Chapter 1

INTRODUCTION: GERMANY AND ITS AUTOBAHN

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A German thinks of planting trees whenever he hears the word *Kultur*.[1]

– Eugen Rosenstock-Huessy (1938)

Together with *Kindergarten*, *Blitzkrieg*, and *Angst*, autobahn (pl. autobahnen) is one of a handful of German words that have migrated into the English language. Driving along one of these multilane, limited-access highways arouses in many foreign visitors feelings that vacillate between awed amazement at this efficient transportation machine and anxiety over the absence of speed limits. A few car dealerships in the United States, from Boston to the San Francisco Bay Area, even call their establishments "Autobahn USA" or "Autobahn Motors," in the hope, evidently, of generating higher sales by invoking the German road network. Recently, one American author even called for an "American autobahn" with no speed limit.[2] The electronic pop music band Kraftwerk made a major contribution to the ambivalent assessment of this technological artifact stretching over thousands of kilometers with its 1974 song "Autobahn": by using the most modern musical techniques to portray a fast-paced road trip, it surrounded the autobahnen with the aura of a modern sheen and cool technoromanticism.

Observers versed in history, however, tend to see in the German autobahnen and their external effects a thicket of motivations, myths, and interpretations. The spectrum ranges from false Internet rumors about the supposed military reasons behind the roadways (the aftereffects of Nazi propaganda legends), to personal driving experiences and even academic controversies. Many of the popular myths have been debunked by scholarship: the autobahnen did not serve primarily military purposes, nor did they solve the problem of unemployment to the degree the Nazis claimed. Yet the context of their creation left a lasting imprint. Like few other European technologies, these roadways have a

prominence that has a special link to Europe's turbulent history in the twentieth century in general, and to Germany in particular. Indeed, the specific shape they took is inconceivable without this context. Drawing on models from Italy and the United States, Hitler's Nationalist Socialist dictatorship assigned high priority to the long-dormant autobahn project during the first years of the regime. The autobahnen were elevated into a central icon of the Nazi State and its dictator as "Reichsautobahnen" and "Adolf Hitler's Roadways"; a massive propaganda campaign on many levels, from cigarette cards to art exhibitions, implanted the roadways and their cultural significance into the memory of several generations. After the Second World War and Germany's liberation, the autobahnen lay upon the German landscape like a hollow relic of past megalomania, until they were reinterpreted—in a more subtle but no less effective process—into central corridors of the economic reconstruction of a Western democracy.

Such efforts at interpretation and reinterpretation are the topic of the present book. It does not claim to be a comprehensive cultural or technological history of the autobahnen. Instead, using a central aspect of these roadways, it analyzes their changing social and professional meaning between 1930 and 1970 in two political systems, the Nazi dictatorship and the Federal Republic of Germany: at the center of the analysis is the relationship of the autobahnen to the landscape surrounding them and shaped by them. Especially under the Nazis, autobahn planners proclaimed that they were successfully reconciling nature and technology in the form of the roadways and were creating a model for a nature-friendly technology. Looking back today, it seems peculiar that roads were praised, beginning in the 1930s, as paths (literally) to open up nature. Yet that was precisely the claim advanced by the planners. By examining these claims, their cultural and political content, and the various strategies—successful or not—to implement these proposed designs, I seek in the present study to make a contribution chiefly to the history of technology and the environment, but also to German history in general. It is also my hope to raise the awareness of historians that landscapes—both their idea and reality—are phenomena subject to historical change.

Though historians of Germany have much to learn from paying attention to the autobahn as the largest peacetime infrastructure project of the National Socialists and its changing role in postwar Germany, little research on it has been published, at least in English. It is not only historians of technology who will find roads, like other infrastructure technologies, a highly rewarding field of research for investigating the relationship between technology and society. As the material realization of societal ideas, goals, and norms, they reflect their roots and the conflicts over their creation: they are thus 'socially constructed technology,' a phrase that many historians of technology have been using for nearly two decades.[3] At the same time, and no less importantly, such technologies reverberate back upon the societies in which they are embedded, whether through utilization, interpretation, or mythologization. Environmental historians also can benefit from such studies. As we shall see, the roadways in question represented, in the intention of the planners and for many users and interpreters, a window

upon nature, and in the process they created landscapes. Nature, however, is not simply one of the most dazzling concepts of the Western imagination, but also a social fact that is constantly renegotiated.

A study of roads offers environmental historians a chance to explore, in all its complexity and subtlety, an important facet of the closely interconnected relationship of technology and nature. Especially in the United States, the notion of "wilderness"—historically inaccurate but culturally potent—has caused roads to be seen as intruders into untouched nature. Reality, whether in America or Europe, is more complicated and therefore more rewarding of study. Roads imparted to cultural landscapes shaped by people, forces, and institutions another layer of human activity; these alterations of the cultural landscape triggered vigorous debates and various design proposals. Examining such plans and structures is therefore an important topic for environmental history. The concept of cultural landscapes will be examined more deeply in the next chapter.

The present book also seeks to help overcome the previous thematic narrowing of some parts of environmental history to nature-protection movements. Especially in Germany, social actors such as landscape architects, with their own professional and aesthetic ideas and increasing state support, were often more important in carrying out their agendas than were environmentalists organized into relatively small groups and peripheral state bureaucracies. However, historians have paid much more attention to the latter than the former.

It is my hope, furthermore, that this book will address important aspects of the history of Germany in the twentieth century. Alongside the already-mentioned symbolic function of the roadways for the National Socialist dictatorship, the social history of the planners and of their clashing conceptions for the autobahnen is well worth a closer look. The discussion over the relative modernity of National Socialism, a debate that was prominent in the 1990s and keeps flaring up, offered a starting point for this study, as did the examination of the question regarding continuities and discontinuities of professional elites between Nazi Germany and the Federal Republic; I chose the period from 1930 to 1970 to answer that question. With different goals and political systems, both the Nazi dictatorship and the postwar republic used the autobahn to advance their particular versions of modernity.

Finally, the book seeks to contribute to the current discussion about the "green Nazis," that is, the question of whether, and if so to what degree, the Nazi regime was open to ideas today regarded as environmentally friendly, and they implemented corresponding policies.[4] Because the builders of the autobahnen claimed to have found an environmentally compatible technology, they have become prime exemplars in this debate. Michael Prinz and Rainer Zitelmann use the roadway's supposed closeness to nature as an example in their politically dubious attempt to claim National Socialism for modernity. But even authors who have other political or scholarly motivations have maintained to this day that the landscape history of the autobahnen is a success story. For Anna Bramwell and Jost Hermand, the roadways and the constellations of personnel to

which they gave rise are evidence of a "green wing" in the NSDAP. William Rollins speaks in this context of a remarkable ecological sensibility. For Simon Schama, as well, it is a fact, however "painful to acknowledge," that National Socialism was "environmentally conscientious."[5] As the present study will show, such conclusions are premature, at best.

Even Gert Gröning and Joachim Wolschke-Bulmahn, landscape architects who, in numerous publications, uncovered their discipline's connections to National Socialism, which had been suppressed as late as the 1980s, saw the involvement of landscape architects in the construction of the autobahnen primarily as evidence for the closeness and ideological convergence between landscape architecture and National Socialism. This iconoclastic and personalizing approach serves a professional discipline's need for self-reassurance. While these references to landscape planning and nature protection before 1945 were certainly a benefit to historical scholarship, they illustrate the limitations of an approach that is engaged primarily in unmasking prominent figures in the field at the expense of contextualization.[6] These studies also fail to examine to what extent the ideas of landscape architects were realized, and whether the claimed closeness between landscape architecture and National Socialism was in fact as constant and consistent as contemporary pronouncements suggest. This weakness affects also the otherwise useful media history of the National Socialist autobahn by Erhard Schütz and Eckhardt Gruber, and the anthology edited by Rainer Stommer.[7]

These authors relied for the most part on the printed sources of the regime in studying the landscape of the autobahnen as a successful project, ignoring along the way the tension-filled history of their planning and construction. Archival sources allow us to paint a more precise and revealing picture of these roadways, thus offering a more nuanced account of their importance to the ideology of National Socialism and the reality of its regime. First approaches in this direction came from the classic work by Karl-Heinz Ludwig and the study by Annette Nietfeld, though both were limited to primary sources available in West German archives. The bulk of governmental sources on the building of the autobahn, however, remained in East Germany after 1945; an analysis of autobahn construction published in that country in 1975 took little interest in the landscape aspects of the roadways.[8] The present study drew not only on the now freely accessible files of the Reich government, but for the first time also on the extensive and informative papers of the Nazi autobahn's chief landscape architect, Alwin Seifert, and what I found there often contradicted Seifert's boastful and self-serving autobiography. The examination of these sources and the use of the landscape concept allowed for a more complex analysis. To put it in greatly oversimplified terms, I have found for the National Socialist autobahnen a declining importance of nature protection and a contradictory amalgam of technocratic planning and attempted landscape management, very much in contrast to authors like Rollins, for whom the autobahn, especially, is evidence of the regime's pro-environment attitude. An analysis that is based on the sources

not only reveals the contradictions between intention and actual construction; even on the level of intentions, the simple clarity of propaganda conceals a clash of concepts, ideas, and goals. These conflicts carried over into the planning and building of the roadways and were not resolved by 1945.

During the first two decades of the Federal Republic, the autobahnen were reinterpreted from "Adolf Hitler's Roads" into a modern transportation infrastructure. Civil engineers were able to create professional continuity through methodological discontinuity, and to do so they engaged in their own kind of politics about the past. In the federal administrative system of the Federal Republic, and in the face of the trend to put construction methods on an increasingly scientific footing, the role of landscape architects was severely curtailed.[9]

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An important goal of this book is to encourage historians to engage themselves more intensively with landscapes. The concept of "landscape" is back in fashion. Since the 1990s, scholars in the humanities and social sciences in Germany have devoted themselves more fully than before to the unwieldy construct of landscape, a spatial, cultural, natural, and also human phenomenon. This upswing is generating reissues of classic prewar works, stimulating new studies on the literary history of landscape, and leading this field of research out of its German defensiveness.[10] Compared to Great Britain and the United States, where "landscape studies" appear more frequently on the academic stage, though not in a leading role, the extent of the interest in landscape in Germany is still modest. It is sufficiently large, however, to address a central aspect of landscape: the technical formation and appropriation of landscape. Without being able to lay out this complex in all its breadth, the present book examines the relationship between landscape and technology by looking at a single example in the realm of transportation.

Let me make the axiomatic statement that transportation and landscape shape each other. The transportation infrastructures of the modern era discovered, partially defined, and always changed the landscapes they transected. Landscapes through which traffic moved were thus turned into landscapes of transportation. Transportation is far more than the economic and material mechanism by which persons and goods move about; rather, for passengers, airplane travelers, and motorists, it includes an experience of landscapes of various kinds. The historical changes in this process are what the present study examines.

In my approach, such landscapes of transportation are understood equally as technological and social constructions. This means, first of all, that these landscapes were by no means the inevitable result of an inherent logic. On the contrary: social groups with identifiable ideologies and interests determined the shape and cultural perception of landscapes. In other words, it is not possible to separate the production of knowledge about transportation and landscape as well as the planning and construction of roads from the level of their cultural meaning. As I will argue, the culturally charged phenomenon of landscape is especially well-suited to examining this interconnection of technology and culture. I will not attempt to probe into the essence of landscape and its specifically German manifestation (if

such a thing exists), nor do I seek to analyze *the* experience of landscape in transportation. By the same token, I have not endeavored to write a complete history of the politics and construction of the projects that are mentioned. Rather, this is an attempt to render landscape manageable as a topic of study in the historical sciences, and to test this approach on one example.

The inherently banal statement that most experiences of landscape in the twentieth century were mediated technologically is one of the starting points for the present work. Whether through the train window, motorcycle goggles, or the windshield: in a motorized land like Germany, the ideas and experiences of nature are largely shaped by driving, traveling, and commuting. These everyday landscapes are no less memorable than tourist destinations. To put it more pointedly: what is of interest here is less the gaze from the top of the Alps, but rather the historically evolved, mobile gaze at the peaks of the Alps, at suburbs and noise barriers. In that respect the attention will rest on the everyday landscapes that are involuntary components of travel for passengers and drivers. Yet these landscapes are not accidental creations (let alone technically determined); instead, they are the result of historical decision-making processes based on an ideologically motivated assignment of values and on social conflicts. As we shall see, landscape was always contested and overlaid with various normative signs, and in that respect it was the opposite of a realm free of civilization that Romanticism had made of it. In this study, landscape functions as the stage and rhetorical resource for the clashes between various social groups such as motorists, civil engineers, conservationists, and landscape architects. These social groups competed for prestige, influence, and the power to define and shape the criteria of landscape; in the case of engineers and landscape architects, there was also a quarrel over where to draw the boundaries of institutions and their own disciplines. Who decided whose conception of landscape and transportation would be articulated, heard, and implemented? This question is one point of departure for this study. For the purpose of this book, landscape is therefore not a fixed entity with roots outside society, but a cultural product that must be continually redefined.

A growing overlap: history of technology and environmental history

Over the past few years, the two subdisciplines of history of technology and environmental history have drawn increasingly close, especially in the United States. That was not always so: the most recent détente was preceded by attempts to draw lines of epistemological and institutional separation. While the history of technology began to establish itself at American universities beginning in the 1950s, environmental history has institutionalized itself only during the last twenty-five years. The fact that both areas of research have a substantial overlap in methodology has been a topic of considerable discussion for only a very short time. According to a summary, elements common to both fields are city and environment, industry and natural resources, as well as the use of energy,

water, and land.[11] In Germany, by contrast, the history of technology had been established as a discipline for decades when (West German) historians of the field published the first articles on the "historical study of the environment" in the early 1980s. This suggests that German historians of technology saw environmental history as a positive challenge in their own field of research, while in the United States there was a tendency toward institutional boundary-drawing and mutual disinterest, which were overcome only in the 1990s.[12] Bridges were built especially by those representatives of the two fields who drew inspiration from the methods of historical geography or who studied cultural representations of nature and technology.[13]

One obstacle along the way was the apparent epistemological clash between technology and environment. At first glance, these two realms are categorically distinct, the one representing that which is made by human hand (technology), the other that which lies outside of humanity (nature). However, this simplistic polarity is not very useful for historical studies that examine human action and perception in nature. Rather, it would seem that humans, technology, and nature are best studied as elements of a continuum. Relevant to environmental history are encounters and exchanges between what appear to be clearly and categorically separate groups. Most interesting in this regard seem to be the overlap and gray zones between nature and technology, where sharp demarcations lose their effectiveness and historical complexity is preferable to binary simplifications.[14]

There is also the added fact that it seems epistemologically highly problematic to use nature as a yardstick for evaluating human action.[15] The concept of a wilderness devoid of humans is clearly just as unsuitable for studying the natural environment. More sustainable, for example, is the definition introduced by Joachim Radkau: environmental historians study how humans influence their conditions of life and reproduction and respond to changes. In the process, environmental history pays special attention to the unintended long-term consequences of human action.[16]

It should be briefly noted that the German methodological debate about what nature is and how one can grasp it as an environmental historian has a history of its own. Environmental history as practiced in Germany has never lacked such methodological differentiations until now. To put it somewhat pointedly, one might even say that a period of delayed self-reflectiveness on the part of German environmental history is only now coming to an end. In view of the difficulty of defining "environment or nature," one practicing environmental historian has warned of a "loss of the subject."[17] Although nature seems to resist definition, this diversity of perspectives is by no means damaging: "It seems pointless to search for a specific definition; 'nature' clearly signals multifarious and complex experiences. The term 'nature' embodies history, and its substance is perhaps best explained in stories. Those stories would presumably revolve around the connection between the human way of life and the environment."[18]

One of the stories is the redefinition and shaping of landscapes for transportation. On the one hand, transportation routes have been dominated, ever since

the Enlightenment, by the "ideology of circulation," which transcends space and whose goal is the exchange of persons, goods, and ideas. On the other hand, this circulation simultaneously levels local peculiarities and older cultural landscapes. By embracing this field of tension, the methodological convergence of technology history and environmental history is best suited to approaching the phenomenon of transportation landscapes.[19]

Transportation history: the system of mobility

At the same time, this study aims to make a contribution to the modern history of transportation. Unlike the study of individual carriers, this history seeks to look at transportation as a social, economic, cultural, and technological system, thus trying to integrate itself into the general discipline of history.[20] In the process, transportation history has given rise to various research areas, some of which are represented in this study. As one example, I will mention transportation policy as the focal point where decisions are made about the allocation of financial resources and about investment policies, but also as the regulatory force in the transportation sector. A number of studies on this theme exist. Furthermore, cities have attracted attention as the historical locus where transportation and traffic are concentrated.[21]

Overarching, comparative research approaches that transcend disciplinary boundaries are strongly represented in this subfield of the historical sciences. And the connection to current transportation and traffic planning is something that the discipline of history can at least point to. Because of the potential of existing transportation systems to shape society, and because of the long duration of transportation investments once they have been made, history is present in what happens every day in the realm of transportation and traffic. Behaviors, economic structures, spatial relationships, and cultural practices are all products of and preconditions for the emergence of a specific transportation system. Such historically mediated connecting effects are especially apparent when the discussion in contemporary transportation planning touches on the relationship between traffic and the environment. It would make no sense to deny the role of automobile traffic in today's environmental problems. Millions of dead and injured, millions of tons of pollutants, the effects of urban sprawl cemented in place by the automobile and its infrastructures, with consequences that extend all the way to the health care system—these are the only too-visible downsides of the automobilization of many societies, especially in the second half of the twentieth century.[22]

These observations are not intended as normative guidelines for the present study, however; against this background it is all the more remarkable that wide segments of the public shared the view that roads during the interwar period were able to help improve nature. Here we are not dealing merely with an irony of history, where the unintended side effects trumped the original intentions. Rather, this hoped-for reconciliation of landscape and technology through a certain kind

of road construction is, in and of itself, a historical product whose context has far too long remained unclear within historical scholarship. In attempting such a contextualization on various levels, I hope to impart a new twist to Rosenstock-Huessey's caustic remark about the Germans and their trees by looking at the trees along the side of the road.

Notes

1   Eugen Rosenstock-Huessy, *Out of Revolution. Autobiography of Western Man* (Providence, RI/Oxford, UK, 1993 [orig.1938]), 423.

2   Mark Rask, *American Autobahn: The Road to an Interstate Freeway with no Speed Limit* (Minneapolis, 1999).

3   The locus classicus for the social positioning of technology is Wiebe E. Bijker, Thomas Parke Hughes, and T.J. Pinch, eds., *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology* (Cambridge, Mass, 1987). However, this volume shows little interest in the environmental aspects of technological change.

4   Franz-Josef Brüggemeier, Mark Cioc, and Thomas Zeller, eds., *How Green Were the Nazis? Nature, Environment, and Nation in the Third Reich* (Athens, Ohio, 2005); Joachim Radkau and Frank Uekötter, eds., *Naturschutz und Nationalsozialismus* (Frankfurt/Main and New York, 2003). On the more general debate see Riccardo Bavaj, *Die Ambivalenz der Moderne im Nationalsozialismus. Eine Bilanz der Forschung* (Munich, 2003).

5   Rainer Zitelmann and Michael Prinz, eds., *Nationalsozialismus und Modernisierung* (Darmstadt, 1991); Anna Bramwell, *Ecology in the 20th Century: a History* (New Haven, 1989); Jost Hermand, *Grüne Utopien in Deutschland. Zur Geschichte des ökologischen Bewußtseins* (Frankfurt/Main, 1991); William Rollins, *A Greener Vision of Home: Cultural Politics and Environmental Reform in the German Heimatschutz Movement, 1904–1918* (Ann Arbor, 1997); idem, "Whose Landscape? Technology, Fascism, and Environmentalism on the National Socialist Autobahn," *Annals of the Association of American Geographers* 85 (1995): 494–520. With a similar tendency: Dietmar Klenke: "Autobahnbau und Naturschutz in Deutschland. Eine Liaison von Nationalpolitik, Landschaftspflege und Motorisierungsvision bis zur ökologischen Wende der siebziger Jahre," in *Politische Zäsuren und gesellschaftlicher Wandel im 20. Jahrhundert. Regionale und vergleichende Perspektiven*, ed. Matthias Frese and Michael Prinz (Paderborn, 1996), 465–498. Simon Schama, *Landscape and Memory* (New York, 1995), 119–120.

6   Gert Gröning and Joachim Wolschke-Bulmahn: *Die Liebe zur Landschaft. Teil I: Natur in Bewegung. Zur Bedeutung natur- und freiraumorientierter Bewegungen der ersten Hälfte des 20. Jahrhunderts für die Entwicklung der Freiraumplanung* (Munich, 1986); *Die Liebe zur Landschaft. Teil III: Der Drang nach Osten. Zur Entwicklung der Landespflege im Nationalsozialismus und während des Zweiten Weltkrieges in den "eingegliederten Ostgebieten"* (Munich, 1987); *Grüne Biographien. Biographisches Handbuch zur Landschaftsarchitektur des 20. Jahrhunderts in Deutschland* (Berlin, 1997).

7   Erhard Schütz and Eckhard Gruber, *Mythos Reichsautobahn. Bau und Inszenierung der "Straßen des Führers" 1933–1941* (Berlin, 1996). Rainer Stommer, ed., *Reichsautobahn. Pyramiden des Dritten Reiches. Analysen zur Ästhetik eines unbewältigten Mythos* (Marburg, 1982).

8   Karl-Heinz Ludwig, *Technik und Ingenieure im Dritten Reich* (Düsseldorf, 1979); idem, "Politische Lösungen für technische Innovationen 1933–1945. Eine antitechnische Mobilisierung,

Ausformung und Instrumentalisierung der Technik," *Technikgeschichte* 62 (1995): 333–344, 336; Annette Nietfeld, "Reichsautobahn und Landschaftspflege: Landschaftspflege im Nationalsozialismus am Beispiel der Autobahnen," Diploma thesis, Technische Universität Berlin, 1985. Karl Lärmer, *Autobahnbau in Deutschland* (Berlin: Akademie, 1975). Judging from the sources I have examined in the present study, the biography by Seidler depicts Todt in too positive a light: Franz W. Seidler, *Fritz Todt. Baumeister des Dritten Reiches* (Berlin, 1986). Important from an economic perspective are Hansjoachim Henning, "Kraftfahrzeugindustrie und Autobahnbau in der Wirtschaftspolitik des Nationalsozialismus 1933–1936," *Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte* 65 (1978): 217–242; Richard J. Overy, "Cars, Roads, and Economic Recovery in Germany, 1932–1938," in his *War and Economy in the Third Reich* (Oxford, 1994), 68–89.

9   By setting 1970 as the terminus of the present study, I was able to use the files of the Federal Transportation Ministry in the Bundesarchiv in Koblenz up to that year; because of the restrictive period that applies in Germany, the files from the years after that were not available to me.

10   Rudolf Borchardt, *Der Deutsche in der Landschaft* (Frankfurt, 1989 [orig. 1925]; Friedmar Apel, *Deutscher Geist und deutsche Landschaft. Eine Topographie* (Munich, 1998); Richard Muir, *Approaches to Landscape* (Lanham, Md., 1999) (on the weak foothold of "landscape studies" see xiii–xiv). For an examination from the perspective of cultural studies see Stefan Kaufmann, ed., *Ordnungen der Landschaft. Natur und Raum technisch und symbolisch entwerfen* (Würzburg, 2002).

11   Jeffrey K. Stine and Joel A. Tarr, "Technology and the Environment: The Historian's Challenge," *Environmental History Review* 18 (1994): 1–7; eidem, "At the Intersection of Histories. Technology and the Environment," *Technology and Culture* 39 (1998): 601–640. Additional titles in the Internet version of this article: http://www2.h-net.msu.edu/environ/historiography/ustechnology.htm, accessed 15 January 2005.

12   This view is supported by the fact that the (German-speaking) Society for the History of Technology (*Gesellschaft für Technikgeschichte*) chose "Nature and Technology" as the theme for its first conference in 1992. On the historiography see Norman Fuchsloch, "Einführung in 'Methodenfragen der Umweltgeschichte,'" in *Umweltgeschichte-Methoden, Themen, Potentiale*, ed. Günter Bayerl, Norman Fuchsloch, and Torsten Meyer (Münster, 1996), 1–12. Outside the purview of the present study is the question of why environmental history in Germany—in contrast with the United States—less often crosses the threshold of institutionalization in professorships within history departments.

13   William Cronon, *Nature's Metropolis. Chicago and the Great West* (New York and London, 1991); David E. Nye, *American Technological Sublime* (Cambridge, Mass., 1994); William Irwin, *The New Niagara. Tourism, Technology, and the Landscape of Niagara Falls, 1776–1917* (University Park, PA, 1996); Mark Fiege, *Irrigated Eden. The Making of an Agricultural Landscape in the American West* (Seattle and London, 1999). The classic work is by Leo Marx, *The Machine in the Garden. Technology and the Pastoral Ideal in America* (London, Oxford, and New York, 1964).

14   Rolf-Peter Sieferle, "Einleitung: Naturerfahrung und Naturkonstruktion," in *Natur-Bilder. Wahrnehmungen von Natur und Umwelt in der Geschichte*, ed. Rolf-Peter Sieferle and Helga Breuninger (Frankfurt and New York, 1999), 9–18; Richard White, *The Organic Machine* (New York, 1995), ix–xi; idem, "'Are You an Environmentalist or Do You Work for a Living?': Work and Nature," in *Uncommon Ground: Rethinking the Human Place in Nature*, ed. William Cronon (New York, 1996), 171–185.

15   The philosophical position which says that an epistemic anthropocentrism is unavoidable seems plausible: Ruth and Dieter Groh, "Natur als Maßstab-eine Kopfgeburt," in *Zum Naturbegriff der Gegenwart*, publ. by Landeshauptstadt Stuttgart, Kulturamt (Stuttgart-Bad Canstatt, 1994), vol. 2, 15–37; eidem, *Weltbild und Naturaneignung. Zur Kulturgeschichte der Natur* (Frankfurt/Main, 1991); Hans Lenk, "Der Macher der Natur? Über operativistische Fehldeutungen von Naturbegriffen der Neuzeit," in *Natur als Gegenwelt. Beiträge zur Kulturgeschichte der Natur*, ed. Götz Großklaus and Ernst Oldemeyer (Karlsruhe, 1983), 59–86.

16 William Cronon, "The Trouble with Wilderness; or, Getting Back to the Wrong Nature," in Cronon, *Uncommon Ground*, 69–90; Joachim Radkau, "Was ist Umweltgeschichte?," in *Umweltgeschichte. Umweltverträgliches Wirtschaften in historischer Perspektive*, ed. Werner Abelshauser (Göttingen, 1994), 11–28, 20–21. Review of the literature: Joachim Radkau, "Technik- und Umweltgeschichte," *Geschichte in Wissenschaft und Unterricht* 48 (1997): 479–497, 50 (1999): 250–258, 356–384; Arne Andersen, "Umweltgeschichte. Forschungsstand und Perspektiven," *Archiv für Sozialgeschichte* 33 (1993): 672–701; Verena Winiwarter, *Was ist Umweltgeschichte?* (Vienna, 1998); Joachim Radkau, *Nature and Power: A Global History of the Environment*, trans. Thomas Dunlap (Cambridge, forthcoming).

17 Franz-Josef Brüggemeier, *Das unendliche Meer der Lüfte. Luftverschmutzung, Industrialisierung und Risikodebatten im 19. Jahrhundert* (Essen, 1996), 10.

18 Radkau, "Was ist Umweltgeschichte?," 14. See also the by-now-classic statement of Raymond Williams: "The idea of nature contains, though often unnoticed, an extraordinary amount of human history"; quoted in William Cronon, "Introduction: In Search of Nature," in Cronon, *Uncommon Ground*, 23–56, 25.

19 Rosalind Williams, "Nature Out of Control: Cultural Origins and Environmental Implications of Large Technical Systems," in *Cultures of Control*, ed. Miriam R. Levin (Amsterdam, 2000), 41–68.

20 Barbara Schmucki, "Automobilisierung. Neuere Forschungen zur Motorisierung," *Archiv für Sozialgeschichte* 35 (1995): 582–597; Thomas Kühne, "Massenmotorisierung und Verkehrspolitik im 20. Jahrhundert: Technikgeschichte als politische Sozial- und Kulturgeschichte," *Neue Politische Literatur* 41 (1996): 196–229; Hans-Jürgen Teuteberg, "Entwicklung, Methoden und Aufgaben der Verkehrsgeschichte," *Jahrbuch für Wirtschaftsgeschichte* (1994): 173–194; Helmuth Trischler and Hans-Liudger Dienel, "Geschichte der Zukunft des Verkehrs. Eine Einführung," in *Geschichte der Zukunft des Verkehrs. Verkehrskonzepte von der Frühen Neuzeit bis zum 21. Jahrhundert*, ed. eidem (Frankfurt and New York, 1997), 11–39, 14–15; Wilfried Reininghaus, "Verkehr und Region," in *Verkehr und Region im 19. und 20. Jahrhundert. Westfälische Beispiele*, ed. Wilfried Reininghaus and Karl Teppe (Paderborn, 1999), 1–43; Christoph Maria Merki, "Die verschlungenen Wege der modernen Verkehrsgeschichte," *Schweizerische Zeitschrift für Geschichte* 45 (1995): 444–457; idem, "Unterwegs in unwegsamem Gelände. Historische Straßenverkehrsforschung in der Schweiz," *Traverse* 6, No. 2, (1999): 37–54; Michael Hascher and Stefan Zeilinger, "Verkehrsgeschichte Deutschlands im 19. und 20. Jahrhundert. Verkehr auf Straßen, Schienen und Binnenwasserstraßen. Ein Literaturüberblick über die jüngsten Forschungen," *Jahrbuch für Wirtschaftsgeschichte* (2001): 165–183; Christopher Kopper, *Handel und Verkehr im 20. Jahrhundert* (Munich, 2002).

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