fourth largest agglomeration of Argentina. Besides its transit function, the Paso de los Libertadores route has become one of the most important tourism routes between the two coun-

tries.

The core part of the pass road on the Chilean side is the so-called *Bajada de los Caracoles*, the 'Descent of the Snails.' In contrast to the Argentinian side of the pass, which features a rather gentle ascent, the Chilean climb is extremely steep. The Andes drop from an elevation of over 6,000 m to 570 m, the elevation of Santiago de Chile, over a distance of only 70 km. The Bajada de los Caracoles has more than 20 hairpin turns, some them following straight after each other. The summit of the pass is now located in the roughly 3 km long *Cristo Redentor* tunnel at the border between the two countries, at an altitude of 3,209 m. The road is an ancient pass road that has been enhanced over the years and is now entirely paved. The statue of *Cristo Redentor de los Andes*, after whom the tunnel is named, was erected in 1904 on the Argentinian side of the old pass road at an altitude of about 4,000 m. The Paso de los Libertadores is located only 20 km from Mount Aconcagua (6,961 m), the highest peak in all of the Americas.





# **PROTECTION SCHEMES AND BRANDING CONCEPTS**



## 5.1. Monument Protection (Michael Schimek)

Roads are living environments. They are made to be used and constantly require repairs. Quite often, at the occasion of a major renovation, they are brought to a newer standard, and some elements of the older version of the road are lost. In terms of monument protection, roads are a different category than castles, churches, or archaeological sites, to some extent.

Nevertheless, some roads have become monument protected. Rarer frequently, this happens when roads are part of historic cities and a whole area is put under protection. Less frequently, this happens with roads in the countryside. It is more common to consider important elements of roads, such as bridges or supporting walls, as worthy for monument protection. Only in some exceptional cases, the whole road and its layout becomes protected.

Some examples for monument protected roads have already been mentioned. In Austria, all roads belonging to public authorities or institutions mainly owned by public authorities used to be automatically deemed as worthy to be monument protected until the opposite was proven. This rule was abolished at the end of 2009. Since then, only the Großglockner High Alpine road and parts of the Wiener Höhenstraße have regained their monument status again. This means that any significant change to these roads the Austrian Federal Monument Protection Authority (*Bundesdenkmalamt*) must be consulted. In Switzerland, the Sustenpass road has a similar status.

In any case, there are other ways to make sure that important scenic roads are kept in a shape that is desirable from a monument protection perspective. In the United States and Canada, for example, important roads in National Parks, State Parks, around National Monuments, or in similar protected areas are considered an integral



Fig. 134:

Inscription on a monument-protected house in the World Heritage city of Bamberg, Germany, put on the facade by its owner after a major renovation (Schindler 2016).

„God save me from dust and dirt, from fire, war, and monument protection.“

© Arnold Plesse / Creative Commons BY-SA 3.0

part of the protective programs. Most importantly, many roads have become part of the respective management plans of those protected sites, and guidelines for their use, maintenance, and restoration have been developed. This especially holds true if roads have become part of one of the various scenic byways programs, since keeping the roads in a shape which is desirable from a monument protection point of view is important for their designation. Neglecting the roads will result in problems related to maintaining the label, which is an important asset to those sites, as they are quite often located in economically less prosperous regions. The labels can indeed make a difference when it comes to the general development of an area.

## 5.2. United States National Scenic Byway Program (Sally Pearce)

In 1987, The President’s Commission on Americans Outdoors found that “driving for pleasure is second only to walking as a popular form of recreation activity by adults. Americans seek variety as they drive; glimpses of mountains, lakes and rushing streams; small towns and farms; wildlife; covered bridges; and first-hand insights into lifestyles of rural America.” This is certainly still true today.

“Scenic byways are special driving routes offering travelers access to the beautiful scenery and the cultural and natural riches of the country. They provide an antidote to the monotony of linear, high-speed travel,

they open up vistas and introduce travelers to places they might otherwise pass by. They may be spectacular destinations sought after by travelers, and they may be local routes long admired by a community for a Sunday drive.” They may be rural, suburban, and urban. They are likely to be a road off the beaten path. “They come with different names: rustic roads, scenic highways, historic roadways, parkways, or backways.” But regardless of its name, as long as the community regards a driving route as a special resource to be promoted and protected, it can be considered a scenic byway. (Federal Highway Administration 1994)

### 5.2.1. Scenic Byway Programs

“Many programs exist to identify scenic byways at the local, state, and federal level. Such programs typically establish basic criteria for eligibility and have a system for nomination and designation.” The commitment required of a community and the regulations administered by the governmental entity are varied throughout the United States. “For some byways, officially adopted plans, land use regulations, and inventories are required.” In other cases, requests approved by the State Department of Transportation will suffice for designation along with the erection of special signs to identify the route. “And in some areas, a good faith commitment by the citizens and the thoughtful stewardship of landowners may be sufficient to recognize a scenic byway.”

In general, scenic byways may be identified through one of the following programs:

- Private Sector Programs are maintained and administered as private entities. Some scenic byways exist entirely within the private sector. These byways may be part of private corporate properties or may be open (sometimes with a fee) to the public. Examples include: The Pikes Peak Highway in Colorado, the Seventeen-Mile-Drive in California, the Colonial Road in Williamsburg, Virginia, or the scenic roads of Calloway Gardens in Georgia.
- State Programs are administered by State Depart-

ments of Transportation, Tourism, Economic Development, or Natural Resources or specially appointed byway commissions. “These programs identify routes of significance at the local and state level. Frequently, state programs seek to represent various categories

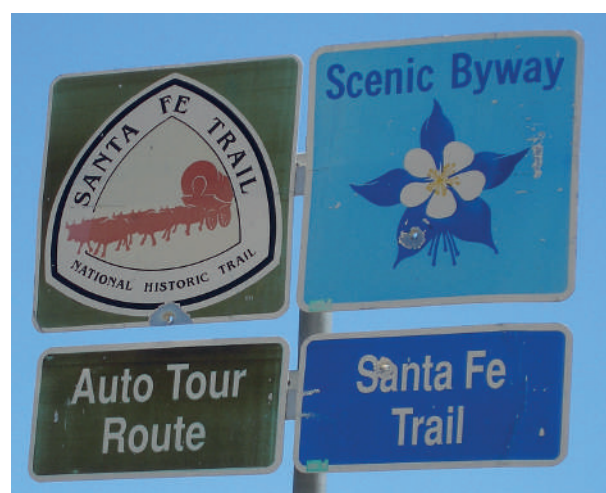


Fig. 135:

Santa Fe Trail is designated as a National Historic Trail.

© Sally Pearce

## United States National Scenic Byway Program

---

of resources - scenic, historic, natural - or to recognize the different geographic regions of the state. In some states, byways are nominated by local organizations for designation, in others, an administrative body designates byways, in still others, byways are designated by individual acts of the legislature. Some state scenic byway programs require or encourage some form of land-use planning within the byway corridor, in other states, scenic byway designation implies no particular level of management or enhancement." A vast majority of states have developed scenic byway programs but they vary widely in their criteria and implementation.

- Federal Programs to designate and manage scenic byways have been developed by a number of federal

agencies. The U.S. Forest Service has designated over 7,000 miles of scenic byways through national forests throughout the country. "The Bureau of Land Management created a program of Back Country Byways, which includes different types of roads - some accessible only by four-wheel drive vehicles. While not specifically designated as scenic byways, nine parkways and numerous park roads through scenic areas are managed by the National Park Service (NPS) along with routes designated by Congress as National Historic Trails such as the Santa Fe Trail." Most of these programs were created prior to the creation of the National Scenic Byways Program in 1991, but now fully cooperate with the program created by Congress. (Federal Highway Administration 1994)

### 5.2.2. The National Scenic Byways Program

The National Scenic Byways Program was established in December 1991 when the United States Congress created a new program for designating National Scenic Byways within the Intermodal Surface Transportation Efficiency Act. The program was continued by subsequent legislation through 2012. The goals of the National Scenic Byways Program were to provide a high-quality visitor experience, to strengthen local economies, and to develop ways to manage the irreplaceable assets of the corridor.

The National Scenic Byways Program is a voluntary, grassroots program, founded on the strength of local leadership and passionate support for preservation of place. It recognizes and supports outstanding roads. It provides resources to help manage the intrinsic qualities within the broader byway corridor so they can be treasured and shared. Perhaps one of the underlying principles for the program has been articulated best by the byway leader who said "the program is about recognition, not regulation." Deep pride in a 'sense of place' and 'power of story' are the prime drivers that motivate communities to seek national designation for their extraordinary roadways. Through the designation, they are seeking to share their special place with others.

International as well as domestic travelers who are seeking the United States' most scenic roads will find a

collection of 150 scenic roadways and landscapes designated by the United States Department of Transportation under the brand 'America's Byways®.' These roads are nominated by local community groups, officially designated as State Scenic Byways by commissions in each of the 50 states, and then submitted for national designation. Almost 20 years later, these routes have produced increased tourism and economic development for the regions they pass through.

America's Byways® are a distinctive collection of American roads, their stories, and treasured places. They are designed to be roads that lead to the 'heart and soul of America.' America's Byways® are exclusive because of their outstanding qualities, not because byways are confined to a selected group of people. Managing the intrinsic qualities that shape the byway's story and interpreting the story are equally important in improving the quality of the visitors' experience. Travelers and visitors are intrigued by a byway's story. People leave with an appreciation for the byway's resources and intrinsic qualities. The experience beckons them to travel other roads in the collection.

For a route to qualify as a National Scenic Byway, a road or highway must possess one or more of the six 'intrinsic qualities:'

Fig. 136:

San Juan Skyway,  
Colorado, is an  
All-American  
Road.

© Sally Pearce



- Scenic: Beauty, both natural and human made. The qualities of the features are measured by how memorable, distinctive, uninterrupted, and unified they are.
- Natural: Minimal human disturbance of geographic and other natural ecological features.
- Historic: Landscapes, buildings, structures, or other visual evidence of the past. There must be something tangible and visible – not just the site of something that used to be there.
- Cultural: Visual evidence of the unique customs, traditions, folklore, or rituals of a currently existing human group.
- Archaeological: Visual evidence of the unique customs, traditions, folklore, or rituals of a human group that no longer exists.
- Recreational: The road corridor itself is used for recreation like jogging, biking, roadside picnics, or provides direct access to recreational sites like trails, campgrounds, lakes, ski lodges, and cabins. (Mingo 1997)

An intrinsic quality refers to a feature considered representative, unique, or irreplaceable – whether a historical site, a canyon, a mountain range, or a Native American

Trail.

The program outlines two tiers of national designation – All-American Roads and National Scenic Byways. The collection of All-American Roads represents the finest examples of the intrinsic qualities – they must be of national significance. A route must have two or more intrinsic qualities that are nationally significant and contain one-of-a-kind features that do not exist elsewhere in the United States. These routes are often considered ‘a destination unto themselves.’ To be eligible for designation as a National Scenic Byway, a route must possess major local or regional significance. There must bear at least one of the six intrinsic qualities, and the distinctive characteristics must be recognized throughout a multi-state region. (Federal Highway Administration 1994)

Both designations require a community or group of communities committed to their management. A Corridor Management Plan provides written guidelines for the management of the route, including interpretation, resource protection, and marketing. These plans are community-based strategies to balance conservation of a byway corridor’s intrinsic qualities with the use and enjoyment of those same resources.

### 5.2.3. The Benefit of Scenic Byway Designation

Scenic byway designation at any level (local, state, or federal) provides recognition of the special qualities and resources of a particular byway and corridor. This official acknowledgement carries with it a heightened awareness of the route and recognition of the community that sought the designation.

For many communities, scenic byway designation will provide new tourism opportunities, increased visitation, and economic development. It should always be a source of pride. Scenic byway designation can, in some jurisdictions, provide:

- Additional funding,
- identification on state highway maps,
- increased maintenance,
- technical assistance for management, and
- assistance from tourism and economic development offices.

More direct benefits of designation include identification on state, federal, and auto club highway maps, in brochures and websites, which can lead to more tourism opportunities, increased business, tax revenue, and jobs from tourism dollars. It's important to note that

two thirds of all U.S. adult travelers include historic or cultural activities in their travels. Cultural heritage tourism travelers are high-value visitors, they stay longer, do more activities, and spend more than the average U.S. travelers.

Studies have shown that scenic byway designation does have some positive economic impacts on the tourism related businesses and communities along byways. Byway business owners estimate about 8.8 % of the increases in their business and 10 % of their total retail sales could be attributed to byway visitors. They also perceive that there are potential economic benefits of being along a designated scenic byway.

Not only do scenic byways help meet the needs of the travelers while improving the local economy, but they also provide citizens with an opportunity to come together and develop plans to educate visitors. Scenic byways can help develop partnerships between state and federal agencies, local communities, and landowners – getting these groups to work together, share common goals, to look beyond their boundaries, and identify or become more aware of how their decisions can affect others.

Fig. 137:

Kancamagus  
Scenic Byway,  
New Hampshire.

© Ellen Edersheim



### 5.2.4. A Calculation of the Economic Impacts and Benefits of Scenic Byways

Estimating the economic impact of scenic byway designation is difficult in the United States. First, byways are only a small component of the travel and tourism industry. Second, it is sometimes difficult to separate byway-related effects from general tourism effects. However, various studies have found that byway designation increased visitor traffic, visitor expenditures, and the retail sales of tourism-related businesses, especially in rural areas.

One early compilation of such studies from 1997 is in ‘Scenic Byways: A Review of Processes, Administration, and Economic Impacts.’ The report looked at over a dozen states that have considered the economic impacts of their scenic byways. The authors concluded: “The most common finding was that most states had not conducted any type of economic analysis for scenic byways. There was often a perception of positive economic impact, but no data to support the suspicions. From the states who had conducted research, the following summarizes their findings:

- Marketing plays a very important role in creating positive benefit.
- Signage plays a very significant role.
- Tourism-related industry is ready to receive or support traffic growth for positive economic benefit to occur.
- Scenic byways programs have been met with overwhelming approval.
- Positive economic benefit is either perceived or has been measured.
- Byways must be of a high quality to gain a favorable

response from travelers.”

The State of Colorado conducted an economic benefits study of its Scenic and Historic Byways Program in 2016. The study found that “the cumulated impact of visitor spending on Colorado byways to the state economy over the period 2009-2014 was estimated at almost \$ 4.8 billion, or nearly \$ 800 million annually. In 2014 alone, over 4,000 jobs were created due to visitor spending along the byways, less than half of them as direct effects and the rest as ripple-effects of employment in the general state economy. Colorado byways generated \$ 835 million in economic output (total spending), with \$ 141 million in wage earnings for more than 4,000 jobs, or about \$ 35,250 per employee.” (Colorado Department of Transportation 2016)

Beyond economic and tourism benefits, byways offer many other advantages to states and local communities. For example, byways routes are usually located in some of the most scenic areas – high priority places for land conservation and natural resource management. Byway designation and corridor planning provides opportunities for enhanced coordination and collaboration between byways organizations and local, state, federal, and non-profit land conservation and management agencies to conserve these sensitive lands.

Moreover, byways can serve as catalysts for community building. Many small and rural communities have limited resources for local planning and improvement projects, and byways designations and organizations can help bring local residents and businesses together around a common vision for the future. (Clarion 2013)

### 5.2.5. Other Scenic Byway Programs

Although America’s Byways® is the best-known designation for distinctive roadways in the United States, there are other federally designated systems. Prior to the creation of the National Scenic Byways Program under the Federal Highway Administration, the United States Forest Service and the Bureau of Land Management both created their own designation programs for scenic routes

within their jurisdiction.

In 1988, the United States Forest Service initiated a National Forest Scenic Byways program. The intent of this program was to draw attention to the outstanding scenery of the national forests administered by the Forest Service and to provide opportunities for the public to view well-managed and changing forest landscapes.





Fig. 138:

Gold Belt Tour, Colorado, is designated a Bureau of Land Management Backcountry Byway.

© Sally Pearce

National Forest Scenic Byways are determined through a process of nominations to the Chief Forester's office submitted from field units through the regional offices. Nominations are required to meet specific detailed criteria with only those providing the highest quality of experience being selected and designated by the Chief as a National Forest Scenic Byway. As of 2012, there were 143 National Forest Service Scenic Byways. Many National Forest Scenic Byways have also been submitted to the National Scenic Byways Program for designation.

Each byway is required to have an implementation plan that will address opportunities for cooperative and partnership agreements, interpretive programs, vegetative management plans, unique signing, maintenance, and monitoring. These plans are similar to the National Scenic Byways Program's Corridor Management Plan.

The Forest Service definition of a Scenic Byway is similar to State and National Program definitions. "That is, a scenic byway is a travel route, which traverses a scenic corridor of outstanding aesthetic, cultural, historic, and/or interpretive forest values." (Sipes/Ostergaard 1991)

### 5.2.6. Multiple Byway Designations: The Example of Colorado

In Colorado there is only one scenic byway program, which is administered by the State Department of Trans-

For many years, national forests have already had a scenic emphasis for trails and waterways. The designated road byways provide the traveler with spectacular scenery in harmony with forest management activities.

A byway corridor gives the National Forest Scenic Byway its principal significance. A byway corridor includes the elements which make up the outstanding scenic vistas and the facilities for enjoying them. These may be within the immediate foreground view area or may be part of a far view panorama. The corridor's boundary lines may be based on topography or political limits and generally are within a specific viewshed.

Another byway program was implemented by the Bureau of Land Management (BLM). The BLM administers the largest, and least explored, land system in the United States. Starting in 1989, as a contribution to the emerging National Scenic Byways program, the BLM began to focus on Back Country Byways, which are scenic corridors along backcountry roads.

These roads are out-of-the-way routes for which the public lands are known. The range of road types may vary from a single-track bike trail to a narrow, low speed, paved road that traverses backcountry areas of high scenic and public interest value. These roads combine the United States' century-old love affair with motor vehicles and the outdoors. The program is aimed at providing the public with recreational driving opportunities while informing them about natural and cultural resources and multiple use activities on the nation's public lands. Through 2012, there were 54 designated Back Country Byways.

BLM is also participating in local partnerships on other scenic byways that involve substantial public lands acreage. These are roadsides or corridors of special aesthetic, cultural, or historic value. The corridor may contain outstanding scenic vistas, unusual geologic formations, or other elements - all providing enjoyment for the highway traveler.

portation, but there are other types of designations, each with its own set of designation criteria and guidelines. By

## Examples for Other Branding Concepts

---

agreement with federal agency partners, a byway must be designated as a state scenic byway before it can be submitted to other national designation programs such as those managed by the U.S. Forest Service or the Bureau of Land Management (BLM). The only exception is a road designated under the National Historic Trails program, which is designated by the U.S. Congress. Colorado has 26 designated scenic and historic byways. Of those 26, one has also been designated as a National Historic Trail. Ten have National Forest Scenic Byways designation, and two are also identified as BLM Back Country Byways.

For example, The Santa Fe Trail was designated by the U.S. Congress as a multi-state National Historic Trail in 1987. National Historic Trails are designated to protect the remains of significant overland or water routes to reflect the history of the nation and are managed by the National Park Service. In 1992, a local community group sought state designation as a Colorado Scenic and His-

toric Byway. And in 1998, the local byway organization submitted a nomination for designation as a National Scenic Byway by the U.S. Department of Transportation. Travelers along the byway will see directional signs that indicate the route is both a Colorado Scenic and Historic Byway and a National Historic Trail.

Other scenic byways with multiple designations use the state byway sign, which features the Columbine (the State Flower), for directional signs. However, these byways may install a portal sign at the beginning of the byway to indicate the designation by another federal agency.

Byways that have been designated as National Scenic Byways are branded as one of America's Byways®. These routes are allowed to use the America's Byways® logo as part of their directional signage, along with the Columbine sign. The Top of the Rockies is both a National Scenic Byway and a Colorado Scenic and Historic Byway.

### 5.3. Examples for Other Branding Concepts (Michael Schimek)

Roads – not only historic ones – are an important infrastructure for accessing cultural and natural monuments, areas of high landscape value, and other touristic destinations. Tourism has, during the last 150 years, grown to become a key economic industry for many nations and enjoys an amount of public support like almost no other business. Roads are an important part of the heterotopias around the world, some of them have become major touristic attractions themselves.

In order to promote regional and local sights and attractions which would not find a sufficient share of attention on the tourism market on their own, many regions have discovered the option of connecting these sights to a common product and market them as routes. Thus, in many cases, roads, not only historic ones, have become a central part of tourism product placement and marketing.

Creating such touristic routes has become particularly fashionable in Germany. So-called *Ferienstraßen* (holiday roads) and *Themenstraßen* (themed roads) may be found all over the country. The current list on Wikipedia names a total of 145 branded routes which lie entirely

in Germany, plus 35 additional transnational ones. It is obvious that many of these routes have never acquired a real touristic significance. Many of them were quickly established but not managed properly over time. It is doubtful that many of these routes have really made an economic difference in the end.

A widespread sub-category of themed routes are the wine roads that may be found all over the world in wine-growing areas. They attempt to create joint marketing for wineries, restaurants, accommodation, sights, and the landscape. For many places in France, Italy, Spain, Portugal, Germany, Austria, Hungary, Slovenia, or Croatia, as well as in the United States, Argentina, Chile, Australia and especially South Africa they are the most important way to access the tourism market. Like other themed routes, long-term management is a major challenge for many of them.

Also in Austria, where tourism is one of the most important industries, numerous *Erlebnisstraßen* (experience roads) have been established during the last 30 years, many of them by the regional development agencies that cover almost all of the country. In a study conducted by

## Examples for Other Branding Concepts

the University of Agricultural Sciences in Vienna, scientists found out that the following categories of routes and roads had been created: Flower and Alpine pasture roads, cider roads, apple roads, oil roads, milk roads, cheese roads, wine roads, business and industry roads, arts and history roads, castle roads. In a conference in 2005, the Austrian Conference on Spatial Planning found that Austria features an “oversupply and a poorly differentiated offer of themed roads independent from if they were appropriate for the regions they lie in or if there was a sufficient potential for their existence.” (stadtland 2005) For some period of time, the Austrian National Tourism Organization had assigned 12 touristic roads the label *Traumrouten* (dream routes), one of them the Großglockner-Hochalpenstraße. The program cannot be retrieved on the ANTO website anymore. Only 8 of the 12 routes actually have a Wikipedia entry of their own.

Examples for some other road branding concepts are:

- Grand Tour of Switzerland

The Grand Tour is a marketing program established by the Swiss National Tourism Organization. The name refers to the Grand Tour travels that were undertaken by young noble people all over Europe in the

18<sup>th</sup> century, including destinations in Switzerland, and which were considered to be an integral element of the education at the time. It connects the must-sees of Switzerland on the ‘most beautiful and scenic roads’ of the country. It includes 45 top destinations of the country, out of which 12 are listed as World Heritage sites and 2 as Biosphere Reserves, and 22 lakes larger than 0.5 km<sup>2</sup>. (www.myswitzerland.com 2020)

- *Route des Grandes Alpes*, France

The *Route des Grandes Alpes* connects 16 Alpine pass roads in France. It runs from Thonon-les-Bains on Lake Geneva to Menton on the Côte d’Azur, over a length of almost 700 km, including pass roads that were built around 1900 or in interwar times, like the Col d’Izoard and the Col de l’Iseran. The first part of the route was already established in 1913, initiated by the *Touring Club de France*. Originally, it was operated by specially designed minibuses, the *autocars*. They were specially acquired and labelled and brought tourists to their final holiday destinations from the railway stations. The route was amended frequently, until it reached its current length. (Kruse et al. 2017)

Fig. 139:

The resting zone at  
Tungeneset Tourist  
Route, North Norway.

© Helge Høifødt /  
Creative Commons  
BY-SA 4.0



## Examples for Other Branding Concepts

- *Route Napoléon*, France

The Route Napoléon is a 335 km long route along cultural roads from Cannes to Grenoble. It received its name in 1932 because it more or less follows the route that Napoleon and his troops took after his return from exile on Elba, some months before his final defeat at Waterloo. It is now marketed as an educational route on French history. The road markers feature the Imperial eagle.

- *Margueritruten*, Denmark

The Marguerite route in Denmark connects the most scenic and naturally valuable places of the country over a length of 4,218 km. It is tagged with small square brown signs with a marguerite blossom. The route was established in 1991 and given the name of Queen Margrethe II. The flower on the signs is supposed to represent the embellishment that Margrethe's mother, Ingrid, wore at her wedding in 1935. The route is managed by the Nature Department of the Danish Ministry for the Environment and Food. (naturstyrelsen.dk 2020)

- *Nasjonale Turistveger*, Norway

Norway has branded 18 roads in the most scenic parts of the country as Norwegian Scenic Routes. The single routes connect scenic places mostly over the

mountains and along the coast and the fjords of Norway. They are between 27 and 433 km long. They are managed by the Norwegian Road Authority (*Statens vegvesen*). Along the routes, the road authority has equipped the roads with architectural elements, created picnic areas and photo points which are serviced regularly, and have put up information signs about the history and the natural values of the roads. These elements help tourists to find the most spectacular places along the roads and direct them in a way which helps them preserve the vulnerable nature of the north. Some of the historic interwar roads of Norway are part of the program. (www.nasjonaleturistveger.no 2020)

- *Svenska Turistvägar*, Sweden

Like Norway, Sweden has branded 18 roads all over the country as tourism roads. Works on the program started at the end of the 1990s. The sign, a white flower on a square brown sign, was copied from Denmark. The program was less successful than its Danish counterpart. Therefore, in 2012 a study on the shortcomings and potentials of the brand was conducted by the Swedish Road and Transport Research Institute, together with a number of partners. The study found out that a discussion should be started to

Fig. 140:

Touge Roads at  
Mount Fuji, Japan.

© Eric Castro /  
Creative Commons  
BY-NC-SA 2.0



## Examples for Other Branding Concepts

---

understand whether or not all of the 18 roads actually meet international criteria for branded roads. Most of all, “a clear strategy and an idea what we want to show and how this should be achieved, for example in terms of resources, is missing.” Not all of the criticism of the study was, in the end, taken into account. For example, so far, no comprehensive website on all of the roads is online, like in Norway or Denmark. (Antonson 2013)

- Hokkaido Scenic Byways, Japan

Hokkaido, Japan’s second largest island, located in the north of the country, has developed a Scenic Byway program which proposes attractive tourism

for motorists and cyclists. Eight of the most scenic routes pass through national parks and other impressive landscape formations. ([www.scenicbyway.jp](http://www.scenicbyway.jp) 2020)

- Touge Roads of Mt Fuji, Japan

The surroundings of Mount Fuji, Japan’s highest mountain, feature a number of scenic mountain roads similar to the Alpine parkways. During the last years, a subculture has developed among car aficionados to drive these roads with contemporary sports cars or Japanese vintage cars at high speed. Local businesses have specialized on renting out cars to tourists.



# CONCLUSIONS





## 6.1. General Framework of the Study (Michael Schimek)

Roads are one of the key global infrastructure networks of our times. According to the United States Central Intelligence Agency's (CIA) 'World Factbook,' as of 2013, there are more than 64 million kilometers of roads around the world (www.cia.gov 2020). As we've seen in this thematic report, road construction techniques develop according to the different requirements that the transport of people and goods require from them. If a road should be considered a technical monument, a different approach must be taken, compared to other sites, like archaeological remains or single historic buildings. Roads are dynamic, on-going ('continuing') sites, like cultural landscapes or historic cities. They are a living infrastructure that must be used by people in order to be properly maintained.

It is obvious that a thematic study on worldwide roads can only exemplify in its descriptions, even if done by a globally based group of authors. We therefore chose the following format:

- We started with outlining a range of historic developments that had an influence on the perception of landscapes, the mobility of people, and the design of transport infrastructures. These include:
  - Different explanations of the way human beings interpret landscapes and their physical environments,
  - the history of travel and tourism and the evolution of 'heterotopias,'
  - the perception of landscapes and 'heterotopias' in arts history and
- its impact on landscape and garden architecture, and
- the interdependency of economic development and the need for the creation and maintenance of transport infrastructure for different means of transport supporting economic activities, including the development of individual motorization and the growing tourism industry of the world.
- The description of various types of roads is given under the framework of a general distinction between cultural and engineered roads. Aesthetic, or scenic, roads are a sub-category of roads that have gained significance and value from their location and/or their special use. Some may be cultural roads, but in the context of this study, most aesthetic roads belong to the category of engineered roads. The issue of protection and management of roads has to take into account the various characteristics different roads may have from the point of view of economic commodity theory.
- Important development stages of road engineering are described in connection with two overarching phenomena of the last 300 years of human development, which is industrialization and motorization.
- The development of scenic roads has to, in addition, take into account the rise of the tourism industry during the last 150 years.
- During the last 50 years, roads have gained interest as technical monuments. This requires the consideration of different forms of protection and management.

## 6.2. General Findings (Michael Schimek)

- For most of human history, humans only travelled short distances. Long distance travel mainly took place for the purpose of trade, pilgrimage, and warfare. Travelling on land became an option if using waterways and the sea proved to be impossible or too difficult. Early road networks and routes developed in exactly such places. In many cases, this happened

in difficult environments, like deserts or high-Alpine areas. Examples are the road network of the Roman Empire, trade routes like the Amber Roads or the Silk Roads, the Inca road network through the South American Andes, or the trade routes through the Saharan desert. Groups of people specialized in supporting travel on these routes, like the caravans in

## Conclusions

---

Northern Africa or the local porter guilds that helped people navigate over dangerous Alpine passes.

- The beginning of modern road construction dates back to the middle of the 18<sup>th</sup> century. Roads played a role at the local level during the industrialization of Europe at the end of the 18<sup>th</sup> century and during the 19<sup>th</sup> century. The key transport infrastructures of that period of industrialization were railways and canals. A much greater part of the available resources of the time were invested into their development. Larger road developments did happen, but they were mainly for military purposes, especially during Napoleonic times and the first half of the 19<sup>th</sup> century. The colonialization of the 19<sup>th</sup> century as well as the settlement of North America during the 18<sup>th</sup> and 19<sup>th</sup> century mainly relied on sea travel and railway construction. If travel happened on roads and routes, it was similar to the way it was done along the ancient trade routes.
- Road construction finally reached the importance it has in present times with the beginning of motorization at the end of the 19<sup>th</sup> century. Mass motorization started in North America before spreading to Europe. This is why the development and differentiation of roads during the 20<sup>th</sup> century mainly took place on these two continents, though it didn't take long for the concept to become a global phenomenon. Some of the impulses for road development came, and still come, from countries with a non-democratic form of government. Road history may be seen as a way of reacting to economic demands as well as reacting to political decisions. At some places, road construction was not a result of the demand for improved infrastructures, but, on the contrary, served as an impulse for modernization, at least in the way modernization was understood during a certain period of history, like in Fascist Italy or Nazi Germany. During interwar times, the construction of many roads had the purpose of tackling high unemployment, both in democ-
- racies and dictatorships, a strategy which only proved partially successful.
- The creation of new roads for high-capacity traffic during the 20<sup>th</sup> and 21<sup>st</sup> centuries did not always take care of landscape issues, like in interwar Italy, the post-World War II United States, or modern-day China. If landscape architecture became a part of road planning, like with the early U.S. parkways or the German Reichsautobahn, it had its roots in landscape philosophies from the 19<sup>th</sup> century or was later influenced by the environmental movement, which, in return, can to a certain extent be traced back to 19<sup>th</sup> century influences as well.
- The perception of existing roads as 'scenic' or the engineering of scenic roads during the 20<sup>th</sup> and 21<sup>st</sup> centuries is connected to the rise of those forms of tourism which enable people to take a break from their industrialized and efficiency-oriented work life. The design and construction of almost all scenic roads, therefore, have their roots in philosophical, artistic, and social movements that formed during the 19<sup>th</sup> century. This holds especially true in the case of the scenic roads from the first half of the 20<sup>th</sup> century. Scenic roads from the second half of the 20<sup>th</sup> century may still have similar qualities, but they may not be the focus of the sightseeing, sports, adventure, or partying tourism forms of our days.
- Roads considered technical monuments need proper management to retain their qualities, being living environments that are constantly used. 'Traditional' monument protection strategies, focusing on the sheer conservation of objects, might therefore prove to be insufficient. Designations aiming at a moderate and conservation-oriented form of exploitation may be the more efficient tools since they require proper visitor management, are often developed with local communities, and can contribute to increased funding of important conservatory projects.

### 6.3. The Application of World Heritage Criteria to Roads (Michael Schimek)

The current version of the UNESCO Operational Guidelines for the Implementation of the World Heritage

Convention (UNESCO 2019) mention the ten criteria for consideration if a property is deemed to have Outstand-

## Conclusions

---

ing Universal value in paragraph 77. Roads that seek designation as a World Heritage property, being technical monuments that often interact with cultural assets such as being located in cultural landscapes or being connected to local cultures and forms of settlement, will in most cases mention one or more of the 'cultural' criteria (i) to (vi) as the reason for their nomination:

- (i) [They] represent a masterpiece of human creative genius.
- (ii) [They] exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design.
- (iii) [They] bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared.
- (iv) [They are] an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history.
- (v) [They are] an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change.
- (vi) [They are] directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance.

Most roads built during the last 200 years will probably only in exceptional cases feature qualities which refer to criteria (iii), (v), and (vi), for example, if they were created for settlements which are now abandoned or for civilizations which have disappeared, if they are part of a special form of land use or if they were predominantly created as access to naturally valuable areas which are currently under threat, or if they have become part of a major work of art or were used during a major historic event. World Heritage nominations for roads will, therefore, probably focus on criteria (i), (ii), and (iv) in most cases.

### Criterion (i):

Some roads were planned by architects, landscape ar-

chitects, or engineers that acquired a certain fame and influenced similar projects on an international level, not only locally. Plans and designs were exchanged globally by specialized magazines or by study visits. Some of those personalities who might be considered and who are mentioned in this study are the members of the Olmsted Firm, Piero Puricelli, or Franz Wallack. Some have played an important role on a regional level, like Carlo Donegani, Stanley Abbott, or Antoni Parietti Coll. A final evaluation of the significance of these personalities has to be done looking at specific cases in a more detailed way.

### Criterion (ii):

Motorization is something which has shaped the world of at least the last five generations. Exceptional roads which are 'a child of their times' may definitely bear values that might be considered under criterion (ii), especially if they were not only built as traffic infrastructure but if they have had an impact on one of the worldwide societal developments mentioned.

### Criterion (iv):

The history of road construction during the last 200 years features only a few moments of greater technological innovation, like the invention of certain types of bridges or tunnel building techniques, some of them already connected to the railway construction of the 19<sup>th</sup> century. Another invention which has a lasting legacy is the McAdam style of road construction and pavement.

At the same time, roads are not built structures that are meant to last forever. After a certain period of use, they simply have to be renewed. It will, therefore, be very difficult to find examples, especially for older roads with a certain historic significance, where much of the original physical substance has survived.

Generally speaking, road construction techniques did not change abruptly during the last 200 years but rather slowly and permanently evolved. The way of construction of Alpine parkways from the first half of the 20<sup>th</sup> century was fairly similar to earlier roads through Alpine terrain, including the aspect of manual labor. An interesting question might be if roads were constructed over a short period of time, following a comprehensive planning, or developed over a longer span of time.

## 6.4. Authenticity, Integrity, and Management (Michael Schimek)

The following questions may be asked to identify if a nominated road fulfills the criteria of authenticity, integrity, and good management:

### Situation at the time of construction:

- Was the road constructed against the background of the prevalent historic, technical, and societal movements of its time?
- Was the road constructed following a comprehensive plan, within a short span of time, or was it built over a longer period of time?
- Following the movements of its time, was the road constructed with respect for the surrounding landscape or deliberately neglecting it?

### Developments since construction:

- Does the road feature the design or layout of the time of its construction, or has this significantly changed over time?
- Does it still feature its original pavement style?
- Are other elements of the road, such as guardrails, toll houses, hospices, walls, bridges, tunnels, or other significant road equipment, left and in a shape similar or alike the time of its construction?
- Is there a comprehensive documentation of the original plan and the changes following its opening?
- Is the maintenance of the road done with respect to

the historic substance and using well-tested methods?

- Is the scenic impression of the road left in a way similar to the time it was planned and constructed, or has the surrounding of the road changed significantly?

### Current management issues:

- Is the road legally protected following the legal framework of the country it is located in? Is the road listed in a national heritage register or a similar list?
- Is the road designated as a historic road of national or at least regional importance, as a history road, a scenic byway, or within some other similar program?
- Is there a well-organized management authority taking care of the road?
- May the road be controlled by its owner, preventing the road from being over-used?
- Are visitors informed about the history and significance of the road and on how to use the road and its environment in a respectful way?

Depending on the applicability of the World Heritage criteria and in case the answers given on these questions are satisfactory, certain roads may be considered eligible for inscription into UNESCO's World Heritage list. This may apply to one of the roads mentioned in this study, but also for ones with similar qualities not described yet.

# SOURCES



## Bibliography

Aiton, K., 2017. *How to road trip South America*. [online] Available at: <https://matadornetwork.com/read/how-to-road-trip-south-america/> [accessed 06 Jul. 2020]

Albalade, D., 2014. *The Privatisation and Nationalisation of European Roads: Success and Failure in Public-Private Partnerships*. Cheltenham

Ammann, G., 2001. *Alfons Walde 1891-1958*. Innsbruck

Antonson, H., 2013. *PLOTS, Svenska turistvägar – planering, aktörer, strategier samt upplevelsepotential* [online] Available at: [http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer\\_001601\\_001700/Publikation\\_001686/130123\\_Profilblad\\_PLOTS\\_avslut.pdf](http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001601_001700/Publikation_001686/130123_Profilblad_PLOTS_avslut.pdf) [accessed 01 Jul. 2020]

Apollonio, U., ed., 1973. *Documents of 20<sup>th</sup> Century Art: Futurist Manifestos*. New York

Arnold, R., 2012, „Simplonpass“ in Schweizerische Akademie der Geistes- und Sozialwissenschaften, ed. *Historisches Lexikon der Schweiz (HLS)* [online] Available at: <https://hls-dhs-dss.ch/de/articles/008806/2012-12-19/> [accessed 26 Jun. 2020]

Askheim, S., 2019. „Alpene“, in *Store Norske Leksikon* [online] Available at: <https://snl.no/Alpene> [accessed 05 May 2020]

Ballantyne, T., Burton A., 2012. „Empires and the Reach of the Global“, in Rosenberg, E., ed. *A World Connecting 1870-1945*. Cambridge/London. 285-390

Barrell, J., 1972. *The Idea of Landscape and the Sense of Place. An Approach to the Poetry of John Clare*. Cambridge

Bates USA Midwest, ed., 2000. *Strategic brand analysis for national scenic byways*. Washington D.C.

Bausinger, H., Beyrer, K., Korff, G., ed., 1991. *Reisekultur. Von der Pilgerfahrt zum modernen Tourismus*. München

Beck, K., Klaeger, G., Stasik, M., 2017, „An Introduction of the African Road“, in: Beck, K., Klaeger, G., Stasik, M., ed. *The Making of the African Road*. Leiden

Belasco, W., 1997. *Americans on the Road: From Autocamp to Motel, 1910-1945*. Baltimore

Benson, F., 1989, „Roads and highways“, in *The New Encyclopedia Britannica*, Vol. 26. Chicago. 360-373

Berger, M., 2001. *The Automobile in American History and Culture: A Reference Guide*. Santa Barbara

Berghoff, H., 2001, „Enticement and Deprivation: The Regulation of Consumption in Pre-war Nazi Germany“, in Daunton, M., Hilton, M., ed. *The politics of consumption*. Oxford

Berghoff, H., et. al., 2002. *The Making of Modern Tourism. The Cultural History of British Experience, 1600-2000*. Houndsmills/Basingstoke

Beveridge, C., 2000. *Olmsted – His Essential Theory* [online] Available at: <https://www.olmsted.org/the-olmsted-legacy/olmsted-theory-and-design-principles/olmsted-his-essential-theory> [accessed 19 Jul. 2020]

Beveridge, C., 2020. *The Olmsted Firm – An Introduction* [online] Available at: <https://www.olmsted.org/the-olmsted-legacy/the-olmsted-firm/an-introduction> [accessed 19 Jul. 2020]

Beveridge, C., Levee, A., 1992. *The Olmsted Parks & Parkways* [online] Available at: [https://louisvilleky.gov/sites/default/files/parks/planning\\_and\\_design/mpchapter2olmstedprksandprkwy\\_0.pdf](https://louisvilleky.gov/sites/default/files/parks/planning_and_design/mpchapter2olmstedprksandprkwy_0.pdf) [accessed 19 Jul. 2020]

Bird, G., Conlin, M., 2014. *Railway Heritage and Tourism: Global Perspectives*. Bristol

Bogard, D., 2005. „Turnpike trusts and the transportation revolution in 18<sup>th</sup> century England“, in *Exploration in Economic History*, 42/4. Amsterdam. 479-508

Bohls, E., 1995. *Women Travel Writers and the Language of Aesthetics*. Cambridge

Bolton, R., 1922. *Indian Paths in the Great Metropolis* [online] Available at: [https://archive.org/stream/indianpathsingre01bolt\\_djvu.txt](https://archive.org/stream/indianpathsingre01bolt_djvu.txt) [accessed 19 Jul. 2020]

## Bibliography

- Bonessi, D., 2019. *Here's Everything You Need to Know about the Capital Beltway Expansion* [online] Available at: <https://wamu.org/story/19/05/29/heres-everything-you-need-to-know-about-the-capital-beltway-expansion/> [accessed 19 Jul. 2020]
- Black, J., 1992. *The British Abroad. The Grand Tour in the Eighteen Century*. New York
- Blomkvist, P., 2001. *Den goda vägens vänners väg- och billobbyn och framväxten av det svenska bilsamhället 1914-1959*. Stockholm
- Brämer, R., 2013. *Landschaftsästhetik elementar – worauf Wanderer wieviel Wert legen*. [online] Available at: [https://www.wanderforschung.de/files/landschaft-elementar\\_1410301148.pdf](https://www.wanderforschung.de/files/landschaft-elementar_1410301148.pdf) [accessed 15 Apr. 2020]
- Brandner, E., 2011. *Vor 150 Jahren beendete eine Straße die Isolation des Salzkammerguts* [online] Available at: <https://www.nachrichten.at/oberoesterreich/salzkammergut/Vor-150-Jahren-beendete-eine-Strasse-die-Isolation-des-Salzkammerguts;art71,689955> [accessed 28 Jul. 2020]
- Brandner, E., 2015. *Als erstes kam eine Straße – 50 Jahre Loser Bergbahnen*. [online] Available at: <https://www.nachrichten.at/oberoesterreich/salzkammergut/Als-erstes-kam-eine-Strasse-50-Jahre-Loser-Bergbahnen;art71,2002757> [accessed 01 Jul. 2020]
- Brendon, P., 1991. *Thomas Cook. 150 Years of Popular Tourism*. London
- Brenna, B., 2011, “King of the Road: Describing Norwegian Landscapes in the Eighteenth Century“, in Hvattum, M., Brenna, B., Elvebakk, B., Larsen, J., ed. *Routes, Roads and Landscapes*. Abingdon. 13-26
- Broch, T., 1848. *Lærebog i Bygningskunsten*. Christiania
- Buhtz, M., et al., 2008. *Städtebauliche, ökologische und soziale Bedeutung des Kleingartenwesens: ein Projekt des Forschungsprogramms “Allgemeine Ressortforschung” des Bundesministeriums für Verkehr, Bau und Stadtentwicklung (BMVBS) und des Bundesamtes für Bauwesen und Raumordnung (BBR)*. Berlin
- Bundi, M., 2013, „Umbrailpass“ in Schweizerische Akademie der Geistes- und Sozialwissenschaften, ed. *Historisches Lexikon der Schweiz (HLS)* [online] Available at: <https://hls-dhs-dss.ch/de/articles/008821/2013-01-25/> [accessed 26 Jun. 2020]
- Bunnell, L., 1892. *Discovery of the Yosemite, and the Indian war of 1851, which led to that event*. Chicago
- Burckhardt, L., 2006. *Warum ist Landschaft schön? Die Spaziergangswissenschaft*, Berlin
- Burckhardt, M., 1997. *Metamorphosen von Raum und Zeit – Eine Geschichte der Wahrnehmung*. Frankfurt
- Busch, T., 2009. „From the Scythians to the Soviets: An Evaluation of Russian Mobility History“, in Mom, G., Pirie, G., Tissot, L., ed. *Mobility in History: The State of the Art in the History of Transport, Traffic and Mobility*. Neuchâtel. 149-157
- Buschmann, K., 1988. *Pakistan. Reiseführer mit Landeskunde*. Frankfurt
- Chang, G., 2019. *Ghosts of Gold Mountain: The Epic Story of the Chinese Who Built the Transcontinental Railroad*. San Francisco
- Chow, K., 2016. *Park Politics: Political Influences on Frederick Law Olmsted & the Creation of Central Park*. Waterville
- Christenson, P., 1996. *Upptäck och bevara allmogeträdgården*. Västerås
- Clarion Associates, ed., 2013. *The Benefits of Colorado's Scenic & Historic Byways*. Denver
- Colorado Department of Highways, ed., 1927. *Colorado's Great Gift to the Nation*. Denver
- Colorado Department of Transportation, ed., 2016. *Colorado Byways Economic Data Analysis* [online] Available at: <https://www.codot.gov/travel/scenic-byways/assets/impact-analysis-report-nov-11-2016> [accessed 20 Jul. 2020]
- Conchon, A., 2006, “Road construction in Eighteenth Century France” in Dunkeld, M., et al., ed., *Proceedings of the Second International Congress on Construction History*. Exeter. 791-797
- Corbin, A., 1994. *Meereslust. Das Abendland und die Entdeckung der Küste*. Frankfurt
- Cresswell, T., 2011, “Towards a Politics of Mobility”, in Hvattum, M., Brenna, B., Elvebakk, B., Larsen, J., ed. *Routes, Roads and Landscapes*. Abingdon. 163-178



## Bibliography

---

- Croucher, T., 2013. *Hakosuka Dream Drive: Touge Roads of Mt Fuji* [online] Available at: <http://www.speedhunters.com/2013/04/hakosuka-dream-drive-touge-roads-of-mt-fuji-2/> [accessed 01 Jul. 2020]
- Davis, C., Wilburn, K., Robinson, R., 1991. *Railway Imperialism*. New York
- Davis, T., 1997. *Mount Vernon Memorial Highway and the Evolution of the American Parkway*. Austin.
- Davis, T.; Croteau, T.; Marston, C., ed., 2004. *America's National Park Roads and Parkways*. Baltimore
- Davis, T., 2008, "The Rise and Decline of the American Parkway", in Mauch, C., Zeller, T., ed. *The World beyond the Windshield – Roads and Landscapes in the United States and Europe*. Athens. 35-58
- Day, U., 2011. *Silberpfeil und Hakenkreuz*. Berlin
- Delon, M., ed., 2002. *Encyclopedia of the Enlightenment* [online] Available at: [https://books.google.at/books?id=QEep-JAgAAQBAJ&dq=voyage+pittoresque+swiss+style&hl=de&source=gbs\\_navlinks\\_s](https://books.google.at/books?id=QEep-JAgAAQBAJ&dq=voyage+pittoresque+swiss+style&hl=de&source=gbs_navlinks_s) [accessed 19 May 2020]
- Denning, A., 2014, "From Sublime Landscapes to 'White Gold': How Skiing Transformed the Alps after 1930", in *Environmental History*, vol. 19/1. Oxford. 78-108
- Denning, A.: 2015. *Skiing into Modernity. A Cultural and environmental history*. Oakland
- Dennis, K., Urry, J., 2009. *After the Car*. Cambridge
- Desportes, M., 2005. *Paysages en mouvements: Transports et perception de l'espace XVIIIe-XXe siècle*. Paris
- Dienel, 2005. "Konkurrenz und Kooperation von Verkehrssystemen", in Gundler, B., Hascher, M., Trischler, H., ed. *Unterwegs und mobil. Verkehrswelten im Museum*. Berlin
- Dille, I., 2015. *The Cyclist's Bucket List: A Celebration of 75 Quintessential Cycling Experiences*. Rodale
- Di Palma, V., 2011, „Flow: Rivers, Roads, Routes and Cartographies of Leisure“, in Hvattum, M., Brenna, B., Elvebakk, B., Larsen, J., ed. *Routes, Roads and Landscapes*. Abingdon. 27-43
- Doswald, C., 2019. „Rivers and Transport Routes. The significance of river crossings for transit networks in Alpine valleys“, in Muhar, S., Muhar A., Egger, G., Siegrist, D., 2019. *Rivers or the Alps: Nature and ecology, culture and economy*. Vienna
- Dougherty, C., n.d. *The fall and rise of the British railway industry, 1847-1900* [online] Available at: [https://www.academia.edu/212326/The\\_fall\\_and\\_rise\\_of\\_the\\_British\\_railway\\_industry\\_1847-1900](https://www.academia.edu/212326/The_fall_and_rise_of_the_British_railway_industry_1847-1900) [accessed 01 Jul. 2020].
- Downes, S., 1982. *Great Ocean Road turns 50* [online] Available at: <https://www.newspapers.com/clip/33735482/great-ocean-road-turns-50/> [accessed 16 Jul. 2020]
- Dulău, A., Coros, M., 2010. *Is there a gastronomic tourist offer in Romania?* [online] Available at: [https://www.researchgate.net/publication/271441754\\_Is\\_there\\_a\\_Gastronomic\\_Tourist\\_Offer\\_in\\_Romania](https://www.researchgate.net/publication/271441754_Is_there_a_Gastronomic_Tourist_Offer_in_Romania) [accessed 13 Jun. 2020].
- Duncan, D., 2009. *The national parks. America's best idea: an illustrated history*. New York
- Eberhart, H., 2018. „... auf heimatlicher Grundlage ...“ *Viktor Geramb und der Verein für Heimatschutz in Steiermark*. [online] Available at: <https://www.baukultur-steiermark.at/wp-content/uploads/2018/12/Helmut-Eberhart.pdf> [accessed 06 Jun. 2020]
- Eberle, M., von Butlar, A., 1985, „Landschaften und Landschaftsgarten“, in Deutsches Institut für Fernstudien an der Universität Tübingen, ed., *Funkkolleg Kunst, Studienbrief 7*. Tübingen. 11-50
- Eliade, M., 1998. *Das Heilige und das Profane, Vom Wesen des Religiösen*. Frankfurt/Leipzig
- Engelskirchen, L., 2005, "Die Geschichte des Hochgeschwindigkeitsverkehrs", in Gundler, B., Hascher, M., Trischler, H., ed. *Unterwegs und mobil. Verkehrswelten im Museum*. Frankfurt/New York. 141-158
- Engelskirchen, L., 2005. "Innovation im Verkehrswesen", in: Gundler, B. Hascher, M. Trischler, H. ed., *Unterwegs und mobil. Verkehrswelten im Museum*. Frankfurt/New York. 57-76
- Escobar, P., 2019. *Cruising Pamir Highway, the heart of the Heartland*. [online] Available at: [www.asiatimes.com/2019/12/cruising-pamir-highway-the-heart-of-the-heartland/](http://www.asiatimes.com/2019/12/cruising-pamir-highway-the-heart-of-the-heartland/) [accessed 14 Jun. 2020]
- Escobar, P., 2019. *Pamir Highway: the road on the roof of the world*. [online] Available at: [www.asiatimes.com/2019/12/pamir-highway-the-road-on-the-roof-of-the-world/](http://www.asiatimes.com/2019/12/pamir-highway-the-road-on-the-roof-of-the-world/) [accessed 14 Jun. 2020]

## Bibliography

---

- Etter, C., Etter, D., 2006. *City of Parks – The Preservation of Denver’s Park and Parkway System*. Denver
- Evans, F., 1981, “Roads, Railways and Canals: Technical Choices in 19<sup>th</sup> Century Britain”, in *Technology and Culture*, 22/1. Baltimore. 1-34
- Federal Highway Administration, ed., 1988. *Scenic Byways*. Washington D.C.
- Federal Highway Administration, ed., 1991. *National Scenic Byways Study*. Washington D.C.
- Federal Highway Administration, ed., 1994. *Scenic Byways: Community Guide to Corridor Management Planning*. Washington D.C.
- Federal Highway Administration, ed., 1994. *Scenic Byways Advisory Committee Report*. Washington D.C.
- Federal Highway Administration, ed., 1995, “FHWA – Protecting and Enhancing the Environment,” in *Public Roads Magazine, Spring Issue 1995*. Washington D.C.
- Federal Highway Administration, ed., 2008. *Wildlife-Vehicle Collision Reduction Study: Report to Congress* [online] Available at: <https://www.fhwa.dot.gov/publications/research/safety/08034/exec.cfm> [accessed 03 Jul. 2020]
- Federal Highway Administration, ed., 2009. *Assessing and sustaining the quality of the America’s Byways® collection*. Washington D.C.
- Federal Highway Administration, ed., 2017. *Contributions & Crossroads: Our National Road System’s Impact on the U.S. Economy and Way of Life*. United States Department of Transportation. Washington D.C.
- Felber, U., Krasny, E., Rapp, C., 2000. *Smart Exports: Österreich auf den Weltausstellungen 1851-2000*. Wien
- Filarski, R., 2005, “Langfristige Veränderungsprozesse des Verkehrssystems im historischen Kontext”, in Gundler, B., Hascher, M., Trischler, H., ed. *Unterwegs und mobil. Verkehrswelten im Museum*. Frankfurt/New York. Frankfurt/New York. 91-110
- Flechter, S., Schreiber, D., 2018. *Kirgistan. Zu den Gipfeln von Tien Shan und Pamir*. Berlin.
- Flink, J., 1990. *The Automobile Age*. Cambridge
- Foucault, M., 2005. *Die Heterotopien. Der utopische Körper. Zwei Radiovorträge*. Frankfurt
- Frohlich-Schauseil, A., 2017, „‘Ich will eine Fussreise [...] machen’. Wandererfahrungen sächsischer Landschaftsmaler um 1800, ihre Ansichten, Prospekte und Horizonte“, in Denk, C., Strobl, A., ed. *Landschaftsmalerei – eine Reisekunst? Mobilität und Naturerfahrung im 19. Jahrhundert*. Berlin/München. 58-71
- Fürer-Haimendorf, C., 1988. *Himalayan Traders*. New Delhi.
- Gammerl, B., Herrn, R., 2015, „Gefühlsräume-Raumgefühle, Perspektiven auf die Verschränkung von emotionalen Praktiken und Topografien der Moderne“, in *Sub\urban. Zeitschrift für kritische Stadtforschung*, 3/2. Berlin. 7-22
- Gardiner, R., 1989. „Africa: The Economy: Transportation“, in *The New Encyclopedia Britannica* 13/73
- Gassan, R., 2008. *The Birth of American Tourism: New York, the Hudson Valley, and American Culture, 1790–1830*. Amherst
- Gassegger, F., 1998, „Denkmäler des autoritären Ständestaates, Repräsentation staatlicher und nationaler Identität Österreichs 1934-38“, in Riesenfellner, S., ed. *Steinernes Bewusstsein I*. Wien
- Gesierich, M., 2016. *Hotels an der Großglockner-Hochalpenstraße - Franz Wallack und das ideale Alpenhotel*. Wien
- Gewald, J., 2009, “People, mines and cars: Towards a revision of Zambian history, 1890-1930”, in Gevald, J., Luning, S., van Walraven, K. *The speed of change. Motor vehicles and people in Africa, 1890-2000*. Leiden. 21-47
- Gewald, J., Luning, S., van Walraven, K., ed., 2009, „An introduction“, in Gevald, J., Luning, S., van Walraven, K. *The speed of change. Motor vehicles and people in Africa, 1890-2000*. Leiden. 1-18
- Giddens, A., 1991. *The Consequences of Modernity*. Cambridge
- Gietl, R., 2004. *Die Römer auf den Pässen der Ostalpen*. [online] Available at: [https://www.academia.edu/6827120/Die\\_Roemer\\_auf\\_den\\_Paessen\\_der\\_Ostalpen](https://www.academia.edu/6827120/Die_Roemer_auf_den_Paessen_der_Ostalpen) [accessed 06 May 2020]

## Bibliography

- Gisler-Jauch, R., 2015, „Anfänge des Automobilismus“, in Schweizerische Akademie der Geistes- und Sozialwissenschaften, ed. *Historisches Lexikon der Schweiz (HLS)* [online] Available at: <https://hls-dhs-dss.ch/de/articles/013901/2015-01-21/> [accessed 25 Jun. 2020]
- Gjestvik, T., 2011. „A road with a View: C.F. Vogt’s Painting of Krokkleiva“, in Hvattum, M., Brenna, B., Elvebakk, B., Larsen, J., ed. *Routes, Roads and Landscapes*. Abingdon. 59-70
- Glaser, H./Werner, T., 1990. *Die Post in ihrer Zeit. Eine Kulturgeschichte menschlicher Kommunikation*. Heidelberg
- Goodwin, H., 2017. *The Challenge of Overtourism. Responsible Tourism Partnership*. [online] Available at: <http://harold-goodwin.info/pubs/RTP’WP4Overtourism01’2017.pdf> [accessed 20 May 2020]
- Gottfried, H., 2012. *Landscape in American Guides and View Books: Visual History of Touring and Travel*. Lanham
- Gravari-Barbas, M., Graburn, N., 2012. *Tourist Imaginaries*. [online] Available at: <https://journals.openedition.org/via-tourism/1180> [accessed 19 May 2020]
- Greene, M., 2008. *Rest in Peace: A History of American Cemeteries*. Matthews
- Greenfield, R., 2011. *Our First Public Parks: The Forgotten History of Cemeteries* [online] Available at: <https://www.theatlantic.com/national/archive/2011/03/our-first-public-parks-the-forgotten-history-of-cemeteries/71818/> [accessed 23 Jun. 2020]
- Gross, R., 2017, “Uphill and Downhill Histories. How Winter Tourism Transformed Alpine Regions in Voralberg, Austria – 1930 to 1970”, in *Zeitschrift für Tourismuswissenschaft Band 9 Heft 1*. München. 115-139
- Grueber, J., 1985. *Als Kundschafter des Papstes nach China 1656-1664*. Stuttgart
- Guigueno, V., Flonneau, M., ed., 2009. *De l’histoire des transports à l’histoire de la mobilité?* [online] Available at: <https://books.openedition.org/pur/102123> [accessed 16 May 2020]
- Günzel, S., 2017. *Raum – Eine kulturwissenschaftliche Einführung*. Bielefeld
- Haas, H., 1992, „Die Sommerfrische – Ort der Bürgerlichkeit“, in Stekl, H. et. al., ed. *Durch Arbeit, Besitz, Wissen und Gerechtigkeit*. Wien/Köln/Graz. 364-377
- Habermas, J., 1974. *Zur Rekonstruktion des Historischen Materialismus*. Frankfurt
- Hachtmann, R., 2010. *Tourismus und Tourismusgeschichte* [online] Available at: <http://dx.doi.org/10.14765/zzf.dok.2.312.v1> [accessed 20 Apr. 2020]
- Hadlow, R., 2018. *US 101 (Oregon Coast Highway)* [online] Available at: [https://oregonencyclopedia.org/articles/highway\\_101\\_oregon\\_coast\\_highway\\_/#.XxS8dedCSUl](https://oregonencyclopedia.org/articles/highway_101_oregon_coast_highway_/#.XxS8dedCSUl) [accessed 19 Jul. 2020]
- Haefeli, U., 2009. *Mass motorization and transport policy in Switzerland: A national special path?* [online] Available at: [https://www.academia.edu/15027378/Mass\\_motorization\\_and\\_transport\\_policy\\_in\\_Switzerland\\_A\\_national\\_special\\_path](https://www.academia.edu/15027378/Mass_motorization_and_transport_policy_in_Switzerland_A_national_special_path) [accessed 20 May 2020]
- Hagman, O., 2000. *Bilen, naturen och det moderna. Om natursynens omvandlingar i det svenska bilsamhället*. Göteborg
- Hahn, H., Kagelmann, J., 1993. *Tourismuspsychologie und Tourismussoziologie. Ein Handbuch zur Tourismuswissenschaft*. München
- Hanisch, E., 2019. *Landschaft und Identität. Versuch einer österreichischen Erfahrungsgeschichte*. Wien-Köln-Weimar
- Hankey, J., 2019. *Transcontinental Railroad history: The Pacific Railroad Act, U.S. Civil War and Manifest Destiny* [online] Available at: <https://trn.trains.com/railroads/railroad-history/2019/02/transcontinental-railroad-history-the-pacific-railroad-act-us-civil-war-and-manifest-destiny> [accessed 23 Jun. 2020]
- Hartung, G., 2001. *Deutschfaschistische Literatur und Ästhetik: gesammelte Studien*. Leipzig
- Hascher, M., 2010, „Maut als Mittel der Straßenfinanzierung zwischen öffentlichen und privaten Interessen, 1908-2008“, in Dienel, H., Schiedt, H., ed. *Die moderne Straße – Planung, Bau und Verkehr vom 18. bis zum 20. Jahrhundert*. Frankfurt. 147-170
- Havik, P., 2009. “Motor cars and modernity: Pining for progress in Portuguese Guinea, 1915-1945”, in Gewalt, J., Luning, S., van Walraven, K. *The speed of change. Motor vehicles and people in Africa, 1890-2000*. Leiden. 48-74

## Bibliography

- Hegdstrand, K., 1996. *Vegfolk forteller*. Oslo
- Hearfield, J., 2012. *Roads in the 18<sup>th</sup> century* [online] Available at: <http://www.johnhearfield.com/History/Roads.htm> [accessed 17 Jul. 2020]
- Heilingsetzer, S., 2001. *Österreich-Pavillons auf Weltausstellungen in der ersten Hälfte des 20. Jahrhunderts - architektonische Marksteine in der Entwicklung vom Historismus zur Moderne*. Wien
- Helfrich, S., 2009. *Commons & Gütertheorie*. [online] Available at: <https://commons.blog/2009/09/15/commons-gutertheorie/> [accessed 24 Jun. 2020]
- Hennig, C., 1997. *Reiselust – Touristen, Tourismus und Urlaubskultur*. Frankfurt/Leipzig.
- Hickel + Werffell, ed., 1966. *Glaubenbielenpass – Panorama Road*. [online] Available at: <https://www.alpen-paesse.ch/en/alpenpaesse/glaubenbielenpass/> [accessed 12 May 2020]
- Hill, J., 2020. *The Environmental Impact of Roads* [online] Available at: [www.environmentalscience.org/roads](http://www.environmentalscience.org/roads) [accessed 03 Jul. 2020]
- Hodel, C., 2016. *Mit der Axenstrasse kam der Wohlstand nach Schwyz* [online] Available at: <https://www.luzernerzeitung.ch/zentralschweiz/schwyz-mit-der-axenstrasse-kam-der-wohlstand-nach-schwyz-ld.55997> [accessed 28 Jul. 2020]
- Hörl, J., Schöndorfer, D., ed., 2015. *Die Großglockner Hochalpenstraße – Erbe und Auftrag*. Wien
- Huber, W., ed., 1975. *Franz Rehl, Landeshauptmann v. Salzburg 1922-1938*. Salzburg
- Hunt, J., 2004. *The Picturesque Garden in Europe*. London
- Hutter, K., 1988. *Großglockner – Saumpfad, Römerweg, Hochalpenstraße*. Salzburg/Wien
- Hvattum, M., 2010, “Veien, reisen og landskapet”, in Paulsrud G., Hole, B., ed. *Årbok for Norsk vegmuseum*. Oslo
- ICOMOS, ed., 1995. *Advisory Body Evaluation of the Nomination of the Lednice-Valtice Cultural Landscape*. Paris
- Iken, K., 2019. *Pechvogel auf dem Dampf-Ungetüm* [online] Available at: <https://www.spiegel.de/geschichte/paris-rouen-1894-das-erste-autorennen-der-welt-a-979220.html> [accessed 02 Jul. 2020]
- Jackle, J., 1985. *The Tourist: Travel in Twentieth-century North America*. Lincoln
- Jäger-Klein, C., Plakolm-Forsthuber, S., ed., 2010. *Die Großglockner-Hochalpenstraße und neuere Erkenntnisse aus dem Archiv der Großglockner-Hochalpenstraßen AG in Salzburg*. Wien
- Jakob, M., 1997, „Das Gebirge, das Heilige und das Erhabene“, in Kunz, S. et.al. *Die Schwerkraft der Berge 1774-1997*. Basel/Frankfurt. 75-81
- Jakobi, V., 2003. *Heimatschutz und Bauerndorf. Zum planmäßigen Dorfbau im Deutschen Reich zu Beginn des 20. Jahrhunderts*. Berlin
- Jackson, P., 1989. *Maps of Meaning, An Introduction to Cultural Geography*. London
- Jones, D., 2008. *Mass Motorization + Mass Transit: An American History and Policy Analysis*. Bloomington
- Jordan, H., 1994. *Public Parks, 1885-1914* [online] Available at: <https://www.jstor.org/stable/1587004?seq=1> [accessed 19 Jul. 2020]
- Jourdain, M., 1948. *The Work of William Kent*. London
- Julin, S., 2008, “A Feeling Almost beyond Description: Scenic Roads in South Dakota’s Custer State Park, 1919-32”, in Mauch, C., Zeller, T., ed. *The World beyond the Windshield – Roads and Landscapes in the United States and Europe*. Athens. 79-93
- Kaiser, J., 2000, „Die Flexenstraße am Arlberg – ein straßenbauliches Juwel in ständiger Auseinandersetzung mit Fels und Schnee“, in Schwaighofer, B., et al. *Mitteilungen des Instituts für Angewandte Geologie, Universität für Bodenkultur Wien, Heft 10*. Wien. 43-62
- Kampffmeyer, H., 1913. *Die Gartenstadtstadtbewegung*. Leipzig
- Kappel, M., 2016. *Angewandter Straßenbau: Straßenfertiger im Einsatz*. Wiesbaden
- Kaufmann V., 2002. *Re-thinking Mobility. Contemporary Sociology*. Aldershot

## Bibliography

---

- Kennedy, D., Cohen, L., 2013. *The American Pageant: A History of the American People*. Stamford
- Khor, E., Khor, A., 2019. *China's Long March of Modernisation: Blueprint & Road Map for the Nation's Full Development 2016-2049*. Bloomington
- King, J., 1989. *Karakorum Highway. The high road to China, a travel survival kit*. Melbourne
- Kinzley, J., Joniak-Lüthi, A., 2016, „Territory, border, infrastructure – Imagining and crafting national borderlands in twentieth century China“, in *Crossroads Asia Working Paper Series, No. 36*.
- Kirchhoff, T., 2012. *Landschaft. Naturphilosophische Grundbegriffe*. [online] Available at: <http://www.naturphilosophie.org/landschaft> [accessed 21 May 2020]
- Klaeger, G., 2009. „Religion on the road: The spiritual experience of road travel in Ghana“, in Gewalt, J., Luning, S., van Walraven, K. *The speed of change. Motor vehicles and people in Africa, 1890-2000*. Leiden. 212-231
- Klein, D., Majewski, J., 2008. *Turnpikes and Toll Roads in Nineteenth Century America*. [online] Available at: <https://eh.net/encyclopedia/turnpikes-and-toll-roads-in-nineteenth-century-america/> [accessed 22 Jun. 2020]
- Knie, A., 2005, „Auto-Mobilität und komplementäres Raumverständnis als Elemente moderner Lebensweisen“, in Gundler, B., Hascher, M., Trischler, H., ed. *Unterwegs und mobil. Verkehrswelten im Museum*. Frankfurt/New York. 131-140
- Korr, J., 2008, „Physical and Social Construction of the Capital Beltway“, in Mauch, C., Zeller, T., ed. *The World beyond the Windshield – Roads and Landscapes in the United States and Europe*. Athens. 187-210
- Kos, W., 1984. *Über den Semmering. Kulturgeschichte einer künstlichen Landschaft*. Wien
- Kos, W., 1992. *Die Eroberung der Landschaft*. Wien
- Koshar, R., 2001, „On the History of the Automobile in Everyday Life“, in *Contemporary European History, Vol. 10, No. 1*. Cambridge. 143-154
- Koshar, R., 2008, „Driving Culture and the Meaning of Roads: Some Comparative Examples“, in Mauch, C., Zeller, T., ed. *The World beyond the Windshield – Roads and Landscapes in the United States and Europe*. Athens. 14-34
- Kotan Publishing, ed., 2000. *Mapping the Tibetan World*. Reno.
- Kottke, J., 2019. *A Detailed Map of Medieval Trade Routes in Europe, Asia and Africa* [online] Available at: <https://kottke.org/19/02/a-detailed-map-of-medieval-trade-routes-in-europe-asia-and-africa> [accessed 10 Jul. 2020]
- Kozel, S., 2007. *Capital Beltway History* [online] Available at: <http://www.capital-beltway.com/Capital-Beltway-History.html> [accessed 19 Jul. 2020]
- Krackowizer, H., et. al., 1997. *Salzburger Automobil- und Motorradgeschichte*. Salzburg
- Krebs, S., 2009. *Closing the body: car technology, acoustics and driving experience in the 1920s* [online] Available at: <https://research.tue.nl/en/publications/closing-the-body-car-technology-acoustics-and-driving-experience-> [accessed 20 May 2020]
- Kreuzer, B., 2010, „Vorausseilende Angebotsplanung und Raumerschließung. Die Vor- und Frühgeschichte österreichischer Autobahnen im internationalen Kontext“, in Diemel, H., Schiedt, H., ed. *Die moderne Straße – Planung, Bau und Verkehr vom 18. bis zum 20. Jahrhundert*. Frankfurt. 171-201
- Kreuzer, B., 2017, „Straßen als Voraussetzung und Attraktion für den modernen Alpentourismus“, in Luger, K., Rest F., ed. *Alpenreisen. Erlebnis, Raumtransformation, Imagination*. Innsbruck. 167-192
- Kruse, A., et. al., 2017. *Nomination Dossier UNESCO World Heritage Großglockner High Alpine Road*. Buc
- Kufeld, K., 2007. *Reisen. Ansichten und Einsichten*. Frankfurt
- Kufeld, K., 2010. *Die Reise als Utopie*. München
- Kühne, T., 1996, „Massenmotorisierung und Verkehrspolitik im 20. Jahrhundert: Technikgeschichte als politische Sozial- und Kulturgeschichte“, in *Neue Politische Literatur* 41. Darmstadt. 196-229
- Kulturstiftung Dessau-Wörlitz, ed., 1999. *Historical cultural landscape Gartenreich Dessau-Wörlitz. Nomination for inclusion on the World Heritage List of the UNESCO*. Dessau
- Landslaget for Reiseliv, 1943. *Landslaget for reiseliv gjennom 40 år*. Oslo

## Bibliography

- Larsen, J., 2010. „Vegskjæringens sublimitet“, in Paulsrud, G., Hole, B. *Årbok for Norsk vegmuseum 2010*. Oslo
- Larsen, J., 2011, “Curating Views: The Norwegian Tourist Route Project”, in Hvattum, M., Brenna, B., Elvebakk, B., Larsen, J., ed. *Routes, Roads and Landscapes*. Abingdon. 179-190
- Lauterbach, B., 2008. *Tourismus. Eine Einführung aus Sicht der volkskundlichen Kulturwissenschaft*. Würzburg
- Lauterbach, I., 2017, *The European Landscape Garden, ca. 1710–1800* [online] Available at: <http://www.ieg-ego.eu/lauterbach-2012-en> [accessed 29 May 2020]
- Lay, M., 1992. *Ways of the World: A History of the World's Roads and of the Vehicles That Used Them*. New Brunswick
- Lehnert, G., 2011. *Raum und Gefühl. Der Spatial Turn und die neue Emotionsforschung*. Bielefeld
- Leitich, F., Müller, G., 1997. *Der Gaisberg. Salzburgs Hausberg im Zeitgeschehen von zwei Jahrhunderten. Mitteilungen der Gesellschaft für Salzburger Landeskunde, Ergänzungsband 16*. Salzburg
- Lekan, T., Zeller, T., 2005. *Germany's Nature: Cultural Landscapes and Environmental History*. New Brunswick
- Lewis, T., 1997. *Divided Highways: Building the Interstate Highways, Transforming American Life*. New York
- Lewis, T., 2011. *Buddhism, Himalayan Trade, and Newar Merchants*. [online] Available at: <http://buddhim.20m.com/8-4.htm/> [accessed 10 Jun. 2020]
- Lillehammer-Gudbrandsdalen Turisttrafikkforening, 1953. *Reisehåndbok. Lillehammer og Gudbrandsdalen 1953*. Lillehammer
- Lively, P., 2003, *Of Fountains Abbey and Studley Royal* [online] Available at: <https://link-gale-com.ezproxy.uio.no/apps/doc/A99317885/LitRC?u=oslo&sid=LitRC&xid=bb0abd28> [accessed 08 Jun. 2020]
- Longen, N., 2010, „Fronarbeiten zur Finanzierung von Infrastruktur: Der Ausbau des Straßennetzes im Kurtrierer Raum, 1716-1841“, in Dienel, H., Schiedt, H., ed. *Die moderne Straße – Planung, Bau und Verkehr vom 18. bis zum 20. Jahrhundert*. Frankfurt. 23-48
- Longfellow, R., 2017. *Back in Time: The National Road* [online] Available at: <https://www.fhwa.dot.gov/infrastructure/back0103.cfm> [accessed 02 Jul. 2020]
- Lorberg, F., 2010. *Wahrnehmungspsychologie und Landschaft* [online] Available at: <https://kobra.uni-kassel.de/handle/123456789/2010093034668> [accessed 27 May 2020]
- Lüder, C., 1779. *Vollständiger Inbegriff aller den dem Strassenbau vorkommenden Fällen, samt einer vorausgesetzten Weeg-Geschichte und einem Verzeichnis der unentbehrlichen Weeg-Gesetze*. Frankfurt
- Luger, K., 2015, „Zeit im Glück. Temporalstrukturen im Tourismus“, in Egger, R., Luger, K., ed. *Tourismus und mobile Freizeit, Lebensformen, Trends, Herausforderungen*. Norderstedt. 137-156
- Luger, K., 2018, „Heritage as tourism attraction“, in Ripp, M., Göttler, M., ed. *Conference Report OWHC Regional Conferenc 2018: Heritage & Tourism: Local Communities and Visitors – Sharing Responsibilities*. Regensburg. 9-14
- Luger, K., Rest, F., 2002, „Der Aufstieg. Konturen einer kulturell konstruierten Sehnsuchtslandschaft“, in Luger, K., Rest, F., ed. *Der Alpentourismus, Entwicklungspotenziale im Spannungsfeld von Kultur, Ökonomie und Ökologie*. Innsbruck, Wien, München, Bozen. 11-47
- Mader, E., 2007. *Lokale Räume, globale Träume. Tourismus und Imagination in Lateinamerika*. [online] Available at: <https://www.google.com/search?client=firefox-b-d&q=Elke+Mader+lokale+R%C3%A4ume> [accessed 21 May 2020]
- Maier, C., 2012. „Leviathan 2.0: Inventing the Modern Statehood“, in Rosenberg, E., ed. *World Connecting 1870-1945*. Cambridge/London. 185-390
- Mankin, E., 2003. *Hudson River School: Masterworks from the Wadsworth Atheneum Museum of Art*. New Haven
- Markowitz, A., 2005. *Ceausescu's folly*. [online] Available at: <https://www.theguardian.com/travel/2005/apr/23/romania.guardiansaturdaytravelsection> [accessed 13 Jun. 2020]
- Marriott, P., 1998. *Saving Historic Roads: Design and Policy Guidelines*. New York
- Marriott, D., 2004. *From Milestones to Mile-Markers: Understanding Historic Road*. Duluth

## Bibliography

---

- Marriott, D. 2011, "Roads Designed for Pleasure: A Brief History of the Origins of Scenic Driving and Automobile Touring in the United States." in *Journal for America's Byways. Volume 1, Issues 1 and 2*. Duluth
- Marx, E., 2017, „360 Grad – Vom Sattler-Panorama zum Location Placement“, in Luger, K., Rest, F., ed. *Alpenreisen – Erlebnis, Raumtransformation, Imagination*. Innsbruck. 497-512.
- Mathieu, J., 2015. *Die Alpen. Raum – Kultur – Geschichte*. Stuttgart
- Matti, E., 1998. *World's Fairs*. New York
- McLaughlin, R., 2010. *Rome and the Distant East: Trade Routes to the ancient lands of Arabia, India and China*. London
- McShane, C., Tarr, J., 2007. *The horse in the city. Living Machines in the Nineteenth Century*. Baltimore
- McConnell, C., 2000. *Coast to Coast by Automobile. The Pioneering Trips, 1899-1908*. Stanford
- Mehrl, A., n.d. *Die kaiserlich-königlich privilegierte Südbahngesellschaft*. [online] Available at: [http://www.laenderbahn-forum.de/journal/die\\_k-k-priv-suedbahngesellschaft/die\\_k-k-priv-suedbahngesellschaft.html](http://www.laenderbahn-forum.de/journal/die_k-k-priv-suedbahngesellschaft/die_k-k-priv-suedbahngesellschaft.html) [accessed 26 Jun. 2020]
- Meretz, S., 2009. *Commons in einer Systematik von Gütern*. [online] Available at: <https://keimform.de/2009/commons-in-einer-systematik-von-guetern/> [accessed 24 Jun. 2020]
- Merki, C., 2002. *Der holprige Siegeszug des Automobils 1895–1930. Zur Motorisierung des Straßenverkehrs in Frankreich, Deutschland und der Schweiz*. Wien
- Merriman, P., 2006, "'Mirror, Signal, Manoeuvre': assembling and governing the motorway driver in late 1950s Britain", in *Sociological Review*, 54/1. Hoboken. 75-92
- Merriman, P., 2008, "'Beautified' is a Vile Phrase", in Mauch, C., Zeller, T., ed. *The World beyond the Windshield – Roads and Landscapes in the United States and Europe*. Athens. 168-186
- Merriman, P., 2009, "Driving Places. Marc Augé, Non-places, and the Geographies of England's M1 Motorway", in *Theory, Culture & Society* 21/4. Thousand Oaks. 145-167
- Meyer, A., 2010. *Brazil Roads* [online] Available at: <https://www.brazil.org.za/brazil-roads.html> [accessed 06 Jul. 2020]
- Meyer, P., 2009. *Concept Note on Historic Trans-Himalayan Main Trails Conservation*, Zürich/Kathmandu
- Meyers Konversations-Lexikon, 1888. *Eisenbahn*. 4<sup>th</sup> edition, volume 5. Leipzig. 428-447
- Michałowski, A., Panning, C., et. al., ed., 2003. *Park Mużakowski – Muskauer Park Cultural Landscape. Documentation for the Inscription on the World Heritage List*. Warszawa/Bad Muskau
- Mingo, J., ed., 1997. *Community Guide to Planning and Managing a Scenic Byway*. Washington D.C.
- Mitchell Whisnant, A., 2008, "The Scenic is Political: Creating Natural and Cultural Landscapes along America's Blue Ridge Parkway", in Mauch, C., Zeller, T., ed. *The World beyond the Windshield – Roads and Landscapes in the United States and Europe*. Athens. 59-78
- Mitterecker, T., 2018. *Großglockner Hochalpenstraße – Prestigebau des Ständestaates*. Vienna
- Mitterecker, T., 2020. *History of the Großglockner Hochalpenstraße*. Berndorf
- Mitterer, W., 2014. *Gebaute Landschaft in Bewegung. Die Brenner-Autobahn. Ein Jahrhundertbauwerk wird 50*. Brixen
- Mohl, R., 2004. *Stop the Road: Freeway Revolts in American Cities* [online] Available at: <https://journals.sagepub.com/doi/abs/10.1177/0096144204265180> [accessed 19 Jul. 2020]
- Mom, G., 2005, "Roads without Rails: European Highway-Network Building and Desire for Long-Range Motorized Mobility", in *Technology and Culture*, 46/4. Baltimore. 745-772
- Mom, G., 2010, „Decentering highways“, in Dienel, H., Schiedt, H., ed. *Die moderne Straße – Planung, Bau und Verkehr vom 18. bis zum 20. Jahrhundert*. Frankfurt. 77-100
- Mom, G., 2014. *Atlantic Automobilmism: Emergence and Persistence of the Car, 1895-1940*. Oxford/New York
- Mom, G., 2015. *The evolution of automotive technology: a handbook*. Warrendale
- Moraglio, M., 2003, "Transferring Technology, Shaping Society: Traffic Engineering in PIARC Agenda, in the Early 1930s", in *Technikgeschichte* 80, 1. Berlin. 13-32

## Bibliography

- Moraglio, M., 2008, „A Rough Modernization. Landscapes and Highways in Twentieth-Century Italy“ in Mauch, C., Zeller, T., ed. *The World beyond the Windshield – Roads and Landscapes in the United States and Europe*. Athens. 108-124
- Morkot, R., 1996, “The Darb el-Arbain, the Kharga Oasis and its forts, and other desert routes”, in Bailey, D., ed. *Archaeological research in Roman Egypt. Journal of Roman Archaeology Supplement No. 19*. London. 82-94
- Moss, R., 2007. *Routes des Grandes Alpes* [online] Available at: <https://www.mountainpassions.com/summer/scenic-touring/route-des-grandes-alpes-1/> [accessed 01 Jul. 2020]
- Mowl, T., 2006. *William Kent. Architect, Designer, Opportunist*. London
- Mozart, W., 2005. *Briefe*. Stuttgart
- Müller, U., 2010, „Der Beitrag des Chausseebaus zum Modernisierungsprozess in Preußen“, in Dienel, H., Schiedt, H., ed. *Die moderne Straße – Planung, Bau und Verkehr vom 18. bis zum 20. Jahrhundert*. Frankfurt. 49-75
- Nagell, O., 1950. *Det Norske veivæsens historie*. Oslo
- National Park Service (NPS), ed., n.d. *Colonial National Historical Park Brochure*. Washington D.C.
- National Park Service (NPS), ed., n.d. *Parkways: A Manual of Requirements, Instructions, and Information for Use in the National Park Service*. Washington D.C.
- National Park Service (NPS), ed., 1993. *National Register of Historic Places (NRHP) Nomination Form, George Washington Memorial Parkway*. Washington D.C.
- National Park Service (NPS), ed., 1995. *National Register of Historic Places Nomination Form, Skyline Drive Historic District*. Washington D.C.
- National Park Service (NPS), ed., 1997. *National Historic Landmark Nomination Form, Transmountain Highway/Going-to-the-Sun Highway*. Washington D.C.
- National Park Service (NPS), ed., 2001. *Historic American Engineering Record Bronx River Parkway Reservation HAER No. NY-327*. Washington D.C.
- National Park Service (NPS), ed., 2007. *The Carriage Roads of Acadia National Park*. Washington D.C.
- National Park Service (NPS), ed., 2015. *Acadia’s Historic Carriage Roads*. Washington D.C.
- National Park Service (NPS), ed., 2015. *Chaco culture* [online] Available at: <https://www.nps.gov/chcu/learn/historyculture/index.htm> [accessed 19 Jul. 2020]
- National Park Service (NPS), ed., 2020. *The Colonial Parkway* [online] Available at: <https://www.nps.gov/colo/parkway.htm> [accessed 23 Jun. 2020]
- Neeley, J., 2015. *Here’s a map of the highways that almost ran through DC* [online] Available at: <https://ggwash.org/view/39787/heres-a-map-of-the-highways-that-almost-ran-through-dc> [accessed 19 Jul. 2020]
- Nicolson, M., 1959, *Mountain Gloom and Mountain Glory. The Development of the Aesthetics of the Infinite*. Ithaca/New York
- Noel, T., Norgren, B., 1987. *Denver: The City Beautiful*. Denver
- Noltsi, E., 2013. *Motive Landscapes: Visualising a new landscape strategy for the Thames Path*. Chelmsford
- Norton, P., 2019. *An Honest History of How America Pays for Its Roads*. [online] Available at: <https://ftalphaville.ft.com/2019/02/08/1549605601000/An-honest-history-of-how-America-pays-for-roads/> [accessed 30 Jun. 2020]
- Nye, D., 1996. *American technological Sublime*. Cambridge/London
- Oettermann, S., 1997, „Berge weiten den Blick“, in Kurz, S. et.al. *Die Schwerkraft der Berge 1774-1997*. Basel/Frankfurt. 49-55
- Oliva, J., 2010, „Die Schaffung eines tschechoslowakischen Straßennetzes in gesamtverkehrspolitischer Betrachtung 1918-1939“, in Dienel, H., Schiedt, H., ed. *Die moderne Straße – Planung, Bau und Verkehr vom 18. bis zum 20. Jahrhundert*. Frankfurt. 203-222
- Pernter, H., 1925. *Die Stilfserjoch-Straße. Anlässlich des hundertjährigen Bestandes 1825-1925*. Meran



## Bibliography

- Peters, W., Weingarten, E., Schicketanz, S., Balla, S., 2017. *Die Alternativenprüfung in der Strategischen Umweltprüfung und der Umweltverträglichkeitsprüfung*. [online] Available at: <https://www.umweltbundesamt.de/publikationen/die-alternativenpruefung-in-der-strategischen> [accessed 22 Jun. 2020]
- Pharo, H., 2019. *Marshallplanen* [online] Available at: <https://snl.no/Marshallplanen> [accessed 01 Jul. 2020]
- Picon, A., 1994, „De l'ingénieur-artiste au technologue: Procédures de sélection et notation des élèves à l'école des ponts et chaussées 1747–1851“, in *Paedagogica Historica*, 30/1. Gent. 411-452
- Pilz, M., 1994. „Berg frei“ 100 Jahre Naturfreunde. Wien
- Pohl, H., n.d. *Bergnamen in Österreich* [online] Available at: <http://members.chello.at/heinz.pohl/Bergnamen.htm> [accessed 01 Jul. 2020]
- Pointecker, M., 2015. *Qhapaq Ñan. Inkastraßen im Wandel der Zeit*. Wien
- Pöll, C., 2013, *Straßenbau und Tourismus. Am Beispiel der Großen Dolomitenstraße und der Großglockner Hochalpenstraße* [online] Available at: <https://webapp.uibk.ac.at/ojs/index.php/historiascribere/article/viewFile/257/147> [accessed 04 Apr. 2020]
- Polunov, A., 2005. *Russia in the Nineteenth Century. Autocracy, Reform, and Social Change, 1814-1914*. Armonk/London
- Porter, V., 2012. *Journey to the Heart of Islam*. London
- Prahl, H., 2002. *Soziologie der Freizeit*. Weinheim/Basel
- Preisendörfer, B. 2015. *Als Deutschland noch nicht Deutschland war. Reisen in die Goethezeit*. Berlin
- Price, G., 2012. *Fun Fact: The beginning of the era of mass motorization* [online] Available at: <https://pricetags.ca/2012/06/08/fun-fact-the-beginning-of-the-era-of-mass-motorization/> [accessed 19 Jul. 2020]
- Primas, E., 2003. *Das Gartenstadtmodell – 100 Jahre Utopie versus Realität*. Hamburg
- Pückler-Muskau, H., 1834. *Andeutungen über Landschaftsgärtnerei, verbunden mit der Beschreibung ihrer praktischen Anwendung in Muskau*. Bremen
- P Wyatt, E., 1984. *The passage of the Alps: From Hannibal to the motorway*. London
- Radner, G., 2006. *Nockalmstraße: 23.7.: Blumenreidn-Fest / 52 Kehren (Reidn) erhalten Namen aus der Pflanzenwelt* [online] Available at: [https://www.ots.at/presseaussendung/OTS\\_20060719\\_OTSO057/nockalmstrasse-237-blumenreidn-fest-52-kehren-reidn-erhalten-namen-aus-der-pflanzenwelt](https://www.ots.at/presseaussendung/OTS_20060719_OTSO057/nockalmstrasse-237-blumenreidn-fest-52-kehren-reidn-erhalten-namen-aus-der-pflanzenwelt) [accessed 01 Jul. 2020]
- Ramos, V., Avila, H., et al, 2020. *South America - Transportation* [online] Available at: <https://www.britannica.com/place/South-America/Transportation> [accessed 06 Jul. 2020]
- Ravalet, E., Vincent-Geslin, S., Kaufmann, V., ed., 2014. *Slices of (Mobile) Life. A Sociological Study and Manifesto on Work-Related High Mobility*. Paris
- Redmond, M., 2011. *Rincon Point Road. Auto Popularity Requires Road Built at Rincon Point* [online] Available at: <https://www.independent.com/2011/11/21/rincon-point-road%E2%80%A8/> [accessed 03 Jul. 2020]
- Repton, H., 1816. *Fragments on the Theory and Practice of Landscape Gardening* [online] Available at: <http://digital.library.wisc.edu/1711.dl/DLDecArts.ReptonFragments> [accessed 29 May 2020].
- Rest, M./Rippa, A. ,2019. *Road Animism. Reflections on the life of infrastructures*. [online] Available at: <http://dx.doi.org/10.1086/706041> [accessed 10 Jan. 2020]
- Rich, N., 2016. *When Parks Were Radical* [online] Available at: <https://www.theatlantic.com/magazine/archive/2016/09/better-than-nature/492716/> [accessed 19 Jul. 2020]
- Rigele, G., 1998. *Die Großglockner Hochalpenstraße – Zur Geschichte eines österreichischen Monuments*. Wien
- Ritter, J., 1974, „Landschaft, Zur Funktion des Ästhetischen in der modernen Gesellschaft“, in Ritter, J. *Subjektivität*. Frankfurt. 172-190
- Robinson, A., 2007. *The Last Man Who Knew Everything: Thomas Young, the Anonymous Genius Who Proved Newton Wrong, Explained How We See, Cured the Sick, and Deciphered the Rosetta Stone, among Other Feats of Genius*. New York
- Rohrer, J., 2010. *Zimmer frei. Das Buch zum Tourismus*. Bozen

## Bibliography

- Rosa, H., 2013. *Beschleunigung und Entfremdung*. Frankfurt
- Rose, C., Frank, O., 2011. *Umweltverträglichkeitsprüfung für Bundesstraßen im Lichte von Public Governance* [online] Available at: [http://www.bmk.gv.at/dam/uvp\\_rosefrank](http://www.bmk.gv.at/dam/uvp_rosefrank) [accessed 19 Jun. 2020]
- Rosengren, A., 1996, "Raggare och jänkebilar", in Bursell, B., Rosengren, A., ed., *Drömmen om bilen*. Stockholm
- Ross, D., Townshend, M., 2017. *Cost-Effective provision of low-volume roads in South Africa*. [online] Available at: [file:///C:/Users/kristsk/Downloads/Cost-effective\\_provision\\_of\\_low-volume\\_r.pdf](file:///C:/Users/kristsk/Downloads/Cost-effective_provision_of_low-volume_r.pdf) [accessed 05 Jul. 2020]
- Roters, E., 1995. *Jenseits von Arkadien. Die romantische Landschaft*. London
- Ruiz, R., Rodríguez, F., Coronado, J., 2014. *Identification and assessment of engineered road heritage: A methodological approach* [online] Available at: <https://www.sciencedirect.com/science/article/abs/pii/S1296207413000137> [accessed 19 Jul. 2020]
- Ruppman, R., 2010, „Frankfurts Idee von der ‚Stadt der Straßen‘ und ihre Wirkung auf die Konzeption des Autobahnnetzes im Rhein-Main-Taunus-Gebiet: Ein unbekanntes Kapitel der deutschen Autobahngeschichte“, in Diemel, H., Schiedt, H., ed. *Die moderne Straße – Planung, Bau und Verkehr vom 18. bis zum 20. Jahrhundert*. Frankfurt. 119-146
- Rybczynski, W., 2013. *A Clearing in the Distance – Frederick Law Olmsted and America in the 19<sup>th</sup> Century*. New York
- Said, E., 1978. *Orientalism*. New York
- Schröder, K., Sternath, M., ed., 2015. *Von der Schönheit der Natur. Die Kammermaler Erzherzog Johanns. Katalog zur 513. Ausstellung der Albertina*. München
- Schievelbusch, W., 1993. *Geschichte der Eisenbahnreise. Zur Industrialisierung von Raum und Zeit im 19. Jahrhundert*. Frankfurt
- Schindler, S., 2016. *Ein Klotz am Bein? Wie Denkmalschutz Hauseigentümern den Schlaf rauben kann* [online] Available at: <https://www.merkur.de/leben/wohnen/denkmalschutz-hauseigentuemern-schlaf-rauben-kann-6709120.html> [accessed 30 Jul. 2020]
- Schmidt, W., 2009. *Landschaftspsychologie: Das ist aber schön hier!* [online] Kölner Stadt-Anzeiger. Available at: <https://www.ksta.de/landschaftspsychologie-das-ist-aber-schoen-hier--12572826> [accessed 07 Apr. 2020]
- Schneider, G., Schneider, H., 2015, „Die Sustenpassstrasse und die Grossglockner Hochalpenstrasse. Zwei Strassendenkmäler im Vergleich“, in ViaStoria, ed., *Wege und Geschichte*, 2015/2. Thun. 30-34
- Schorske, C.E., 1979. *Fin-de-Siecle Vienna, Politics and Culture*. New York
- Sears, J., 1989. *Sacred Places: American Tourist Attractions in the Nineteenth Century*. Oxford
- Seiler, C., 2008. *Republic of Drivers. A Cultural History of Automobility in America*. Chicago/London
- Sekler, E., 1982. *Josef Hoffmann. Das architektonische Werk. Monographie und Werkverzeichnis*. Salzburg/Wien
- Seland, H., 2014, „Veiene imellem Bjergene ved Coblenz ere skjønne – Om veimester Johnsons reise i Nederlandene i 1838“, in Hole, B., ed. *Årbok for Norsk vegmuseum*. Oslo
- Sha, H., 2017. *Milliarden-Brücke in China: Ein 55 Kilometer langer „weißer Elefant“* [online] Available at: <https://www.handelsblatt.com/politik/international/milliarden-bruecke-in-china-ein-55-kilometer-langer-weisser-elefant/20663458.html?ticket=ST-9412727-X4IbonLMF0DWXAeb5bfe-ap3> [accessed 06 Jul. 2020]
- Shannon, K., Smets, M., 2010. *The Landscape of contemporary infrastructure*. Rotterdam
- Sheller, M., 2018. *Mobility Justice. The Politics of Movement in an Age of Extremes*. London
- Shubic, M., 2019. *List of the Most Scenic Roads of Africa*. [online]. Available at: <https://www.mikesroadtrip.com/list-of-most-scenic-roads-of-africa/> [accessed 05 Jul. 2020]
- Siegelbaum, L., 2008. „Roadlessness and the ‘path to communism’. Building roads and highways in Stalinist Russia“, in *The Journal of Transport History*, 29/2. Thousand Oaks. 277-294
- Simmel, G., 1957, „Philosophie der Landschaft“, in Landmann, M., ed. *Brücke und Tür, Essays*. Stuttgart
- Simmel, G., 1995. *Aufsätze und Abhandlungen 1901-1908, Band 1*. Frankfurt

## Bibliography

- Simonett, J., 2011, „San Bernardino (Pass)“ in Schweizerische Akademie der Geistes- und Sozialwissenschaften, ed. *Historisches Lexikon der Schweiz (HLS)* [online] Available at: <https://hls-dhs-dss.ch/de/articles/008810/2011-01-10/> [accessed 26 Jun. 2020]
- Simonett, J., 2013, „Splügenpass“ in Schweizerische Akademie der Geistes- und Sozialwissenschaften, ed. *Historisches Lexikon der Schweiz (HLS)* [online] Available at: <https://hls-dhs-dss.ch/de/articles/008823/2013-01-10/> [accessed 26 Jun. 2020]
- Sipes, J., Ostergaard, R., 1991, “The Use of Computer Animation in Developing Interpretive Facilities Along the San Juan Skyway”, in Appalachian State University, ed. *Parkways, Greenways, Riverways: A Partnership for Beauty and Progress*. Boone. 68-73
- Sipes, J. et.al., 1997, “Scenic byways: A review of processes, administration, and economic impacts.”, in *Journal of the Transportation Research Board*, 1599. Washington D.C.
- Skåden, K., 2013. *Vegarbeid. Transnasjonale relasjoner i perioden 1800-1942*. Oslo
- Skåden, K., 2018, “‘Schöner als in der Schweiz’: norsk-sveitsiske relasjoner i diskusjoner om norsk turisme”, in Kolbe, W., ed., *Turismhistoria i Norden*. Uppsala
- Sleath, D., 2020. *1001 Traumstraßen der Welt erfahren und entdecken*. Zürich
- Snow, G., 1981. *The Years 1881-1894 in Russia – A Memorandum Found in the Papers of N.Kh. Bunge: A Translation and Commentary*. Philadelphia
- Somogy éditions d’art/Musée d’Art et d’Histoire, ed., 2003. *Catalogue à l’occasion de l’exposition Ferdinand Hodler, Le Paysage*. Paris/Genève
- Sørensen, E., 2013. *Norsk havekunst under europeisk himmel*. Oslo
- Soulliere, L., 1995. *Historic Roads in the National Park System*. Denver
- Sowa, J., 2008. *Die Wiener Höhenstraße*. Erfurt
- Spode, H., 1992, „Der moderne Tourismus – Grundlinien seiner Entstehung und Entwicklung vom 18.-20. Jahrhundert“, in Storbeck, D., ed. *Moderner Tourismus – Tendenzen und Aussichten, Materialien zur Fremdenverkehrsgeographie*. Trier. 39-76
- Spring, D., 1973, “Reviewed Work: ‘The Turnpike Road System in England: 1663-1840’ by William Albert”, in *The Business History Review*, 47/3. Cambridge. 407-408
- stadtland, 2005. ÖROK-Projekt „Multifunktionale Freiräume.“ *Dokumentation und Zusammenfassung des 2. Workshops „Steuerungsmechanismen und Handlungsmöglichkeiten“* [online] Available at: [http://oeroktest3.sil.at/fileadmin/Bilder/2.Reiter-Raum\\_u.\\_Region/3.Themen\\_und\\_Forschungsbereiche/6.Freiraeume\\_-\\_Landschaft/Workshop\\_II/DO-KU-WS2-051215\\_final.pdf](http://oeroktest3.sil.at/fileadmin/Bilder/2.Reiter-Raum_u._Region/3.Themen_und_Forschungsbereiche/6.Freiraeume_-_Landschaft/Workshop_II/DO-KU-WS2-051215_final.pdf) [accessed 01 Jul. 2020]
- stadtland, 2017. *Managementplan Welterbe Wachau*. Spitz
- Stagl, J., 2002. *Geschichte der Neugier. Die Kunst des Reisens*. Wien/Köln/Weimar
- Statens Vegvesen, 2002. *Vegvalg. Nasjonal verneplan. Veger – Bruer – Vegrelaterte kulturminner*. Oslo
- Steiger, R., 1995. *Roads of the Roman Empire* [online] Available at: [https://www.concreteconstruction.net/\\_view-object?id=00000153-8bb9-dbf3-a177-9fb903fb0000](https://www.concreteconstruction.net/_view-object?id=00000153-8bb9-dbf3-a177-9fb903fb0000) [accessed 19 Jul. 2020]
- Stiller, A., 2000. *Oswald Haerdtl: Architekt und Designer, 1899 – 1959, aus der Sammlung des Architekturzentrum Wien*. Salzburg
- Stinnes, C., 2016. *Im Auto durch zwei Welten. Die erste Autofahrt einer Frau um die Welt 1927-1929*. 4. Auflage. Wien
- Stoffel, P., 2018. *Die Alpen. Wo die Natur zur Vernunft kam*. Göttingen
- Stover, J., 1987. *History of the Baltimore and Ohio Railroad*. West Lafayette
- Stremlow, M., 1998. *Die Alpen aus der Untersicht. Kontinuität und Wandel von Alpenbildern seit 1700*. Bern
- Studienkreis für Tourismus, ed., 1991. *Zur Sonne, zur Freiheit! Beiträge zur Tourismusgeschichte*. Berlin.
- Sund, T., Sømme, A., 1947. *Norway in Maps. A. Text Volume*. Bergen

## Bibliography

- Tabor, J., ed., 1994. *Kunst und Diktatur: Architektur, Bildhauerei und Malerei in Österreich, Deutschland, Italien und der Sowjetunion 1922-1956*. Baden
- Tacke, A., 2017, „... läßt mich in Frieden weiter ziehn‘. Aspekte der Künstlermobilität vor 1800“, in Denk, C., Strobl, A., ed. *Landschaftsmalerei – eine Reisekunst? Mobilität und Naturerfahrung im 19. Jahrhundert*. Berlin/München. 46-58
- Transportation Research Board, National Research Council, ed., 1992, “Scenic Byways“, in *Transportation Research Record #1363*. Washington D.C.
- Transportation Research Board, National Research Council, ed., 2005. *Assessing and Managing the Ecological Impacts of Paved Roads* [online] Available at: <https://doi.org/10.17226/11535> [accessed 02 Jul. 2020]
- The People’s Magazine, 1834. *The road of the Simplon*. Boston
- Theye, T., ed., 1989. *Der geraubte Schatten, Die Photographie als ethnographisches Dokument*. München
- Thompson, I., ed., 2008. *Rethinking landscape, A critical reader*. London
- Transportation Research Board, National Research Council, ed., 1992, “Scenic Byways“, in *Transportation Research Record #1363*. Washington D.C.
- Tsukonawa, K., Hoban, C., ed., 1997. *Roads and the Environment. A Handbook* [online] Available at: <https://www.cbd.int/doc/pa/tools/Roads%20and%20Environment.pdf> [accessed 19 Jul. 2020]
- UNESCO, ed., 2019. *Operational Guidelines for the Implementation of the World Heritage Convention*. Paris
- Union of Concerned Citizens, ed., 2014. *Car Emissions and Global Warming* [online] Available at: <https://www.ucsusa.org/resources/car-emissions-global-warming> [accessed 03 Jul. 2020]
- Urry, J., 2004. „The ‘System’ of the Automobility“, in *Theory, Culture & Society*, 22/4-5. Thousand Oaks. 25-39
- van Oss, S., 1893. *American Railroads and British Investors*. London
- von Gerstner, F., 1997. *Early American Railroads*. Palo Alto
- von Röhl, V., 1912, „Brennerbahn“, in *Enzyklopädie des Eisenbahnwesens*, Band 3. Berlin/Wien. 62-65
- von Rütte, H., 2006, „Grimselfpass“, in Schweizerische Akademie der Geistes- und Sozialwissenschaften, ed. *Historisches Lexikon der Schweiz (HLS)* [online] Available at: <https://hls-dhs-dss.ch/de/articles/008851/2006-01-30/> [accessed 30 Jun. 2020]
- von Rütte, H., 2012, „Sustenpass“, in Schweizerische Akademie der Geistes- und Sozialwissenschaften, ed. *Historisches Lexikon der Schweiz (HLS)* [online] Available at <https://hls-dhs-dss.ch/de/articles/008862/2012-05-02/> [accessed 30 Jun. 2020]
- Wagner, M., 2010, “‘Routen zum Fortschritt und zur Zivilisation‘: Der Aufbau des mexikanischen Fernstraßennetzes (1925-1940)“, in Dienel, H., Schiedt, H., ed. *Die moderne Straße – Planung, Bau und Verkehr vom 18. bis zum 20. Jahrhundert*. Frankfurt. 223-244
- Walden, J., Hill, W., Pearce, S., 2010, “USA Scenic Byways – Connecting People to Places“, in Newsome, D., Dowling, R., ed. *Geotourism: The Tourism of Geology and Landscape*. Oxford
- Wallach, B., 2005. *Understanding the Cultural Landscape*. New York/London
- Wallack, F., 1949. *Die Großglockner-Hochalpenstraße. Die Geschichte ihres Baus*. Wien
- Walton, J., 2000. *The British Seaside. Holidays and Resorts in the Twentieth Century*. Manchester
- Weber, B. et.al., ed., 1981. *Die Alpen in der Malerei*. Rosenheim
- Webster, D., 2004. *The Burma Road. The Epic Story of the China-Burma-India Theater in World War II*. New York
- Weiss, P., 2015. *Kulturlandschaft und Hochwasserschutz am Beispiel Wachau*. [online] Available at: <http://journals.ub.uni-heidelberg.de/icomoshefte/article> [accessed 31 Mar. 2020]
- Welle-Strand, E., 1968. *Bilturer i Norge*. Oslo
- Wenderlein, J., 2018. *Die Brasa Schlucht (SP38) – Strada della Forra*. [online] Available at: <https://1000roadstodrive.com/2018/05/01/brasa-schlucht/> [accessed 30 Jun. 2020]

## Bibliography

---

- Wiener Messe AG, ed., 1935. *Wirtschaft im Aufbau – Österreich über alles, wenn es nur will*. Wien
- Wiley, M., 1976. *The High Road: Bicentennial project of the Division of Highways*. Denver
- William, A., 1972. *The turnpike road system in England 1663-1840*. Cambridge
- Williams, D., 1999. *Olmsted Parks in Seattle* [online] Available at: <https://historylink.org/File/1124> [accessed 15 Jul. 2020]
- Williams, T., 2014. *The Silk Roads: an ICOMOS Thematic Study*. [online] Available at: [https://www.icomos.org/images/mediatheque/ICOMOS\\_WHThematicStudy\\_SilkRoads\\_final\\_lv\\_201406.pdf](https://www.icomos.org/images/mediatheque/ICOMOS_WHThematicStudy_SilkRoads_final_lv_201406.pdf) [accessed 19 Jun. 2020]
- Wimmer, C., 1989. *Geschichte der Gartentheorie*. Darmstadt
- Wiplinger, H., ed., 2018. *Ferdinand Hodler. Wahlverwandtschaften von Klimt bis Schiele*. Köln
- Wismer, B., Kunz, S., 1997, „Voglio vedere le mie montagne“, in Kurz, S. et.al. *Die Schwerkraft der Berge 1774-1997*. Basel/Frankfurt. 11-20
- Wittkamp, R., 2001. *Zur Entstehung der Landschaft in der europäischen Literatur und ihrer „Entdeckung“ in Japan*. [online] Available at: <http://www2.ipcku.kansai-ac.jp/~wittkamp/Entstehung%20der%20Landschaft.pdf> [accessed 18 May 2020]
- Wöhler, K., 2008, „Heritagefication: Zur Vergegenwärtigung des Kulturerbes“, in Luger, K. Wöhler, K., ed. *Welterbe und Tourismus, Schützen und Nützen aus einer Perspektive der Nachhaltigkeit*. Innsbruck/Wien/Bozen. 43-58
- Wöhler, K., 2011. *Touristifizierung von Räumen*. Wiesbaden
- Wollstonecraft, M., Godwin, G., 1987. *A Short Residence in Sweden, Norway and Denmark [1796] and Memoirs of the Author of The Rights of Woman [1798]*. London
- Wuthenow, R., 1993, „Romantik als Zeitgeist?“, in Breuer, U., Wegmann, N., ed. *Athenäum – Jahrbuch der Friedrich Schlegel-Gesellschaft Heft 03/1993*. Mainz. 173-197
- Zeller, T., 2002. *Straße, Bahn, Panorama*. Frankfurt/New York
- Zeller, T., 2010, „Der automobile Blick: Berg- und Alpenstraßen und die Herstellung von Landschaft in Deutschland und den USA im 20. Jahrhundert“, in Dienel, H., Schiedt, H., ed. *Die moderne Straße – Planung, Bau und Verkehr vom 18. bis zum 20. Jahrhundert*. Frankfurt. 265-284
- Zuelow, E., 2015. *A Modern History of Tourism*. London

## Uncredited and Additional Internet References

assets.publishing.service.gov.uk, 2019. *A time of unprecedented change in the transport system. The Future of Mobility*. [online] Available at [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/780868/future\\_of\\_mobility\\_final.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/780868/future_of_mobility_final.pdf) [accessed 15 Jul. 2020]

ca.wikipedia.org, 2020. *Antoni Parietti Coll* [online] Available at: [https://ca.wikipedia.org/wiki/Antoni\\_Parietti\\_Coll](https://ca.wikipedia.org/wiki/Antoni_Parietti_Coll) [accessed 30 Jun. 2020]

de.hardangerfjord.com, 2020. *Seljestadjuvet* [online] Available at: <https://de.hardangerfjord.com/odda/things-to-do/seljestadjuvet-p793173> [accessed 08 Jul. 2020]

de.wikipedia.org, 2020. *Alwin Seifert* [online] Available at: [https://de.wikipedia.org/wiki/Alwin\\_Seifert](https://de.wikipedia.org/wiki/Alwin_Seifert) [accessed 22 Jun. 2020]

de.wikipedia.org, 2020. *Autodrome de Linas-Montlhéry* [online] Available at: [https://de.wikipedia.org/wiki/Autodrome\\_de\\_Linas-Montlh%C3%A9ry](https://de.wikipedia.org/wiki/Autodrome_de_Linas-Montlh%C3%A9ry) [accessed 02 Jul. 2020]

de.wikipedia.org, 2020. *Autodromo Nazionale di Monza* [online] Available at: [https://de.wikipedia.org/wiki/Autodromo\\_Nazionale\\_di\\_Monza](https://de.wikipedia.org/wiki/Autodromo_Nazionale_di_Monza) [accessed 02 Jul. 2020]

de.wikipedia.org, 2020. *Autostrada dei Laghi* [online] Available at: [https://de.wikipedia.org/wiki/Autostrada\\_dei\\_Laghi](https://de.wikipedia.org/wiki/Autostrada_dei_Laghi) [accessed 10 Apr. 2020]

de.wikipedia.org, 2020. *Avenue Foch* [online] Available at: [https://de.wikipedia.org/wiki/Avenue\\_Foch](https://de.wikipedia.org/wiki/Avenue_Foch) [accessed 09 Apr. 2020]

de.wikipedia.org, 2020. *AVUS* [online] Available at: <https://de.wikipedia.org/wiki/AVUS> [accessed 10 Apr. 2020]

de.wikipedia.org, 2020. *Axenstrasse* [online] Available at: <https://de.wikipedia.org/wiki/Axenstrasse> [accessed 28 Jul. 2020]

de.wikipedia.org, 2020. *Bernsteinstraße* [online] Available at: <https://de.wikipedia.org/wiki/Bernsteinstra%C3%9Fe> [accessed 06 Jul. 2020]

de.wikipedia.org, 2020. *Besetzung der Hainburger Au* [online] Available at: [https://de.wikipedia.org/wiki/Besetzung\\_der\\_Hainburger\\_Au](https://de.wikipedia.org/wiki/Besetzung_der_Hainburger_Au) [accessed 22 Jun. 2020]

de.wikipedia.org, 2020. *Bois de Vincennes* [online] Available at: [https://de.wikipedia.org/wiki/Bois\\_de\\_Vincennes](https://de.wikipedia.org/wiki/Bois_de_Vincennes) [accessed 10 Apr. 2020]

de.wikipedia.org, 2020. *Bois du Boulogne* [online] Available at: [https://de.wikipedia.org/wiki/Bois\\_du\\_Boulogne](https://de.wikipedia.org/wiki/Bois_du_Boulogne) [accessed 10 Apr. 2020]

de.wikipedia.org, 2020. *Brennerbahn* [online] Available at: <https://de.wikipedia.org/wiki/Brennerbahn> [accessed 26 Jun. 2020]

de.wikipedia.org, 2020. *Brennerstraße* [online] Available at: <https://de.wikipedia.org/wiki/Brennerstra%C3%9Fe> [accessed 26 Jun. 2020]

de.wikipedia.org, 2020. *Bruckmühl* [online] Available at: <https://de.wikipedia.org/wiki/Bruckmühl> [accessed 22 Jun. 2020]

de.wikipedia.org, 2020. *Carrera Panamericana* [online] Available at: [https://en.wikipedia.org/wiki/Carrera\\_Panamericana](https://en.wikipedia.org/wiki/Carrera_Panamericana) [accessed 02 Jul. 2020]

de.wikipedia.org, 2020. *Col de l'Iseran* [online] Available at: [https://de.wikipedia.org/wiki/Col\\_de\\_l%E2%80%99Iseran](https://de.wikipedia.org/wiki/Col_de_l%E2%80%99Iseran) [accessed 15 Jul. 2020]

de.wikipedia.org, 2020. *Col du Mont Cenis* [online] Available at: [https://de.wikipedia.org/wiki/Col\\_du\\_Mont\\_Cenis](https://de.wikipedia.org/wiki/Col_du_Mont_Cenis) [accessed 15 Jul. 2020]

de.wikipedia.org, 2020. *Demografie Österreichs* [online] Available at: [https://de.wikipedia.org/wiki/Demografie\\_%C3%96sterreichs](https://de.wikipedia.org/wiki/Demografie_%C3%96sterreichs) [accessed 30 Jul. 2020]

## Uncredited and Additional Internet References

---

- de.wikipedia.org, 2020. *Deutsche Währungsgeschichte* [online] Available at: [https://de.wikipedia.org/wiki/Deutsche\\_W%C3%A4hrungsgeschichte](https://de.wikipedia.org/wiki/Deutsche_W%C3%A4hrungsgeschichte) [accessed 10 Apr. 2020]
- de.wikipedia.org, 2020. *Dobratsch* [online] Available at: <https://de.wikipedia.org/wiki/Dobratsch> [accessed 01 Jul. 2020]
- de.wikipedia.org, 2020. *École nationale des ponts et chaussées* [online] Available at: [https://de.wikipedia.org/wiki/%C3%89cole\\_nationale\\_des\\_ponts\\_et\\_chauss%C3%A9es](https://de.wikipedia.org/wiki/%C3%89cole_nationale_des_ponts_et_chauss%C3%A9es) [accessed 10 Apr. 2020]
- de.wikipedia.org, 2020. *Erlebnisstraße* [online] Available at: <https://de.wikipedia.org/wiki/Erlebnisstraße> [accessed 01 Jul. 2020]
- de.wikipedia.org, 2020. *Fritz Todt* [online] Available at: [https://de.wikipedia.org/wiki/Fritz\\_Todt](https://de.wikipedia.org/wiki/Fritz_Todt) [accessed 09 Apr. 2020]
- de.wikipedia.org, 2020. *Gottfried Feder* [online] Available at: [https://de.wikipedia.org/wiki/Gottfried\\_Feder](https://de.wikipedia.org/wiki/Gottfried_Feder) [accessed 21 Jun. 2020]
- de.wikipedia.org, 2020. *Große Dolomitenstraße* [online] Available at: [https://de.wikipedia.org/wiki/Gro%C3%9Fe\\_Dolomitenstra%C3%9Fe](https://de.wikipedia.org/wiki/Gro%C3%9Fe_Dolomitenstra%C3%9Fe) [accessed 10 Apr. 2020]
- de.wikipedia.org, 2020. *Haukelivegen* [online] Available at: <https://de.wikipedia.org/wiki/Haukelivegen> [accessed 08 Jul. 2020]
- de.wikipedia.org, 2020. *Hongkong-Zhuhai-Macau-Brücke* [online] Available at: <https://de.wikipedia.org/wiki/Hongkong-Zhuhai-Macau-Br%C3%BCcke> [accessed 06 Jul. 2020]
- de.wikipedia.org, 2020. *Irschenberg* [online] Available at: <https://de.wikipedia.org/wiki/Irschenberg> [accessed 22 Jun. 2020]
- de.wikipedia.org, 2020. *Motorsportjahr 1895* [online] Available at: [https://de.wikipedia.org/wiki/Motorsportjahr\\_1895](https://de.wikipedia.org/wiki/Motorsportjahr_1895) [accessed 02 Jul. 2020]
- de.wikipedia.org, 2020. *Nockalmstraße* [online] Available at: <https://de.wikipedia.org/wiki/Nockalmstra%C3%9Fe> [accessed 01 Jul. 2020]
- de.wikipedia.org, 2020. *Kahlenbergbahn (Zahnradbahn)* [online] Available at: [https://de.wikipedia.org/wiki/Kahlenbergbahn\\_\(Zahnradbahn\)](https://de.wikipedia.org/wiki/Kahlenbergbahn_(Zahnradbahn)) [accessed 29 Jun. 2020]
- de.wikipedia.org, 2020. *Liste der Ferien- und Themenstraßen* [online] Available at: [https://de.wikipedia.org/wiki/Liste\\_der\\_Ferien-\\_und\\_Themenstra%C3%9Fen](https://de.wikipedia.org/wiki/Liste_der_Ferien-_und_Themenstra%C3%9Fen) [accessed 01 Jul. 2020]
- de.wikipedia.org, 2020. *Mille Miglia* [online] Available at: [https://en.wikipedia.org/wiki/Mille\\_Miglia](https://en.wikipedia.org/wiki/Mille_Miglia) [accessed 02 Jul. 2020]
- de.wikipedia.org, 2020. *Nürburgring* [online] Available at: <https://de.wikipedia.org/wiki/Nürburgring> [accessed 02 Jul. 2020]
- de.wikipedia.org, 2020. *Pico del Veleta* [online] Available at: [https://de.wikipedia.org/wiki/Pico\\_del\\_Veleta](https://de.wikipedia.org/wiki/Pico_del_Veleta) [accessed 15 Jul. 2020]
- de.wikipedia.org, 2020. *Reform- und Öffnungspolitik* [online] Available at: [https://de.wikipedia.org/wiki/Reform-\\_und\\_%C3%96ffnungspolitik](https://de.wikipedia.org/wiki/Reform-_und_%C3%96ffnungspolitik) [accessed 06 Jul. 2020]
- de.wikipedia.org, 2020. *Route des Grandes Alpes* [online] Available at: [https://de.wikipedia.org/wiki/Route\\_des\\_Grandes\\_Alpes](https://de.wikipedia.org/wiki/Route_des_Grandes_Alpes) [accessed 10 Apr. 2020]
- de.wikipedia.org, 2020. *Route Napoléon* [online] Available at: [https://de.wikipedia.org/wiki/Route\\_Napol%C3%A9on](https://de.wikipedia.org/wiki/Route_Napol%C3%A9on) [accessed 01 Jul. 2020]
- de.wikipedia.org, 2020. *Salzkarawanen in der Sahara* [online] Available at: [https://de.wikipedia.org/wiki/Salzkarawanen\\_in\\_der\\_Sahara](https://de.wikipedia.org/wiki/Salzkarawanen_in_der_Sahara) [accessed 10 Jul. 2020]
- de.wikipedia.org, 2020. *Straßen- und Wegebau* [online] Available at: [https://de.wikipedia.org/wiki/Stra%C3%9Fen-\\_und\\_Wegebau](https://de.wikipedia.org/wiki/Stra%C3%9Fen-_und_Wegebau) [accessed 06 Jul. 2020]
- de.wikipedia.org, 2020. *Südbahn-Gesellschaft* [online] Available at: <https://de.wikipedia.org/wiki/Südbahn-Gesellschaft> [accessed 26 Jun. 2020]

## Uncredited and Additional Internet References

---

- de.wikipedia.org, 2020. *Targa Florio* [online] Available at: [https://de.wikipedia.org/wiki/Targa\\_Florio](https://de.wikipedia.org/wiki/Targa_Florio) [accessed 02 Jul. 2020]
- de.wikipedia.org, 2020. *Timmelsjoch* [online] Available at: <https://de.wikipedia.org/wiki/Timmelsjoch> [accessed 10 Apr. 2020]
- de.wikipedia.org, 2020. *UVP in Österreich* [online] Available at: [https://de.wikipedia.org/wiki/UVP\\_in\\_Österreich](https://de.wikipedia.org/wiki/UVP_in_Österreich) [accessed 22 Jun. 2020]
- de.wikipedia.org, 2020. *Vier Modernisierungen* [online] Available at: [https://de.wikipedia.org/wiki/Vier\\_Modernisierungen](https://de.wikipedia.org/wiki/Vier_Modernisierungen) [accessed 06 Jul. 2020]
- de.wikipedia.org, 2020. *Wiederaufarbeitungsanlage Wackersdorf* [online] Available at: [https://de.wikipedia.org/wiki/Wiederaufarbeitungsanlage\\_Wackersdorf](https://de.wikipedia.org/wiki/Wiederaufarbeitungsanlage_Wackersdorf) [accessed 22 Jun. 2020]
- de.wikipedia.org, 2020. *Wiener Höhenstraße* [online] Available at: [https://de.wikipedia.org/wiki/Wiener\\_H%C3%B6henstra%C3%9Fe](https://de.wikipedia.org/wiki/Wiener_H%C3%B6henstra%C3%9Fe) [accessed 10 Apr. 2020]
- en.wikipedia.org, 2020. *Acadia National Park* [online] Available at: [https://en.wikipedia.org/wiki/Acadia\\_National\\_Park](https://en.wikipedia.org/wiki/Acadia_National_Park) [accessed 08 Apr. 2020]
- en.wikipedia.org, 2020. *Arab slave trade* [online] Available at: [https://en.wikipedia.org/wiki/Arab\\_slave\\_trade](https://en.wikipedia.org/wiki/Arab_slave_trade) [accessed 10 Jul. 2020]
- en.wikipedia.org, 2020. *Arroyo Seco Parkway* [online] Available at: [https://en.wikipedia.org/wiki/Arroyo\\_Seco\\_Parkway](https://en.wikipedia.org/wiki/Arroyo_Seco_Parkway) [accessed 10 Apr. 2020]
- en.wikipedia.org, 2020. *Brooklands* [online] Available at: <https://en.wikipedia.org/wiki/Brooklands> [accessed 02 Jul. 2020]
- en.wikipedia.org, 2020. *Capability Brown* [online] Available at: [https://en.wikipedia.org/wiki/Capability\\_Brown](https://en.wikipedia.org/wiki/Capability_Brown) [accessed 04 Apr. 2020]
- en.wikipedia.org, 2020. *Carretera Austral* [online] Available at: [https://en.wikipedia.org/wiki/Carretera\\_Austral](https://en.wikipedia.org/wiki/Carretera_Austral) [accessed 20 Jul. 2020]
- en.wikipedia.org, 2020. *Chaussee* [online] Available at <https://en.wikipedia.org/wiki/Chaussee> [accessed 10 Jul. 2020]
- en.wikipedia.org, 2020. *Cornelius Vanderbilt* [online] Available at: [https://en.wikipedia.org/wiki/Cornelius\\_Vanderbilt](https://en.wikipedia.org/wiki/Cornelius_Vanderbilt) [accessed 10 Apr. 2020]
- en.wikipedia.org, 2020. *Eastern Parkway* [online] Available at: [https://en.wikipedia.org/wiki/Eastern\\_Parkway](https://en.wikipedia.org/wiki/Eastern_Parkway) [accessed 09 Apr. 2020]
- en.wikipedia.org, 2020. *Expressways of China* [online] Available at: [https://en.wikipedia.org/wiki/Expressways\\_of\\_China](https://en.wikipedia.org/wiki/Expressways_of_China) [accessed 06 Jul. 2020]
- en.wikipedia.org, 7 June 2020. *Former countries in Europe after 1815* [online] Available at [https://en.wikipedia.org/wiki/Former\\_countries\\_in\\_Europe\\_after\\_1815](https://en.wikipedia.org/wiki/Former_countries_in_Europe_after_1815) [accessed 1 July 2020].
- en.wikipedia.org, 2020. *Frederick Law Olmsted, Jr.* [online] Available at: [https://en.wikipedia.org/wiki/Frederick\\_Law\\_Olmsted\\_Jr.](https://en.wikipedia.org/wiki/Frederick_Law_Olmsted_Jr.) [accessed 10 Apr. 2020]
- en.wikipedia.org, 2020. *Ghana Empire* [online] Available at: [https://en.wikipedia.org/wiki/Ghana\\_Empire](https://en.wikipedia.org/wiki/Ghana_Empire) [accessed 10 Jul. 2020]
- en.wikipedia.org, 2020. *Gao Empire* [online] Available at: [https://en.wikipedia.org/wiki/Gao\\_Empire](https://en.wikipedia.org/wiki/Gao_Empire) [accessed 10 Jul. 2020]
- en.wikipedia.org, 2020. *Great Ocean Road* [online] Available at: [https://en.wikipedia.org/wiki/Great\\_Ocean\\_Road](https://en.wikipedia.org/wiki/Great_Ocean_Road) [accessed 16 Jul. 2020]
- en.wikipedia.org, 2020. *Historic Columbia River Highway*. [online] Available at: [https://en.wikipedia.org/wiki/Historic\\_Columbia\\_River\\_Highway](https://en.wikipedia.org/wiki/Historic_Columbia_River_Highway) [accessed 25 Jun. 2020]
- en.wikipedia.org, 2020. *History of Rail Transport in China* [online] Available at: [https://en.wikipedia.org/wiki/History\\_of\\_rail\\_transport\\_in\\_China](https://en.wikipedia.org/wiki/History_of_rail_transport_in_China) [accessed 10 Apr. 2020]



## Uncredited and Additional Internet References

---

- en.wikipedia.org, 2020. *History of Rail Transport in India (2020) Wikipedia*. Available at: [https://en.wikipedia.org/wiki/History\\_of\\_rail\\_transport\\_in\\_India](https://en.wikipedia.org/wiki/History_of_rail_transport_in_India) [accessed 10 Apr. 2020]
- en.wikipedia.org, 2020. *History of Rail Transport in Japan* [online] Available at: [https://en.wikipedia.org/wiki/History\\_of\\_rail\\_transport\\_in\\_Japan](https://en.wikipedia.org/wiki/History_of_rail_transport_in_Japan) [accessed 10 Apr. 2020]
- en.wikipedia.org, 2020. *Humphry Repton* [online] Available at: [https://en.wikipedia.org/wiki/Humphry\\_Repton](https://en.wikipedia.org/wiki/Humphry_Repton) [accessed 04 Apr. 2020]
- en.wikipedia.org, 2020. *Indianapolis Motor Speedway* [online] Available at: [https://en.wikipedia.org/wiki/Indianapolis\\_Motor\\_Speedway](https://en.wikipedia.org/wiki/Indianapolis_Motor_Speedway) [accessed 02 Jul. 2020]
- en.wikipedia.org, 2020. *Karakoram Highway* [online] Available at: [https://en.wikipedia.org/wiki/Karakoram\\_Highway](https://en.wikipedia.org/wiki/Karakoram_Highway) [accessed 14 Jun., 2020]
- en.wikipedia.org, 2020. *Long Island Motor Parkway* [online] Available at: [https://en.wikipedia.org/wiki/Long\\_Island\\_Motor\\_Parkway](https://en.wikipedia.org/wiki/Long_Island_Motor_Parkway) [accessed 09 Apr. 2020]
- en.wikipedia.org, 2020. *Mali Empire* [online] Available at: [https://en.wikipedia.org/wiki/Mali\\_Empire](https://en.wikipedia.org/wiki/Mali_Empire) [accessed 10 Jul. 2020]
- en.wikipedia.org, 2020. *Milwaukee Mile* [online] Available at: [https://en.wikipedia.org/wiki/Milwaukee\\_Mile](https://en.wikipedia.org/wiki/Milwaukee_Mile) [accessed 02 Jul. 2020]
- en.wikipedia.org, 2020. *Monte Carlo Rally* [online] Available at: [https://en.wikipedia.org/wiki/Monte\\_Carlo\\_Rally](https://en.wikipedia.org/wiki/Monte_Carlo_Rally) [accessed 02 Jul. 2020]
- en.wikipedia.org, 2020. *Mount Rushmore National Memorial*. [online] Available at: [https://de.wikipedia.org/wiki/Mount\\_Rushmore\\_National\\_Memorial](https://de.wikipedia.org/wiki/Mount_Rushmore_National_Memorial) [accessed 25 Jun. 2020]
- en.wikipedia.org, 2020. *Mulholland Drive* [online] Available at: [https://en.wikipedia.org/wiki/Mulholland\\_Drive](https://en.wikipedia.org/wiki/Mulholland_Drive) [accessed 10 Apr. 2020]
- en.wikipedia.org, 2020. *National Parkway* [online] Available at: [https://en.wikipedia.org/wiki/National\\_Parkway](https://en.wikipedia.org/wiki/National_Parkway) [accessed 16 Jun. 2020]
- en.wikipedia.org, 2020. *Peter Norbeck Scenic Byway* [online] Available at: [https://en.wikipedia.org/wiki/Peter\\_Norbeck\\_Scenic\\_Byway](https://en.wikipedia.org/wiki/Peter_Norbeck_Scenic_Byway) [accessed 25 Jun. 2020]
- en.wikipedia.org, 2020. *Prospect Park (Brooklyn)* [online] Available at: [https://en.wikipedia.org/wiki/Prospect\\_Park\\_\(Brooklyn\)](https://en.wikipedia.org/wiki/Prospect_Park_(Brooklyn)) [accessed 09 Apr. 2020]
- en.wikipedia.org, 2020. *Road transport in the Netherlands* [online] Available at: [https://en.wikipedia.org/wiki/Road\\_transport\\_in\\_the\\_Netherlands](https://en.wikipedia.org/wiki/Road_transport_in_the_Netherlands) [accessed 10 Jul. 2020]
- en.wikipedia.org, 2020. *Robert Moses* [online] Available at: [https://en.wikipedia.org/wiki/Robert\\_Moses](https://en.wikipedia.org/wiki/Robert_Moses) [accessed 10 Apr. 2020]
- en.wikipedia.org, 2020. *Songhai Empire* [online] Available at: [https://en.wikipedia.org/wiki/Songhai\\_Empire](https://en.wikipedia.org/wiki/Songhai_Empire) [accessed 10 Jul. 2020]
- en.wikipedia.org, 2020. *Taghaza* [online] Available at: <https://en.wikipedia.org/wiki/Taghaza> [accessed 10 Jul. 2020]
- en.wikipedia.org, 2020. *Trans-Saharan trade* [online] Available at: [https://en.wikipedia.org/wiki/Trans-Saharan\\_trade](https://en.wikipedia.org/wiki/Trans-Saharan_trade) [accessed 10 Jul. 2020]
- en.wikipedia.org, 2020. *Vanderbilt Cup* [online] Available at: [https://en.wikipedia.org/wiki/Vanderbilt\\_Cup](https://en.wikipedia.org/wiki/Vanderbilt_Cup) [accessed 02 Jul. 2020]
- fr.wikipedia.org, 2020. *Cargneule* [online] Available at: <https://fr.wikipedia.org/wiki/Cargneule> [accessed 28 Jul. 2020]
- fr.wikipedia.org, 2020. *Col d'Izoard* [online] Available at: [https://fr.wikipedia.org/wiki/Col\\_d%27Izoard](https://fr.wikipedia.org/wiki/Col_d%27Izoard) [accessed 28 Jul. 2020]
- fr.wikipedia.org, 2020. *Henri Berge* [online] Available at: [https://fr.wikipedia.org/wiki/Henri\\_Berge](https://fr.wikipedia.org/wiki/Henri_Berge) [accessed 28 Jul. 2020]

## Uncredited and Additional Internet References

---

- fr.wikipedia.org, 2020. *Route départementale 77b* [online] Available at: [https://fr.wikipedia.org/wiki/Route\\_d%C3%A9partementale\\_77b](https://fr.wikipedia.org/wiki/Route_d%C3%A9partementale_77b) [accessed 15 Jul. 2020]
- fudinfo.trafikverket.se, 2020. *Svenska turistvägar – planering, aktörer, strategier samt upplevelsepotential* [online] Available at: <http://fudinfo.trafikverket.se/fudinfoexternwebb/pages/ProjektVisaNy.aspx?projektid=2233> [accessed 01 Jul. 2020]
- HowStuffWorks.com, 2007. *Connecticut Scenic Drives: Merritt Parkway* [online] Available at: <https://adventure.howstuffworks.com/scenic-drive-in-connecticut-merritt-parkway-ga.htm> [accessed 30 Jun. 2020]
- it.wikipedia.org, 2020. *Colle dell'Agnello* [online] Available at: [https://it.wikipedia.org/wiki/Colle\\_dell%27Agnello](https://it.wikipedia.org/wiki/Colle_dell%27Agnello) [accessed 28 Jul. 2020]
- janeaustensworld.wordpress.com, 2009. *The Postal Service in 18th Century Britain: Post Roads and Post-Boys* [online] Available at: <https://janeaustensworld.wordpress.com/2009/09/12/the-postal-service-in-18th-century-britain-post-roads-and-post-boys/> [accessed 02 Jul. 2020]
- naturstyrelsen.dk, 2020. *Margueritrutten - Danmarks kendteste rute går gennem naturskønne landskaber* [online] Available at: <https://naturstyrelsen.dk/naturoplevelser/naturguider/margueritrutten/> [accessed 01 Jul. 2020]
- no.wikipedia.org, 2020. *Fylkesvei 55* [online] Available at: [https://no.wikipedia.org/wiki/Fylkesvei\\_55](https://no.wikipedia.org/wiki/Fylkesvei_55) [accessed 28 Feb. 2020]
- no.wikipedia.org, 2020. *Trollstigvegen* [online] Available at: <https://no.wikipedia.org/wiki/Trollstigvegen> [accessed 28 Feb. 2020]
- pavementinteractive.org, 2020. *Pavement history* [online] Available at: <https://pavementinteractive.org/reference-desk/pavement-types-and-history/pavement-history/> [accessed 06 Jul. 2020]
- ppihc.org, 2020. *PPIHC All Time Kings of the Mountain (1916-2019)* [online] Available at: <http://ppihc.org/wp-content/uploads/All-Time-Kings-of-the-Mountain-2019.pdf> [accessed 02 Jul. 2020]
- seattleolmsted.org, 2020. *A brief history* [online] Available at: <https://seattleolmsted.org/history/> [accessed 19 Jul. 2020]
- secretlibraryleeds.net, 2019. *The Corn-price Riot of 1735 and the Turnpike Riot of 1753* [online] Available at: <https://secretlibraryleeds.net/2019/09/13/the-corn-price-riot-of-1735-and-the-turnpike-riot-of-1753/> [accessed 09 Jul. 2020].
- timesmachine.nytimes.com, 1868. *Summer Travel* [online] Available at: <https://timesmachine.nytimes.com/timesmachine/1868/07/19/78948670.pdf> [accessed 23 Jun. 2020]
- uic.org, 2020. *High-speed rail history*. [online] Available at: <https://uic.org/passenger/highspeed/article/high-speed-rail-history> [accessed 06 Jun. 2020]
- universalium.academic.ru, 2020. *Simplon Pass*. [online] Available at: <https://universalium.academic.ru/245403> [accessed 10 May 2020]
- web.stanford.edu, 2020. *Chinese Railroad Workers in North America* [online] Available at: <https://web.stanford.edu/group/chineserailroad/cgi-bin/website/> [accessed 30 Jun. 2020]
- whc.unesco.org, 2020. *Main Andean Road - Qhapaq Ñan* [online] Available at: <https://whc.unesco.org/en/list/1459> [accessed 06 Jul. 2020]
- whc.unesco.org, 2020. *Medici Villas and Gardens in Tuscany* [online] Available at: <https://whc.unesco.org/en/list/175> [accessed 06 Jun. 2020]
- whc.unesco.org, 2020. *Palace and Park of Fontainebleau* [online] Available at: <https://whc.unesco.org/en/list/160> [accessed 01 Jun. 2020]
- whc.unesco.org, 2020. *Palace and Park of Versailles* [online] Available at: <https://whc.unesco.org/en/list/83/> [accessed 01 Jun. 2020]
- whc.unesco.org, 2020. *Silk Roads. The Routes Network of Chang'an-Tianshan Corridor* [online] Available at: <http://whc.unesco.org/en/list/1442> [accessed 21 Jul. 2020]
- whc.unesco.org, 2020. *Studley Royal Park including the Ruins of Fountains Abbey* [online] Available at: <https://whc.unesco.org/en/list/372> [accessed 06 Jun. 2020]

## Uncredited and Additional Internet References

---

- whc.unesco.org, 2020. *Villa d'Este, Tivoli* [online] Available at: <https://whc.unesco.org/en/list/1025> [accessed 01 Jun. 2020]
- wien.orf.at, 2019. *Denkmalschutz für Teile der Höhenstraße* [online] Available at: <https://wien.orf.at/stories/3022552/> [accessed 29 Jun. 2020]
- wko.at, 2020. *PKW-Bestand nach Bundesländern* [online] Available at: <http://wko.at/statistik/extranet/langzeit/blang/blang-pkw.pdf> [accessed 30 Jul. 2020]
- www.alpenverein.at, ed., 2020. *Das Glocknerhaus im Rückblick*. [online] Available at: <https://www.alpenverein.at/glocknerhaus/geschichte.php> [accessed 29 Jun. 2020]
- www.alpinecols.com, 2015. *The Lacets de Montvernier* [online] Available at: <https://www.alpinecols.com/climbing-the-lacets-de-montvernier/> [accessed 15 Jul. 2020]
- www.amalficoast.com, 2020. *Amalfi Coast* [online] Available at: <https://www.amalficoast.com/> [accessed 19 Jul. 2020]
- www.asphaltwa.com, 2020. *Asphalt Pavement History* [online] Available at: <http://www.asphaltwa.com/welcome-asphalt-pavement-history/#:~:text=Macadam%20Pavements&text=John%20McAdam%20> [accessed 17 Jul. 2020]
- www.austria-motor-veterans.at, 2020. *Die ersten Motorsportveranstaltungen Österreichs* [online] Available at: <http://www.austria-motor-veterans.at/PDF/Motorsportveranstaltungen.pdf> [accessed 21 Jun. 2020]
- www.barbermuseum.org, 2020. *1894 Hildebrand & Wolfmüller* [online] Available at: <https://www.barbermuseum.org/spotlight/1894-hildebrand-wolfmuller/> [accessed 05 May 2020]
- www.bbt-se.com, 2020. *Brenner Basistunnel – Projektüberblick* [online] Available at: <https://www.bbt-se.com/tunnel/projektueberblick/> [accessed 07 Jul. 2020]
- www.berchtesgaden.de, 2020. *Rosßfeld-Panoramastraße auf 1.600 m – eine unvergessliche Erlebnisfahrt auf der Höhenringstraße* [online] Available at: <https://www.berchtesgaden.de/rossfeld-panoramastrasse> [accessed 29 Jun. 2020]
- www.bfloparks.org, 2020. *Your parkways* [online] Available at: <https://www.bfloparks.org/parks/parkways/> [accessed 19 Jul. 2020]
- www.britannica.com, 2019. *Simplon Pass* [online] Available at: <https://www.britannica.com/place/Simplon-Pass> [accessed 15 May 2020]
- www.britannica.com, 2019. *William Richard Morris, Viscount Nuffield* [online] Available at: <https://www.britannica.com/biography/William-Richard-Morris-Viscount-Nuffield-Baron-Nuffield-of-Nuffield> [accessed 20 May 2020]
- www.britannica.com, 2020. *William Kent* [online] Available at: [academic-eb-com.ezproxy.uio.no/levels/collegiate/article/William-Kent/45113](http://academic-eb-com.ezproxy.uio.no/levels/collegiate/article/William-Kent/45113) [accessed 22 May 2020]
- www.cia.gov, 2020. *The World Factbook: Roadways* [online] Available at: <https://www.cia.gov/library/publications/the-world-factbook/fields/385.html> [accessed 21 Jul. 2020]
- www.codot.gov, 2000. *Tourism Initiative* [online] Available at: <https://www.codot.gov/travel/scenic-byways/southwest/san-juan-skyway/ScenicByway-SanJuanInitiative-May2000> [accessed 07 Jul. 2020]
- www.dangerousroads.org, 2020. *dangerousroads* [online] Available at: [www.dangerousroads.org/](http://www.dangerousroads.org/) [accessed 05 Jun. 2020]
- www.dangerousroads.org, 2020. *24-Zig Road, a winding hairpinned mountain drive in China* [online] Available at: [www.dangerousroads.org/asia/china/4630-24-zig-road.html](http://www.dangerousroads.org/asia/china/4630-24-zig-road.html) [accessed 14 Jun. 2020]
- www.dangerousroads.org, 2020. *Mount Cook Road, an absolute must for coastal road lovers* [online] Available at: <https://www.dangerousroads.org/australia-and-oceania/new-zealand/5826-mount-cook-road.html> [accessed 16 Jul. 2020]
- www.dangerousroads.org, 2020. *Over-Water-Highway, one of the World's Most Scenic Roads* [online] Available at: <https://www.dangerousroads.org/asia/china/5810-over-water-highway.html> [accessed 06 Jul. 2020]
- www.dangerousroads.org, 2020. *Paso de los Libertadores, an Andean pass from Chile to Argentina* [online] Available at: <https://www.dangerousroads.org/south-america/chile/77-paso-de-los-caracoles-chile.html> [accessed 16 Jul. 2020]
- www.dangerousroads.org, 2020. *Sa Calobra Road, nicknamed "The Snake" by the inhabitants* [online] Available at: <https://www.dangerousroads.org/europe/spain/1554-sa-calobra-road-spain.html> [accessed 30 Jun. 2020]

## Uncredited and Additional Internet References

---

- www.dangerousroads.org, 2020. *Simplonpass, an iconic road in the Swiss Alps* [online] Available at: <https://www.dangerousroads.org/europe/switzerland/3470-simplonpass.html> [accessed 20 Jul. 2020]
- www.deutsche-alpenstrasse.de, 2018. *Deutsche Alpenstraße – Route der bayerischen Originale*. [online] Available at: <https://www.deutsche-alpenstrasse.de/cdn/uploads/18-broschu-reda-a5-d-web.pdf> [accessed 29 Jun. 2020]
- www.dhr.virginia.gov, 1995. *Factsheet George Washington Memorial Parkway* [online] Available at: [https://www.dhr.virginia.gov/wp-content/uploads/2018/04/029-0228\\_George\\_Washington\\_Memorial\\_Parkway\\_1990\\_Final\\_Nomination.pdf](https://www.dhr.virginia.gov/wp-content/uploads/2018/04/029-0228_George_Washington_Memorial_Parkway_1990_Final_Nomination.pdf) [accessed 20 Jul. 2020]
- www.dioezese-linz.at, 2020. *Pfarre Ebensee* [online] Available at: <https://www.dioezese-linz.at/pfarre/4061/pfarre/kirchenundgeschichte/article/19048.html> [accessed 28 Jul. 2020]
- www.fhwa.dot.gov, 2020. *Boston Post Road* [online] Available at: <https://www.fhwa.dot.gov/candc/factsheets/boston-postroad.pdf> [accessed 20 Jul. 2020]
- www.fhwa.dot.gov, 2020. *Mount Vernon and George Washington Memorial Parkways* [online] Available at: <https://www.fhwa.dot.gov/candc/factsheets/mtvernongwmemorialparkways.pdf> [accessed 20 Jul. 2020]
- www.fhwa.dot.gov, 2020. *National Road/Route 40* [online] Available at: <https://www.fhwa.dot.gov/candc/factsheets/nationalroadroute40.pdf> [accessed 20 Jul. 2020]
- www.fhwa.dot.gov, 2020. *Route 66* [online] Available at: <https://www.fhwa.dot.gov/candc/factsheets/route66.pdf> [accessed 20 Jul. 2020]
- www.fhwa.dot.gov, 2020. *The D.C. Freeway Revolt and the Coming of Metro* [online] Available at: <https://www.fhwa.dot.gov/highwayhistory/dcrevolt/part10.pdf> [accessed 19 Jul. 2020]
- www.fjordtours.com, 2020. *Serpentinen der Stalheimskleiva* [online] Available at: <https://www.fjordtours.com/de/aktivitaeten-in-norwegen/sehenswuerdigkeiten/stalheimskleiva-haarnadelkurven/> [accessed 08 Jul. 2020]
- www.gerlosstrasse.at, 2020. *Gerlospass und Gerlos Alpenstraße* [online] Available at: <https://www.gerlosstrasse.at/gs/de/gerlosalpenstrasse/diegeschichte> [accessed 01 Jul. 2020]
- www.goldeck-panoramastrasse.at, 2020. *Die Goldeck Panoramastraße* [online] Available at: <https://www.goldeck-panoramastrasse.at/gp/de/goldeckstrasse/diegoldeckstrasse> [accessed 01 Jul. 2020]
- www.houseofswitzerland.org, 2019. *The legend of the Gotthard pass*. [online] Available at: <https://www.houseofswitzerland.org/swissstories/history/legend-gotthard-pass> [accessed 10 May 2020]
- www.iceman.it, 2016. *Ötzi, der Mann aus dem Eis* [online] Available at: <https://www.iceman.it/de/oetzi-der-mann-aus-dem-eis/> [accessed 06 May 2020]
- www.infrastructure.gov.au, 2020. *History of Rail in Australia*. [online] Available at: <https://www.infrastructure.gov.au/rail/history.aspx> [accessed 05 May 2020].
- www.krimmler-tauernhaus.at, 2020. *Tradition und Geschichte* [online] Available at: <https://www.krimmler-tauernhaus.at/krimmler-tauernhaus/tradition-geschichte/> [accessed 29 Jun. 2020]
- www.losapos.com, 2020. *Transfagarasan: world's best road trip according to Top Gear* [online] Available at: <https://www.losapos.com/transfagarasan.html> [accessed 13 Jun. 2020]
- www.mlit.go.jp, 2020. *History* [online] Available at: [https://www.mlit.go.jp/road/road\\_e/q1\\_history.html](https://www.mlit.go.jp/road/road_e/q1_history.html) [accessed 10 Apr. 2020]
- www.myswitzerland.com, 2020. *Simplon Pass* [online] Available at: <https://www.myswitzerland.com/en-us/experiences/simplon-pass/> [accessed 20 Jul. 2020]
- www.myswitzerland.com, 2020. *Via Gottardo* [online] Available at: <https://www.myswitzerland.com/en-ch/experiences/route/viagottardo-1/> [accessed 20 Jul. 2020]
- www.myswitzerland.com, 2020. *Zahlen und Fakten zur Grand Tour of Switzerland*. [online] Available at: <https://www.myswitzerland.com/de-at/erlebnisse/erlebnisfahrten/auto-motorrad-grand-tour/fakten-zur-grand-tour-of-switzerland/zahlen-fakten/> [accessed 01 Jul. 2020]

## Uncredited and Additional Internet References

---

- www.nasjonaleturistveger.no, 2020. *Atlantehavsvegen* [online] Available at <https://www.nasjonaleturistveger.no/no/turistvegene/atlantehavsvegen> [accessed 13 Jun. 2020]
- www.nasjonaleturistveger.no, 2020. *Sognefjellet* [online] Available at: <https://www.nasjonaleturistveger.no/en/routes/sognefjellet> [accessed 20 Jul. 2020]
- www.nasjonaleturistveger.no, 2020. *Storberget – nytt stoppepunkt langs Nasjonal turistveg i Havøysund* [online] Available at <https://www.nasjonaleturistveger.no/no/presse/nyheter/tittel-storberget-nytt-stoppepunkt-langs-nasjonal-turistveg-havoysund> [accessed 13 Jun. 2020]
- www.nasjonaleturistveger.no, 2020. *Turistvegernes særpreg* [online] Available at: <https://www.nasjonaleturistveger.no/no/presse/turistvegernes-saerpreg> [accessed 01 Jul. 2020]
- www.nationalparkregion-schwarzwald.de, 2020. *Schwarzwaldhochstraße* [online] Available at: <https://www.nationalparkregion-schwarzwald.de/Geschichte-Historie/Schwarzwaldhochstrasse> [accessed 29 Jun. 2020]
- www.nationaltrust.org.uk, 2020. *Humphry Repton: the first landscape gardener*. [online] Available at: <https://www.nationaltrust.org.uk/features/humphry-repton-our-first-landscape-gardener> [accessed 31 May 2020]
- www.nockalmstrasse.at, 2020. *Erlebnis Nockalmstraße* [online] Available at: <https://www.nockalmstrasse.at/na/de/index> [accessed 01 Jul. 2020]
- www.olmsted.org, 2020. *The Olmsted Firm - An Introduction*. [online] Available at: <https://www.olmsted.org/the-olmsted-legacy/the-olmsted-firm/an-introduction> [accessed 03 Jul. 2020]
- www.pc.gc.ca, 2019. *A brief history of the Icefields Parkway* [online] Available at: <https://www.pc.gc.ca/en/pn-np/ab/jasper/activ/itineraires-itineraries/promenadesdesglaciers-icefieldsparkway/PGHistoire-IPhistoire> [accessed 26 Jun. 2020]
- www.quaeldich.de, 2020. *Pico del Veleta (3384 m)* [online] Available at: <https://www.quaeldich.de/paesse/pico-del-veleta/> [accessed 15 Jul. 2020]
- www.raurisertal.at, 2020. *Glocknerwallfahrt* [online] Available at: <https://www.raurisertal.at/de/region/tradition-brauch-tum/glocknerwallfahrt/> [accessed 29 Jun. 2020]
- www.rhb.ch, 2020. *UNESCO Welterbe RhB*. [online] Available at: <https://www.rhb.ch/de/erlebniswelt-bahn/unesco-welterbe-rhb> [accessed 29 May 2020]
- www.roadex.org, 2020. *Environmental issues related to road management* [online] Available at: <https://www.roadex.org/e-learning/lessons/environmental-considerations-for-low-volume-roads/environmental-issues-related-to-road-management/> [accessed 19 Jul. 2020]
- www.sahistory.org.za, 2020. *George, Garden Route – Western Province* [online] Available at: <https://www.sahistory.org.za/place/george-garden-route-western-province> [accessed 16 Jul. 2020]
- www.scenicbyway.jp, 2020. *Introduction into the scenic byways of the Hokkaido Route* [online] Available at: <http://www.scenicbyway.jp/> [accessed 01 Jul. 2020]
- www.schwarzwaldplus.de, 2020. *Panoramastraße im Schwarzwald* [online] Available at: <https://www.schwarzwaldplus.de/schwarzwald/schwarzwaldhochstrasse-die-panorama-strasse/> [accessed 29 Jun. 2020]
- www.silvretta-bielerhoehe.at, 2020. *Silvretta-Hochalpenstraße – die Traumstraße für Genießer* [online] Available at: <https://www.silvretta-bielerhoehe.at/de/Silvretta-Hochalpenstrasse> [accessed 30 Jul. 2020]
- www.sn.at, 2020. *Alpenstraße (Salzburg)* [online] Available at: [https://www.sn.at/wiki/Alpenstra%C3%9Fe\\_\(Salzburg\)](https://www.sn.at/wiki/Alpenstra%C3%9Fe_(Salzburg)) [accessed 29 Jun. 2020]
- www.sn.at, 2020. *Gaisbergbahn* [online] Available at: <https://www.sn.at/wiki/Gaisbergbahn> [accessed 29 Jun. 2020]
- www.sn.at, 2020. *Gaisberg Landesstraße* [online] Available at: [https://www.sn.at/wiki/Gaisberg\\_Landesstra%C3%9Fe](https://www.sn.at/wiki/Gaisberg_Landesstra%C3%9Fe) [accessed 10 Apr. 2020]
- www.thehenryford.org, 2015. *Ford's Model T: A Car for the Great Multitude*. [online] Available at: <https://www.thehenryford.org/explore/blog/fords-model-t> [accessed 23 Jun. 2020]
- www.tibettour.org, 2020. *Sichuan Tibet Highway – A Dangerous yet Alluring Road You May Want to Explore* [online] Available at: <https://www.tibettour.org/how-to-get-to-tibet/sichuan-tibet-highway.html> [accessed 20 Jul. 2020]

## Uncredited and Additional Internet References

---

- www.tibettravel.org, 2020. *Tibet Vista* [online] Available at: [www.tibettravel.org/](http://www.tibettravel.org/) [accessed 14 Jun. 2020]
- www.timmelsjoch.com, 2020. *Eine Nord-Süd-Verbindung mit großer Geschichte* [online] Available at: <https://www.timmelsjoch.com/de/timmelsjoch-geschichte/> [accessed 01 Jul. 2020]
- www.timmelsjoch.com, 2020. *Vom Saumpfad zu Tirols schönster Panoramastraße* [online] Available at: <https://www.timmelsjoch.com/de/timmelsjoch-strassenbau/> [accessed 01 Jul. 2020]
- www.tourismchile.com, 2004. *History of the Carretera Austral* [online] Available at: [http://www.tourismchile.com/guide/austral\\_north\\_road/articles/675](http://www.tourismchile.com/guide/austral_north_road/articles/675) [accessed 19 Jul. 2020]
- www.traunsee-almтал.salzkammergut.at, 2020. *Löwendenkmal* [online] Available at: <https://traunsee-almтал.salzkammergut.at/oesterreich-poi/detail/430001961/loewendenkmal.html> [accessed 28 Jul. 2020]
- www.travelsupermarket.com, 2020. *Snow mobile: Five great European ski driving routes* [online] Available at: <https://www.travelsupermarket.com/en-gb/blog/inspiration/five-great-ski-driving-routes/> [accessed 09 Jul. 2020]
- www.tt.com, 2018. *Über Brenner fahren dreimal mehr Lkw als über alle Schweizer Alpen* [online] Available at: <https://www.tt.com/artikel/15152446/ueber-brenner-fahren-dreimal-mehr-lkw-als-ueber-alle-schweizer-alpen> [accessed 07 Jul. 2020]
- www.unesco.at, 2020. *Semmeringebahn*. [online] Available at: <https://www.unesco.at/kultur/welterbe/unesco-welterbe-in-oesterreich/semmeringebahn> [accessed 29 May 2020]
- www.vam.ac.uk, 2020. *The evolution of European motorways 1920 – 2020*. [online] Available at: <https://www.vam.ac.uk/articles/the-evolution-of-european-motorways-1920-2020> [accessed 01 Jul. 2020]
- www.viastoria.ch, 2020. *Kulturwege Schweiz*. [online] Available at: <https://www.viastoria.ch/kulturwege-schweiz/> [accessed 10 May 2020]
- www.viastoria.ch, 2020. *Via Gottardo – Entdeckungen abseits der Transitroute*. [online] Available at: <https://www.viastoria.ch/kulturwege-schweiz/viagottardo/> [accessed 10 May 2020]
- www.villacher-alpenstrasse.at, 2020. *Die Geschichte der Villacher Alpenstraße* [online] Available at: <https://www.villacher-alpenstrasse.at/va/de/villacheralpenstrasse/diegeschichte> [accessed 08 Apr. 2020]
- www.visitnorway.com, 2020. *Sognefjellet National Tourist Route* [online] Available at: <https://www.visitnorway.com/listings/sognefjellet-national-tourist-route/5167/> [accessed 20 Jul. 2020]
- www.webuildvalue.com, 2020. *Trans-African Highway: Roads and Railways to make cargo move*. [online] Available at: <https://www.webuildvalue.com/en/infrastructure/trans-african-highway-roads-and-railways-to-make-cargo-move.html> [accessed 10 July 2020]
- www.youtube.com, 2020. *Amazing engineering: Stunning aerial view of Yaxi expressway in SW China* [online] Available at: <https://www.youtube.com/watch?v=OQpB-XuZA2U> [accessed 06 Jul. 2020]



