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ABSTRACTS OF PAPERS

SESSION 1

<u>1:1</u>

DISSEMINATION OF NATURE IN THE FORM OF FAKE IN GERMANY IN THE MODERN AGE

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This paper explores the development and dissemination of artificial plants in Germany since the 19th century and observes the change of attitudes towards nature at the level of every day urban life.

In Germany artificial plants became popular as a replacement of difficult to cultivate and expensive plants. Their dissemination can be divided into two phases. In the first phase, artificial plants became popular as ornaments in rooms of the bourgeoisie from the middle of the 19th century. Then, from the turn of the century, the working class started to use artificial plants as cheap and convenient substitute for real nature.

At first sight, there is only a one-way relationship between nature and fake: the real plant determines the appearance of the artificial counterpart in order to make a perfect copy. But the development of artificial plants did not only result in the replacement, on the contrary, it seems to have changed the attitude and behavior towards nature: The contact with nature became limited to passive optical satisfaction since one cannot enjoy the growth nor the smell of plants. The emphasis on optical satisfaction was not really new in Europe. Europe had a tradition of enjoying nature as beautiful object which resulted e.g. in the development of the painting style 'still life' and the perception of natural scenery as 'landscape'. But the cheap mass production of artificial plants, which made nature available to the large majority of the society in the form of fake, accelerated the tendency of enjoying nature as an object tremendously.

WILDERNESS IN GERMANY

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German language only knows the term Wildnis not wilderness.

Useful nature thinking dominated nature understanding, natural history and biology subject development since 17th century in German school education, accompanied by virtue training of order, industry and thrift. Wild land generally was seen as a task of reclamation. Bear, wolve, lynx became extinct end of 18th century. Mainstream in German schoolgarden tradition (max. 1880-1950) was the useful garden, confirmed by years of hunger.

With romantic influence and criticism of urban-industrial development "Heimatschutz"- movement arose around 1900. This and ecological concepts were basic for nature conservation efforts but did not establish a real wilderness preservation thinking. 1935 "Reichsnaturschutzgesetz" (First German Conservation Law) set up under Goering favored an orderly agricultural and forestrial landuse practice at principle. Beside this patches of primeveal looking forests ("Urwald") and of bogs werde set aside as strictly protected conservation areas. Ideologically wild nature of Germanian savage ancestors was mystified.

Bavarian Forest National Park 1970 became first German National Park. Process dynamic concept in forest ecology and international wilderness preservation thinking were influencing this Park Management. Especially after reunification several new National Parks were established around "Totalreservate" (totally preserved areas) that had been designated in East Germany. Wildnis got an ecological meaning taken for managing successions, reintroducing predators, restoring habitats, for managing core zones of greater nature conservation areas as National Parks. It is also discussed for restoring forests, military land and mining areas. Wildnis thinking is confronted with non acceptance and resistance of landusers, local people, developers and investors.

WELCOME TO THE ATOMIC PARK: PROBLEMS OF WILDERNESS AND NATURE IN A NUCLEAR SETTING

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In the last few years, environmental historians have questioned their reliance on a number of salient phrases in established academic discourse. In 1995, William Cronon highlighted The Trouble with Wilderness in Uncommon Ground: Toward Reinventing Nature. By claiming wilderness to be 'quite profoundly a human creation,' more a well-crafted social construction than an accurate description of wild, unkempt land, Cronon cast doubt on one of the most favoured terms in the environmental historian's vernacular. Nature has similarly emerged as a problematic term. Environmental historians have pondered the appropriate place of humans within (or outside) the natural world, as well as the apposite use of nature in their work.

My paper will consider how atomic landscapes inform contemporary historiographical debates regarding wilderness and

harm and human malfeasance. Anti-nuclear protesters denounced the atom as antithetical to healthy communities and vibrant ecosystems. However, in the 1990s, the stereotypical image of atomic lands devoid of life was challenged by evidence of flora and fauna thriving at US military ranges. Former nuclear lands may yet be set aside as nature reserves.

In order to elucidate the relationship between wilderness, nature and the atom, Welcome to the Atomic Park will comment on several nuclear landscapes, including Diablo Canyon nuclear power plant, California and the Trinity Site, New Mexico. The paper will hopefully create a lively discussion over the nomenclature employed by environmental historians, and the problems and potential of the discipline.

<u>1:2</u> HUNTING IN EUROPE DURING THE ANCIENT REGIME

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In Portugal, during the Ancient Regime, natural resources like timber, firewood, game, and pastures were considered to be compatible with agriculture, although with different social appropriations, which led to intense conflicts between peasants and landlords, and between both these groups and the crown. Up until the nineteenth century, the Monarch could still claim both hunting rights in noble and municipal properties, as well as ownership over some kinds of trees for use in building the royal ships. Aside from these royal claims, landlords also claimed exclusive land-use rights. Yet game, as a res nullius, could only be legally captured outside marked hunting properties, as well as in municipality lands. In fact, hunting and collecting forest goods – in what seemed to be a "Natural" right which was also guaranteed by law – tended to be controlled by the top of social hierarchy. In Portugal, rules governing hunting therefore depended on a dual system of land property and natural resource ownership. Built during the Ancient Regime, this complex system of hunting restrictions turned out to be one of the most responsible ways for protecting natural resources as well as a growing source of criminality.

Although forestry and hunting rights relied on a different juridical system in, Spain, France, England, and Austria, this crime and protection duality towards resources, coexisted among this countries. Under the liberal or counter-liberal systems consolidation, resources appropriation became one of the most visible sign of changing power.

ENVIRONMENTS ON THE EDGE: FRONTIER LANDSCAPES OF EARLY MEDIEVAL EUROPE

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Borderlands, regions where claims to political sovereignty overlap, and where sometimes cultural and social differences also arise, can be usefully studied from an environmental point of view. Indeed, the ecological consequences and causes of the political, cultural, and social differences in such areas can greatly illuminate their history. This paper offers two early medieval European examples of how human activity in borderlands reacted to and reshaped the environments of these sensitive zones. The examples are from western England, where in the eighth century AD a frontier between Saxon and British peoples developed, and from southern Denmark, where in the early 700s another frontier zone between Danes and various Slavic and Germanic people established itself. The paper investigates how ethnic, cultural, and political distinctions fashioned new landscapes in these borderlands. It shows that the environmental history of such marginal spaces is intimately tied up with their social and cultural, but especially their political evolution.

SHAPING LAND IN MEDIEVAL SALZBURG AND LOWER AUSTRIA

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Long term cultivated landscapes in the central part of Europe are in the majority a product of medieval colonization. What is now Austria's landscape was shaped by human enterprise from the early middle ages onwards in the province of Salzburg and beginning in the high middle ages in the province of Lower Austria.

The processes of shaping land are the focus of this paper's consideration. Who colonized the former wildernesses and how was it done?

Ecclesiastical institutions such as monasteries and bishops with their familia developed the most sophisticated colonization regimes on the land which had been donated to them. They did so according to their internal institutional logic. These programs were rather elaborated and have yet to be detected and fully understood by historians. One obvious method of designing human landscapes was to use biblical number symbolism in the process of creating villages. Settlements with 12 or 24 farmsteads were thus established. Cistercian monasteries were funded with seven surrounding granges.

Episcopal land-registers from the 8th-9th century A.D., unique sources for the Austrian territory, are used to detect landscape patterns and the logic behind them in Salzburg. In the case of Lower Austria sources from a Cistercian monastery near the Bohemian boarder are investigated.

Why make the origins of European cultural landscapes visible? A better understanding of the present landscapes, of infrastructures and of demographic and ecological processes depends on knowledge about long-term landscape changes.

ENVIRONMENTAL POLLUTION AND SOCIAL PERCEPTION: HOW DO THEY RELATE? FROM THE

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A general problem of environmental history is the modelling of the relation between environmental pollution and its social perception. But this challenge is also a chance for environmental history to contribute substantially to the environmental discussion. Where could we learn about this relation if not in the past?

This topic will be discussed on the example of the Swiss environmental history between 1950 and 1980. Like in other industrial countries, in the decades after 1950 economic growth in Switzerland was accompanied by growing impacts on the environment. A process which Christian Pfister described as the "1950s syndrome". Taking into consideration the impressive data, with which this development can be outlined, the environmental turn of the 1970s has usually been explained as a direct reaction to the growing environmental stress.

But the short-circuit of pollution and perception in the tradition of challenge and response is a far to simple approach. Environmental pollution is probably a necessary disposition but not a sufficient reason for changing perceptions of the environment. It has rather to be seen as an offer to society to reshape its relation to nature. The perception of environment as a problem and the definition of its importance take place within the social field and depend on a multitude of social factors. To get a more realistic picture of these processes we therefore have to look closely at the social processes of problem defining and solution seeking, hence to examine discursive currents and social organisations. In analogy to Pfister's 1950s syndrome I will describe this process of mental reshaping of the world as the "1970s diagnose".

NATURAL AFFLUENCE: THE CONFLICT OVER THE BUILDING OF HIGH-SPEED RAILWAY LINES IN WEST GERMANY, 1970-80

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European environmentalists in the second half of the twentieth century were used to fighting industrial polluters, largescale developers, and utility companies, among others. A national railway company was an unlikely enemy of the conservationists, given their preference for public over individual transportation. Yet, during the 1970s and the 1980s in West Germany, nationwide environmental groups and local protesters joined forces to halt or change the building of highspeed railway lines by the Deutsche Bundesbahn, the public railway company. The railway managers introduced the building of hundreds of kilometers of track as a means to speed up the operation of the trains and offer them a chance to compete with both car and plane transportation. Environmentalists portrayed them as an encroachment into a largely unspoiled countryside with little or no benefit for the locals. This debate, the rhetorical strategies involved, and its outcomes offer intricate insights into the changing nature of post-war European environmentalism in a highly industrialized nation. The proposed presentation at the ESEH's first meeting will analyze these protests on three levels.

Firstly, the actors and their respective audiences will be examined. The railway managers, used to thinking in terms of engineering efficiency, perceived of the project as an overdue act of modernizing the railways. They were neither trained nor accustomed to entering the public sphere as political actors, especially not on the local level. There, they met furious farmers and local elites. These individuals quickly organized themselves into committees, streamlined their strategies, and fought the project both in the political as well as the legal sphere by hiring lawyers to halt the project. On a larger level, these protests and the responses to them will be contextualized in the growing movement of citizen participation and organized local protest of the 1970s.

Furthermore, the paper will examine the different concepts of landscape and environment. To put it simply: What were the protesters fighting for? In the absence of wilderness as a unifying concept, the culturally (that is, agri-culturally) formed landscapes of Germany were portrayed as expressing aesthetic values and also serving as recreation grounds for urbanites. The more effective rhetorical strategy, however, was to place the high-speed trains in the context of a new social and natural environment. Humans and nature formed this broadly understood environment. In this new frame of reference, the noise expected to be emitted by the trains was a successful motivating force. Unlike aesthetic concerns, noise could be measured, regulated, and engineered. These values of quantification strongly informed the outcome of the altercations.

As a result of these long and arduous battles over noise, aesthetics, and political participation, the environmentalists suffered a defeat in that they could not prevent the trains from being built. However, the design of the train routes indicates that they were indeed able to influence the way the tracks were laid out. Roughly a third of the tracks were situated in tunnels or encasements, thus mitigating the emissions of the trains. This design increased the cost of building the tracks; but it was a price that Germans were willing to pay. In this sense, the railway lines embodied a compromise of affluence.

organizations of environmentalism in Germany as well as about the changing nature of the environment as a motivating factor for action.

<u>1:4</u>

LANDSCAPE AND GENDER. THE VISUAL REPRESENTATION OF ALEXANDER VON HUMBOLDT'S "VIEWS OF NATURE"

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I propose to identify and interpret the visual representations of "typical landscapes" that were defined as part of Alexander von Humboldt's global classification and description of landscapes. These landscape representations were enormously influential in that they had a deep and lasting impact on the European perception of the non-European parts of the world. These "characteristic landscape representations" carried not only various Eurocentric prejudices, but very much also gender-related ones. The purpose of this paper is to examine the extent to which some of these have survived to the present day.

SCIENCE FICTION LITERATURE AND THE ECOLOGICAL IMAGINATION

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While it is accepted that 'nature' writing has had a formative influence on the development of the conservation movement and vica versa, the impact of a whole genre of popular literature, science fiction (sf), has been ignored. The two areas that sf has, I maintain, been most influential is on popular post war 'eco-doom' literature and the development of 'ecotopia'.

First my paper proposes to examine the influence and similarities of sf and popular ecological literature (from Faifield, Vogt, Ehrlich and Hardin) for the period 1925-1975. It will then examine the development of the 'pastoral' image in sf – living a simple low tech life in a post apocalyptic world- and its similarities with the 'back to the land' movement in the US in the late 1960s fueled by fear of impeding social and ecological collapse of cities.

Finally it will look at the development of the idea of 'ecotopia' – ecological and generally anarchist utopian societies. This whole new genre of sf started in the mid 1970s and was heavily influenced by the rediscovery (and reprinting) in the early

Much sf may indeed be pulp fiction but it is a powerful medium for the communication of ecological ideas on our relationships with nature and possibilities for our future. Not only has it been a tool for ecological 'education' and propaganda, but also a means to fire the youthful imagination, to inspire and to create. Its history is well worth studying.

A RETROGRESSIVE STUDY OF THE LANDSCAPE SOUTH OF GHENT AS A HISTORICAL CONTRIBUTION TO THE CONTEMPORARY DEBATE ON SPATIAL PLANNING AND HERITAGE OF CULTURAL HISTORY

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The landscape in the region South of Ghent and East of the river Scheldt has a very long and rich history. This landscape has for some decades now been threatened by modern agriculture, urbanization and new infrastructure.

A specific economic and political context around the year 1000 has determined the outlook of the landscape for a very long time. A great part of the centre of old « desmesnes » that existed at that time has become the centre of the actual villages, with significant seigniorial features like a parish church, a « moat » and an important seigniorial farm. An open landscape came into being around the houses concentrated in the villagecentre. In the later Middle Ages and Post-Medieval period, significant features were added to this original layer.

Traditional historical geography described the origins and evolution of this landscape but only in few cases it arouse greater awareness of a more thougt-out use of our surrounding landscapes. The aim of this paper is to show how historians can contribute to the newly developed methods in applied historical geography concerning landscape appreciation. By acting this way the cultural and historical value of landscapes can really weigh on policy-makers' decisions and public opinion.

SESSION 2

<u>2:1</u>

INVENTORIES FOR IMPROVEMENT: CHARTING THE SUBTERRANEAN WORLD OF THE 18TH-CENTURY GERMAN TERRITORIES

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This paper will examine a series of proposals for the "improvement" of German rural landscapes, set forth in the early decades of the eighteenth century. At this time, numerous treatises came to be published, purporting to unveil the "subterranean treasures" of German territories from Braunschweig to Nuremberg. These works provide us with a fascinating source for European environmental history. The proposals for land development found in these mineralogical inventories ranged from the establishment of new mines and manufactures, to the marketing of sites as mineral baths or health spas, to the introduction of innovative agricultural techniques. The paper will explore the emergence, in these proposals, of new visions of the potential of the rural German landscape at a relatively early date, well before the eventual triumph of cameralist economic ideology in German universities and princely courts. The paper will compare these early German schemes for "improvement" with those in other areas of Europe, such as—most famously—England and Holland, and will argue that the projects they outline reveal a distinctive outlook, shaped by centuries of historical land use, towards landscape change.

PERCEPTIONS OF NATURE IN THE 18th CENTURY

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The first large-scale drainage project in the territory of what should later become the German Reich took place in the Oderbruch in the middle of the 18th century. This project tried to improve the course of the river and thus the living conditions of the people in the marsh lands and its banks and also make room for new settlement.

The damming of the Oder began in 1716 with a dam-building project, which covered a stretch of approximately 20 kilometers. There were continual efforts on the local level, year to year, to improve the agricultural usability of the land, and they were largely successful. The reign of Frederick Wilhelm I is characterized by a more cautious approach to improve the natural environment for human settlement.

In contrast to the works carried out under the reign of his father, Frederick II, tired by the constant demands of local authorities and lured by the prospects of gaining large stretches of fertile lands for new settlements, opted for a bigger solution.

In the early hydrological literature, authors like Johann Elias Silberschlag encourage the reader to take a careful approach in their attempts to tame the rivers. According to cameralistic thinking attempts to improve the course of a river are viewed as a boon for both the people living near the river and the state government.

THE U.S. DEEP ECOLOGY MOVEMENT AND ENVIRONMENTAL POLITICS IN EUROPE

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The Deep Ecology movement, which appeared in the early 80s in the U.S., has played a key role on the U.S. environmental scene since then. What is striking is that it has not got much publicity in Europe, even though more and more European scholars are conducting research on it. The purpose of this presentation is to confront the fundamental values and principles of Deep Ecology with environmental politics as it is currently developing in Europe. The presentation will first focus on the central figure of philosopher Arne Naess who happens to be European, and then confront his vision to some of the current environment-related issues in Europe, such as transport and the environment, the setting aside of public land or sustainable development vs job creation. Finally, this comparative approach shall lead us to (re?)consider the fundamental concepts and values that are shaping up our environmental policies in Europe and to question the validity of functional/institutional ecology in the developed world.

COLONIALISM AND ENVIRONMENTAL AWARENESS IN GERMAN SOUTH WEST AFRICA

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The degradation of the African environment is no longer an insignificant matter for the industrialised world. One reason for the growing interest in the African environment is that the people-environment debate has moved from a national to an international level, largely because of a growing concern with such macro-processes as the human impact on global climatic change. The objective of my paper is to analyse how environmental matters were taken into account by the colonial powers after the 'scramble for Africa'. The study will focus on South West Africa during the German colonial period (1884-1915). The ideas behind the German environmental awareness are examined and the conservation measures taken by the colonial administration are described. The conservation policy carried out by the colonial authorities was very controversial because they were interested only in areas which were suitable for European settlement. This was also very clearly seen in German South West Africa, where several laws and ordinances were prescribed for protecting the trees in the areas reserved for the European settlement. The idea of improving the climate of South West Africa in the beginning of the twentieth century by greening the Namib Desert was an excellent indication of the firm belief in science. The reverse side of the coin was that the colonial authorities did not bear any responsibility for the environment of the African reserves of their environment.

PROTESTANT, CATHOLIC, GREEN: ENVIRONMENTAL HISTORY AND THE CULTURAL DIVIDE BETWEEN GREEN MOVEMENTS IN NORTHERN AND SOUTHERN EUROPE

It has often been noted how different the history of environmental politics and Green movements have been in Northern and Southern Europe. In general, the further north one travels, the more vigorous and influential Greens and environmentalists become. This difference is reflected as well in the number of environmental historians working in the two regions. Environmental history in academia is strong and growing in Scandinavia, Britain, and Germany, and declines rapidly the further south one looks.

This paper proposes to analyze this striking difference as a product of cultural history, particularly in the realm of predominant cultural values. At first glance, environmental values appear to be strongest in countries of Germanic extraction. A closer look reveals that the divide runs more clearly along the divide between Protestants and Catholics. A perceptible difference in the value and significance of nature can be traced from the Reformation through the Romantic Era and into the present. Historically-Catholic states tend to subordinate environmental issues to community concerns like national needs or social issues. Historically-Protestant regions attach moral meaning to the individual in nature and tend therefore more strongly to favor protection of nature and its creatures from human encroachment.

<u>2:3</u>

'THE BEST IDEA WE EVER HAD': REVISITING AMERICAN EXCEPTIONALISM AND THE US PARK IDEAL IN THE LIGHT OF EUROPEAN EXPERIENCE

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Wallace Stegner summed up a potent American cultural maxim when he identified US national parks as 'the best idea we ever had.' This paper will examine the saliency of Stegner's claim by offering a comparative analysis of 'the park ideal' in Europe and the United States.

The term 'park' was originally employed in medieval Europe to describe an enclosure for beasts of the chase. In the 1700s, genteel aristocrats crafted verdant estates for sport and leisurely strolls. The Arcadian idylls of the Old World denoted landscapes of power, with trespassers and natural processes subject to control. By contrast, US national parks were predicated on the protection of rugged vistas and established in the spirit of republican democracy. Despite the apparent differences between parks in Europe and North America, the public reservations of Yosemite (1864) and Yellowstone (1872) shared common traits with English estates such as Greenwich Park (1433) and Stourhead (1741). National park managers emulated the actions of their European ancestors in cultivating protected areas as refuges for 'game' animals, excluding native predators, and introducing exotic plants.

In tracing the evolution of the park idea across two continents, I will comment on broader themes of nature and nationalism, human mastery over the environment, and the idealization of pastoral and wilderness landscapes. Moreover, by highlighting the European lineage of 'the park ideal'. the paper will address the traditional assumption of American

their soil.

RESTORED PLACES OR RESTORED PASTS? MANAGING PARKLANDS IN THE ADIRONDACKS AND THE APENNINES

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Parks represent important places to explore our notions of ideal landscapes. Urban parks, as well as regional, wilderness or historic parks, embody the kinds of places that people hold dearest. But with ongoing natural and human modifications to these places, all parklands are in flux, so that park managers must work continually to maintain their park's appropriate image. Park "protection" usually means park "restoration." In my comparative example, Americans and Italians face very different challenges in their parks: Americans are beginning to acknowledge and restore cultural artifacts in wildland parks, whereas Italians are working harder to restore wildlife and elements of "pure" nature in inhabited parks. My presentation focuses on controversies of restoration in the Adirondack and Abruzzo Parks since the 1970s. Specifically, I explore how Italians are reconciling their belief in ancient lands with re-wilding proposals that presuppose a timeless land; and I explore how Americans are reconciling their establishment of wilderness areas with rising popular and scientific evidence that such lands have histories. Because restoration is the process of bringing back former landscapes, I believe that "senses of history" lie at the root of the choices being made for restoring parklands in these two countries. In fact, restorationists in both countries may be bringing back better pasts even more than better places. I endeavor to show that land managers can improve their craft by understanding their nation's assumptions about its ideal pasts.

MATUSHKA VOLGA: A NATURE INTERPRETED, A RIVER COMPARED

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ABSTRACT: The essay I propose to present focuses on one river, Russia's Volga River. Two models form the main arguments of the essay, both of which are from an American historiographical perspective. One is an interpretative model based on William Cronon's characteristics of nature in *Uncommon Ground*. Using several of Cronon's characteristics and definitions of nature, the essay will show the different "meanings" of the Volga River. The other model utilized in the paper compares the Volga River with the Columbia River in the United States. Richard White argued that the Columbia River is an "organic machine." The second model I will use describes the Volga River as an organic machine, by looking at the people, the river structures, and the sturgeon, and how these interact with each other along the Volga.

By using the two models-interpretation and comparison-the underlying characteristics of the Volga River will be

model that would be the best to use in Russian river research and history). The Volga River, revered as the "Mother of All Russia," represents all of the diverse aspects of The River as a part of nature and wilderness. It can be compared to different natures and wildernesses located in the West. It serves as a microcosm of the entire environment of its nation, Russia. The Volga is a dichotomy, much like Russia itself, with both positive and negative elements—it is up to interpretation, perspective, and comparison to determine which outweighs the other. But, most of all, it demonstrates the fragility, and yet the resilience, of an environmental entity—a living, ever-changing monument to humanity and all its goods and evils. I aspire for my paper to represent a starting point in the understanding of the Volga River and its diverse nature and role as an organic machine.

LAND ABANDONMENT: IDLE LANDSCAPES OR REWILDING THE LAND?

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keywords: landscape change, comparative studies, conservation

Abstract

The decrease in global forest cover is paralleled by an increase in forested area in some of the most densely populated and economically highly developed regions of the world. We compare the situation in two of those reagions (Massachusetts and Switzerland) regarding changes in land cover and land use, and some conservation issues that are related to these changes. Similarities and differences in the prerequisites and developments in the two regions are discussed.

In terms of conservation, the regrowth of forests on abandoned farmland threatens species depending on habitats provided by traditional farming practices. At the same time, animals which depend on extensive forests expand their ranges. New conflicts with traffic (e.g., collisions of moose and cars in Massachusetts) or the remaining agricultural activities (e.g., sheep on alpine meadows in Switzerland being attaced by wolf and lynx) arise from these spreading populations. The landscape changes can be interpreted as a loss of cultural landscape or as the return of wilderness.

Land abandonment in New England is much further advanced than it is in Central Europe, where different forces are driving land abandonment. We discuss to what extent such a comparative approach might contribute to scenario studies and land use planning and we highlight some of the pitfalls such attempts might face. Environmental history contributes to a deeper understanding of the historical dimension of issues on the political agenda and of public concern. A comparative approach sheds new light on the particularities of the regions involved and helps to ask new questions.

<u>3:1</u>

THE EVOLUTION OF A PLACE: PATTERNS OF ENVIRONMENTAL CHANGE IN THE YAZOO-MISSISSIPPI DELTA FROM THE ICE AGE TO THE NEW DEAL

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The Yazoo-Mississippi Delta, or the floodplain between the Yazoo and Mississippi Rivers in the northwestern corner of the present-day state of Mississippi, experienced enormous environmental change during the period from the Civil War to the New Deal. By the beginning of the twentieth century, agriculture, lumbering, and remaking of the floodplain hydrological system had transformed the landscape originally dominated by mature bottomland hardwood forest beyond recognition into a thriving New South cotton kingdom. The long-term environmental history of the Delta, however, emerges as immensely more complicated. Significant human impact on the floodplain forest complex goes back much further than the late nineteenth century, and shows remarkable fluctuation even during the last 150 years.

Utilizing an interdisciplinary approach, the presentation identifies the most significant patterns of environmental change on the floodplain since the arrival of the first humans. The modes of production and subsistence economies of successive human societies on the floodplain are examined, paying attention to the differences exhibited by Native American and Euro-American cultures. In addition to chronicling changes in human subsistence and economic activities, the paper addresses ecological aspects of the region's changing land use patterns and examines connections between environmental and social problems, such as the relationship between monocultures and tenancy.

The theoretical framework connects the socioecological developments in the Delta to the larger context of American and world environmental history. Applying concepts originating from both the humanities and natural sciences, the Delta is established as a valid ecological complex for the study of bioregional history. Different ecohistorical formations on the floodplain are identified, and an ecohistorical periodization for the Yazoo-Mississippi Delta is presented.

LANDSCAPE AND RURAL SOCIETY IN THE TUSCAN APPENNINE (19TH-20TH): A CASE STUDY

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This study represents one of the first results of a major project on the conservation of Tuscan Landscape, whose importance in the European context has been recognized also by the European Landscape Convention signed in Florence on October 19th. The history of an area belonging to the farm of Moscheta, developed around the Abbey founded in the 11th century, is analysed with the aim to develop a methodology to asses the historical value of the landscape, and define conservation strategies. The social, economic and environmental factors affecting the evolution of the area have been studied starting from 1832, when the first cadastre of Tuscany was made. The analysis of maps, aerial photographs and archival documents, allowed to analyse landscape changes in the last 200 years, relating changes with socio-economic development. The traditional forest and agricultural practices carried out in the area have been described through oral investigations and field studies to detect archaeological evidences of ancient landscape types. The ecological conditions of the area have been studied, considering also successions occurring in old fields, while the features of landscape mosaic has been analysed using Geographic Information System. From the last century almost 60% of landscape diversity has been lost, while woodlands have increased their extension on former pastures and cultivated fields. The extensions of woodlands on old fields and pastures seems to be the main factors affecting the reduction of landscape diversity.

RE-EXAMINING THE CONCEPT OF AGRICULTURAL PRODUCTIVITY: OF MEASURES, METHODOLOGIES AND MEANINGS.

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Agricultural productivity forms the cornerstone of achievement of an agrarian region in the modern world. The most prevalent measure of economic success in agriculture is the productivity of land, calculated in terms of the yields per unit of land. Other measures of agricultural productivity have looked to evaluating the contribution of factors of production such as labour and capital. The strong emphasis on agricultural productivity arises from a narrow economic and pseudo-scientific methodology for analysing agricultural success and has resulted in unsustainable agricultural practices in the region. The restrictive practice of using a single indicator of agricultural success has also had severely deleterious consequences for the local ecology of agrarian regions.

This paper examines the intellectual underpinnings of the concept of agricultural productivity. The methodologies and associated measures of mainstream economic analysis are re-visited with the intention of drawing attention to the political economy of agricultural research. The main focus of the paper is to show that the term 'agricultural success' has various and sometimes contradictory meanings in the local environment. The rigid use of conventional measures of agricultural productivity disregard, if not negate, the existence of these multiple meanings. This paper uses a more nuanced political economy framework to analyse the meaning of agricultural success.

The measurement of agricultural success in key agrarian regions of India through the twentieth century is undertaken to illustrate the problems thrown up by using a single 'technical' measure. This case study indicates that the use of a myopic approach to measurement creates severe problems for policy formulation since the conventional measures are unable to

BETWEEN BORINQUEN AND THE BARRIO: ENVIRONMENTAL JUSTICE AND NEW YORK CITY'S PUERTO RICAN COMMUNITY 1969-1972

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The last decade has seen an upsurge of both scholarly and popular interest in the US environmental justice movement. But what is largely missing from this contemporary discussion is any sense of the historical roots of this new wave of environmental activism. This paper explores the emergence of a radical Puerto Rican organization called the Young Lords who were active in a number of US cities in the late 1960s and early 1970s. In New York City, the Young Lords successfully mobilized their community through a series of direct actions devoted to improving public services, the creation of new community spaces, and the assertion of cultural identity. We examine the internal tensions within the organization as it sought to extend its role beyond community-based concerns such as sanitation and health care towards more abstract political goals including demands for Puerto Rican independence. It is argued that the ultimate disarray of this radical phase of Latino political activism cannot be understood separately from a series of wider developments including the gathering pace of urban decline, the marginalization of the US Left and the dissolution of the New Deal era.

IS "BECOMING RICH" IMPROVING THE ENVIRONMENT?

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It is claimed that we need economic growth in order to improve environmental conditions, because without growth we cannot afford environmental protection. The claim is based on the environmental Kuznets curve hypothesis, which describes the relationship between some pollutants and income as an inverted-U, with increasing levels of pollution for people living in lower income countries and declining levels of pollution for higher per capita incomes.

In my work I have estimated the historical development of Finlands emissions of carbon dioxide, sulfur dioxide and nitrogen. The calculations are based on Finlands historical energy balance from 1800 to 1998 made in the Department of Social Science History. In order to test the relevance of the theory to explain the development of Finlands air pollution emissions, I have related the emissions to the growth of the gross domestic product from the beginning of the industrialisation to present.

In my paper, I will give the answer to the question if "becoming rich" have helped to solve the environmental problems related to air pollution in Finland. A better understanding of the relations between economic development and

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environmental pressure in the developed countries might help us to deal with environmental problems in countries in the beginning of their industrialisation process.

WHAT IS AN ENVIRONMENTAL CRIME?

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The aim of my paper is to investigate how the concept of environmental crime has developed from the 1960s and onwards by elucidating the complex cultural and social processes that cause some actions or phenomena to be identified as 'crime'. The paper will focus on three well-known Swedish environmental scandals that led to legal procedures. I will investigate how these environmental scandals have incited both inquiries about legislation and crime on the one hand and man's ability to control nature's processes and human technology on the other hand. A hypothesis is that such 'focusing events' have been important in altering the ethical attitudes to the environment in newly enacted legislation.

However, it is not an uncomplicated process to define actions or phenomena as 'crimes'. Different agents— such as scientific or technical experts, NGOs, industrialists, journalists and politicians— are important in defining what is legal or illegal. In Sweden environmental crimes have had a 'weak' position in society. The indistinct definitions of illegal cases in the environmental field have had as a result that there is a large space for arbitrariness and negotiation. Focusing events, in this case the three environmental scandals, however, have placed environmental issues and legislation on the agenda. Politicians have been held responsible for the environmental crimes, a number of different investigations and debates were initiated and proponents stood against opponents. As a consequence, apart from the physical damage, the scandals led to the criminalization of some offences against the environment.

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IMAGINING AN AFRICAN LANDSCAPE: WESTERN SCIENCE AND THE CREATION OF CONSERVATION IMPERATIVES

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This essay examines landscape history in Tanzania's Eastern Arc Mountains, which *Nature* has recently identified as a "biodiversity hot spot." It argues that although the mountain environments are ecologically complex, the biodiversity values ascribed to them derive from a particular trajectory of scientific analysis that focuses almost exclusively on highland forests. The essay also points out that the scientific foundation of conservation ideology helps foster a siege mentality that portrays forests as constantly under attack from indigenous influences. My analysis seeks to enlarge the scale of interpretation and build a historical interpretation capable of informing conservation efforts in the future.

The paper contrasts how Africans and Westerners have developed their descriptive emphases on particular environmental elements. It first draws attention to the continuities between contemporary scientific analyses and those of the colonial period, which have tended over the past century to stress the structure and value of mountain plant communities, especially

tendency among African presentations to view the landscape as varied place that requires constant adaptation to changing environmental conditions, many of them fostered by the arbitrary application of western conservation models. The primary concern here is to present a study of "place" by showing how different observers have created particular images of Usambara's landscapes. The essay shows in its conclusion how images have very real consequences for natural resource conservation.

THE DEVELOPMENT OF INDIAN ECOLOGY AND CONSERVATION POLICIES: A CASE STUDY FOR TRANSNATIONAL ENVIRONMENTAL HISTORY

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When India achieved political independence in 1947, the Bombay Natural History Society turned almost immediately to the United States for economic and scientific assistance. This turn from British to American influence in India's leading conservation and ecological sciences institution played a key role in the development in India of a U.S.-styled wilderness preservation system. This shift was in part due to the politics of post-colonialism, in part to the economics of post-war Europe, but also substantially to a shared German model of behavioral ecology practiced by the BNHS' leading Indian figure, Salim Ali, and some ecologists in the United States. While Ali had actually studied in Berlin for one year, U.S. scientists who practiced this German style of ecology had benefited from working with a wartime refugee to the U.S., Dr. Ernst Mayr (who had shared a lab with Ali in Berlin). Thus, the history of the development of Indian wilderness conservation, and the science upon which it is based, must be told with attention to scientific, social, and political developments in Europe, North America, and India. This complex web of international associations and exchanges of ideas and people, and its ultimate impact upon Indian conservation, provides my case study for considering the attractions and difficulties of transnational environmental history.

ENVIRONMENTAL HISTORY IN THE ARGENTINA AGRARIAN EXPANSION. CAPITALISM AND ECOLOGY IN THE PAMPEAN REGION (1890-1950)

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The principal object of environmental history is to deepen our understanding of how humans have been affected by their natural environment in the past and also how they affected that environment and with what results. Environmental history is studying the interaction between humans and the environment in the past.. <u>In this paper</u> the principal purpose is analyse the relations between the Argentine agrarian development and the environmental impact in the "pampean" region from a

This development is a complex and heterogeneous process in which numerous causes can be found. A specific environmental problem is present at each stage, partly a product of the way in which resources were used as well as eventually of the project of Nation intended to be carried out.

In this sense, the use of certain natural resources was not only a consequence of the knowledge of their existence or the proper technology to use them. Each form of social organization establishes a peculiar relationship with nature and said relation generated a particular geographic shape for the period and the space under study. The factors conditioning the established society-nature relationship were largely the causal agents for the regional structure of the country, the building of the national space and the relations of regions among themselves, which present differences at each stage of development.

Ecological destruction, overexploitation of natural resources and environmental degradation were part of the process our "Pampean" prairie had to undergo so as to become a member of the world market, through the development of agriculture and cattle of a capitalist type. In this case, environmental resources were a condition, as were externality and production process cost of benefits and economic surplus. These conditions of capital reproduction enabled the development of productive patterns oriented towards maximizing benefits in the short run, leaving the preservation and regeneration conditions of renewable resources aside, stimulating processes that have degraded environmental quality and life quality.

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PROXY FLOOD RECORDS FROM THE SCOTTISH HIGHLANDS: THE BEAULY RIVER AT STRATHGLASS

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A c.2000 year flood history of a large highland river in the north-western Scottish highlands is reconstructed from historical, documentary, sedimentary and instrumental records. Most overbank flood sediments preserved in the alluvial reaches of large rivers are uniform and fine-grained due to low competence of overbank flows over low-gradient, wide floodplains. However, situations where high stream power, high velocities and shear stresses can be generated during large floods (>50 year return period) may result in the overbank deposition of coarse-textured sediments transported as bedload. These conditions are achieved in a relatively confined reach of the Beauly system in Strathglass, west of Inverness, where floodwaters are concentrated within a glacially-sculptured valley 400-1000 metres wide and have achieved depths on the floodplain of a few metres during larger floods since 1829. Long flood sequences are preserved in several meander cut-offs, or 'oxbows lakes', that have become isolated from the main channel since c. 2000 years ago. Fill sediments consist of silt and fine sand deposited during moderate and small floods, while lenses of medium sand relate to larger floods and peat accumulates during quiescent periods. The fill sediments reveal changes in large flood frequency, and changes in the magnitude of the bankfull flood are inferred from channel dimensions preserved in the abandoned meander loops. Rates

of channel migration, cut-off frequency and changes in channel planform are estimated from historical maps dating from 1876. The chronology of flood events is based on radiocarbon and 210Pb.

A timeline of large floods from documentary sources has been constructed back to 1768 at present, and is used to test the veracity of the sedimentary record. The results show that sedimentary records in the floodplains of alluvial, meandering rivers have the potential to extend the historical flood record for several thousand years in some locations.

THE POLITICS OF NATURE: CONSTRUCTING THE GERMAN REUNIFICATION DURING THE GREAT ODRA FLOOD 1997

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Natural disasters like earthquakes, tornadoes, hailstorms and floods always lead to a massive media coverage as a close look in the 'fait divers' of daily newspapers proves. They seem to have a short-lived but extreme effect on society as well as on the media. One point which is often neglected is the fact that disasters occur in unique socio-historical contexts that determine the patterns of interpretation. This seems to be also the case concerning the Great Odra Flood 1997 inasmuch as the disaster occurred within the singular process of the German reunification. Following especially the German newspapers, the Odra Flood marked the point of the real reunification and therefore efforts to dam the rising waters have been metaphorically interpreted as the "joint fight" against the flood. The Odra Flood received its political dimension in particular via different types of metaphors that blend synchronic as well as diachronic domains of discourse. The talk therefore investigates the metaphorical patterns that underlie the news coverage of the Odra Flood in order to trace their constitutive role in the news discourse as well as their historical and political dimensions. The main hypothesis is that the metaphorical discourse about the disaster and nature in general serves as a metaphorical reservoir for illustrating and legitimising the abstract political process of the Reunification.

LOCAL SESSION

LOCAL SESSION 1

PERCEPTION, IDENTITY AND REGULATION – ATTITUDES TO INDUSTRIAL AIR POLLUTION PRIOR TO THE CLEAN AIR ACT (1956)

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This paper examines the perception of industrial air pollution through the final years of the nineteenth century until the Clean Air Act of 1956. In particular, the paper focuses on the development of attitudes towards smoke pollution within the heavily industrialised areas of Scotland and the North of England, and what affect these attitudes have upon pollution regulation. Whilst national and local legislation to abate smoke was evident from 1821, little real progress was made in tackling pollution levels until the 1870s, when legislators began to use their powers of prosecution, public complaint dramatically increased, and anti-smoke societies were established. However, the campaign for smoke abatement, does not portray a neat division in attitudes between those responsible for the pollution and all others forced to breath in the 'deadly smoke pall'. One of the most interesting developments has been the formation of smoke as a motif in the identity of a place or group of people, to the extent that in some of the most polluted locations smoke begins to represent a sentimental attachment and a sense of pride. The Clean Air Act of 1956 (and changes in the demand for fuel types) saw a dramatic reduction in smoke pollution and a subsequent shift in regulatory focus. Furthermore, structural changes in the British economy caused a decline in many of the smoke-producing industries. In depicting these attitudes to industrial air pollution this paper questions what affect they had upon smoke abatement, and asks whether they provide a legacy for contemporary air pollution problems.

CLEANSING THE SKIES: VOLUNTARISM AND DOMESTIC SMOKE POLLUTION IN URBAN BRITAIN, 1880 - 1914.

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Current concerns about climate change have begun to attract considerable scholarly interest in the history of air pollution problems in Britain. To date, however, it is the harmful emissions from the tall smokestacks of industry which have received by far the most historical attention. But as British householders are presently failing to exhibit the self-restraint needed to cut CO2 emissions and meet the sustainability challenge, it is an opportune moment to explore past attempts to reduce domestic air pollution.

Unlike many of today's unseen environmental threats, the deleterious effects of smoke pollution were immediately tangible to the inhabitants of the late-Victorian British city. After a century of escalating and extensive urban and industrial growth, clear skies, fresh air and good health were beyond the reach of the nation's poorest city dwellers. By the 1880s it was clear to many contemporaries that emissions from countless domestic chimneys were a major source of the destructive smoke that characterised Britain's urban atmosphere. In the absence of any legislation regulating the traditional open coal fire, Victorian anti-pollution activists began to impress upon the public the notion that a "good citizen" would help to cleanse the skies by reducing the volume of smoke issuing from the chimneys of one's own home. But then, as now, most people failed to respond positively to calls urging them to alter their lifestyles and domestic practices voluntarily. In this paper I will outline some of the social. cultural. technical and economic factors that combined to defeat concerted attempts by

"MONEY, MANURE AND THE MODEL CITIZEN: CLEANSING IN THE SCOTTISH TOWN AND CITY, 1830-1870"

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Histories of British public health tend to assume that prior to mid- nineteenth century sanitary reform, urban cleansing was hopelessly inadequate, and that towns and cities became tolerably clean and healthy only with the provision of sewers and water supplies. This paper re-examines these assumptions, analysing the measures taken to control dirt in Scottish towns and cities between 1830 and 1870. The study shows that during this period efficient and effective systems of cleansing were put in place in large cities, towns and small villages. Such extensive urban cleansing was made possible by the value of refuse: the dirt and dung generated in homes and on the streets was sold as agricultural fertiliser and the profits from the sale wholly or partly offset the costs of cleansing, thus reducing the level of rates. The commercial nature of cleansing created financial relationships between citizens and local government and generated models of good and bad behaviour. Selfish inhabitants, who hoarded their own household refuse for private sale were castigated as a threat to the health of their neighbours, and forced to abandon the practice by increasingly strict laws on the collection of rubbish. Good citizens complied with regulations: by putting their household rubbish out at the appointed hour, they assisted in improving the urban environment, and benefited from lower rates.

LOCAL SESSION 2

MANORIAL COURTS AND THE MANAGEMENT OF COMMON LAND: NORTHERN ENGLAND AND THE SCOTTISH BORDERS, 1400-1700

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In the late-medieval and early-modern periods, manorial courts were the principal institutions regulating the exercise of rights on common land. In the uplands of northern England and the Scottish Borders, the courts oversaw the management of many thousands of acres of rough hill and moorland, which formed not only the vital grazing resource for a pastoral economy but also a source of fuel and other materials.

This paper focuses on the workings of manorial courts as local regulatory bodies, examining the legal context of their decision-making processes; the principles (such as the preservation of 'ancient custom' and 'good neighbourhood') that lay behind the orders and byelaws they formulated to regulate the use of common land; and the practices they developed to police the exercise of common rights. A major theme is the effectiveness of manorial courts in the management of change. Maior aspects of the transition from medieval to modern farming systems in the uplands can be dated to the 16th and 17th

pastoral land use. The response of the local men who formed the manorial court juries included reiterations of 'ancient custom', attempts to steer the direction of change, and tighter restrictions on the exercise of common rights. The role of manorial courts in the management of common land illustrates such central themes in environmental history as control of access to natural resources and the tensions between individual liberty and the interests of community.

THE EXPLOITATION OF PEATLANDS AND COMMONS – A HISTORY OF THE CULTURAL USE OF A COMMON RESOURCE.

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The exploitation of peatlands, heathlands and commons has been shown to be vital to many people throughout a substantial period of European history. Indeed for many of the 'common' people, especially the rural poor, (and until quite recently) this resource was vital for life. Subsistence utilisation of these landscapes, be it the peatlands and heaths of Britain, Ireland, and Atlantic Europe, or the heaths, grasslands and scrub communities of the Mediterranean, persisted to the late twentieth century, but has now substantially declined.

Case studies are drawn from work across the UK are presented to demonstrate the scale of environmental change and to highlight the implications for contemporary management of the landscape. Key problems in the interpretation of landscape change are noted, and it is suggested that these have caused a general misunderstanding of the scale and importance of this usage. It is further indicated that the ecological character of this resource has also been frequently misjudged, and therefore the ecological consequences of abandonment of traditional exploitation, often over a period of 200-400 years underestimated.

The work is set in the broader context of landscape change and the problems in reconstructing the past to help illuminate our understanding of the present.

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EXTENDING THE BOUNDARIES: A PALYNOLOGICAL VIEW OF MEDIEVAL AND LATER RURAL SETTLEMENT DEVELOPMENT AT RELAQUHEIM, ABERDEENSHIRE

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Exceptionally well-preserved Medieval and later rural settlement and field systems occur around the farmstead at Relaquheim, in the Grampian Mountains, NE Scotland. The site is unusual in its location at over 350 m OD, which many would infer to be a 'marginal' upland setting. The archaeological remains and limited sixteenth century and later documentary and cartographic sources cannot establish (1) the nature of pre-Medieval land-use, (2) the continuity of activity from pre-Medieval until recent times, or (3) the nature and timing of changes in land-use over the last 1000 years. Pollen analysis can provide a continuous record of changes in vegetation and land-use, enabling a clearer understanding of the context of rural upland agriculture to complement existing data sources. Fine resolution palynological investigation indicates that mixed agriculture was established in an essentially open landscape by the third century AD. Increasing activity is recognised from the eleventh century AD. Integrated palynological, documentary and archaeological evidence suggest the formation or consolidation of a highly organised, intensively managed farming system from the fourteenth century onwards. Human responses to climatic change are discussed since climate has been seen as a critical factor controlling upland agriculture, especially during the so-called 'Little Ice Age.' The palynological data also raise questions about management practices which documentary and archaeological sources cannot answer, but which would remain unrecognised without the use of environmental archaeological methods. Fine resolution pollen analysis thus addresses issues which are of relevance to environmental historians, who employ different techniques but share common goals.

LOCAL SESSION 3

SCIENTIFIC VALUES AND LANDSCAPE CONSERVATION IN GLEN ROY, NORTHERN SCOTLAND

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Nature Conservation is normally associated with the protection of habitats, fragile ecosystems or landscapes of outstanding beauty. However, a landscape can become an interesting place through human action, not only through physical changes to the landscape, but also the emotional, intellectual or scientific values that can be invested in certain landscapes. Such a landscape exists in Glen Roy, south of the Great Glen. Glen Roy derives its interest from a geomorphic phenomenon known as the 'Parallel Roads', a sequence of lake shorelines that were constructed during the final stages of the Pleistocene glaciation when the valley was dammed by glacial ice. During the 19th century Glen Roy became the focus of debates about the geomorphic evolution of northern Europe, involving Charles Darwin, and Charles Lyell amongst others, which culminated in the acceptance of the ice age theory. In 1955 the Forestry Commission announced its intention to purchase a significant part of Glen Roy, for afforestation. This threatened the 'Parallel Roads' by concealing them from view and by partially destroying them. In 1958 Glen Roy got the status of a National Nature Reserve. This did not happen under pressure of environmental groups or popular action. Glen Roy became a Nature Conservancy. This paper aims to uncover how the Nature Conservancy convinced the Forestry Commission with other than amenity or ecological arguments to refrain from planting in the area.

POWER, PROTEST AND THE 'SHINING RIVERS': WATER RESOURCE DEVELOPMENT AND LANDSCAPE PROTECTION IN 20TH CENTURY RURAL SCOTLAND

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With the need for cleaner energy becoming an ever-higher priority for environmental policy makers, the story of the development of hydro-electric power in some of Scotland's most cherished landscapes gains new significance.

Most twentieth century Highland water resource developments were related to hydro-electricity projects. The geological formations responsible for the arresting scenery of fabled lochs, glens and waterfalls – Loch Lomond, Loch Tummel, Glen Affric and the like – also made ideal hydro-electricity sites. The ambitious hydro-electric schemes envisioned for Scotland and the efforts of those who tried to prevent their realisation reflect a complex interplay between parties intent on ensuring the best use of Scotland's glens; on the one hand as scenic elements of a landscape to be preserved inviolate and on the other as workhorses of the power which it was hoped would energise the economy and infuse the Highland way of life with light and industry. This account sheds light on the changing issues affecting concepts of aesthetically pleasing landscape and methods for its protection. Ultimately it was for economic rather than aesthetic reasons that the schemes faltered in the 1960s.

The argument has resurfaced following the European Union-imposed Renewables Obligation, recently revised national planning policy guidelines and renewed interest in Scotland's potential as a site for emission-free energy production. Hvdro-electric proposals are being considered along with plans for large scale wind farms, and attempts to reach a fresh

background information.

THE GREY SEAL PROBLEM IN SCOTLAND 1900-2000: USING HISTORY TO ILLUMINATE THE ROOTS OF A CURRENT CONSERVATION CONFLICT

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This paper will examine the history of the grey seal in Scotland over the last century. In particular, it will focus on our different reactions to the animal over time, and reveal why in the modern era fishermen still demand from government a return to the seal culls of the 1960s and 1970s, whilst many (voters) in Scotland treasure the sight of a seal. The paper will be broad based, to show how the seal problem is also a political, environmental, social, cultural, economic and animal welfare problem. In the nineteenth century, the grey seal was hunted as a resource in Scotland. By the late twentieth century it has become an environmental icon to many, and perhaps the most dramatic example of a nature conservation success in Scotland. We often talk about conservation failures, but very rarely do we address conservation successes and the problems they can bring. In 1914, the Grey Seals (Protection) Act established a close season for this mammal as the British population was thought to number just 500 animals. Further protection from Parliament came in 1932 and 1970, and by 1999 the British grey seal population stood at 123,000 most of which are in N and NW Scotland. Reasons for this massive expansion in population will be presented. It is the aim of this paper to show how environmental history can shed light on the historical development of modern countryside conflicts. The historical material presented should be of interest to historians, conservationists, biologists and policy-makers currently responsible for seal management policies in Scotland.

POSTER SESSION

LAKE FERT/NEUSIEDLER – CASE STUDY ON A WETLAND LANDSCAPE (LATE MIDDLE AGES – EARLY MODERN TIMES)

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Before the drainage works, one quarter of the lowland area of Hungary was covered by water in one part of the year. Not only climate variability and changes, but also changing human influence played a significant role in the extension and appearance of these wetland environments. The example of the most sensitive site of a wetland area, a lake and connected swamp, shows how a human-environmental interaction which is partly typical and partly different from the contemporary wetland management in the Carpathian Basin.

The frequent waterlevel changes of this extremely shallow lake and the swamp are strongly influenced by the climate changes and variations of its catchment area. which extends to the eastern Alps and the northern Transdanubian region

the sixteenth, and extensively from the late seventeenth century.

This wetland environment looked fundamentally different to the present surface. The early modern and late medieval features of the wetland environment can be followed only in the close vicinity of the lake. However, present attempts to create (within the territory of a National Park) a quasi-natural wetland environment (in the junction of the east-west and north-south bird-migration routes) need detailed reconstruction of the early modern natural conditions. On the basis of the available sources and other evidence, an attempt is made to map the early modern environmental conditions of the area, pointing out the changes, which have occurred up to the present.

COMMAND TO NATURE: WITCHCRAFT VERSUS NATURAL ENVIRONMENT

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In this poster presentation I would like to focus on the medieval and early modern popular beliefs concerning witchcraft and their relevance to the environmental history. A particular emphasises will be put on the cases of witches which supposedly could influence the natural environment through their spells, such as rising up of atmospherical disturbances, poisoning of cattle and food products, destroying of crops and vegetation. Those aspects of witchcraft will be illustrated by numerous examples taken from demonology treaties written in XVth-XVIIth centuries as well as by the cases of Swiss witch trials. In regard to these examples I will attempt to determine whether the crimes attributed to witches were a product of demonologists' doctrine or rather belonged to the secular folk beliefs. The iconography relevant to this topic being particularly rich, I also intend to accompany this poster presentation by the comments of various representations of witches disturbing the natural order.

RABBITS FROM ST. ANDREWS TO KÖNINGSBERGEN. LONG-DISTANCE TRADE AND LOCAL ECOSYSTEMS, 1300-1600

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The history of the rabbit in Northern Europe is a case-study that may be placed in two main strands in ecological history: the history of the introduction of exotic animals and the history of the influence of long-distance trade on local ecosystems. The rabbit was introduced in Northern Europe in the thirteenth century as a prestigious and luxurious source of fur and food. Its great economic and ecological succes soon turned it into a mass commodity that was produced in large quantities in special rabbit gardens, or warrens. This poster puts the succes story of the rabbit in the broader perspective of how demand affects ecosystems through long-distance trade in the age before and leading up to ecological imperialism and globalisation. As such it follows up on ideas introduced by Hoffmann, Hacqebord and others in the 2001, 2 special issue 'Beyond local ecosystems' of *Environment and History* (Cambridge). A first introduction to the history of the rabbit in northern Europe I published as 'Status Loss Due to Ecological Success. Landscape Change and the Spread of the Rabbit', *Innovation: the European Journal of Social Science Research* 14 (2001) 2: 157-171. a special issue devoted to 'Nature.

CZECH INTERNET JOURNAL FOR ENVIRONMENTAL HISTORY AND FIRST ENVIRONMENTAL TOPICS IN THE CZECH HISTORICAL AND HISTORIC GEOGRAPHICAL WRITINGS

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The poster comprises two parts. The first provides information on idea, concept, content and aim of the first Czech Internet journal for historical geography and environmental history called Klaudyan (http://klaudyan.psomart.cz). It is a unique and effective platform serving as stimulator and organiser for development of research in environmental history in Czechia. Some basic information about state of environmental history in Czechia is outlined.

The second part contents paper entitled "Environmental traditions in the Czech historical and historic geographical writings". This paper provides a brief outlook of both fields of literature mentioned above published in Czechia in 20^{th} century which has been devoted in certain sense to the environmental history topics (mainly to environment or cultural landscape reconstruction). Main attention will be dedicated to the personality of Bohemian German W. Friedrich (1881-1914) who published in 1912 book concerning the reconstruction of landscape and environment in early medieval Bohemia (6. – 12. century).

THE ARCHAEOLOGY AND ECOLOGY OF MANAGED ANCIENT WOODLANDS: UNDERSTANDING THE COINCIDENCE OF INTEREST.

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Ancient woodlands in Britain have been extensively researched and in many cases thoroughly documented. Despite this, there still remains a dearth of collaborative research that considers both the ecology and archaeology of many of these sites.

Two major problems are highlighted. The first is that most woodland ecologists have little experience or training in the recognition or interpretation of archaeological features. (Indeed, many archaeologists are actively defensive in discouraging ecologists to cross the disciplinary divide!). The second problem is in relation to what is recognised as 'archaeology'. The soil, the ground features, and the vegetation may all hold clues to former management and indeed to former landscapes. However, these aspects of a woodland are often ignored by archaeologists either more interested in 'monuments' and 'artefacts' than earth and vegetation, or simply untrained to recognise these subtle landscape features. Trained archaeologists tend to recognise archaeology 'in' woods, but not the archaeology 'of' woods. Both a cause and a

consequence of this situation is that there is presently almost no literature to guide the would-be field worker or to inform a site manager, in surveying or evaluating the archaeology of their woodland resource.

Ancient woodlands in England, in some cases in the heart of major urban areas, may hold evidence of landscape utilisation going back over 3000 years. Only recently has much of this evidence been formally recognised. This situation raises serious issues of an urgent need for cross-disciplinary collaboration and for effective training and support for field workers. Many of these landscapes are extremely vulnerable to inappropriate management or to intensive recreational disruption. Often unrecognised they may be lost or degraded very easily and very quickly.

Case studies are presented from South Yorkshire and North Derbyshire in England, and the argument is supported by preliminary observations from elsewhere in Europe.

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IONISING RADIATION IN THE ENVIRONMENT AS AN ADDITIONAL SOURCE FOR STUDYING THE PAST

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The ionising radiation found in the environment can be used to investigate the nature and intensity of human activity as well as to assess the transformations, over the course of time, in the hyper fine structures of archaeological artefacts and old architectural structures.

Naturally occurring radionuclides are variously distributed across the face of the planet but pre-nuclear age human activity can alter the accumulation of the specific activity of radionuclides in an area by more than even double at different cultural layers. The intensity at various cultural layers in Vilnius of 40K, one of the more distinct examples, ranges from 7.8 to 43.2 Bg/kg, i.e. from 40% to 60% of the background radiation. The fluctuation of 40K is related to the dispersion of the products of burning (ashes, aerosol smoke particles, etc.) into the environment.

The specific activity of radionuclides not only reflects human activity but also is an active factor influencing the transformations of the hyperfine structures of artefacts, in other words, the aging processes of materials. These transformations are prospective parameters for dating and reconstructing the characteristics of artefacts and ancient technology. To use these, it is essential to know the precise quantities of ionising radiation the artefact has absorbed. Since the mid-twentieth century, the addition of artificial radionuclides (created during nuclear reactions), e.g. 137 Cs, 92 Sr, 239 Pu, etc. into the environment has significantly altered the levels of background radiation, creating yet another reason to study the specific activity of radionuclides.

SESSION 4

<u>4:1</u>

¹³C PEAT PROFILES: RECORDS OF THE TEMPERATURE OF THE VEGETATION PERIOD IN THE LAST MILLENNIUM IN POLAND

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Carbon stable isotope analyses have been carried out in three raised Polish peat bogs. These are "Zieleniec" and "Szrenica" in the Sudety Mountains (Southwest Poland) and Suche Bagno in the Wigry Lake District (Northeast Poland). The vertical peat cores, from c.a. 60 to c.a. 153cm long, were divided into 3 to 5cm thick intervals and ¹⁴C dating was used to correlate corresponding profiles. Values of δ^{13} C are quoted relative to the Pee Dee Belemnite (PDB).

 δ^{13} C in the peat profiles vary from -31 to -22‰. The isotopic composition and directions of δ^{13} C variations in the profiles in the same age horizons were similar. It has been suggested that variation in δ^{13} C of peat is dominantly governed by variations in temperature of vegetation of *Sphagnum Sp.* composing given strata. It has also been shown also, that the increase in the vegetation temperature by 1°C results in decrease in δ^{13} C value by about -0.6‰.

Based on δ^{13} C calibration, the following sequence in the climate variations between 600 and 1950 BP in Poland has been proposed (Fig.1): about 600-1050 AD cold period, 1050-1200 AD very cold period, 1200-1550 AD very warm period – Little Climatic Optimum, 1550-1820 AD very cold period – Little Ice Age, 1830-1960 AD warm moderate period – Global Climatic Warming.

Fig. 1. Calculated plots: Szrenica – three point running average filter, Zieleniec – raw data, Suche B. – curve calculated from three profiles (Suche B.1, Suche B.2, Suche B.3)



CLIMATIC CRISES AND SOCIAL INNOVATION IN SIXTEENTH CENTURY ZÜRICH

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Over the 1990's our knowledge of climatic variability and natural disasters in the last millennium has greatly increased. On the other hand, the study of the social consequences of severe climatic anomalies was neglected.

The paper analyses the management of subsistence crises in the canton of Zürich (Switzerland) in the second half of the Sixteenth Century. In the early 1570's and in 1586/87 the Zürich council had to face widespread unemployment and rising prices. To this end the council closely cooperated with the clergy who proposed far reaching social innovations such as job-creating measures, marriage restrictions, the invention of begging letters and close cooperation between the city and the rural communities concerning the maintenance of the poor. The clergymen supported their arguments with a large body of demographic data obtained from parish records and climatic data that had been collected over the preceding decades. The climatic data include the famous weather diary (1546 to 1576) of Wolfgang Haller who was the archdeacon of the chapter at Zurich as well as a 24 volume chronicle (about 1560 to 1587) that was compiled by Johann Jakob Wick. This information was complemented with reports on the situation in neighbouring countries and regions which the dean Heinrich Bullinger drew from his European wide correspondence. It is shown how this coherent body of evidence was efficiently used for improving crisis management. In sum, the paper highlights the revolution of communications and its significance for social innovation in the climatic change in the late Sixteenth Century.

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On the basis of visual daily observations and written narrative sources the course of weather in the Czech Lands in the period 1769-1772 is described with particular consideration of disastrous poor harvests in the years 1770-1771 as a result of prevailing outstanding rainy weather. Its synoptic-climatological causes are analysed according to the reconstructed sea level pressure field in the months of March-August. Poor harvests, together with other factors, caused high prices, hunger and diseases. Impacts of poor harvests on the dramatic increase in grain prices and population mortality are studied in the context of the rescue measures of the Vienna Imperial Court. Changes in the diet habits and the role of the hunger years as one of the impulses for the rise of the serf uprising in the year 1775 are referred to.

'WEATHER EXTREMES AND CLIMATE VARIABILITY, ECONOMY AND POPULATION IN THE NETHERLANDS, 1650 TO 1800'.

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This paper deals with the impact of climate extremes on human society. Until very recently trends of prices and wages were very much used to explain the development of population and the way in which man dealt with it's environment. At the same time the impact of nature such as climate was often very much neglected. Growing awareness of this neglectance caused by the warming of our climate and especially caused by the occurance of last year's weather extremes has led to a reassessement of the impact of weather and climate on human societies as such.

In fact, climate extremes such as storms and storm surges, extreme winters or hot and dry summers and large scale floodings have always had an impact on society, e,g, on economics (prices, wages), agricultural production and on the population (mortality, diseases) in particular. So this paper is an attempt to re-assess the impact of climate showing how the 18th century economic and social development in the Netherlands is not only very closely connected with climate variability but wittnessed the impact of climate extremes as well.

<u>4:2</u> INDUSTRIAL POLLUTION IN 19TH FRANCE : KNOWLEDGE AND IMPLEMENTATION OF CLEANSING PROCESSES
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The paper aims to analyse what was exactly known about the pollution factories emitted in 19th century (precise nature, consequences, possible cure), who knew that, at what date and why, when means existed to prevent pollution, they were not always implemented.

Historians know that the concept of protection of the environment is an anachronistic one for the 19th century. In contrast, that of pollution as a danger for public health and an interference with the free enjoyment of certain rights (ownership...) or activities (agriculture, industrial activities suffering from pollution...) was used. As soon as the middle of the century and sometimes much earlier national or local authorities began to worry about the possible consequences of industrial pollution on public health and to tried to regulate or contain it with more or less willingness and efficiency. Nonetheless, in spite of some partial successes, old industrial pollutions went on and new ones appeared. The paper will try to evaluate what people (industrialists, scientists, engineers, public authorities) exactly knew about pollution, in order to answer the following question: if pollution went on despite the worry it caused and the claims it raised, was it because what was known about its nature was insufficient to prevent it without stopping the development of industry, or for other reasons, and which ones? It will show that much was known, at least by some. It will then explore the reasons which prevented this knowledge from being systematically implemented. The profit, although it played a great role, was far from being the only one.

LEAD EMISSION IN PARIS IN THE 19th AND EARLY 20th CENTURIES

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Lead and lead compounds are mainly used in an urban context: gas and water were distributed through lead pipes, walls were painted with white lead until the beginning of this century, and (tetraethyl)lead is associated with petrol and car traffic. The aim of this paper is to examine the contribution of the industrial lead and lead derivatives production to the pollution of urban areas in the 19th and early 20th centuries.

At the turn of the late century, three fourth of the French lead industries were located in Paris and its surroundings. Apart from their inventory, we analysed their processes, along with lead flow, in order to enlighten the contribution of those activities to urban lead pollution. White lead was produced either by the so-called "Dutch process" or by the "procédé de Clichy". The evolution of the two processes is a good example of innovations due to several factors: scientific progress, hygienist awareness as well as political and economical interests.

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1Man has harvested the marine and aquatic environments since the earliest historical records. Animals of all kinds have been harvested, in lakes and rivers, in estuaries, along ocean shorelines, and in the open oceans. The effects of man's harvesting on the populations of animals has been of increasing interest over this last century.

The paper argues that we need to combine the approach of maritime history and ecological science with that of environmental history. The key to this new area of study is the integrated study of marine ecosystems and human society. Whereas conventional interpretations of the past adopt a markedly anthropocentric approach in explaining the developmental process, the environmental history approach identifies mankind as one factor in a broad ecological network of complex interactions. The research effort in the environmental history sub-discipline has so far focused on the terrestrial environment, notably temperate plains and tropical rain forests. Marine environmental history will broaden the scope of the research field to investigate the life forms and ecosystems that have evolved in the oceans.

The paper will provide an introduction to methodological and theoretical problems facing the recent global project History of Marine Animal Populations, currently being undertaken as part of the global ecological research programme Census of Marine Life, <u>www.coml.org</u>.

THE EXTINCTION OF THE BOWHEAD WHALE IN THE EASTERN ARCTIC, 1600-1900

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The paper reconstructs catch, yield, and price data for Bowhead Whales from the Dutch, British, German, and other whaling nations. These are used, first, to estimate the stock of whales from the mid-seventeenth century through the nineteenth. The stock estimates show the stages of extinction. Economic models are estimated econometrically and used to simulate the history of the whaling industry. The simulations sort out the importance of the factors responsible for the extinction of the whales--subsidization, technical change, climatic variation, and so forth.

<u>4:4</u>

METHODS FOR ANALYSIS AND FORECASTING OF ENVIRONMENTAL HISTORY DYNAMICS

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Correct analysis of dynamics of direct as well as indirect historical data will allow decide three main problems:

- to determine a regular properties of different elements of environmental during historical period;

- to use the obtained properties for forecasting of possible future changes;

- to separate natural changes from the anthropogenic ones, which take place in the last century.

Each time series is characterised by two main properties:

- compositional structure, which reflects the superposition of homogeneous components of different time scales;

- cyclic nature, which is connected with environmental dynamics.

The second problem of historical time series processing connects with non-homogeneity of data and their possible big errors. For reducing of these unfavourable peculiarities two approaches are suggested: assessment of extraordinary outlying values in the particular time series and generalisation of many time series over the space.

Empirical-statistical methodology and the particular methods and models for processing, description and extrapolation of historical dynamics have been developed. The suggested methodology includes the follows main steps:

- assessment of homogeneity of historical time series by developed adequate tests;

- development of the common model of time-space fluctuations for non-homogeneous - non-stationary process;

- extraction of homogeneous components of different time scales from historical time series (inter-annual, decadal, centennial, millennium, etc), assessment of their contributions in the common variability and interrelations between components;

- determination of characteristics of dynamics for each homogeneous component, assessment of their regular properties and choice of the kind of time model (deterministic-stochastic or stochastic);

- extrapolation on the basis of chosen kind of time models;

- generalization of observed data over the area including the choice of homogeneous regions and development of space models;

- assessment of regular properties of the parameters of space models over the time and their extrapolation;

- assessment of predictability of environmental characteristics of different time scales and possible time limits of such extrapolation.

New robust methods have been developed for the practical realisation of suggested methodology and their detailed analysis is given in the paper. Assessment of the efficiency of developed methods have been shown on the numerical synthetic examples as well as compared with outcomes of natural filtration, which takes place in water levels of lakes without outflow, soil temperature on the different depths, rings of trees, layers of silt, etc). Application of developed methods and models are shown for observed and paleo-data of different environmental characteristics (solar activity, water level of Caspian sea, rings of trees, layers of silt, air temperature and other).

THE VALUE OF LANDS. (POLITICS, TAXES AND SCIENCE IN THE RUSSIAN ZEMSTVO LAND TAXATION.)

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The introduction of the provincial elected self-government (Zemstvo) was one of the liberal reforms» of 1860-s. The great number of zemstvo surveys (statistics) had been carried. Formally they were to back up land taxation, but their real aims were broader.

Geography is a tool of power. In 1860-s liberal government in Petersburg, public and Zemstvo representatives considered Zemstvo to be the local government with all attributes: exploration, census and mapping.

Liberal «know how». Statistics served to the liberals' political rhetoric against the central government. Liberals claimed the program of political reforms based on the «true scientific knowledge» of the country that Petersburg government was lacking.

Agricultural reform. Statistics and taxation were to back up the agricultural reform. Zemstvo activists thought the semi-feudal agriculture to be extremely ineffective. Land tax should make landlords to sell lands to the peasants.

Non market value of lands. The left radicals were in opposition to the development of rural capitalist market. For them the studies of nature were to define the «real» value of land, contrary to it's market value.

Professorial response. Zemstvo invited young private docents to study the local environment and economy. Many Zemstvo employees were the former university students speaking the same language as their former professors. The scientific result was outstanding in botany, soil science, geology, hydrology, economics etc.

Consensus. This «honeymoon» was based on the consensus of central power, Zemstvo moderates and radicals, academics. Neither before the «Great Reforms», neither later the views of social groups were represented so openly.

SESSION 5

<u>5:1</u>

CLIMATE HISTORY OF THE CARPATHIAN BASIN DURING THE LAST FIVE CENTURIES

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The data base of the climate reconstruction are mainly drawn from human evidence, principally from chronicles, from personal papers (diaries, calendars) containing intermittent meteorological entries, from non-instrumental weather diaries that contain both instrumental measurement and visual observation. I have completed the documentary data with the instrumental data of the meteorological station network. The construction of the five hundred vears long time series offer

is a nearly 300,000 square kilometre large area, therefore I have to distinguish that for four macro-regions are the next: Transdanubia, Northern Hungary, Hungarian Plain and Transylvania. The time resolution of the records varies from ten days period to months and seasons. The data classify into explicit weather data and proxy-data. The former compromise quantitative (in terms of the number of rainy, snowy and sunny days per month) or verbal description of weather and instrumental measurements: the latter describe such phenomena as snowfall, snowcover, the freezing of water bodies, and the blossoming, ripening and the yields of corps, which are governed by meteorological variables. The Hungarian temperature and precipitation time series I compare with other Central European climate history series thus with Checz, Swiss and German time series.

HISTORY OF CLIMATE AND WATER IN THE LAST TWO-THREE CENTURIES IN EUROPE

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Records of observations on air temperature, precipitation, water level and discharges at some stations in Europe reach 2-3 centuries to present moment. Several dozens of such time series with the longest records of observations on annual and seasonal characteristics have been chosen. Empirical-statistic approach and new methods of data processing have been applied for a decision of the following problems:

- determination of the number of homogeneous components of different time scales in period of 2-3 century and their regular properties;

- assessment of stationarity of parameters for each homogeneous component;

- assessment of long-term climate change contributions in XVIII-XIX centuries for conditions of quasi-natural variations of climate and in XX century under strong man's impacts;

- assessment of the stability of synoptic processes (atmospheric dynamics) during last 2-3 centuries.

-

Different methods of decomposition of time series have been used (truncation method, smoothing of amplitudes of cycles, consecutive averaging with constant time period) and the results have been generalised. For all time series 3 homogeneous components have been extracted, their parameters have been obtained and they have inter-annual, decadal and centennial time scales.

For the assessment of stability of parameters and contributions of each homogeneous component the longest time series have been divided into two sub-samples: the last part belonging to XX century and previous "natural" period. Main parameters of fluctuations (periods, amplitudes of cycles and other) and the contributions have been obtained for each sub-sample and for whole process and for each homogeneous component. Obtained differences gave the information about stability. It has been established that the parameters of inter-annual process are stable during the whole 2-3 centuries, but parameters of decadal component are stationary in the most cases, but for some time series have regular tendencies. Contribution of long-term climate change component in the last century has been on 30% more, that can characterise the additional anthropogenic impacts.

For the assessment of a stability of synoptic processes during the last 2-3 centuries, the monthly data have been used and the joint model of intra-inter annual fluctuations has been developed for each time series. This model allowed extract the component connected with each-year seasonal function (in form of two parameters) and component connected with synoptic scale of fluctuation as a parameter of intensity of such processes in each year. Analysis and comparison of the results for different centuries allowed obtain the increasing of synoptic activity in the recent period.

Obtained regular properties of the longest time series have been used too for an assessment of predictability of air temperature for the nearest 10-15 years period and a determination of random errors for computed hydrological values, which are used for design of future water projects.

<u>5:2</u>

GREEN CRUSADERS OR CAPTIVES OF INDUSTRY? ENVIRONMENTAL REGULATION IN NINETEENTH-CENTURY BRITAIN

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The relationship between science and public policy that blossomed through the course of the nineteenth-century is a road well travelled by academics. Crucially, Victorian government scientists have been depicted as experts guided by professional ideals of neutrality and objectivity. This paper will explore this image, with particular reference to the first chief alkali inspectors, Robert Angus Smith (1817-1884) and Alfred Evans Fletcher (1827-1920). Under the Alkali Acts of 1863-1906, these men were entrusted with the protection of landowners' property from the pervasive pollution emitted by chemical manufacturers. Between 1864-1895, Smith and Fletcher served as arbitrators, technical experts, teachers, shepherds and referees combined, seeking to resolve local disputes between landowners and manufacturers over 'muck and brass.' Yet on a grand scale, the alkali inspectors grappled with essential issues such as liberty, utility and rights, as they sought to solve the intrinsic conflict between the protection of the chemical trade and national economic prosperity, environmental well-being and laissez faire ideology. This paper will focus upon biographical factors and discretionary enforcement procedures to reveal precisely how Smith and Fletcher tackled the inherent conflict of interests. It will illustrate the centrality of individual methodological and intellectual imperatives to the discretionary enforcement of Victorian environmental legislation, and show that neutrality was in reality a hard won outcome of complex motivations and value-laden judgements.

SYSTEMATIC IDENTIFICATION OF INDUSTRIALLY POLLUTED AREAS IN A SWEDISH RIVER BASIN USING HISTORICAL DATA SOURCES

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The cost of future reclamation activities of known polluted sites in Sweden was in 1993 estimated at 30 billion SEK.

approach and chance influences what is known and what will be further studied. This is not satisfactory and therefore we suggest that a systematic study of historical sources describing the production, use of raw materials, generation of waste and possibly emissions for potentially polluting activities should be used in this process.

In this paper, a study is presented that aims at identifying industrially polluted areas in a Swedish river basin. These areas could potentially become suitable objects for reclamation activities. Substances in focus of this study were chosen by a river basin organisation and included the metals cadmium, copper, lead and mercury as well as the organic pollutants polychlorinated bi-phenyls (PCBs) and poly-aromatic hydrocarbons. In this article, the approach will mainly be exemplified by using mercury. The main focus of this study is on industrial activity from 1900 to 1970.

The studied substances were connected to different trades and thereafter the region was invented in search for industries representing these different trades. The main source of information for the study was the official national statistics for industry. These data are organised in parishes and the results from this study was instead organised into 19 river subbasins, in order to fit into an organisational framework of river basin management. For the largest companies of the basin, the use of raw materials, processes and emissions were estimated.

The state of the environment has for a long time been studied intensively in this basin. Still, this study has contributed to an improved understanding of the pollution dynamics of the basin as well as suggesting a priority between different polluted areas. Reclamation projects have been initiated in the basin and when deciding the priority between them, studies of historical data sources and estimates of earlier emissions have not been included. The results from the study presented here would probably have influenced the order of priority. An important advantage of this approach, based on a systematic inventory, is that it makes it possible to find "new" polluted areas and not just fulfilling our prejudices concerning what is already known, which sometimes occur in mainstream environmental chemistry.

POLLUTION DISPLACEMENT: THE TOXIC LEGACY OF TOWN GAS IN BRITAIN

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Europe today faces a toxic legacy: environments polluted by past industrial activity. A substantial number of such sites once contained gasworks, where coal was heated and its volatile constituents distilled to create a product known as town gas. Paradoxically, a century ago many lauded gas as the ideal way to prevent air pollution. Gas had been widely used for lighting in Britain since the early nineteenth century. By the 1870s new types of gas appliances made it possible to use it for heating and cooking as well. Smoke-abatement activists and gas industry officials alike asserted—correctly—that the burning of gas would fill the air with smaller quantities of particulates and volatile organic compounds than coal. Yet gas enthusiasts often failed to recognize that the production of this fuel did not eliminate environmental problems associated with coal. Instead, it shifted them from sites of consumption to those of production. Air pollution declined in many places, but it grew worse in those containing gasworks. In addition to displacing pollution geographically, the conversion

and groundwater beneath many of them remains highly contaminated by substances released when gas was produced, including heavy metals and carcinogenic organic compounds.

<u>5:3</u>

ÖRESUND AND THE ISSUE OF WATER POLLUTION AND PROTECTION: THE GROWTH OF REGIONAL, NATIONAL, AND INTERNATIONAL COOPERATION 1940-1960

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Öresund, the strait, between Skåne (Sweden) and Sjaelland (Denmark), connects Baltic Se with the North Sea. The plant and animal life in the Baltic Sea is dependent on the oxygen and salt content of the water which flows from Kattegat (North Sea) through Öresund. The environmental discussions which preceded the construction of the massive new bridge over the strait (this bridge between Malmö and Copenhagen was opened in July, 2000) were above all about whether or not the water flow could be guaranteed despite the bridge. However, Öresund is burdened with nutrients and various pollutants because of the concentration population, industry and agriculture on both sides of the strait.

Already during the 1920s and 1930s Danish and Swedish biologists talked about the changes in the state of the bottom as well as in the fauna and flora in Öresund, which were said to be due to pollution. In June 1943 The Swedish government received an official letter from the Royal Danish Board of Health. The Danish authority wondered what actions had been take in Sweden against water pollution of Öresund. It may be claimed that this letter signified the beginning of a new phase in the history of water pollution and protection of Öresund. The purpose of my paper is to illuminate in tentative words how Swedish-Danish cooperation was built up from occasional contacts in the middle of the 1940s to the establishment of permanent water committee of Öresund in 1960.

SPACES OF WATER PROTECTION: FROM OSLOFJORD TO THE NORTH SEA

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My current work has focused on the history of the development of the protection of Oslofjord in the 20th century. The intention is to enlarge is this work to describe the development of regional, national and international cooperation after WW II. The paper will focus on the role of different actors, of politicians, engineers and natural scientists in the formulation of water protection policies. Special attention will be paid to the role of Oslo and municipal authorities in the development of national policy concerning the North sea. Technical, natural scientific and political sources will be used.

PHYLLOXERA - THE ANATOMY OF A BIOLOGICAL CATASTROPHE

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In contrast to other types of natural catastrophes like stormfloods, landslides or hurricanes, pests and diseases of plants and animals are a neglected field not only in environmental history. A biological or biogenic catastrophe can be understood as an extreme event of nature having biological causes. This type of catastrophe needs other sorts of countermeasurements. Damages are not so clearly visible and have to be detected in an expensive way. Moreover, it was complicated to understand the mechanisms behind the catastrophe. Research on biological catastrophes allows us to learn more about the measurements of earlier societies against events, which were able to destroy parts of their entire agricultural economy. The appearance of phylloxera from the mid 19th century onwards can be understand as the prototype of a global pest. A comprehensive monitoring apparatus, or a "phylloxera bureaucracy" was set up not just in Germany, but in all affected countries. In 1878 and then finally in 1881, monitoring of vineyards, trade with wine stocks and exchange of information on the spreading of the phylloxera was regulated by an international phylloxera convention between a few European countries. This way of organizing and coordinating the measurements was a remarkable early attempt of international cooperation.

POLITICAL ECONOMY OF EUTROPHICATION: THE HISTORY OF ALGAL BLOOMS IN THE BALTIC SEA

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Eutrophication is nowadays generally acknowledged as being the main environmental concern affecting the Baltic Sea. The fragile scientific and social consensus regarding the adverse effects of eutrophication is, however, relatively new; our studies indicate that for the most part of the 20th century eutrophication of the Baltic was viewed as a desirable and profitable conjuncture. By studying scientific articles and parliamentary committee reports concerning marine production, we have created a picture of how public perception of the sea has changed during the last century. From the commencement of hydrobiological research in the late 1800s, marine research was viewed by government officials and scientists throughout the Baltic Sea area as a means of augmenting fish production, and later on of commercially utilizing plankton. Methods for increasing the upwelling of accumulated nutrients from the sea floor, and for raising the temperature and salinity of the Baltic, were discussed in scientific articles and journals. Our finds indicate that this development peaked during the second world war and in its immediate aftermath. In the 1960's the discovery of toxic algae, coupled with the public concern developed by the super-toxins PCB and DDT, raised awareness of the adverse effects of such projects and ridirected scientific research toward other fields.

ANTHROPOGENIC EFFECTS UPON LAKE BAIKAL: USING COLLOID CHEMISTRY METHODS TO UNDERSTAND PRESENT SITUATION AND PROPOSING AMELIORATION'S

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We possess nothing except the past

Evelyn Waugh (1945)

Water resources were a vital part of our predecessors' lives. Understanding the anthropogenically driven evolution of the basin is a key for large planning of the basin. Baikal Lake, one of the deepest lake in the world, is a unique nature resource and a part of the world heritage. Baikal is one of the world largest reservoirs of fresh, high-quality surface water. It is considered one of the oldest lakes of the world; it is 25 million years old. Human settlers and industrial development changed the natural ecosystem of Baikal Lake region. Knowledge about changes in Baikal Lake water quality from the early beginnings to nowadays is scarse. An improvement of this knowledge may be important for future management of the Baikal Lake region.

Aspects of the dumping of chemical wastes in Baikal Lake and their natural and artificial sources, are analyzed. Baikal water quality data for the period 1982 -1996, are presented. In order to understand the way the primordial Baikal water acquired its present state, colloid chemistry methods involving disperse (and colloid) systems and surface related phenomena are introduced. Colloid-Chemical Processes (CCPs) present in water under dumping, e.g., adsorption of molecules or ions of pollutants on the different phase boundaries; formation of both stable (or unstable) sols and suspensions, emulsions, foams and micelle solutions; coagulation, sedimentation, and structure formation in the water mass, etc, are introduced to clarify the subject. A brief analysis of the way CCPs modify water quality and some ways of solutions for the present ecological problems in the Baikal region are sketched.

SESSION 6

<u>6:1</u> THE RUBBISH DUMPS AND TIPS OF COPENHAGEN - A HISTORICAL SURVEY AND INVESTIGATION OF POLLUTION

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Since its earliest settlement Copenhagen has grown with continuous tips of rubbish, bricks and soil. The tips which present pollution problems today are those which date from the 1880s to today. They can be divided into three groups. Rubbish dump tips, where daily refuse, industrial waste and bricks are deposited. These tips are concentrated along the coastal areas and former lakes and low-lving areas.

Belonging to the second group are those tips, where most probably no polluted material has been deposited, i.e. soil from digging somewhere else, the so-called terrain levelling. These tips are the harbour extensions.

In the third group it is a matter of filling up with both rubbish dump filling such as removed soil, bricks, etc. This can be found in the coastal areas.

A deciding factor is industrial rubbish and the chemicals, which are deposited on the rubbish dumps. The use of chemicals is closely connected with industrialization and also to which extent it has taken place.

The filled in rubbish dumps were laid out into recreational areas as well as allotments. A later pollution investigation in the allotments showed that there was strong pollution with heavy metal as well as oil and tar waste.

THE ORIGINS OF THE PIPE-BOUND CITY: THE EVOLUTION OF WATER SUPPLY AND SEWERAGE IN LINKÖPING AND NORRKÖPING, SWEDEN, 1860 – 1890

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Technological sanitary systems such as water supply, sewerage and solid waste removal are absolutely vital to modern cities. While today's water and sanitary engineers focus on problems of water supply in Middle-East cities, on how to take care of sewage in the growing mega cities in Asia or on how to deal with the "garbage crisis" in the USA, city engineers and physicians in mid-19th century Sweden faced different problems. They were at the other end of what Joel Tarr calls the "piped society". The 19th century discussions ultimately resulted in the abandonment of small-scale, often ecological, solutions – wells and waterways as well as latrine pits, the content of which was used in agriculture – for large-scale technological systems. Today, these systems are being questioned, and some researchers promote a return to the small-scale alternatives.

The aim of the proposed paper is to study the origins of the "piped society" by comparing two Swedish cities of very different character – the administrative city of Linköping and the industrial city of Norrköping. Focus will be primarily on the cultural aspects, i.e. the values, beliefs, ideas and ideologies that control, limit or facilitate the evolution of water supply and sewage management. Questions of interest are: What were the views of decision-makers, professional groups and other actors of sanitary and environmental problems in Linköping and Norrköping in the mid-19th century? What were the reasons for building water and sewer systems in the 1870s and how were they financed? What technical solutions were promoted and by whom? What cultural, technological, political, economic etc. factors made the pipe-bound alternative so attractive? Where was the line drawn between the public and private domain, as regards payment for this new technology (via taxes, water fees etc), but also as regards access to the water (the affluent inner-city residents as opposed to the suburban)? How were the rivers Stångån and Motala ström valued as sources of water supply for, as well as recipients of sewage and waste from. the two cities? What differences and similarities can be seen between the two cities as far as the

Finally, the paper will have a brief look at the national and international context. The Swedish civil engineers and physicians at the time were greatly influenced by the British, as well as the French to some extent. Scientific and technological ideas were imported through a few water- engineering pioneers, who studied primarily British water and sewerage technology on the spot.

Mary Douglas' cultural theory of dirt provides an overarching perspective, while Bruno Latour's so-called actor-network theory will help explain how different actors interacted.

HISTORICAL RESEARCH APPLIED TO THE DIAGNOSIS OF THE CONTAMINATION OF SOIL IN URBAN AREAS

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The historical investigation of areas that are under suspicion of soil and groundwater contamination has been practised by the Engineering Dept. of the city of Rotterdam for over a decade. The acknowledgement of the environmental engineers that they did not have the right equipment for throughout historical research led to the formation, five years ago, of the Historical Research Team. This multidisciplinary unit of historians and engineers operates within the engineering department. The aim of this team is to contribute to the solution of environmental problems by analysing these problems from an historical point of view.

Practically all the (re)development projects in the urban areas of Rotterdam nowadays start with a historical inquiry. The redevelopment of the area around the Central Railway Station gives an example of how historians work together with geostatistics to create a map of the 'virtual' quality of the soil in an given area. With this map the planners and environmental authorities try to answer two major questions.

First: which environmental and health hazards are to be expected due to soil contamination and how can the clean-up operation (as ordered by the Soil Protection Act) be optimised.

Secondly: what is the quality of the huge amount of soil which will be excavated during the construction works and what can be done with it (the Building Materials Decree prescripes the strict conditions on which -contaminated- soil can be re-used).

On behalf of the first inquiry historical data concerning industrial acivities, fuel depots etc. are being collected and interpreted according to the nature of the possible pollution they caused.

To get an insight in the overall quality of the soil -the second inquiry-, information on the land use in past and present, fillings up of canals. waste-disposals, destructions during the war etc. is collected and assimilated in a geografical

The unification of the results of both inquiries gives the 'virtual' quality of the soil: the contaminated spots as well as the background pollution.

<u>6:2</u>

MIXED BLESSINGS: RIVERS AS RESOURCES AND RISKS – THE CASES OF HAMBURG/ ELBE, MANNHEIM/ RHINE AND LEICESTER/ SOAR

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The paper aims to analyze the relationship between selected cities and their rivers in terms of making use of the river, technically reshaping the river but also in terms of mental imaging of the river.

During industrialization rivers have been transformed in rather comprehensive ways to adapt to the changing needs of cities on their shores. These transformations have enabled cities to use rivers in unforeseen ways for purposes of transport and industry while on the other hand severe and long-lasting environmental alterations were brought about. The paper will briefly recount this creating a man-made second "river-nature" in Hamburg, Mannheim and Leicester from the middle of the 19th century and then focus on the public perception of these rivers in their ambivalence. Hamburg stands for a city where the river and its marshes were used to create a major maritime port, almost 100 km from the sea, thereby completely remodelling the riverscape. During a catastrophic storm flood in 1962 the vulnerability of the city because of this transformation was sadly proven. Mannheim on the Rhine represents an inland port city at a significant river junction and point of transhipment. Leicester stands for an industrial town in the English midlands specialising in textile where the rather small river Soar nevertheless was essential for coal supplies and after the construction of a canal to London also for the opening of new markets in London. The paper will especially look at changes in attitudes connected with changing environmental perceptions and economic preferences.

RESTORING THE RHINE: NATURE, CULTURE, AND THE EUROPEAN COMMUNITY, 1945-1970

LEKAN, Thomas

After World War II, the Rhine River, once a proud symbol of German national identity and economic power, became a depressing symbol of Europe's ecological decline. By the late 1950s, newspaper articles, journal essays, and radio programs were reporting the death of the river; diseased fish and toxic wastes now clogged the waterway that the French had once proclaimed their "natural" border and Germans had designated as the birthplace of their national consciousness. Scholars have usually attributed postwar ecological concern about the Rhine both to unbearable pollution problems and a

growing body of scientific knowledge about ecology, particularly the emergence systems theories that recognized interdependencies and feedback loops in watersheds.

This paper attempts to understand postwar ecological discourses in a different light: as a vehicle for imagining a transnational European community after the devastation of World War II. The ability to perceive distant, non-point toxins as a threat to the Rhine's watershed, for example, depended on the development of new standardized forms of instrumentation used by the European community to monitor atomic fallout. More importantly, Europeans recognized the Rhine's cleanup as a symbol of both the limits and possibilities of cross-national cooperation after 1945. Because the Rhine's watershed included parts of 5 European countries, the river's clean up required former enemy nations to join together in a shared enterprise. Debates about sharing financial responsibility for the cleanup and appropriate measurement of ecological health, however, reflected lingering resentments from the war and anxieties about losing sovereignty over waters within the home country. Ecological systems in theory do not recognize political borders, yet this scientific fact along could not have saved the Rhine. Rather, the ability to perceive and remedy environmental problems was the result of war and devastation, which enabled Europeans to imagine the river as part of their transnational community, rather than a symbol of individual national identities.

THE POLITICS OF WATER IN SOUTH AFRICA

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With the establishment of a true democracy in South Africa in 1994 the African National Congress (ANC) government took up the challenge of transforming the South African society from its apartheid base to one that would more correctly reflect the realities of the society as a whole. Within this context it became imperative for the government to address pressing socio-economic inequalities such as access to proper housing, safe living environments, safe water and quality education. Special attention was paid to the redistribution of water resources because of the South Africa's status as a water scarce country and the potential limitations water shortages would place on future developments. As a result, the ANC government made radical changes to existing water management structures and water allocation systems, and started to curtail free access to underground water resources. The purpose of this paper is to provide an analysis of the changes that took place in the management of water resources in South Africa in the 1990s. Attention will firstly be directed at the management of water during the apartheid era, focusing especially on the grassroots level impact of a racist water policy, and secondly on the initiatives taken by the ANC government to address the injustices of the past.

<u>6:3</u> LAND USE AND THE SOCIO-ECONOMIC ENERGY SYSTEM 200 YEARS OF INDUSTRIAL MODERNIZATION IN AUSTRIA

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The substitution of biomass for fossil fuels as energy carrier and raw material is seen as an essential step towards a transition towards a sustainable resource economy.

Only 150 years ago Austrian society was solely dependent on renewable energy - mostly biomass in the form of fire wood for households and industry, food for people and fodder for draft animals. Until the "green revolution" in the first half of the 20th century the agricultural production system can be interpreted as a means for converting solar energy – in itself only of limited use for socio-economic purposes – into food and energy carriers. Obtaining a net gain of energy was therefore a main objective of agricultural production. With a continuously growing population and an increasing industrial demand for energy on the one hand and limited possibilities for further increases in yield and production on the other hand, the solar energy system was used to its limits in the first decades of the 19th century.

Hence, pre-industrial land use patterns can be seen as a result of requirements of a complex optimisation process of the agricultural production system and patterns in socio-economic demand for biomass. The spreading use of fossil energy carriers and new, fossil energy dependent technologies changed the role of biomass in the socio-economic metabolism and the structure of the agricultural production system significantly. At the cost of energetic efficiency agricultural production was almost doubled despite a significant reduction of the area under cultivation. Current land use in Austria is, among others, a result of these changes in the socio-economic metabolism.

This paper gives some empirical evidence for the intimate relation between patterns of socio-economic flow of materials and energy (socio-economic metabolism) and land use. A quantitative analysis of changes in land-use, energy consumption and biomass production in Austria from 1830 to 1998 will be presented.

TRANSITION FROM THE SOLAR AGE TO THE FOSSIL ERA IN THE FINNISH ENERGY ECONOMY

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R.P. Sieferle has argued that the industrialisation of Europe has required a change of the energy system. "Energetically, the transition from an agricultural to industrial economy is identical with the transition from a solar to fossil energy system." Taking this statement as a point of departure, my paper examines whether an early switch to the extensive use of fossil fuels was a necessity for all industrialising countries in Europe.

Does Sieferle's generalisation fit all countries? Considering contrastive development paths, Finland is a case in point. I argue that Finland industrialised on renewable energy sources. An upswing in modern manufacturing from the early 19th

country moved to extract most its energy from fossil fuel. It is clear that Finnish industrial breakthrough took place by the late 1950s. Nevertheless, still in 1962 Finland deprived roughly 60% of its energy from fuel wood and hydropower. Transition from the solar energy system to the fossil energy system, however, followed and the change was quick. In 1973, indigenous renewable energy sources accounted for only 30% of the total energy supply, while imported fossil fuels comprised 66%.

Why did Sieferle's dependencies not fit the Finnish case? Why the transition from one system to another was so fast? Why did then imported fossil fuels in a short time span replace indigenous energy sources that had been the basis of the Finnish economy for centuries? These are key research problems in my paper.

<u>6:4</u>

RECOVERING WITHERED DIVERSITY: SOURCES AND METHODS TO STUDY THE EFFECTS OF LAND RECLAMATION IN 18TH CENTURY PRUSSIA ON ANIMALS AND PLANTS.

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Enormous tracts of marshland in Northern Germany, flanking the rivers Oder, Warthe and Weichsel, were drained during the 18th century. Dutch water-engineers were the first agents of transformation in the 17th century, which in the end affected at least some 2000 km². The melioration affected areas which had previously been used for fishing, the rivers and adjacent swamps offering abundant resources of striking diversity. Following reclamation, political preferences forced introduced settlers into bovine based meat production and cash crop agriculture instead. Such a large scale remodelling of the entire landscape causes dramatic changes of previous faunal and floral elements by means of changing basic assets of the ecosystems. The extermination of the beaver is well documented. Beavers had to be killed because of their habit to build caves in dykes, which was seen as a potential threat to the newly engineered landscape. Other animals, e.g. the crane and the common swamp turtle were also heavily reduced. Surprisingly enough, the fish fauna seems not to be affected in its number of species. The challenge of researching such questions lies in the reconstruction of species lists from archival records. At present only few information on ecological key species either animals or plants is available. But understanding past biodiversity needs more than just species information. A more general aim of our approach is to find prerequisites and screening techniques that can be used to provide base data for natural conservation from archival records. At the same time, one needs to follow the shift of values and attitudes towards floral and faunal elements during the past 200 years. Such an endeavour can only be undertaken as interdisciplinary research. The paper will finally reflect on the problems and potentials of co-operation at the interface of natural sciences and the humanities as become apparent in this research project.

THE EXHAUSTION OF ENERGY-RESOURCES AND ENVIRONMENTAL DAMAGE CAUSED BY PEAT DIGGING IN THE DUTCH GOLDEN AGE

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The prosperity of the Dutch Republic in the 17th and 18th century did not only rest on the use of the famous Dutch windmills and sailing ships, but on the use of peat as well. Peat was used by households and by a lot of industries. The digging of peat however, caused many environmental problems. Large tracks of land disappeared when the peat was digged out, leaving shallow lakes behind. For the local governments this meant that they saw their income dwindle from the most important revenues they had: the various land taxes. Moreover, the lakes were ever growing. Villages were treathened and even lost because of the growing of the lakes due to storms and further peat digging. The possibility of the exaustion of the peat reserves in the late 18th century also caused concern.

So, the problems caused by the digging of peat followed a kind of "Club of Rome"-scenario: the land was destroyed, the welfare of the country in danger of running out of cheap energy-resources.

Nowadays, however, these dug out areas are among the most important wetlands in the country. They are indispensable for the protection of species, recreation and the supply of drinking water for the city-population of, for instance, the capital Amsterdam.

In this paper I would like to discribe the extent of this problem, the political reactions and propositions made to solve it and, finally, the solutions found in the 19th century.

SESSION 7

7:1

THEORETICAL APPROACHES TO THE ENVIRONMENTAL HISTORY OF THE BALTIC SEA

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What is the Baltic Sea? What is environmental history of the Baltic Sea? The paper aims to study these interconnected questions in time, space and content. The Baltic Sea means different things depending of the time period we are studying. Also, the sea is a different phenomenon from local, regional, national and international point of view. The environmental history of the sea may be studied using a wide or a more focused approach depending on which sources of loads are discussed. Environmental history is understood here as interactive study of the history of environmental politics. sciences

and technology. The combination of these three different approaches in environmental history studies is discussed from the point of view of network theory and actor network theory. A new approach also is developed.

WATER QUALITY CONTROL, MONITORING AND WASTE WATER TREATMENT IN LITHUANIA IN 1950-1999

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Lithuanian water management system was created and developed according to Soviet regulations in 1950-1990. Surface water quality monitoring started in the 1950s, and the system was improved in 1960s. Today 47 rivers are monitored with 101 sampling stations and 55 parameters measured. Statutory monitoring of wastewater discharges started in 1962 and the standards for them were issued in 1957, and in 1966. The polluters were obliged to monitor themselves the effluents that was controlled by the Republican Hydrochemical Laboratory. Contemporary effluent standards date back to 1996. Wastewater treatment plants were first built in rural areas and factories, and by 1990 there were altogether 928 plants. Since 1990 existing plants have been renovated and new large capacity municipal plants have been constructed with foreign assistance. Since 1970 the water quality of rivers has improved in some rivers, but the largest river, the Nemunas, remains moderately polluted. The Nemunas flows into the Baltic Sea via Curonian Lagoon which is highly eutrophied. Especially the lower reaches of the Nemunas are affected by pollution from dicharges of municipal and industrial wastewater of the Russian towns, Sovietsk and Neman, which makes a half of the total loading. Hydrobiological studies of years 1994-1998 showed the Lagoon and Sea to the North of Klaipeda having bacteriological pollution and blue-green algae production.

7:2

MATERIAL-, ENERGY- AND FOOD SUPPLY AS DRIVING FORCE FOR LAND COVER CHANGES- A TIME SERIES APPROACH FOR THE UK BETWEEN 1880 AND 1997

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In our socio-ecological approach towards environmental history we study the co-evolutionary dynamic of societies as dynamic cultural systems embedded in a specific natural environment. Despite the conflicts that were caused during this historic process, innovative ways of how societies related to their environment were also triggered. While societies have to stabilise their exchange processes towards the environment in the long run, they might face rapid social changes, thereby societies can temporarily override the capacity of a specific ecosystem since cultural evolution mostly operates autonomous from natural evolution.

We focus on the modes of interaction between the cultural and the natural systems. We intend to show how cultural and social changes affect the society-nature interrelationship as well as the natural environment. We apply concepts of these physical interactions, to account for societies dependence on natural resources (such as biomass or minerals availability) and ecosystems services (such as the capacity of an ecosystem to absorb society's wastes and emissions). These physical interactions we capture with the concept of 'Metabolism of Society'. We define society not only as a system of cultural beliefs and communication but also as comprising of material components, such as population, livestock and infrastructure. The concept of society's metabolism describes the material and energy required to produce, maintain and reproduce these elements. It can be analysed with methods such as Material Flow Accounting, Energy Flow Accounting and the study of Land-Use and -Cover Changes. The metabolic profile (the structure, quality and quantity of material and energy flows) of a society is closely related to specific land-use patterns. These patterns depict details of societies energy-and nutrition-system as well as the competition of these functions with other area demanding formations like space for infrastructure.

Empirically, we will apply the methods outlined above to a case study of the United Kingdom, in a time series approach covering the period from 1880 to 1997.

Our empirical data set covers material and energy inputs and data on land use and land cover change. We intend to crossanalyse our results with preceding works on the United Kingdom's natural relations.

THE LINEAR NUTRIENT FLOW - A PARENTHESIS IN URBAN AGRICULTURE AND URBAN LIVING?

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Urban agriculture has rarely been observed as an important activity. A reason may be that urban areas by definition are different from the rural areas, and that the modernising view today - as well as a century ago - emphasises urban industry, the services sector, education etc. and not agriculture. However, the recent economic crises in Eastern Europe and in developing countries have seen an upsurge of urban agriculture activities. Also, national policy is often being reoriented from discriminating against to supporting urban agriculture. The search for sustainable infrastructure in developed countries brings up the question how to recover and recirculate nutrients from human waste in agriculture. This evolution warrants a historical study of the links between urban agriculture and recirculation of nutrients.

In the second half of the 19th century, towns in Sweden were small in an international comparison. Contemporary descriptions of towns often pointed out that they were little more than big villages. Cows, horses, pigs and hens were a common sight also in central parts of the towns. Vegetables and fruit trees were grown to supplement the purchased food. Urban residents had access to commons and city council ground outside the town boundary.

The paper explores the extent to which urban agriculture supported different sections of urban resident, and how the nutrients in human excreta was taken care of. A case study in the town of Norrköping is reported and analysed in a national (Swedish) context.

In the last quarter of the 19th century flats and homes in towns were increasingly connected to communal water pipes. The increased volume of used water speeded up the installation of small-sized wastewater pipes. From a nutrient point of view, it is interesting to note that already such a sewer diverted a large part of the nutrients in human waste since the urine was collected in jugs or bowls and emptied in the sink in the kitchen. The residents had two reasons for this practice. The volume of urine is about ten times that of faeces, and by throwing the urine in the kitchen sink, the bucket with dry faeces could be emptied less often. Also, the smell from the dry toilets in the apartments was negligible if urine and faeces were not mixed. Technically this practice was possible by using a urine-diverting toilet or possible an ordinary dry bucket toilet in the wardrobe or attic. The farmers seemed not to realise this loss of nutrient and they protested only when flush toilets were being introduced several decades later.

The linear flow of nutrient that resulted from the introduction of the flush toilet is now being challenged.

PORK AND EUTROPHICATION - HUMAN CONSUMPTION AND ITS ENVIRONMENTAL IMPACT THROUGHOUT THE LATE 19th AND 20th CENTURY

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Food consumption is close to every human's heart. The matter of diet, freedom of choice and cultural and individual identification seem to be more important, than the actual nutrition intake, that is, presuming people have a choice in what they consume. So, as the possibility to choose the composition of diet and still have nourishment increased, why did (and

This paper studies the history of consumption with focus on the development in Sweden from the late 19th century onward. The focus is on the environmental impact of differently composed diets and the shift from urban agriculture and recycling towards a linear flux of agricultural products into the city and sewage and waste out of the city. The historical context and for future prognosis are taken into account.

The aim of this study is to analyse the development and composition of the diet and to link it to the impact on the nitrogen cycle. The flux of nitrogen is directly connected with food consumption, both through the protein content in food and through the use and leakage of fertilisers in the agricultural sector.

The historical development is of great interest in order to find a way to explain and analyse today's situation. One serious issue is the shift from circular towards linear fluxes of nutrients, both concerning human and animal excreta that were used in agriculture, and the actual production of food within the city. The method of material flux analysis, including a budget for a system and a certain area, allows a tangible quantification of matter. Everything that goes into this system is either stocked or leaves the system in some way, which shows vividly the impact of our consumption on the entire system. This method will make it possible to compare the development of the flux of consumption goods and the related flux of nutrients during more than a century and to learn from the historical development.

<u>7:3</u>

TRADITIONAL SHIFTING CULTIVATION PRACTICES IN INDONESIA AND THE PHILIPPINES

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Shifting cultivation – an agricultural practice, which dates back thousands of years – has often been regarded as a principal factor in deforestation. However, two main types of shifting cultivation can be distinguished: traditional and forest pioneer systems. It can be argued that many traditional farming systems have proved sustainable in the course of time. In this paper I will discuss about this kind of traditional practices. The selected case studies are from humid tropics: Indonesia, Kalimantan, and the Philippines, the island of Mindoro.

This study seems to support the argument that the environmental impacts of the traditional form of shifting cultivation are smaller than many other uses of forestland. On the one hand, there are several ecologically unsustainable practices in slashand-burn cultivation, such as many pioneer shifting cultivation systems, in the tropics today. On the other hand, the environmental effects are not unambiguous. In general, agricultural practices are seen to become more unsustainable as the fallow period is shortened, traditional is replaced by modern, subsistence crops give way to cash crops, external funding replaces family capital, and the farm is located near urban areas.

In considerations of sustainability of shifting cultivation, the study showed that socio-economic factors, such as land tenure. seemed to be a crucial matter. The pressure for alternative uses of land and forest resources. particularly logging

and large-scale commercial agriculture, together with population growth push shifting cultivators to more marginal and peripheral areas that may result in a socio-economic or environmental crisis.

WAGING WAR ON THE WEST NILE VIRUS: WHAT THE PAST TELLS US ABOUT THE POTENTIAL OF HISTORY TO INFORM PRESENT POLICY

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In some parts of the United States, the West Nile virus has replaced AIDS as the public health issue that screams loudest from headlines. In New York City, Mayor Ralph Giuliani has overseen a campaign of aerial and ground spraying of insecticides. Central to Mayor Giuliani's response has been the use of war metaphors.

This paper puts the mayor's rhetoric into historical context and suggests that other, more constructive, ways to frame the virus problem are available. Giuliani's rhetoric taps into a discourse constructed by entomologists. They relied on war metaphors to talk to the public partly because entomologists saw insects as serious threats, and partly because they believed such metaphors would help them win public funding and support for their work. War metaphors imply that the threat is large, the period for solving the problem is short, power of government to compel cooperation should increase, citizens should lower their expectations regarding property rights and pitch into the battle, and overwhelming force is the only way to defeat the enemy.

The virus control effort would better be framed not as an effort in ruptured international relations (war), but as a problem of domestic policy. The threat is not overwhelming, the period for action is long, the best role for government is non-coercive, and citizens should have a role in determining priorities. Funding research and education is different from going to war and better suited to where we are today.

ENVIRONMENTAL HISTORY, CULTURAL CHANGE, AND THE GLOBAL WORLD SYSTEM: CORES, PERIPHERIES, AND OTHER FALLACIES

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Environmental historians have long recognized the importance of adopting a more global perspective in explicating how environments and cultures change over time. From a purely biospheric perspective, all life is interconnected and plants and animals do not recognize national or international boundaries. In more recent times, the world systems theory of Immanuel Wallerstein has been used to illustrate how both human and non-human environments change within the context of global economic relations. This paper will look at the relevance of world systems theory to environmental history and conceptualize a new model that gives both local environments and indigenous peoples more agency in the culture/environmental change equation. The region of southern Appalachia of North America will provide the geographic stage for the discussion, a Aperipheral@ area not unlike many mountainous regions of Europe and Eurasia.

ENVIRONMENTAL HISTORY IN CZECHIA: ITS BIRTH, PROBLEMS AND PERSPECTIVES

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The paper characterises sources, causes and broader consequences of origin, development, concepts, aims and also applicability of the research in environmental history in Czechia. It also deals with comparison between the observed processes and the development of environmental history in the USA and Western Europe.

The paper gives a general outline of most important consequences, which have had an impact on the Czech environmental history origin and development such as scientific discipline. Its "cradle", similarly to Europe, is seen mostly in the fields of historical geography, economic history, landscape ecology and ecology. This situation has issued in its development according to the Worster's second level of research in environmental history, dealing mainly with the socio-economic realm as it interacts with the nature development, and consequently how results of these Interactions impact on both spheres.

Environmental history started practising in Czechia from the end of 80s. Firstly as historical geography of environment, then as historical ecology and in the 1st half of 90s as environmental history were mostly practised by historical geographers who do research of the long term land use changes, historical climatology, settlement development etc. However, the Czech historical community does not devote greater attention to the environmental history research, because it prefers rewriting of political and cultural history after 1989. The evidence of larger interest of Czech historians about environmental history has been proved by negotiation of session "Environmental History" within the program of the VIII. Czech Historians Congress in 1999, which was organised by historical geographers group.

SESSION 8

8:1

THE DREAM OF NON-POLLUTANT FUELS: ZOLLERN COLLIERY IN THE RUHR IN THE BEGINNING OF THE 20TH CENTURY

GILHAUS, Ulrike

The paper is based on both a broad study about the environmental history of Westphalia, one of Prussian's industrial pioneer regions, and a case study of Zollern Colliery in Dortmund, 'model mine' of the largest mining company in the Ruhr region at the beginning of the 20th century. It combines new methods of regional environmental history with technological details of an experiment.

In the 1850s coal substituted the environmental friendly charcoal and became the leading primary fuel used increasingly in industry, traffic and private households. The rise of SO2-emissions was tremendous as is shown through comparison of ubiquitous polluters, namely steam engines, between 1845 and 1904 in Westphalia. With the help of statistical material valid data for the growing industrial air pollution can be gained and even be calculated.

This heavy burden of industrialisation soon stimulated research and even patents for 'smokeless' firing and even for nonpollutant fuels. The hope of early 20th century was electricity, allegedly clean and a remedy to the smoky air in industrial towns, even if extracted form coal too. Central power stations were meant to replace decentral furnaces and chimneys. Zollern Colliery was a prominent industrial plant where this vision of a clean energy transformed. The colliery, built between 1898 and 1904, became the symbol of the economic power of its owners, the Gelsenkirchen mining company. The winding engine house contained high technology of this period and for the first time in German mining industry all aggregates were run by electricity. Two other collieries in the neighbourhood and the suburb Bövinghausen profited form the energy produced here. To reduce the costs and the input of coal gas from the coke plant was exploited, too. Thus Zollern had a glorious start as a 'model mine' and was a much visited colliery among experts. Soon, however, the technological and economic keystone became an insignificant family mine after the First World War. However, Zollern Colliery can be presented as a typical example of the attempt to use new fuels and even waste products as a contemporary answer to growing air pollution.

THE STORY OF ENVIRONMENTAL-FRIENDLY ENERGY: THEORY AND PRACTICE OF MAKING WASTE TO ENERGY IN GERMANY AND THE UNITED STATES IN THE 20TH CENTURY"

BERGMEIER, Monika

"Sustainable Development" is one of the most politically, economically and scientifically discussed subjects. Within this discussion, the claim for a more environmental-friendly and a more efficient use of energy plays a central role; this is why waste energy recovery becomes a subject of interest. This analysis deals with the history of waste energy recovery.

Historically, waste energy recovery has been a tale of paradoxes. It involves more than a hundred years of continuous development, exploring the technical prospects that provide and employ energy in a socially and ecologically desirable manner. Its potential has reached a high level, but has not yet been extensively exhausted. This analysis is concerned with the renunciation of efficiency. This is all the more astonishing as this subjects had a rather hopeful beginning. Techniques of waste energy recovery have been known since the 19th century, and experienced an upward urge in the years that followed World War I.: Economy, science and politics did what they could to spread the usage and development of these techniques, as it was essential to find an answer to the lack of coal. However, this did not last long, not even surviving through the Twenties. The next wave occurred fifty years later, with two oil crisis that took place during the Seventies. However, this was not supported in larger circles, so it ended sooner than the first wave had. It was not until the Greenhouse Effect became a main topic, publically, scientifically and politically, in the late Eighties, that waste energy recovery was discussed as a serious alternative for an energy supply which was pollution reducing and efficient. This issue

energy recovery hadn't been utilized for processing. They were in fact utilized, but were unable to gain broader acceptance, and their potential was not exploited.

This analysis attempts to address why this was so. It attempts to explore the technical, scientific, economic, social, political and intellectual aspects, which were in favour of or against the spread of these techniques of an environmental-friendly energy utilization. The comparison between Germany and the United States helps to describe more precisely the value of each off these aspects.

CREATING A SHORTAGE OF WOOD? A GERMAN REGION IN THE 19TH CENTURY

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Since the late Middle Ages, the claim of wood scarcity was often used in conflicts about forests between rulers, cities, iron and salt works, peasants and everybody who had any interest in wood or other forest products. The early foresters of the 18th and 19th century defined a shortage of wood as a surplus demand for wood which represented a danger for the forests. This definition is still used by forsters and the traditional forest history at the institutes of forestry today. They commonly think that the establishment of a sustainable forestry was the solution for that problem. The so-called rational forestry was supposed to tidy up the traditionally unlimited forest uses, to avert the destruction of the forests and to produce more timber and firewood than before.

The question of wood scarcity and the consequences of the new forest management cannot be observed on a national level, but have to be studied with a regional approach. The excellent sources are not the only reason to choose the Palatinate as a favourite subject of study, because all the signs are that there has been an unsatisfied demand for forest products: There were (1) very high prizes for wood and timber even inside the woodland, (2) in the second chamber of the Bavarian Landtag the Palatinian deputies frequently applied for cheaper wood from the state forests, (3) in some parts in the north of the Palatinate where peat was found, it was used as surrogate for firewood. (4) The forestry in this region was very well developed and even those parts of the forests which were far away from the settlements were opened up for use by many new trails. Also rafting channels had been constructed to bring the wood from the woodlands to the villages in the Rhine valley. Nevertheless (5) the wood production (in relation to the surface) in the Palatinate was the lowest of all Bavarian regions. But the most remarkable indicator for an unsatisfied supply for wood and other forest products was (6) a very high rate of theft of wood and other offences against the forest laws: In the period from 1830 to 1850 more than 20 % of the population was arrested yearly for these forest delicts. On balance, there can be no doubt that many people in the Palatinate had heavy problems to satisfy their demand for burning material and other forest products. Why?

TILLEY, Helen

The development of "agroecology" as an environmental science has been little studied. This paper explores one branch of its genealogy in the history of British colonialism in sub-Saharan Africa. The issue of "native" versus "European" agriculture in the British African territories was an enduring conundrum to colonial administrators. What did one do with European settlers and their increasing demands for land? How should new methods of agriculture be introduced? Was there anything to be learned from "native" methods or ought they to be replaced entirely?

At opposite ends of the ideological spectrum were those who considered African practices "parasitical" and those who saw in them "inherent soundness". While both poles were agreed that agriculture across the continent could be 'improved', they differed, sometimes sharply, over what constituted improvement and what means could best achieve it. This paper reconstructs the socio-political and epistemological context in which research on indigenous agricultural practices first emerged in British colonial Africa. Undertaken by individuals trained in such fields as ecological science, human geography, and social anthropology, many of these new studies sought to privilege African understandings of their environments and, by extension, protect the best of their existing practices. Often grounded in extensive and sustained fieldwork, these studies achieved an empirical breadth and depth rarely paralleled in contemporary literature on "indigenous knowledge systems." Perhaps more significant, they influenced the policies of colonial agricultural departments.

William Allan's 1965 book *The African Husbandman* in many respects represents the culmination of this research tradition and provides an ideal point of departure for an historical discussion. The key concepts from his book population densities, land fertility, and human carrying capacities take on new meaning when viewed through the bifocal lens of African environmental history and the history of science.

THOSE THAT ARE AND THOSE THAT COULD BE': CONCEPTUALIZING AND TRANSFORMING THE NATURAL WORLD IN EIGHTEENTH-CENTURY SCANDINAVIA

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This paper examines several attempts of Danish officials to transform and improve agricultural and environmental conditions in various regions of the eighteenth-century Danish kingdom by transplanting flora and fauna from one part of the country to another. I will look at the examples of the removal of raindeer from northern Norway to Iceland, of agricultural crops from the Jutland pennisula to the Faroe Islands and Iceland, and, finally of Icelanders and Icelandic farming techniques to Greenland. The paper will show how the offical language used to catagorize plants and animals came to encompass and include people within its domain, thus powerfully extending its colonial capacities. According to the Danish state, certain types of nature--including people, animals, and plants possessing defined characteristics--could be transfered at will within what I have designed a "zone of local nature" in their efforts to improve agricultural conditions or correct environmental problems. In this paper, I will show how this "zone" was invented and how its creation was one of the powerful tools of Danish colonialism.

PLIABLE NATURE AND RATIONALIZED AGRICULTURE: THE USES OF NATURAL KNOWLEDGE IN COLONIAL JAVA c.1920.

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In colonial Indonesia in the early years of the twentieth century, Dutch officials sought greater knowledge of the natural environment of Java (primarily) as part of a project of social and economic uplift for the Native peoples. The colonial project of "Native development" was intended by planners to improve Native agricultural practices. As experts began to construct their knowledge of the agricultural world of Java, their ideas of development, and agricultural improvement changed in response, gradually coming to mean an orderly rationalization of agricultural production on Java – using each area of land according to a notion of optimal use dictated ideally by the natural propensities of land itself. This paper will explore the ways that colonial officials went about constructing the natural capabilities of the Javanese landscape, and the ways that the local knowledge and expectations of Native farmers, and European sugar planters contributed to this mapping of the Javanese environment. A special concern will be the conflict between notions of naturally-dictated "best use", and the desire on the part of colonial planners to dramatically increase yields. Was nature infinitely pliable and therefore respondant to the needs of the colonial leaders? Or was it the foundation from which a truly optimized agriculture would emerge? I will discuss how the colonial understanding of the Javanese natural world contributed to the ideology and technical projects of development in the colony.

MAN AND NATURAL DISASTERS IN LATER MEDIEVAL AUSTRIA – DIVINE PUNISHMENT OR PART OF LIFE?

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There are only few studies concerning natural disasters in the middle ages. For the eastern Alpine regions there does not exist any bigger study on natural disasters except on the earthquake of Jan. 25th 1348.

It is always easier to study mentalities in extreme situations than in normal times. It seems to me, for example, that the "medieval" explanation: natural disaster = divine punishment is often not more than a myth that was reprojected from early modern times. In addition to that the image of natural disasters in later medieval Austria was always dominated by the only well documented one: the earthquake of 1348. This event was, indeed, always seen as an omen, as the begin of a divine punishment followed by the Black Death. On the other hand avalanches, inundations, etc., but also man made disasters so as mine collapses, etc. were part of late medieval life. How did the people react on these natural abnormalities? Why did they experience them as disasters? How did they explain them? Did they really see them as a divine punishment?

There are several problems concerning the methods and the sources when natural disasters and the mentalities of common people are intended to be "reconstructed". The approaches are laborious and must be interdisciplinary. But if this approach will succeed to get a glance on "man and natural disasters" in the middle ages, this part of environmental history can be an important criterion for examining mentalities, not only during the middle ages.

NOAH'S FLOOD - THE GENESIS STORY AND NATURAL DISASTERS IN EARLY MODERN TIMES

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Since antiquity no other natural disaster of the christian tradition has more inspired the human imagination in art, literature and science than the world-wide inundation which is described by Mose in Genesis 6-9. Today, the biblical deluge is widely no longer seen as a single global inundation but as several local floods in different times and places during the history of the earth. This modern view is the result of a long process of dealing with the Genesis story in connection with flood disasters since Early Modern Times. This lecture will attempt to reconstruct this process.

It exams e.g. the traditional view of the deluge as a crucial step in the history of the earth as a mundus senescens, the interpretation of actual floods (for example: the "Sturmflut von Antwerpen 1570") as a "Sündflut" (flood as a divine punishment for human sins) or the astrological deluge-debate between 1521-24 about a future apocalyptic flood. Finally, the paper will deal with the adaptation of the biblical flood in early modern scientific theories of the earth. As the main event of geology in its early period as a new science Noah's Flood forms the paradigm of the so called diluvialism, and later. more generally the catastrophism. Thus, the exciting history of the flood interpretations in Early Modern Times offers

<u>8:4</u>

MOTIVES, METHODS, AND EVOLUTION OF ENVIRONMENTAL ACTIVISM IN EAST GERMANY

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Environmental (and other activists) in the GDR came to concern themselves with expanding the diminutive public sphere in the GDR as much as with having an impact on environmental policies.

Both the western media and some Protestant parishes encouraged public expression of dissent in the former GDR, constructing a narrow public sphere within a closed police state. Each time they met outside a church they had to create public space and by the late-1980s some had learned to use the western media to amplify their voice and shield themselves somewhat. East German dissidents attempted to create public space so that their voices might have influence, and also because creating dialogue between the state and grass roots groups became central to their vision of reforming the state. Dissidents with a generalized sense of defiance toward the state began to connect specifically with environmental activists, especially as global concern over this issue legitimized it. As the GDR presented an inflexible front, activists attempted to achieve some personal space, to stretch themselves out against the walls of a state that acknowledged no room for individual conscience. Just as activists probed for vulnerable spots in the dictatorship's rule, so the state faced crucial decisions about when to crackdown, and whether to use force. In turn activists attempted to avoid invoking this crackdown response by employing less "spectacular" actions which they hoped still held a chance of expanding the limited public sphere, and in turn might be influential in state decision making.

CHALLENGING THE 1950S-SYNDROME. ENVIRONMENTAL ACTIVISM IN POST-WORLD WAR II GERMANY

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The 1950s syndrome has become one of the most popular interpretative schemes of European environmental history. In describing protest and activism against air pollution in post-war Germany, my paper will argue that this scheme of interpretation is not so much wrong as terribly incomplete: while focusing on the increase of consumption and energy use, the notion of the 1950s syndrome has lead environmental historians to ignore that the 1950s were also a time of increasing environmental awareness. My paper intends to discuss the increasing discontent about the state of the atmosphere, its socioeconomic context, and the subsequent reform of environmental regulation. In a nutshell, my argument will be that the current system of air pollution control is basically a result of the environmental activism of the 1950s. In contrast, the

ineffectual when it came to changes of policy: while being "sold" with a new rhetoric that I will call, for lack of a better word, an "ecological" rhetoric, subsequent legislation basically followed the paths of 1950s legislation. My paper will close with some reflections on how this changes the place of the 1950s in environmental history.

SESSION 9

<u>9:1</u>

LANDSCAPE AND COMMUNITY: EUROPEAN ENVIRONMENTAL HISTORY IN THE 21st CENTURY

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Perhaps the central organizing element of Environmental History as practiced in the United States is the existence of a relatively unspoiled, pre-European natural environment. US environmental historians are often able to use the historical record to detail some kind of steady state ecology, and then to critically explore the impact of more intensive land use practices. Except in some rare circumstances, European Environmental History does not have this luxury. Instead, the environment of Europe has been heavily used by humans for centuries--shaped and reshaped to serve human needs. This paper will argue that what is often perceived as an obstacle or a shortcoming, the lack of a "pristine" nature as a baseline, is actually a boon to historians of the environment in Europe.

Land use and community are intimately connected and changes in land use directly effect community structures and social relations, and these reverberate back to the land base. The long lasting presence of humans on the European landscape affords ample opportunity to examine this relationship between nature and history. Key to exploring this relationship, and to strengthening the sub-field of European Environmental History, is the marriage of social, economic, and environmental varieties of history. To illustrate this I will be using examples from my own research on the early industrial revolution in southeast Lancashire, England, as well as examples from the extractive economies of the western US.

POTENTIAL FOR INTERNATIONAL COLLABORATION IN ENVIRONMENTAL HISTORY: THE CHALLENGE AND PROMISE

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Many opportunities exist for international collaboration in environmental history. Such opportunities include interdisciplinary research, the broad examination of environmental justice, and transnational analysis. There are also obvious and not so obvious barriers to successful collaborative efforts including but not limited to academic protocol, political boundaries, and organizational identity. To help illuminate the opportunities and the challenges, the author will focus on recent efforts of the Forest History Society including, but not limited to, the focus of environmental history journals; the on-line annotated bibliographic database; an archival database; a new Center for Applied Forest and Environmental History (CAFEH); and an international forestry photo index.

CAN SOCIOLOGY/ANTHROPOLOGY CONTRIBUTE TO ENVIRONMENTAL HISTORY?

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Within the discourse about 'sustainable development', 'environmental problems' are perceived as problems linked to the interaction between society and nature. This calls for an interdisciplinary field of research, such as Environmental History which deals with the mutual interaction of social and natural systems. Can social science disciplines, for example sociology and anthropology, contribute to such an interdisciplinary project? The paper will highlight different conceptions of society-nature interaction within sociological and anthropological theory. We will concentrate on three approaches: First, the naturalistic approach: Society, by being part of nature, functions along the same laws as other comparable natural phenomena (e.g. early evolutionism). The second approach which we call the materialist approach perceives society and nature as two separated realms of reality which are nevertheless strongly related to each other (e.g. historical materialism, social ecology). Thirdly, we will discuss the constructivist approach which perceives nature as part of human communication and social discourses (e.g. N. Luhmann's systems theory). The paper will inquire whether and how these approaches contribute to the field of environmental history. We will do so by focusing on different concepts of time and space as presented by the various approaches.

<u>9:2</u>

THE SUPPLY, PRICING AND MANAGEMENT OF COPPICES AND FIREWOOD IN EARLY MODERN WÜRTTEMBERG

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This paper examines the management of underwood, and the resultant yields, using a combination of sources from the ducal forestry administration of Württemberg between around 1580 and 1700. These allow an estimation of yield variation over time and space, and shows a prime determinant of very low yields during this period to have been periods of warfare. An assessment is made of the relative impact that the pasturing of livestock, presence of wild game, and legislative and administrative measures, had on both yields and management practices such as coppicing cycles. Analysis of prices over time also demonstrates that the prices of different diameter firewood (sold as fathoms or faggots) behaved at variance over this period, suggesting different market responses to local availability for each type. It is also shown that despite large price differences over a relatively small area there was strong negative correlation between yield levels and prices across the region studied.

PROBLEMS AND POTENTIAL IN WOODLAND HISTORY - AN EXAMPLE FROM LOCH AWE, ARGYLL, SCOTLAND.

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The ancient semi-natural oak woodlands of Western Scotland are considered to be some of the most natural forest ecosystems remaining in Britain yet their current species composition is also widely attributed to direct human influence in the historic period.

To investigate this apparent contradiction an interdisciplinary study of the ecological history of woodlands around Loch Awe (Argyll, Scotland) has been made. Evidence of temporal biodiversity change from pollen records was combined with an event record of anthropogenic disturbance derived from documents relating to woodland management.

The results suggest that arboreal diversity in the forest has been significantly altered in the last five hundred years particularly as a result of intensive eighteenth and nineteenth century management.

Problems or barriers to effective interdisciplinarity in this type of research are summarized thus:

There is often disparity among the temporal and spatial scales, temporal precision and taxonomic resolution at which ecological, palaeoecological and textual information sources operate.

The potential of woodland history lies in understanding the temporal dynamism of forest ecosystems. Woodland nature conservation has traditionally been based on the view that natural forest is stable and self-replicating. Contrary to this view, historical analyses and modern ecological theory emphasise the transformations to which forests are prone. Given the drive in Scotland at present to restore and conserve native woodland, there is an opportunity for environmental - historical research to serve policy makers. However, problems resulting from the difficulty in integrating site based historical studies with landscape scale strategic policy making need to be overcome.

TREE POLLARDING IN HUNGARY

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Tree pollarding is the practice of cutting the branches of a tree two-three metres above the ground in order to prevent animals from grazing the young shoots. Pollard trees are a conspicuous and majestic feature of the landscape all over Europe from Norway to Crete, and from Spain to Romania. Individual species can be studied both as archaeological objects, and as integral parts of local land-management.

Hungary, though could certainly not boast a number as high as England or Greece, possesses a fair number of ancient pollards, be them oaks, willows, limes, or ecological newcomers, such as horse-chestnut. No study has yet undertaken the task of examining the history of tree pollarding in Hungary, the present paper will be the first attempt to do so.

The paper will focus on three types of sources. Firstly, it will consider the medieval written material. Secondly, pictorial sources will be introduced, some medieval, but mostly sixteenth-century. Thirdly, standing trees and place-name evidence will be included in the discussion, which represent the archaeological aspect of the problem.

As it is intended to be the starting point of further research, my paper will establish basic standpoints, and will focus on discovering what to search for in the rather specific Hungarian source material. It will demonstrate that tree pollarding was present in Hungary in the Middle Ages, with special Latin and Hungarian vocabulary. It will also lay out the possibilities and limitations of fieldwork with one specific example (Mende, a village 30 km north-east of Budapest) that features standing pollards and a characteristic place-name. The overall purpose of the paper will be to illustrate that although tree pollarding is a general European practice, every country has to find its own way to discovering the history of pollard trees.

<u>9:3</u>

SUSTAINABILITY, COMMON WEAL AND AGRO-SYLVO-PASTORAL BALANCE: IN QUEST OF A DESIGN FOR EUROPEAN ENVIRONMENTAL HISTORY.

Overlooking worldwide environmental history since ancient times, it has become usual according to Lynn White's famous Chrismas speech of 1966 to follow the way of religious and spiritual history, consequently to take Europe and North America together and to contrast the dualistic Christian view of man and nature to the alleged holistic world-view of Eastern religions. It is, however, doubtful whether there really exists this great universal contrast between "East" and "West". With regard to environmental history, the key seems rather to lie in institutional differences, especially with regard to agriculture and forestry. There is therefore a good chance to transfer the institutional approach from economic to environmental history.

Contrary to a widespread assumption in the modern environmental movement, Western civilization - at least in Europa, not in the same degree in North America with its abundance of soil and forests - seems to have had relatively efficient institutional traditions guaranteeing a certain degree of sustainability. The most striking example from earlier century is usually the forest administration - not only the governmental but also that of local communities. Similarly, there existed traditions of birth regulation and a certain balance agriculture, animal husbandry and woodlands which contained elements of inherent ecological sustainability,- at least in comparison with many other regions of the world. Garrett Hardin in his famous *Tragedy of the Commons* misunderstood the historical European commons which were fundamentally different from the commons of the American West and *impeded* a general free access to natural resources.

Nevertheless, it is doubtful whether European environmental history will be a story with a happy ending. For it was just this relatively high ecological stability which seduced Western civilization to strategies of unlimited economic growth. In the past as in the future, it may be just the partial success in environmental managements which causes the most difficult problems in the long run.

HOW TO WRITE AND TEACH ENVIRONMENTAL HISTORY AT UNIVERSITY LEVEL

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This paper deals with three major questions concerning environmental history as an academic discipline. The questions are closely related, but represent three different angles in addressing the general theme.

1) How to reformulate historical questions and rewrite history in an environmental perspective?

The latest productions of history writing are often presented as being written in new perspectives like the history of Norway in 12 volumes published by Aschehoug in the 1990s which was said to be written in an international perspective, a people's perspective and an environmental perspective. It seems the authors have only partly succeeded in these efforts. How do we then reformulate historical questions and rewrite history in an environmental perspective?

2) How to write a textbook in environmental history on a university level?

How do we introduce environmental history to students of history and/or students of other subjects? Do we present the problems in a bird's perspective, or do we rather use the microscope? Does environmental history mean history on a macro or a micro level, or perhaps both? How do we bridge knowledge of other disciplines with the one of our own? Do we have any good examples of such textbooks?

3) How to establish courses in environmental history at a history department?

This question sets focus on the need for new ways of teaching history, from the ground level to the major. Why is it important that we offer courses in environmental history? Why is the historical dimension important in dealing with environmental problems? What could be to gain for history departments in offering lectures in environmental history? What insights could we transmit to students and to the current public debate?

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LONG TERM LUCC IN CZECHIA 1845–2000 AS RESULT OF NATURE–SOCIETY INTERACTIONS: POTENTIAL STREAM OF ENVIRONMENTAL HISTORY?

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The main aim of paper is to demonstrate potential of historical land use research as one of methods of relatively exact
structure and its changes. LU changes are considered also as an indicator of environmental quality and landscape aspects, their state and development. The evidence of close interdependence between LU changes on the one side, and economic, social and political development, so-called social driving forces, on the other side, during periods of capitalism and bureaucratic socialism is shown in region of Czechia. It is supposed that presented method offers possibility to measure the results of the nature-society interactions.

The paper gives a brief overview of the major land use changes in Czechia over the past 150 years with focus on looking for and describing their main social driving forces. Though economic development is seen as the key impact on land use before 1945, during Communism (1948 – 1989) the importance of political decisions was crucial. The most recent period brought back the market conditions and consequently it results in environmentally desirable land use changes.

The paper also provides a brief report on results of the unique research project concerning land use changes in Czechia from 1840s until 2000 according appr. 10,000 comparable territorial units and 12 categories of land use. The results are presented by coloured cartograms that demonstrate the ability of this method to carry out research in environmental history with valuable information about interaction between society development (economy, politics, social) and its natural (geographical) conditions. Generally, land use changes are compared between 1845 and 1948, i.e. the period of development of capitalism and market economy, and between 1948 and 1990, i.e. in the bureaucratic socialism development period, the period of planned non-market economy.