

EXCEPTIONALISM IN EUROPEAN ENVIRONMENTAL HISTORY

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“Don’t be afraid to say you don’t know,” is one of the rules which Oliver Rackham, the British forest historian, proposes in his provocative manner for historians of the environment.¹ I will try to heed this advice. Therefore, as I set out ten theses, they should be understood as cautious hypotheses about some open questions. My subject, the problem of Europe’s special path (*Sonderweg*) in environmental history, appears rather ambitious; it is difficult to grasp. Moreover, the comparison between Europe, the New World, and the Third World is burdened with prejudices. By analyzing questions of this kind, one is moving on shaky ground. It is not even certain whether Europe as a whole is an appropriate unit for environmental history because in several respects the Mediterranean is a region of its own which has had characteristic environmental problems throughout its history.

In this paper, “Europe” means first and foremost Western and Central Europe, the earliest centers of industrial development. In what sense Mediterranean Europe, too, belongs to my concept of Europe or whether the whole Mediterranean should be understood as a particular environmental region remains an open question. My paper seeks to examine the connection between environmental conditions and the industrial revolution. In general, I have the impression that Western and Central Europe since medieval times can indeed be considered an environmental unit in some important respects.

But, to be sure, in many other respects the units of environmental history are much smaller, and the progress of knowledge depends on field research in these small areas. Large-scale overviews always run the risk of constructing history out of preconceived assumptions, not solid research. On the other hand, mere field studies are frequently not able to identify the truly distinctive traits of a specific region, as the comparison with other regions is missing. Important particularities of European environmental history have not been adequately recognized because of the lack of comparison with non-European regions. Reading recent works on American, Indian, or Chinese environmental history, one gets surprising insights into characteristically European features of the relationship be-

tween man and nature. Therefore, a worldwide comparison can be justified because of the services it offers to regional research.²

1. A Plea for Caution in Regard to the Spiritual Approach

In his Christmas lecture in 1966, which became the starting point and a sort of holy text for environmental history, Lynn White Jr. assigned the Judeo-Christian religion a prominent place among the “historical roots of our environmental crisis.” “Especially in its Western form,” he declared, “Christianity is the most anthropocentric religion the world has seen. . . . Christianity, in absolute contrast to ancient paganism and Asia’s religions . . . not only established a dualism of man and nature but also insisted that it is God’s will that man exploit nature for its proper ends.” Modern science and technology, the immediate causes of modern alienation from nature, have—in the words of Lynn White—“grown out of Christian attitudes toward man’s relations to nature.”³ This statement has deeply influenced the environmentalists’ view of Western civilization in comparison with the old civilizations of the East. The history of religion and of spiritual movements seemed to be the royal road to writing environmental history in a world-wide perspective and overcoming the immense complexity of the material world.

Eugen Drewermann, a popular German ex-priest, presented a similar view in his German bestseller, *Der tödliche Fortschritt—Von der Zerstörung der Erde und des Menschen im Erbe des Christentums* (Deadly Progress—On the Destruction of Earth and Mankind within the Christian Heritage). “The religion of Israel,” he states, “has remained, after all, a desert religion which . . . has never been able to perceive the earth as good-natured and warm like a Great Mother.”⁴ The recent cultural turn within the social sciences seems to have endowed the spiritual approach with a new attractiveness in environmental matters as well.⁵ But this might in the end turn out to be a blind alley. I fear it is an illusion to believe that the history of religion offers a clear and simple structure for a world history of the relationship between humankind and nature. Religion is not an autonomous force in history. In this regard, historians have much to learn from the writings of Clifford Geertz. In a comparison of the cultural appearance of the Islamic religion in Morocco and Indonesia, Geertz discovered fundamental differences that stood in connection with ecological contrasts. “Intensive, extremely productive wet rice cultivation has provided the main economic foundation” of the culture of Java, he writes; “and rather than the restless, aggressive, extroverted (Moroccan) sheikh husbanding his resources . . . , the national archetype is the settled, industrious, rather inward plowman of twenty centuries, nursing his terrace. . . . In Morocco civilization was built on nerve; in Indonesia, on diligence.”⁶

Elsewhere he warns of drawing direct conclusions about everyday behavior from religious ideas: "But no one, not even a saint, lives in the world religious symbols formulate all of the time, and the majority of men live in it only at moments."⁷

To be sure, religion is no trifling matter in environmental history. But it makes little sense to tear some seemingly environmentalist elements of religion, such as "Mother Earth," out of the greater context. The meaning of religion for the practical relationship between man and nature can only be discovered by analyzing everyday religious culture, not merely by contemplating its basic religious ideas. In this way, the imagined contrast of "East" and "West" becomes blurred; a much more complicated picture emerges instead.

The "dominium terrae" ("Subdue the Earth!") commandment of the Judeo-Christian god has had no clear practical meaning throughout history, contrary to the opinion of some environmental historians. In early modern times a human responsibility for nature and the duty of animal protection was deduced from this commandment, which was understood within its biblical context. Did Christianity remain a desert religion in the agrarian West? Certainly not, if one looks not only at the Bible, but also at popular religion, at the stories of the saints, the festivals of the church. Everywhere, one finds traces of the traditional agrarian world. And it is hardly a coincidence that on the whole, modern environmentalism is most widespread in Protestant countries.

On the other hand, were the great Eastern religions really non-anthropocentric? Did they really promote a brotherly relationship toward nature?⁸ Herbert Franke, one of the leading German historians of China, made statements of this kind about Chinese religious and spiritual traditions; but this view has been vigorously attacked by Gudula Linck. "Yin and Yang—forget it." According to Linck, the old Chinese veneration of unspoiled nature was not a mirror of reality, but a resigned sigh from isolated individuals who retired from public life.⁹ Above all, the publications of Mark Elvin have debunked the myth of Chinese harmony with nature through the millennia.¹⁰

The widespread belief among environmentalists that rescue will come from non-Western cultures is not well-founded. It is quite easy to find overwhelming evidence for an anthropocentric attitude toward nature not only in the history of the West, but in the history of the East as well. It is not here that we find the key to the unique European path in environmental history. To be sure, this is not to say: "Forget religion as a driving force in environmental history!" Perhaps we need a new Max Weber to discover intimate links between Protestantism and modern environmentalism. But even between Protestant Europe and Protestant America there exist remarkable differences in environmental history.

2. Outlines of an Institutional Approach to Environmental History

If we look at institutional aspects of environmental history, we arrive on more solid ground.¹¹ In this context, I conceive the term “institution” in the broad sense of the institutional school of economics; as comprising not only administrative bodies and established organizations, but also rules and customs fixed for a long time. My basic philosophy is very simple: It is not ideas and individual actions that are of decisive importance in the evolution of the human treatment of nature, but rather the lasting patterns of everyday collective behavior and the institutions that generate and perpetuate those patterns.

I would argue that on this level, a distinctive European path can be recognized most clearly and concretely, though some open questions will remain. The management of environmental problems in Europe has been deeply influenced over the centuries by old European traditions of *Verrechtlichung*—regulation by law—dating back to Roman times. In the pluralistic European political tradition, where different sources of law always existed, law has frequently been a subject of discussion and controversy. Law was not only imposed by an omnipotent ruler, but was also conceived as something an individual could use to fight against the ruler. For over five hundred years, the forest communities (*Markgenossenschaften*) of the Tyrolean peasants instituted legal proceedings against the Habsburg government in order to preserve their *jus regulandi silvas*; and in the end, in 1847, they won.¹² I have the impression that it would be difficult to discover similar stories in other regions of the world—it seems that there was not even the hint of such stories. The basic conditions of environmental history have been deeply imprinted by this long-time process of legal regulation.

One could propose a hypothesis that contradicts this finding: Are institutions of this kind really so important for the treatment of nature in the course of history? Did the really decisive things not happen on a level below these institutions, on the level of the domestic economy? There is some truth in this view. Until the nineteenth, even twentieth century, the basic units of environmental behavior in most regions of the world were very small: the family, the house, the farm, the neighborhood. Until modern times, the environmental advantage gained by European traditions of legal regulation was probably not very considerable. But at least since the eighteenth century, it has been growing along with the increasing complexity of environmental problems that could no longer be regulated sufficiently within the framework of a domestic economy. The sound management of woodlands, of water resources, of pasture, and of urban problems demanded more and more institutional regulation.

In this context, we should take notice of another important point: The growth of effective institutions which are founded upon everyday behavior needs a lot of time; it cannot happen as a quick reaction to a sudden state of emergency. In the leading European countries, industrialization was—at least in comparison with the rest of the world—a relatively slow process that lasted several generations. Therefore, Europe had a better chance than many other regions of the world to build institutions that acted as a certain counterbalance against the negative side effects of industrialization.

Perhaps the greatest achievement of research on environmental history so far has been the rediscovery of the immense number of environmental conflicts in the urban regions during the period of early industrialization in the nineteenth and early twentieth centuries. At least in Germany, the most impressive research has mainly been done in this area.¹³ But on the whole, the results are highly ambiguous. On the one hand, the reader is impressed by the broad scope of early environmentalist concern; on the other hand, one may be irritated by the lack of immediate and effective action against the obvious pollution of the environment. An institutionalist approach would probably be fruitful here and help advance discussion. Instead of asking the question “Was environmental protest successful or not?” one might ask: “In what way were institutions of environmental management influenced or shaped by this protest?” In this way, environmental history need not remain an endless lament. Repeated environmental protest has frequently had an institutional effect in the long run. Sometimes, the most difficult problems are not the lack of any practical measures, but the new environmental issues created by certain kinds of temporarily successful environmental management, for instance by waterworks, organized reforestation, major projects for cleaning up the cities, or nuclear energy as a remedy for the depletion of limited fossil energy resources.

The most important European success story told by the institutionalist school of economic history is the development of reliable property rights, but it is not certain whether the rise of private property was a success story in environmental history. In the era of subsistence economy, well-established property and inheritance rights may have been the best way to conserve the fertility of the soil. But under the conditions of unlimited and worldwide capitalist dynamism, unrestricted private property rights tend to become an environmental risk. Thus, the European path has definite drawbacks: even institutions that have been rather successful for a long time may become detrimental under changed conditions. Today, African agrarian scientists are complaining about the hypertrophy of private property rights in the European legal tradition: “Traditional legal doctrine sanctifies the property rights of the individual

against the state, but perceives hardly any objection to the individuals appropriating more and more property rights at the expense of the public's larger interest in environmental resources as the common property of all."¹⁴

Yet it seems that the emphasis on private property rights is not the whole European tradition. The development of certain kinds of collective loyalties belongs to the European heritage as well, though it is difficult to say whether they are particularly European. Above all, the nation-state has been an invention with far-reaching environmental consequences. Environmental history as a whole is always much more than environmental history in the narrow sense of the word.

3. Balance and Imbalance Between Field and Pasture

For the biologist, there is a clear and simple natural foundation of Eurasian superiority: the domestication of big mammals, especially cattle and horses.¹⁵ This success alone does not explain European superiority over the Asian civilizations, from where most European domesticated animals originated. But Eric L. Jones is probably right that in early modern times there was already a quantitative European advantage in regard to large animals. "Europeans commanded more working capital per head than Asians, mainly in the form of livestock. . . . They brought more draught animals to bear on their fields than the Chinese and stronger, better-fed ones than the Indians."¹⁶ Long before the industrial revolution, the peoples of Western and Central Europe—of "carnivorous Europe"—probably had more sources of energy and calories available to them than most Asians, if we disregard nomadic peoples. This holds true for water power, too, if we think of the multitude of rivers that were water-bearing year-round, which were the driving force of the tens of thousands of water mills that were a distinctive trait of Central and Western European development and landscape since medieval times. Therefore, the origins of Europe's special path in environmental history as well as in the history of technology can be traced far back into premodern times.

The use of large mammals for cavalry and the deep plough certainly gave Europeans a military and economic advantage, but did it stabilize the agrarian ecosystem? A pastoral economy frequently leads to overgrazing and the destruction of woodlands. In many regions of the world there is an ancient tension between peasants and herdsmen, especially in the Asian regions that suffered from nomadic invasions. But even in European history there are many instances of hostility between agricultural and pastoral cultures. Most famous is the case of the Spanish Mesta, the powerful shepherds' organization that invaded the fields by means of royal privileges and neglected the interests of the peasantry. In the view

of Douglass C. North and Robert P. Thomas, both pioneers of the institutionalist school of economics, the Mesta is the striking negative proof of the power of institutions in the course of economic history.¹⁷ Whether the Mesta had a similarly detrimental effect on the environment is not certain. Modern Spanish environmentalists are becoming enthusiastic about the biodiversity upon the *camínadas*, the old paths of transhumance.

Be that as it may, compared with the Mediterranean and with many other regions of the world, Western and Central Europe are, on the whole, characterized by relatively successful combinations of farming and herding, and that means by a relatively well-organized material flux in agriculture combined with high ecological reserves. To be sure, the balance was frequently far from perfect, but up to the nineteenth century, this balance tended to improve. This equilibrium was of decisive importance for the improvement of agricultural sustainability because prior to the introduction of chemical fertilizers, the conservation of the fertility of the soil depended on the use of animal manure. In this regard, there were significant differences between many regions of the world. This is a subject that deserves the special attention of environmental historians. With respect to manuring practices, there was even a striking contrast between the old agricultural regions of Europe and most Yankee farms in North America, which exploited the abundance of land without much care for maintaining fertility. European peasants had known since medieval times that they inhabited an area of limited resources.

The balance between field and pasture depended on institutions: the three year crop rotation system, the wood and pasture commons (*Allmende*), and contracts between peasants and pastoralists. For this reason, an institutional approach might be fruitful in analyzing the ecology of traditional agriculture as well. Nowadays, institutions of this kind are lacking. The old principle of balance between agriculture and pastoralism has been forgotten. Today, in the era of chemical fertilizers and highly specialized agriculture, the awareness of one of the most important elements of ecological stability in human existence has nearly disappeared.

4. The Western European Marriage Pattern

There is a widespread and well-founded opinion that overpopulation and population pressure on resources—sometimes abbreviated as PPR—is the most important environmental stress coefficient in history. This view has not remained unchallenged. The main counterargument notes that “overpopulation” is an inexact term susceptible to ideology, that the most densely populated countries are in many cases the wealthiest ones, and that population growth frequently enforces several forms of intense agriculture that are more sustainable than the old slash-and-burn econo-

mies. There is some truth in this counterargument. Environmental history cannot be reduced to mere demographic history. Chinese wet rice agriculture offers the best known example of population growth creating an economy with relatively high ecological stability. But Chinese history also offers impressive evidence that an agricultural system that encourages unlimited population growth carries a great ecological risk in the long run.

What are the characteristics of European reproductive behavior in comparison with other cultures? To be sure, there is no simple answer that does justice to all regions and historical periods. In his famous work, *Les paysans de Languedoc*, Emmanuel Le Roy Ladurie describes how the peasants of southern France repeatedly stumbled into the Malthusian trap of overpopulation and famine during medieval and early modern times. But in Western Europe, bad experiences of this kind ultimately contributed to a learning process. From the Middle Ages on, there was a peasant maxim, "No land, no marriage."¹⁸ This maxim did not limit the number of children within marriage, but in the course of centuries, clear signs of fertility control emerged.

The question whether the story of birth control is a happy story of sexual know-how or a sad story of infanticide and sexual repression is one of the great unsolved mysteries of history. Be this as it may, this story exists. David Grigg remarks that "the seventeenth century is of greatest importance for the widening of the demographic options." "In the first place . . . , it saw the appearance of the West European pattern of late marriage and a comparatively high proportion [of] unmarried [people]."¹⁹ And this is not the end of the story. Fernand Braudel observes about eighteenth-century France: "Contraception by coitus interruptus is spreading like an infectious disease and is gaining more and more adherents."²⁰ It is curious to see how this famous historian disapproved of the environmental wisdom of his own people in this regard. At the end of the nineteenth century, doctors warned that coitus interruptus might lead to physical or mental illnesses. But a German farmer coolly replied: "I don't believe that. Otherwise everybody would be sick."²¹

It is an interesting problem whether reproductive patterns of this kind can be explained by the institutional approach. From the eighteenth century until today, the state and its institutions have frequently favored population growth and opposed contraception and other birth control practices. It was society that tacitly but stubbornly resisted the political encouragement of population growth. Sometimes, historians should look for a tacit environmental reason by reading between the lines of the sources and for informal institutions of society independent from government policy. The hidden passive reserves left over by birth control probably have been (and are) one of the most important elements of

ecological stability in the past and the present. The precarious environmental situation of a country like China at least since the eighteenth century seems to demonstrate the dilemma of a land which has lost a great deal of its soil reserves.

5. Continuity, Sustainability, and Self-Sufficiency

Donald Worster has declared that he is deeply skeptical of the term “sustainable development,” which the 1992 Rio Conference named as the supreme environmentalist goal for the world economy. Worster dislikes this term in politics as well as in environmental history because he suspects that “sustainability” is simply a catchword designed to justify the unrestrained exploitation of nature. From his point of view, the preservation of untouched nature is a better goal than “sustainable development.”²² It is easy to understand his skepticism when one bears in mind the American experience in which sustainable development has never been a historical reality over a longer period. However, for an analysis of the environmental history of Europe, the criterion “sustainability” makes more sense. If there is a continuity of villages, towns, and institutions over a long period combined with a sedentary mentality as it existed in many parts of Europe—but also, to be sure, in Asian regions—then a history of sustainability can make sense. And the chances of a genuine sustainable management of resources are greater when there is a high degree of local self-sufficiency and limited dependence on external forces. It seems that many parts of Europe were characterized since medieval times—if not since antiquity—by a relatively high degree of continuity and local and regional autonomy.²³ When reading the famous stories of the rise of European commerce, one should not forget that most European regions lived mainly on their domestic resources until the nineteenth or even twentieth centuries. This self-sufficiency applied at least to the most important resources, grain and firewood.

The traditional German term for “sustainability,” *Nachhaltigkeit*, stems from forestry; in this area, it comprises a history of several hundred years—to be sure, a history which reveals much of the ambiguity and the manipulative possibilities of that concept.²⁴ But there is no better alternative even today.

It is significant that the goal of *Nachhaltigkeit* has a peculiarly long tradition in some Central European saline forests. As early as 1661, the chancellor of Reichenhall, an old Bavarian salt-works city, stated: “God created the woodlands for the salt-water spring, in order that the woodlands might continue eternally like the spring. Accordingly shall the men behave: They shall not cut down the old trees before the young trees have grown up.”²⁵ In these words, sustainability appears as a secular form of

eternity that endows human things with an affinity to God. The condition for this kind of sustainability was the autonomous saline town, which needed huge masses of wood, which lived on its own forest resources, and which was accustomed to having salt-works running constantly over many centuries. In many mining towns there was no such spirit of sustainability because of the violent ups and downs of the mines.

The interior regions of Asia raise the interesting question of whether there is perhaps a different type of sustainability, a sustainability connected with discontinuity and mobility—a nomadic type of sustainability. Under the conditions of many steppe regions, settlement leads eventually to overgrazing and to desertification. The question of whether the nomadic economy is sustainable or not is still controversial, all the more so since it has political consequences for the treatment of nomadic tribes.²⁶ A definitive and general answer is not possible. One should probably distinguish between planned and inherent sustainability. The latter was as a rule more typical of traditional societies than the former. But there seems to be growing evidence that nomadic peoples not only adapted themselves to the conditions of the steppe, but, to a certain degree, *created* the steppe by the destruction of woodlands and sometimes even of agriculture. Surely, many nomads had a kind of soil awareness, but they had no methods for improving the soil, and they defined their status by the possession of livestock, not of land. At least under modern conditions, it seems that the future belongs to the sustainability of the sedentary peasant, not to that of the nomad.

6. Forest and Power

Especially for the last decade, we have become remarkably well informed about many chapters of East and South Asian environmental history. Just take the two well-done, recently published anthologies on China and India/Southeast Asia, both products of cooperation between Western and Asian scholars: *Sediments of Time* and *Nature and the Orient*.²⁷ These are based on extensive regional research, most of which has been little known in Europe up until now. Because of this new abundance of information, a comprehensive comparison between “East” and “West” in environmental matters has become much more complicated than at the time of Lynn White’s Christmas speech in 1966, and whoever studies this new mass of literature may doubt whether a well-founded comparison will be at all feasible in the future. But in the end, one point seems to be even clearer than before: With regard to the institutional treatment of forests, there has been—for at least five hundred years—a fundamental difference between China and India on the one hand and Western and Central Europe on the other. Since the late Middle Ages the protection of forests

has been a manifestation of political power in Europe; in Asia, however, it has not. One would hardly expect that the environmental history of the world contains major features which are so distinctive, but as far as I can see, the evidence is overwhelming.

One may also find a love of trees in ancient Chinese literature, and certain traditions of forest protection existed in China, too. Nicholas K. Menzies has investigated these traditions: the imperial hunting reserves, the Buddhist temple and monastic forests, the Cunninghamia groves of some peasant communities, among others. But on the whole it remains clear that these examples were exceptional. "The trend of government policy during the late Imperial period was to open land for settlement and to permanent agriculture, not to exclude the population." Therefore, "administrative authority was rarely exercised to reserve forested land as government property," as was the case with many European governments.²⁸ Not the conservation of forests, but the clearing of forests was a manifestation of power in Asian cultures. "Traditional Chinese thought exhibited a definite bias against forests and the cultivation of trees," observes Eduard B. Vermeer. "Forest areas were seen as hideouts for bandits and rebels, beyond the reach of government authority, where uncivilized people lived their wretched lives without observing the rules of property. In this view, the clearance of forests and agricultural reclamation brought safety and political and cultural progress."²⁹ Although this attitude was widespread in Europe too, since late medieval times it stood in competition with a better appreciation of the forests.

In India, traditions of forest protection may have been somewhat better developed than in China; but on the whole, the situation seems to have been similar. It is true that an anthology on Indian forest history starts with the forest protection edict of the Mahrat King Shivaji of about 1670 A. D.: ". . . The mango and jack trees in our own kingdom are of value to the Navy. But these must never be touched. This is because these trees cannot be grown in a year or two. Our people have nurtured them like their own children over long periods. If they are cut, their sorrow would know no bounds."³⁰ But in all the literature so far available, this edict appears rather unique. Apart from the Indian tradition of cultivating mango and other fruit trees, the edict does not refer to any institutional traditions of forest protection. Madhav Gadgil and Ramachandra Guha, the authors of an "ecological history of India," praise the alleged traditional Indian harmony with nature, but they, too, do not present any sources on forest protection in pre-colonial India.³¹ (Or do these sources exist in the archives of the Mughal period, but written in old Persian which most Indian historians do not read?) The contrast to the immense mass of forest protection documents in Central and Western Europe from the sixteenth century on could hardly be sharper.

The causes are manifold. Often the royal passion for hunting is said to have been the main motivation for European forest protection. But I believe that the high value of the woodlands for pasture—which lasted from prehistoric times until the nineteenth century—might be even more important. Here again, livestock seems to be at the core of the problem. For governments, shipbuilding was, as a rule, the primary interest that made forest protection a matter of utmost priority, whether in sixteenth-century Venice, in medieval Portugal, in Colbert's France or in John Evelyn's England. (Even in early Ming China, the building of a fleet gave a uniquely strong though transitory impetus to a gigantic reforestation project.³²) Another strong force for institutional control of woodcutting came from the mining interests, as long as wood and charcoal were the energy base of mining and smelting. The peasants have frequently been charged with being the enemies of the forest; but this accusation was a one-sided evaluation from the perspective of governmental forestry. The peasants had their own woodlands for pasture, firewood, and building, woodlands which from the forester's viewpoint might have been of inferior quality, but were superior in regard to biodiversity.³³

My argument can be challenged with the question whether the sharp institutional contrast between East and West in the treatment of forests truly corresponds to a contrast in actual practice. Was it really the forest laws and forest administrations that protected the woodlands rather than unwritten customs and the interests of the people? I admit this is a difficult problem still full of open questions. Many historians of forests frequently give the impression that the true history of forest laws is the history of the violation of these laws. Forest history often has been written as the history of forest destruction, at least before the great reforestation movement of the nineteenth century.

In my earlier work, I have repeatedly discussed this pessimistic kind of premodern forest history. It is a complicated matter, and a general evaluation is hardly possible. But in any case, there are good reasons to be cautious with many forest destruction stories in Europe.³⁴ Oliver Rackham has repeatedly ridiculed these stories, remarking that the deforestation storytellers forgot the simple fact "that trees grow again."³⁵ At least in most Western and Central European regions the forest easily regenerates itself even without artificial reforestation; limiting the human use of the forest is enough. Under conditions of this kind, governmental forest protection could succeed with relative ease. The European tradition of institutionalized forest protection was surely favored by European ecology. But the decisive point was probably the fact that in spite of innumerable forest conflicts between government and peasants or other forest users, there was to a certain degree a common interest in the conservation

of the forests and—withstanding countless violations—a certain acceptance of the regulation of forest use in principle, if not in every case.

7. The Advantage of European Polycentrism

In the course of the present process of European unification, much hope is frequently placed in common European environmental policies. But even today, we often have to recognize that really effective environmental policies are usually best achieved within small nations like Denmark or the Netherlands. An effective consensus is best reached where society is relatively homogeneous and communication is not too complicated. The opinion that problems will be solved by European integration might therefore turn out to be a fundamental error. In the past, European polycentrism appears to have had considerable advantages in regard to the handling of environmental issues. The peculiar European process of legal regulation (*Verrechtlichung*) is conditioned by this polycentrism where every authority needs legitimation by law. Where, on the contrary, there is only one single authority far and wide, there is no strong pressure for legitimation, and no legal advantage can be obtained by individual engagement.

Even more important is another point. Effective environmental management can only be achieved by institutions that are not too far away from the site where action is demanded. Forest and water management—the two classic areas of governmental intervention in environmental matters—both present numerous historical examples of the advantage of tackling problems from nearby, not from a far-away capital. Even if the Chinese Emperor had been determined to protect the forests, he would not have been able to do so effectively because an appropriate forest policy can be organized only on a regional level, not on the level of a huge empire. In this regard, a comparison between China and Japan is instructive. Even though in Japanese cultural tradition a high estimation of woodlands does not seem to be more deeply rooted than in Chinese tradition, for strictly practical reasons Japanese institutions started a forest protection policy with remarkable effectiveness in the course of the eighteenth century.³⁶

In Europe, a comparison between France and Germany is informative. Under the strong administration of Colbert and his *grande ordonnance forestière* of 1669—Colbert even warned: “France will perish from lack of wood!”—France gained European leadership in forest policy, which it held throughout the eighteenth century. But in the long run, the French centralist system was not well adapted to forest problems. At the end of the eighteenth century, German states took the leadership in forestry.³⁷ This success was conditioned by German political polycentrism. In vari-

ous German states a plurality of regional approaches to forestry arose. It was the only way to obtain real practical progress. German nationalists complained about German particularism (*Zersplitterung*), but Wilhelm Pfeil (1783–1859), a leading Prussian teacher of forestry, emphasized that German scientific forestry was—in contrast to French forestry—“exclusively the product of the German partition into different countries.”³⁸ In this way, the rigid Prussian dogmatism of Hartig’s forestry rules was counterbalanced by other forestry schools that came out of the mixed forests of middle and southwest Germany.

The lessons of forest history could probably be transmitted to other areas of environmental policy. Consequently, one can doubt whether it is wise at the present time for many environmentalists to adopt the current “globalization” rhetoric, though it partly descended from the rhetoric of global ecological problems. There are indeed connections between environmentalism and “globalization.” The *causes* of many environmental problems have analogous structures all over the world, but the *solutions* frequently demand much local knowledge and appropriate regional methods.

8. A Green Revival of Wittfogel’s “Asiatic Mode of Production”

The theory of the “Asiatic mode of production,” also known as “Oriental despotism,” is thought-provoking, but does not have the best reputation. It was worked out by Karl August Wittfogel (1896–1988), who started as a German communist and finished as an American anti-communist, and the development of his theory was influenced by the great change in his life and outlook. Initially, it was an endeavor to apply Marxism to the history of non-European civilizations that produced neither feudalism nor capitalism; later on, it was used by Wittfogel as a weapon in the Cold War. The core of the theory is the following argument: Everywhere in the world where agriculture needs artificial irrigation on a large scale, there is little room for individual producers and a strong tendency toward bureaucratic centralism.³⁹ Wittfogel’s theory presented a political economy of totalitarian bureaucracy. At the same time, it offered an explanation for the fundamental difference between Western and non-European cultures. It is interesting to note that Douglass C. North adopted the Wittfogel theory as an impressive example of an institutional approach to economics, arguing that in this case economic institutions are generated by nature: “Wittfogel’s hydraulic society was in effect a natural monopoly, with economies of scale derived from the indivisibility of an integrated water system.”⁴⁰

In reality, however, the relationship between nature and institutions seems to be more complicated. For a long time, there has been a well-founded counterargument to Wittfogel. In most cases, even in India and China, irrigation can be managed on a local level. Natural conditions and the mode of production alone do not really enforce a central bureaucracy. The “Asiatic mode of production” is not based on simple natural causality.

Despite this argument, the problem is not yet settled. As Mark Elvin wrote to me: “[Wittfogel’s] ghost cannot be exorcized.” Undoubtedly, there is a historical connection between irrigation and power, though it does not consist of a simple causality. Arid regions did not, to be sure, create the *necessity* for establishing a central bureaucracy, but they did create the *possibility* for one. Even if local irrigation was sufficient, improved irrigation on a major scale could multiply the agricultural product. Central power was not enforced by natural conditions, but it could make itself indispensable through ambitious irrigation projects: through the building of waterworks as well as the subsequent demand for regulation; and, last but not least, through the demands of crisis management, because larger irrigation projects generated great risks. Big dams increased the risk of catastrophic floods if the dams failed at only one single point or if the masses of water became too powerful. Waterworks have to be supervised and repaired continuously in order to operate well. Drainage is as important as irrigation itself in order to avoid salinization and the spread of swamps and malaria. The central bureaucracies often legitimated themselves through the problems of big waterworks, but in the long run they were not able to solve these problems in an effective way. In Chinese imperial myth, the Emperor was the savior in the face of the big floods, but catastrophic floods recurred again and again. The inherent contradiction of the Asiatic mode of production originates from ecology, not so much from economy.

As a rule, it is difficult to isolate ecological causes in history, as they usually interact and work together with other forces. Peter Christensen summarizes the medieval downfall of Mesopotamia as follows: Plague and epidemic diseases made “visible the inherent environmental instability which I believe was the key factor in the decline of Mesopotamia. The large-scale colonization and expansion in Parthian and Sassanian times had created an ecological system extremely sensitive to the smallest disturbances.”⁴¹ But one should not forget that over a long period, irrigation systems offered a kind of stability by making peasants independent from the vagaries of the weather to a certain degree. The claim advanced by Clive Ponting and others that already the Sumerians had committed ecological suicide by irrigation with subsequent salinization does not correspond with the millenia of flourishing agriculture in Mes-

opotamia.⁴² The extensive irrigation networks contained problems similar to modern industrial systems. For a long time one is mainly aware of the advantages, while the full extent of the ecological trap becomes obvious only much later.

It seems that one characteristic feature of European environmental history is the absence of large-scale systems of field irrigation (not of small-scale systems of meadow irrigation). Eric L. Jones believes that this absence proved to be an advantage in the end. "The very impracticability of hydraulic agriculture freed a fraction of European energies for other purposes. The rainfall farmers of Europe might be fewer in number than the farmers of China and India, but the former spent less time on all aspects of farmwork than the latter spent on water control work alone."⁴³ In the long run, the lack of major irrigation was an element of ecological stability and likewise of individual autonomy. It is an irony of history—as Marc Reisner has pointed out⁴⁴—that in large parts of the arid American West, "Asiatic" conditions have emerged in the course of the twentieth century: a kind of agriculture totally dependent upon large irrigation networks which means dependence on governmental subsidies and threat of desertification. Reisner predicts that the agriculture of Arizona and California will have a fate similar to that of the agriculture of Mesopotamia. Under these conditions, the term "sustainable development" makes no sense.

9. Environmental Repercussions of European Colonialism

As to the ecological aspects of colonialism, we have two great works which have gained worldwide attention: Alfred W. Crosby's *Ecological Imperialism* and Richard H. Grove's *Green Imperialism*. Today, colonialism is one of the most discussed subjects in international environmental history. Nevertheless, the significance of colonial expansion for environmental developments in Europe has remained a neglected problem. Reading Crosby, one gets the impression that imperialism has been an ecological success story, at least from the European point of view. But Crosby does not tell the whole story. Europe not only colonized the New World with grain, cattle, and sheep, but was itself colonized with the potato, maize, and not least by the phylloxera which destroyed traditional European viticulture. The potato encouraged strong population growth and undermined European traditions of birth control which were weakened, too, by the chance to emigrate to America. Maize increased soil erosion and did not fit into the traditional crop rotation systems. Therefore, it seems that European ecology was not stabilized, but in some ways disturbed by colonialism.

Richard H. Grove discovered a lot of surprising indications that point to colonial origins of modern environmentalism. Is colonial history after all, at least seen from the environmentalist standpoint, a story with a happy ending? Considerable doubts remain. The history of ideas presented by Grove is not identical with a history of actions and real effects. But even the history of ideas seems to be ambiguous. If one carefully scrutinizes several important points in Grove's argument, one repeatedly discovers that the true origin of colonial environmental awareness lay in Europe, not in the colonies. Poivre looked at Asian agriculture with the eyes of a French physiocrat. Alexander von Humboldt's deforestation concerns presumably originated in his German homeland, where fears of that kind had become a real mass psychosis at the end of the eighteenth century.⁴⁵ In the spring of 1790, young Humboldt undertook a journey on the Rhine together with Georg Forster, then a famous world traveler. Forster's report contains long reflections on the imminent danger of wood shortage, which might cause northern peoples in the end to emigrate to the south.⁴⁶ In a recent publication, Grove himself has pointed out that Hugh Cleghorn, one of the founding fathers of Indian forestry, and several other pioneers of colonial environmentalism were influenced by their Scottish background, by the experience of a country "already made barren by the evils of the English."⁴⁷ The criticism of the ruthless soil exhaustion caused by North American farmers was inspired by the pattern of traditional European agriculture and the European agrarian reforms of the late eighteenth century.⁴⁸

On the whole, the effects of colonialism on the European environment do not appear to be fortunate. The following effect can be identified most clearly: The lack of a durable tradition of forest protection in leading colonial powers like Spain, the Netherlands, Great Britain, and even Denmark is apparently conditioned by the ease with which these countries were able to import masses of timber from their colonies or other regions of the world. In contrast, the German states developed scientific forestry at a time when Germany had no colonies and was forced to live on its own wood resources. Furthermore, the omnipotence of the Mesta in Spain during the sixteenth and seventeenth centuries is connected with the rise of Spanish colonialism. As for England, the mass import of Peruvian guano in the nineteenth century thwarted the efforts of agrarian reformers to improve the inherent sustainability of agriculture. The colonial world trade threatened the traditional European balance between field and pasture and nurtured the illusion of unlimited resources. The full consequences of this development, however, belong to the postcolonial period, which probably experienced the deepest ecological change in history.

10. A “European Miracle” in Environmental History?

In contrast to the pessimistic view of European culture that prevails in the spiritual approach to environmental history mentioned at the beginning, the institutional approach seems to present a European success story similar to the one told by Eric L. Jones in his *European Miracle*. But I fear this is not the end of history. In spite of all the achievements of environmental policies, there are no true grounds for optimism. Human institutions, even if they are effective, are never fully adapted to the complexity of environmental problems. One of the most impressive lessons of history has always been the insight that this very success may become the cause of decline in the long run.

To be sure, it was the relatively stable ecological conditions of Western and Central European soil and the relatively effective institutions of the countries in these regions that made the rise of industrial civilization possible. Only a region with rich wood and water resources and—at least to a certain extent—sustainable methods of forest utilization was able to enter a path of unlimited growth in energy-intensive industries with high water consumption. Coal did not start the industrial revolution. The pit-coal only carried on a development which had begun on the basis of charcoal and wood. Moreover, only countries with effective urban and national institutions capable of overcoming at least the worst damages caused by industry were able to make industrial development a self-sustaining and popular process. But sustainability remains an illusion in an economy that annually consumes the fossil resources that have grown over a period of a million years. Since the European path is marked by exceptional characteristics, it cannot become the model for the whole world. In some respects, it may not even be an appropriate model for the European future. Moreover, a part of the traditional foundations of European ecological stability, for instance the old combination of agriculture and animal husbandry, has been overtaken by modern developments. The stability of deep European soils is threatened by growing acidification, especially during the last decades.

Perhaps we should learn the lesson of Chinese environmental history, which is far better documented than any other non-European history. Mark Elvin described the history of the Chinese Empire as “three thousand years of unsustainable growth.”⁴⁹ Perhaps he goes too far in this harsh evaluation. The great anthology co-edited by Elvin, *Sediments of Time*, suggests that the environmental decline of China is fully documented only for the last three *hundred* years. Based on the present state of research, I prefer an interpretation of Chinese history which differs a little from Elvin’s. It seems to me that for many centuries, Chinese agriculture did indeed embody a high degree of ecological stability. This stability

was founded mainly on three elements: (1) the wet rice cultivation that in its traditional form needed little or no manure; (2) the highly elaborated system of terraces that stopped soil erosion; (3) the systematic use of “night soil,” of human excrement, for fertilization.

It was mainly the last point for which Justus von Liebig, the great chemist, praised the Chinese for being the wisest people on earth, because they gave back to the soil all they had taken away from it.⁵⁰ I presume that for a long time, a high degree of inherent sustainability did indeed exist in Chinese agriculture and may partly explain Chinese cultural continuity over the millennia. But it was precisely this stability that encouraged continuous population growth and concealed the elements of unsustainability: population pressure, deforestation, erosion, in marginal regions even desertification and, above all, the growing loss of ecological reserves. The environmental crisis of China might foreshadow the environmental crisis of Western civilization: a crisis aggravated precisely by its long-term success.

Notes

¹ Oliver Rackham, “The Countryside: History & Pseudo-History,” in *The Historian* 14 (1987): 16.

² This paper is based upon my *Natur und Macht—Eine Weltgeschichte der Umwelt* (Munich, 2000); enlarged paperback edition 2002.

³ Lynn White, Jr., “The Historical Roots of Our Ecological Crisis,” in *Science* 155, no. 3767 (March 1967): 1205ff. With a similar tendency, Rolf Peter Sieferle, “Europäische Traditionen im Umgang mit der Natur,” in *Europas Kulturen und ihr Umgang mit der Natur*, Mainauer Gespräche, vol. 14 (Insel Mainau, 1999), 17.

⁴ Eugen Drewermann, *Der tödliche Fortschritt*, 5th ed. (Freiburg, 1991), 73.

⁵ See, for instance, several contributions to *Europas Kulturen und ihr Umgang mit der Natur*, Mainauer Gespräche, vol. 14 (Insel Mainau, 1999).

⁶ Clifford Geertz, *Islam Observed: Religious Development in Morocco and Indonesia* (Chicago, 1971), 9ff.

⁷ Clifford Geertz, *Dichte Beschreibung: Beiträge zum Verstehen kultureller Systeme* (Frankfurt, 1995), 86.

⁸ Tenzin Choegyal, the junior brother of His Holiness the Dalai Lama, when asked by the author about environmentalist elements in Buddhism, emphasized that the aim of Buddhism is *not* human unification with nature, but on the contrary human deliverance from the material world! Peter Gerlitz, *Mensch und Natur in den Weltreligionen* (Darmstadt, 1998), arrives at a similar result for world religions in general.

⁹ Herbert Franke, “Geschichte und Natur—Betrachtungen eines Asien-Historikers,” in *Natur und Geschichte*, ed. Hubert Markl, (Munich, 1983), 51–69; Gudula Linck, “Die Welt ist ein heiliges Gefäß, wer sich daran zu schaffen macht, wird Niederlagen erleiden—Konfliktaustragung an der Natur während der Umbrüche in der chinesischen Geschichte,” in *Mensch und Umwelt in der Geschichte*, ed. Jörg Calließ et al., (Pfaffenweiler, 1989), 327–351.

¹⁰ See note 49; Mark Elvin, “The Environmental History of China: An Agenda of Ideas,” in *Asian Studies Review* 14 (1990): 39–77; Mark Elvin, “The Environmental Legacy of Imperial China,” in *The China Quarterly* 156 (Dec. 1998): 733–756.

- ¹¹ My institutional approach has some affinity to the organizational approach of Frank Uekötter with whom I had many discussions; see Frank Uekötter, "Confronting the Pitfalls of Current Environmental History: An Argument for an Organizational Approach," in *Environment and History* 4 (1998): 31–52.
- ¹² Heinrich Oberrauch, *Tirols Wald und Waidwerk: Ein Beitrag zur Forst- und Jagdgeschichte* (Innsbruck, 1952), 21. The particular Western character of this public sense of law has been stressed by the Russian liberal Bogdan Kistiakovsky, who stood in close connection with Max Weber in his criticism of Russian Intelligentsia, in *Vechi—Wegzeichen, Zur Krise der russischen Intelligenz*, ed. Karl Schlögel, (Frankfurt, 1990), 212–250.
- ¹³ See my review of the works of Arne Andersen, Franz-Josef Brüggemeier, Michael Stolberg, Ralf Henneking, Ulrike Gilhaus, Jürgen Büschenfeld, Peter Münch, et al. in *Geschichte in Wissenschaft und Unterricht* 50 (1999): 365–384.
- ¹⁴ J. B. Ojwang with Calestous Juma, "Towards Ecological Jurisprudence," in *In Land We Trust: Environment, Private Property and Constitutional Change*, ed. Calestous Juma and J. B. Ojwang, (Nairobi, 1996), 321.
- ¹⁵ Jared Diamond, *Guns, Germs and Steel* (London, 1997), 174ff; Marvin Harris, *Kannibalen und Könige* (Stuttgart, 1990), 145ff.
- ¹⁶ Eric L. Jones, *The European Miracle: Environment, Economies, and Geopolitics in the History of Europe and Asia* (Cambridge, 1981), 4.
- ¹⁷ Douglass C. North and Robert P. Thomas, *The Rise of the Western World: A New Economic History* (Cambridge, 1973), 4, 86, 129, 131.
- ¹⁸ Angus McLaren, *A History of Contraception* (Oxford, 1990), 141.
- ¹⁹ David Grigg, *Population Growth and Agrarian Change: An Historical Perspective* (Cambridge, 1980), 289.
- ²⁰ Fernand Braudel, *Frankreich*, vol. 2 (Stuttgart, 1990), 183.
- ²¹ McLaren, 189.
- ²² Donald Worster, "Auf schwankendem Boden: Zum Begriffswirrwarr um nachhaltige Entwicklung," in *Der Planet als Patient*, ed. Wolfgang Sachs, (Berlin, 1994), 95ff.
- ²³ At a time when Third World examples of autocratic development had been discredited, Dieter Senghaas presented several European countries as historic patterns of appropriate and autonomous development: Dieter Senghaas, *Von Europa lernen: Entwicklungsgeschichtliche Betrachtungen* (Frankfurt, 1982). For a thorough explication of that approach, see Ulrich Menzel, *Auswege aus der Abhängigkeit: Die entwicklungspolitische Aktualität Europas* (Frankfurt, 1988).
- ²⁴ About the many different meanings of "Nachhaltigkeit" in forestry, see Wiebke Peters, "Die Nachhaltigkeit als Grundsatz der Forstwirtschaft, ihre Verankerung in der Gesetzgebung und ihre Bedeutung in der Praxis," (diss., University of Hamburg, 1984).
- ²⁵ Götz v. Bülow, *Die Sudwälder von Reichenhall* (Munich, 1962), 159 f. The question whether sustainability was really obtained in the saline forests of Reichenhall remains controversial today; see Alfred Kotter, "'Holznot' um 1600: Die Energieversorgung der Saline Reichenhall," in *Salz Macht Geschichte*, ed. Manfred Treml et al., (Augsburg, 1995), 186–192.
- ²⁶ H. F. Lamprey, "Pastoralism Yesterday and Today: The Over-Grazing Problem," in *Tropical Savannas*, ed. Francois Bourlière, (Amsterdam, 1983), 658, believes to recognize an "overwhelming evidence of continuing extensive ecological degradation" by nomadic pastoralism. Melvyn C. Goldstein and Cynthia M. Beall, *Nomads of Western Tibet: The Survival of a Way of Life* (Hong Kong, 1990), present a description of skillful adaptation to an extremely hard environment. But it is doubtful whether one can generalize this Tibetan example.
- ²⁷ Mark Elvin and Liu Ts'ai-jung, eds., *Sediments of Time: Environment and Society in Chinese History* (Cambridge, 1998); Richard H. Grove, Vinita Damodaran, and Satpal Sangwan, eds., *Nature and the Orient: The Environmental History of South and Southeast Asia* (Delhi, 1998).

- ²⁸ Nicholas K. Menzies, *Forest and Land Management in Imperial China* (New York, 1994), 44. Yi-Fu Tuan, *China* (London, 1969), 32, 141, 142 mentions some cases in Chinese history where an alliance between imperial power and forest protection can be observed, but at the same time makes clear that this policy was not effective in the long run.
- ²⁹ Eduard B. Vermeer, "Population and Ecology along the Frontier in Qing China," in Elvin and Liu, *Sediments of Time*, 247ff.
- ³⁰ Madhav Gadgil, "Deforestation: Problems and Prospects," in *History of Forestry in India*, ed. Ajay S. Rawat, (Delhi, 1991), 13.
- ³¹ Madhav Gadgil and Ramachandra Guha, *This Fissured Land: An Ecological History of India* (Delhi, 1992).
- ³² Jaques Gernet, *Die chinesische Welt* (Frankfurt, 1979), 331.
- ³³ Joachim Radkau and Ingrid Schäfer, *Holz: Ein Naturstoff in der Technikgeschichte* (Reinbek, 1987), 59–65, 157–159.
- ³⁴ For France, see Andrée Corvol, *L'Homme et l'arbre sous l'Ancien Régime* (Paris, 1984), 632. "Il est donc fort délicat d'employer l'expression de 'crise forestière' puisque chaque réorganisation administrative se justifie au travers de ceux qui la conduisent." Similarly, Ingrid Schäfer, "Ein Gespenst geht um": Politik mit der Holznot in Lippe 1750–1850 (Detmold, 1992).
- ³⁵ Oliver Rackham, *Ancient Woodland, Its History, Vegetation and Uses in England*, (London, 1980), 153. I am not likewise convinced when Rackham transfers his mockery upon deforestation stories into Mediterranean history, for instance in Oliver Rackham and Jennifer Moody, *The Making of the Cretan Landscape* (Manchester, 1996). See, for the Mediterranean, J. R. McNeill, *The Mountains of the Mediterranean World: An Environmental History* (Cambridge, 1992). McNeill repeatedly characterizes Rackham's position as a "maverick opinion," 72, 311.
- ³⁶ Conrad Totman, *The Green Archipelago: Forestry in Preindustrial Japan* (Berkeley, 1989).
- ³⁷ Michel Devèze, *La grand réformation des forêts sous Colbert* (Nancy, 1962); Heinrich Rubner, *Forstgeschichte im Zeitalter der industriellen Revolution* (Berlin, 1967).
- ³⁸ Karl Hasel, *Studien über Wilhelm Pfeil* (Hannover, 1982), 137.
- ³⁹ Karl August Wittfogel, *Wirtschaft und Gesellschaft Chinas* (Leipzig, 1931); *Oriental Despotism: A Comparative Study of Total Power* (New Haven, 1957). Joachim Radkau, "Der Emigrant als Warner und Renegat: Karl August Wittfogels Dämonisierung der 'asiatischen Produktionsweise,'" in *Exilforschung: ein internationales Jahrbuch* 1 (1983): 73–94.
- ⁴⁰ Douglass C. North, *Structure and Change in Economic History* (New York, 1981), 26.
- ⁴¹ Peter Christensen, *The Decline of Iranshahr: Irrigation and Environments in the History of the Middle East 500 B.C. to A.D. 1500* (Copenhagen, 1993), 104.
- ⁴² Clive Ponting, *A Green History of the World* (London, 1991), 70ff.
- ⁴³ Jones, *The European Miracle*, 8.
- ⁴⁴ Marc Reisner, *Cadillac Desert: The American Desert and Its Disappearing Water*, rev. ed. (New York, 1993).
- ⁴⁵ Joachim Radkau, "Holzverknappung und Krisenbewußtsein im 18. Jahrhundert," in *Geschichte und Gesellschaft* 9 (1983): 513–543.
- ⁴⁶ Georg Forster, *Ansichten vom Niederrhein* (1791: Stuttgart, 1965), 56ff.
- ⁴⁷ Richard Grove, "Scotland in South Africa: John Crumie Brown and the Roots of Settler Environmentalism" in *Ecology & Empire: Environmental History of Settler Societies*, eds. Tom Griffiths and Libby Robbin, (Seattle, 1997), 144.
- ⁴⁸ The most famous early example is Harry J. Carman, ed., *American Husbandry* (1775: Port Washington, 1939).

⁴⁹ Mark Elvin, "Three Thousand Years of Unsustainable Growth: China's Environment from Archaic Times to the Present" in *East Asian History* 6 (1993): 7–46.

⁵⁰ Justus v. Liebig, *Chemische Briefe* (Leipzig, 1865), 498ff. In *Sediments of Time*, one finds contradictory comments on the use of human excrements. On page 6, Elvin criticizes this method as an offspring of worm diseases; on page 503, Kerrie L. MacPherson in an article on cholera quotes D. B. Simmons (1879) that the returning of "nightsoil" to the soil reduced "the danger of contamination" to "a minimum." Both opinions may contain some truth; I presume that the favorable effect prevailed. I got the impression that the modern hygienic movement tended to overstate the danger of worm infections.