PAPERS

AALL CARLO
Western Norway Research Institute

The "ups" and "downs" in the history of local environmental policy in Norway

Norway is usually considered a “pioneer” with respect to institutionalise environmental policy. Norway was also an early starter with respect to institutionalising local environmental policy making. An important element in the history of local environmental policy is the division between a national and a global historic line. The first relates to the local level of governance functioning as a structure for implementing national environmental policy; whereas the latter opens up for the local level also to function as an independent actor working with global environmental problems like climate change and biodiversity. However, the latest development in Norway with de-regulation and new public management as a dominant ideological trend raises the question of a de-institutionalising process with regard to local environmental policy.

ALLEMEYER MARIE LUISA
Max-Planck-Institut für Geschichte, Göttingen

Environment, Mentalities and Social Structures: The Northfrisian Coast in the Early Modern Era.

This investigation focusses on the relationship between human beings and nature, demonstrated by the example of the coastal community in Schleswig-Holstein during the early modern period. Reality of life for people inhabiting the coast was essentially formed by dealing with the natural environment. This reality was typically expressed in the continuing process of dike construction, in which the natural environment had a strong influence on the human society, politics and mentality. Human beings, the dike, and the natural environment were linked in a triangular relationship, which is the first subject of investigation of the present work. Secondly, the investigation focusses on the substantial changes from the 14th century onwards, which the cultural process of building dikes was subject to.

The construction and the maintainance of the dike were not performed without conflicts. This was due to different material intrerests, as well as to substantially different mentalities within the community, as well as to scientific development and changes in the social and political organization. All those aspects were items of intense negotiations within the coastal society. The conflicts were caused by matters of the construction and maintainance of the dike and were carried out on all levels of society. Analysis of these negotiations gives an interesting insight into the cultural and political structure of the coastal society in the early modern period. Furthermore, we gain interesting information about how the people in those times perceived nature and tried to deal with its perils.

ARNOLD ELLEN
University of Minnesota, Twin Cities

Fit for Human Uses: Rivers and Water Resources in the Medieval Ardennes

Water resources were an important part of the environmental, economic, and social history of the communities settled in and around the Ardennes during the Middle Ages. One particularly vibrant community, the monks in the twin monasteries of Stavelot and Malmédy, allow a glimpse of the nature of water use and the perception of water resources. During the High Middle Ages (ca. 900 to ca. 1200), both legal and literary sources show the diversity of ways that medieval communities used and sustained water resources, including the maintenance of fisheries, reclamation of swamp land, the use of water power in mills, and the transportation of goods. The monasteries, as major landholders, exerted a wide control over these resources, and to a large extent determined the manner of exploitation of the waters.

In addition to allowing historians to better understand the practical nature of the control and use of water, the monastic documents also allow a glimpse of the ways in which the monks thought about this resource and the human needs that it met. Literary sources, including saints' lives and miracle collections, suggest that the monks identified water with a flourishing and blessed landscape. The rivers and their bounty were often idealized in these documents, but the sources also show the potential danger of water, including storms, floods, and shipwreck. This paper will explore both the nature of water use by the monks and their dependents and the ways that water shaped the monk's environmental imagination.

BAGER MAIBRITT
University of Southern Denmark

Fishing matters -Exploitation of the marine resources in early modern Denmark

Denmark is almost surrounded by water, except for the southern border which connects the country to continental Europe. The Sea and the marine resources have played a significant roll in the economic development of the country during the middle ages and in early modern time. Specially the exploitation of the rich stocks of herring and cod in the Baltic Sea gave important input to the early Danish economy. The herring marked of Scandia linked the Danish economy to the growing economy of Northwest Europe and worked towards an integration of the national Danish marked with the international marked. By the late 16th century the Danish fishing industry was hit by a serious decline. The herring fishery in the southern Baltic Sea collapse and the cod fishery showed evident signs of decline as well. The decline of the fishing industry had various effects on the Danish economic beside the direct effect on the fishermen and the fishmerchants. The decline also influenced the revenue of the state and the national capital marked as the investments of town men and nobilities were withdrawn from the industry and reinvested in more lucrative activities.

The history of the Danish fishery in early modern time is the history of exploitation of a natural resources, the accessibility of resources and its effects on the human society.

BANKOFF GREG
University of Auckland

Time and Disasters: Vulnerability according to Social Scientists and Historians

As an historian whose interests lie in both contemporary disaster practice as well the historical roots of vulnerability, I have become increasingly intrigued by the manner in which these two sets of actors approach the question of time and disasters. Needless to say they regard it very differently. Social scientists (and here I include particularly sociologists, anthropologists and human geographers) largely pay lip service to its importance, at best mentioning its relevance en passant but giving historical analysis little real consideration in the greater scheme of things. At the same time, though, they place inordinate emphasis on the importance of 'process' as the basis upon which their understanding of what turns a natural hazard into a disaster depends. The concept of vulnerability is proposed as the key to understanding how social systems generate unequal exposure to risk by making some people more prone to disaster than others, a condition that is largely a function of the power relations operative in each society. Vulnerability to historians, on the other hand, is not even a conceptual term and, if used at all, merely indicates a state of being not a condition derivative of historical processes. Above all, disasters are 'events' to historians, occurrences caused by a variety or combination of seismological, meteorological or epidemiological agents (occasionally war is seen in this context as well) that have certain detrimental physical and socio-economic consequences that, at their most extreme, can cause the downfall of societies but are rarely integrated into any wider theoretical perspective.

Though both social scientists and historians may talk about disasters, they are not necessarily talking about the same thing: the one sees disasters as basically ahistorical processes, the other

as non-sequential historical events. This is unfortunate because disasters primarily are historically related sequential processes.

BARCA STEFANIA
ISSM, Napoli

Acque e industrializzazione in Italia, 1800-1900

La storia dell'industria in Italia ha raggiunto negli ultimi anni un elevato grado di formulazione e di consapevolezza, in seguito a numerose ricerche di livello macro e micro economico. Restano ancora da indagare, tuttavia, il ruolo rivestito dalle risorse naturali del paese, e l'impatto ambientale dell'industrializzazione. Oltre ad essere un'importante fonte di energia biologica (agricoltura, pesca), l'acqua è stata una fonte importantissima di energia meccanica, in un paese privo di carbone ed altri combustibili fossili rilevanti. La storia dell'industria in questo paese è strettamente legata a quella dei suoi corsi d'acqua, che sono serviti fin dagli albori per muovere le ruote e le turbine idrauliche, permettendo la meccanizzazione delle industrie, il passaggio dal *putting out* al *factory system*. In Italia l'acqua è stata la risorsa energetica di base per l'industria per tutto l'Ottocento, e anche oltre, sotto forma di energia elettrica: fino agli anni '60 del Novecento, l'Italia ha soddisfatto la domanda interna di energia soprattutto grazie alle riserve idriche accumulate in grandi bacini di ritenuta, che hanno trasformato il paesaggio e portato grandi cambiamenti nella vita sociale, economica e culturale di campagne e città. Una storia ambientale delle opere idrauliche, che hanno avuto tanta parte nello sviluppo economico italiano, e nel trasformare radicalmente la vita di interi ecosistemi, insieme a quella delle popolazioni che vi abitavano, attende ancora di essere scritta. Il *paper* espone questa tesi, e propone una lettura dell'industrializzazione italiana dal punto di vista del rapporto metabolico tra impresa e natura, focalizzandosi sulla funzione energetica dei corsi d'acqua.

BARLES SABINE
Université de Paris 8

The rise of urban wastes in France, 1800s-1930s

From 1800s to 1930s, the question of rubbish changed a lot in French cities. Useless material coming from households and other urban activities became first valuable raw materials for agriculture and industry (1800s-1870s), then were progressively converted into "déchet" (waste) (1880s-1930s). The aim of the paper is to show how important were those useless things during the two first thirds of the 19th century, how they were turned into worthless materials after, and the environmental consequences of these evolutions.

During the first period, useless things kept going up in value, as they were essential for agricultural production (especially but not only street sludge) and industrial development (rags, bones, cans of food, etc.). The word "déchet" (waste) was never used for them, and solid waste from cities was limited by the interest in rubbish transformation.

Things changed during the second period, as industry and agriculture did not need anymore urban rubbish; in the meantime, rubbish quantity was increasing with urbanisation and consumption. At first, cities tried to find new ways of transformation for useless materials, as public authorities, scientists and urban engineers were convinced that rubbish should find an utilisation: industrialisation of recycling ("industrialisation du chiffonnage"), sludge transportation to pour lands by rail, incineration.

But those innovations were not enough to stop the rise of waste. During the 1920s, cities used more and more often landfill for rubbish, or threw it to see or rivers. Urban waste ("déchet urbain") was born, as the evolution of the vocabulary shows.

Urban waste and urban waste management are very good indicators of the relationships between cities and their environments. Their study shows that those relationships are not linear since the beginning of the first industrial revolution.

BEINART WILLIAM
Srt Antony's College, Oxford

Transhumance, animal diseases and the environment in South Africa

My paper focuses on the curtailment of transhumance in South Africa during the period c.1880-1950. Livestock were of great economic and social importance both to settlers and Africans in the country. Environmental conditions underpinned many local systems of transhumance in which people, sometimes communities, moved seasonally with their livestock to water resources and natural pastures. The paper explores the variety of these movements, their linkages with an expanding pastoral frontier, and increasing commodification of livestock production. It also discusses the links between transhumance and the spread of disease. Veterinary surgeons argued against such multiple movements of livestock. I will explore how such general arguments, as well as specific disease control measures, contributed to the gradual curtailment of transhumance. This had significant social and environmental impacts and became intertwined with `modernity' in the countryside as well as new patterns of investment and livestock management.

BERG ROALD, JAKOBSSON EVA
Stavanger University Center in Norway

Nature and diplomacy: The struggle over the Scandinavian border rivers

In 1905 the Norwegian Parliament voted to terminate the union with Sweden, established in 1814. The Swedish authorities reacted by demanding certain concessions, i.a. that the Norwegian authorities committed themselves to refrain from implementing “inappropriate” measures in the common watercourses. Negotiations on these questions were carried out during the summer and ended by the Karlstad-agreement of October 26th were the Norwegians accepted the Swedish requests – included the guarantee against one sided measures in the watercourses - and thus achieved full independence. Our paper will discuss the watercourse question in the Karlstad-agreement: the Scandinavian waterway convention of 1905, in a diplomatic and an environmental perspective.

The negotiations on the common waterways in 1905 were a continuation of several hundred years of hydro political diplomatic proceedings on the utilisation of one of these common rivers, namely River Klara, which has its sources in Norway and runs into Sweden. The hydro diplomacy that resulted in international regulation of utilization of River Klara in 1905 emanated in and became a small but important building brick in international water law. The fundamental cause of the hydro diplomacy and hydro legal regulations was however the universal problems connected with conflicting upstream-downstream interests and the fact that the Norwegian had had plans for redirecting River Klara into an adjacent Norwegian river during the 18th century. The environmental and topographic perspectives are in other words basic to understand the outcome of the negotiations that led to the dissolution of the union. Moreover the river basin perspective enhances our understanding of both development of living conditions and the development of culture in the Scandinavian region of Europe as the convention of 1905 guaranteed Swedish logging and agriculture interests and hindered the construction of a dam in Lake Femunden that could have increased or stabilised the water level in River Klara aiming hydro electrical production by strengthening the doctrine of absolute territorial sovereignty in international water law. On both sides of the border dissatisfied voices later argued for rational utilization instead of national rightfulness to make possible common utilisation of the water resources. They ascertained the existence of a topographic and environmental union at the Scandinavian peninsula demonstrated by the waterway drainage system through the landscape, unaffected by the dissolution of the political union in 1905.

BIAGIOLI GIULIANA
Università di Pisa

Il suolo agrario: metodi e tecniche di salvaguardia in Italia centrale

L'area che sarà soggetto di indagine è quella dell'Italia prevalentemente costituita da colline e montagne nella fascia centrale della penisola italiana che va dal mar Tirreno all'Adriatico. Le poche pianure costiere e interne sono state per tutti i secoli dell'età moderna afflitte dal problema delle paludi. Gli agricoltori e il capitale cittadino (si tratta di zone in cui esisteva dal Medioevo in poi una forte presenza urbana) sono stati costretti da un lato a ricavare un suolo agrario coltivabile dalla collina e bassa montagna, dall'altro a cercare di recuperare le pianure e i fondovalle con i metodi delle colmate. In entrambi i casi, il suolo così creato andava poi mantenuto alla coltivazione attraverso opere di difesa. In collina si misero a punto una serie di tecniche di sistemazione del suolo (terrazzamenti, ciglionamenti, lunette) e di lavorazione dello stesso (a girapoggio, a cavalcapoggio, a spina) sempre più perfezionate ai fini della conservazione dello strato fertile. In pianura, sui terreni recuperati furono create due reti complementari, di macro e micro-idraulica, tese ad impedire da un lato un nuovo impaludamento, dall'altro a garantire le colture asciutte dall'invasione o dal ristagno delle acque.

La parte di territorio più impervia o di pianura non bonificata servì a creare correnti di scambio di prodotti e risorse con quella coltivata (forza-lavoro umana delle migrazioni temporanee, energia per la trasformazione dei prodotti, legname, bestiame, prodotti delle paludi) in una continua tensione tra le diverse aree e l'allocazione delle risorse, condizionata in primo luogo dalla vicende demografiche.

Sul suolo così recuperato alla coltivazione si creò un sistema agrario a ciclo chiuso, in cui era importante sia il poco bestiame da lavoro, sia quello suino ed ovino che traeva alimento dalle terre lasciate a pascolo temporaneo o dai boschi, e che si caratterizzava per un completo riutilizzo dei residui o scarti dei cicli precedenti. Importanti furono poi pratiche colturali come opportune rotazioni agrarie, anche quelle che gli agronomi denunciarono nel XIX secolo come arcaiche (come la permanenza del maggese) e lo sviluppo di colture arboree più appropriate alla collina di quelle erbacee.

Questo sistema entrò in crisi dopo la metà del XX secolo, a seguito dello spopolamento delle campagne e dell'avanzata dell'agricoltura "industriale", che abolì sia la tradizionale sistemazione del terreno, sia l'agricoltura del ciclo chiuso e del riutilizzo dei residui colturali, umani e dell'allevamento.

BIÈÍK IVAN, KUPKOVÁ LUCIE,ŠTYCH PØEMYSL

Charles University in Prague, Faculty of Science

Chief political events as a factor of land use changes in Czechia during period of transformation (1989–2003)

The paper deals with searching of major societal (political, economic, social etc.) driving forces that were influencing land use changes in Czechia during its transformation from communism to capitalism. Czechia is a state whose development has been influenced by a number of large-scale political changes throughout the 20th century, which occurred in Europe and particularly in Central Europe.

Paper attempts to clarify interplay of big political events and processes and their impact on land use dynamics in Czechia which are typical by higher intensity and in the case of some land use categories by opposite trends of their development (e.g. permanent grasslands, increase, an unused plots area increasing as a new element in LUCC and landscape, continuing arable land diminishing etc.).

Transformation of the Czech society from centrally-planned towards free market economy we can perceive in a broader view of overall modernization process as a consequence of ongoing internalization and globalization of the present world. On the other hand it can be in a narrower perspective seen as a necessary restructuring of the Czech economy and making it more efficient. In period of transformation it has been typical by the change in the ownership of land

and of means of production was concerned; in transformation of "socialist" co-operatives and state estates into new forms of capital organization (stock companies etc.) and changes in the areas and structure of crop and livestock production etc.

This is to say that the most significant of the changes after 1990 mentioned above led to considerable decrease in the volume of agricultural production by at least one fourth and also to decrease of number and share of economically active people by about two thirds. Al these changes resulted in the intensive LUCC, which will be characterized at maps and tables.

BLANK GARY B.
North Carolina State University

Short Duration, Intensive Coppice Management in Eastern North America

In the landscape of early colonial America, forests were abundant enough and the desire to clear land compelling enough so that woodlands were seldom coppiced. However, iron manufacture in the American colonies became a compelling reason for coppice management of woodlands, as at Principio, Maryland after 1722. Subsequently, sites wherever iron ore could be extracted and processed prompted coppice cutting on proximal woodlands to produce charcoal for smelting. A ring of furnace sites arced around the north and west of Baltimore during the 18th century. Sites like Catoctin Furnace (MD) and Bloomery Gap (WVA) represent typical locations of coppice management for charcoal throughout the Appalachian Mountains in the 19th century. Charcoal iron production continued even beyond the time when coked coal came into use for larger scale iron production in the United States. Preference for charcoal iron by some customers prompted continuation of small scale operations where business prospects encouraged it. Thus coppicing for charcoal production persisted in some locations into the early twentieth century. Eventually scale of demand and the efficiency of mass production systems drove iron mongers to mineral coal as the only fuel they would use. Coppicing therefore became less pervasive and soon dwindled as a practice for managing woodlands. In its place, selection cutting often culled the best timbers from hardwood forests where mine props, railroad ties, tanbark and other wood products were extracted. In retrospect, the practice of coppicing produced some striking results remarked by early 20th century observers, mainly high quality timber stands that developed after coppice cutting ended. The modern practice of clearcutting hardwood forests and allowing natural regeneration from stump and root sprouts sustains the concept of coppicing. However, parallels between the modern practice of clearcutting hardwood stands and traditional coppicing are lost on some critics of forest management. While both systems produce sustainable rotations in woodland of suitable species, ecological side effects of the practices disturb proponents of natural landscapes.

BLAVASCUNAS EUNICE
University of CA Santa Cruz-Anthropology Dept.

Animal-Human Contingencies: Moose, Wolf and the Science that Describes, Isle Royale, Michigan

This paper explores how population biologists on Isle Royale, Michigan represent animals in their science. By the mid-twentieth century moose and then wolves colonized this island archipelago in Lake Superior. Scientists arrived to the island soon thereafter to study predator-prey interactions. They realized that they had found the perfect outdoor laboratory to test hypotheses about predator-driven interactions. Unlike landlocked sites, the island held the promise of a simplified ecosystem with no competing human interests, such as ranching or hunting. In every way there are compelling narratives about the introduction of moose, wolf and scientists to this island. My paper will look at which narrative strategies scientists have used to describe animals, particularly as these scientists view their field biology as the interface of natural history and mathematical modeling. Broadly speaking I will address what constitutes an historical event in a scientific study where animals are concerned.

Environmental history has established the idea that nature constrains and construct human history and vice-versa. Natural history and evolution emphasizes the temporality of animals in sequences of mutations, where evolution cannot be cyclical or move backwards. My paper will forward the above concerns of environmental history and natural history, combining these with the analytics of ecology to ask: what animal-historical contingencies defy reduction in a mathematical model, yet exemplify an operational concept in ecology? As new stochastic models of ecology have replaced older ideas about homeostasis, what this does mean for scientific and public understandings about appropriate ratios of predator-prey? How is equilibrium of animal populations understood in an historical framework?

BOCQUET DENIS
Ecole Nationale des Ponts et Chaussées, LATTS, Parigi

Piani regolatori e ambiente in Italia: visioni del futuro delle città tra sistemi tecnici, organizzazioni burocratiche e percezioni della natura.

Il piano regolatore rappresenta, nella tradizione urbana italiana, il nodo burocratico, amministrativo, sociale e politico della previsione del futuro delle città. E anche un'indicatore del rapporto tra città e natura al momento della sua redazione. La relazione delle società urbane all'ambiente ne è profondentemente segnata, nelle dimensioni sia affermativa (e non necessariamente positiva), come impatto del piano, che negativa (ma non necessariamente nel senso morale), come non applicazione del piano o costruzione della città al di fuori di esso. Quest'articolo, esaminando l'evoluzione del trattamento dell'elemento "natura" nei piani e nei dibattiti ad essi legati nei primi cento anni della legge del 1865, propone un tentativo di lettura della complessa relazione fra sistemi burocratici e spazio delle città.

BOERMA PAULINE
School of Geography & Environment, Oxford University

Italian Colonial Forestry Policy in Eritrea

Drawing on extensive original archival sources, photographs and oral histories, this paper examines the origins, content and implementation of Italian colonial forestry policy in Eritrea and its impact on forest cover in the central highlands during the time of Italian colonial rule from 1890 to 1941. In Eritrea, it is popularly believed that the Italian colonial government was responsible for the excessive exploitation of the country's forest resources. This exploitation is thought to be one of the main factors contributing to a presumed deterioration in tree cover in much of the central highlands of Eritrea since the end of the nineteenth century. Archival and photographic evidence, however, suggests that tree cover was already scarce in Eritrea when Italian colonial rule was established. Furthermore, other than in a few limited areas, tree cover did not diminish significantly during the time of Italian colonial rule in most of the central highlands.

The paper highlights how forestry policy was variously influenced by the need to attract agricultural settlers to the colony, by the ambivalence of politicians in Italy itself to the government's colonial aspirations, particularly in the early years of colonial rule, and by the eventual military conquest of Ethiopia. It finds that, with some exceptions, the colonial administration was careful in its conservation of trees, passing extensive forestry legislation, importing most of its timber needs and conducting widespread tree-planting campaigns. Where damage did occur, it appears to have been not so much the result of a conscious strategy to exploit timber, than of a poor diagnosis of the principle causes of deforestation in the early years of colonial administration, as well as ineptness in the enforcement of legislation during other periods.

BOERSEMA JAN J.

Vrije Universiteit, Amsterdam

Overshoot but no Collapse?

For many scholars Easter Island (Rapa Nui) is a textbook example for a flourishing and highly developed culture that has collapsed as a result of the overexploitation of natural resources. And indeed, it is a powerful image. The well-known giant statues do certainly compel our admiration and they betoken, according to anthropologists, a socially and religiously "rich", "highly" developed society. At the same time however, archaeological research has shown a sorry history of deforestation. The once-numerous palm trees, Jubea chilensis, disappeared completely due to overexploitation and lack of regeneration and a large shrub, Sophoro Toromiro, was pushed close to extinction. The decline of these two species initiated the winding down of the Easter Island environment and society. Local erosion, dwindling animal species, deteriorating quality of water, decline in population, diminishing resources, mutual competition and endemic warfare, even cannibalism and wilful destruction of religious objects were the apparent characteristics and mechanism of these ecological and social crash.

Thus Easter Island seems illustrative for the way in which the good life, a very civilisation, may become lost due to bad treatment of the natural environment. Two terms recur in descriptions of such a process, i.e. "overshoot", or exceeding certain limits, and "collapse".

However, this dominant view might be contested. There is reason for doubt as to how rapidly the collapse occurred and how profound the effects were. Was it really a collapse? Why didn't the Dutch and the Spanish visitors see any weapons? Why did the islanders barter chicken for linen? This seems quite illogical conduct while in the state of decline, involved in warfare and suffering from severe hunger. After re-reading the journals of early (eighteenth century) European visitors and a re-examination of the historical, archaeological and anthropological evidence I conclude there was not a collapse in the way most authors have described it, involving starvation, major warfare and cannibalism. After discussing the evidence I propose a different hypothesis: a rather smoother transition from a 'rich culture' into a 'poor culture', both in principle sustainable but with different levels of quality of life.

Finally I will raise the question if this reappraisal bears any relevance to the present day debate on sustainability and quality.

BOOMGAARD PETER
KITLV Netherlands

Rich man, poor man, beggarman, thief; Rights to land in the Indonesian Archipelago, 900-1950

There is a pertinacious opinion among scholars of Southeast Asia that prior to European colonisation all rights to land vested in the monarch, a view already propounded by Thomas Stamford Raffles in the early nineteenth century. Another persistent rumour has it that all lands were being held communally by the village, the larger kin group ('clan') or the extended family. In both cases it has been argued that lack of individual property rights had a negative impact on economic development. Recent research, however, has revealed that already in tenth-century Java individual cultivators held their wet rice fields in full (allodial) property. Now this was of course a densely populated area even a thousand years ago, and it is far from certain that we will find similar arrangements in the more empty areas of the Archipelago. Nevertheless the data on rights to land should be reviewed in the light of these recent findings. What are the implications for the link between land holding rights, land clearing, poverty or wealth, and environmental impact?

BRENDEHAUG EIVIND, HØYER KARL GEORG
Western Norway Research Institute

The precautionary principle - History and development

The precautionary principle (PP) is part of several international environmental treaties and agreements, for example the Montreal Protocol in 1997, the Rio Declarations in 1992 and the Cartagena Protocol on Biosafety in 2000. The basic elements of the principle, precaution and uncertainty have however a longer history back to the late 19th century (Harremoës, 2001). The PP is applied in different environmental fields in a policy and regulatory context by traditional administration management (governing). In the latest decades we can notice a continuous development of the PP:

- From environmental to health issues
- from policy to science
- from governing to governance
- from uncertainty to ignorance

In the beginning the PP was applied to regulate chemical pollution and consequences on the natural environment. Today the principle is applied on several environmental fields and also to protect human health, for example to regulate additives in food. The other element is the regulative issue. Originally PP was developed as a principle in environmental policy, as a precautionary-policy. While the principle involves scientific knowledge question has been addressed if and how the principle could be applied in science. Is it possible to develop a precautionary-science? The third element is the relationship between governing and governance. In the latest years the principle has been strongly related to governance, with less vertical management, and more horizontally consultation both in politics and in science.

This development is not going on without several controversies. Our objective is to describe, in a historical perspective, this development to understand the controversies. From that point of view we discuss possible consequences of the broader practice of principle. Will the PP be weakened and loose its importance? Or will the broader practice strengthen the PP and the understanding of the principle?

BROWN KAREN
Wellcome Unit History of Medicine, Oxford

Poisonous Plants, Veterinary Science and Grassland Ecology in 20th century South Africa

Historiographically much of the literature pertaining to grassland management in South Africa has focused on debates and policies surrounding veld degradation /transformation as well as the eradication of noxious weeds. To-date historians have not specifically explored the effect of poisonous plants on South Africa's valuable livestock economy.

With the control of many serious epizootics by vaccination or stock dipping (to combat tick-borne disease) more animals died from plant poisoning than from any other cause by the 1920s. Toxicosis therefore had important implications for the pastoral economy and fed into environmental debates about the sustainability of palatable grasslands. In the 1930s the toxicologist Douw Steyn designated 200 plants as toxic; by the 1980s this figure had risen to 600.

The high incidence of plant poisoning generated extensive research from the 1920s onwards by scientists working at the world-famous veterinary laboratory at Onderstepoort (Pretoria, South Africa), as well as by state botanists employed at the veld experimental stations. The knowledge generated expanded the relatively new scientific fields of ecology and toxicology. Toxicology was a complex subject given that many plants were highly nutritious at certain times of the year, but could become seasonally poisonous in certain pedological zones under particular climatic conditions. In South Africa scientists isolated the toxic principles, recorded the distribution of poisonous plants and devised new grazing strategies. Plant investigations also involved local farmers who played a vital role in the preliminary identification of toxic flora.

This research had both intellectual and practical dimensions. It fed into broader ecological debates about floral succession and climax. Toxicology both influenced and altered scientific and political critiques of African and settler methods of animal husbandry. On the one hand

veterinarians and ecologists complained of overgrazing, arguing that the growing prevalence of poisonous plants was a result of diminished grass cover and the fluorescence of secondary, animal-resistant, vegetation. Other ecologists however introduced an alternative concept to South African agriculture – the problem of undergrazing. These concerns contributed to new recommended patterns of rotational veld management, which had implications for traditional practices such as transhumance and kraaling. Either eliminating poisonous species, or incorporating them into the animal diet during their non-toxic phases became integral strategies for sustaining edible pastures and optimising livestock yields.

BRYKALA DARIUSZ
Polish Academy of Sciences, Institute of Geography

Water mills and mill ponds in the Skrwa River catchement area (central Poland) since 14th to 20th century.

At the turn of the 11th and the 12th centuries, water mills appeared all over the Polish land. Until the beginning of the 20th century, they were the main elements of small rivers' management.

The analysis of the collected materials proves that the water of the rivers of this relatively small basin (ca 400 km2) used to be dammed up every 2-3 kilometres. Water mills were permanent investments and existed for quite a long time. If a water mill got damaged, it most cases it was rebuilt at the same place. Thus, it happened quite often that water mills existed in the places for hundreds of years (500-600 years).

BÜHN S., GLASER R., VINCELLI E.
University of Heidelberg

Severe Climatic Events in Germany Since AD 1000 and their Perception

Based on selected time series, the article first presents major climatic catastrophies such as floods, storms, and droughts that have occurred since 1000 AD. In addition to the overall structures and underlying trends of the time series the major events are discussed further.

The (public) perception of especially severe climatic events is detailed on the basis of selected case studies. How were such catastrophic events explained and what lessons were learned? This approach is geared to solving the integral issues of the interaction between humans and the environment.

CARPINTERO ÓSCAR
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Socio-economic metabolism and dematerialization: The Case of Spanish Economy (1955-2000)

Mainstream economics usually analyses the sources of economic growth studying the evolution of conventional inputs like work, capital or technology, but this approach tends to forget the contribution of natural resources to the expansion of the GDP. In this paper, we focus on hidden environmental cost and natural resources requirements that economic growth is demanding in Spain during the last half century. For this purpose, the concepts of economic metabolism and material flows accounting allow us to explain the ecological changes suffered by the Spanish economic metabolism in this long period of time. Indicators like Total Material Requirements (TMR) includes all energy and material flows that enter in the economic system, and lets us to take part in the debate on the "dematerialization" of industrial economies. In this context Spain present, in comparative terms, a bigger rate of growth in the use of energy and materials. As a result of this analysis on Spanish economic metabolism, it is not possible to find empirical evidence about the existence of a Environmental Material Kuznets Curve for this country.

CARTER LYN
University of Auckland

The land is my parent. She will provide for my children and me

Legitimising indigenous knowledge in sustainable land development and use.

This paper seeks to examine how indigenous knowledge systems for utilising and managing land are just as sustainable and viable as are western knowledge systems. The overall purpose of the paper is to demonstrate the relevance of Maori resource management systems to a contemporary situation, and how they can be utilised in a sensible and realistic way. Examples will be taken from two case studies of sustainable land use and management that have occurred on Maori-owned land in New Zealand. One is the nohoanga projects [resource gathering sites] that were returned to the South Island Ngai Tahu tribal group through legislation in 1998. The second is a papakainga housing [housing on customary tribal lands] development project instigated by Ngäti Pikiao in the Rotorua area of the North Island. Both these examples demonstrate different methods of utilising Maori resources, in this case land, and how this has been accomplished by the utilisation to different degrees, of both Maori and Western knowledge. It is the tensions created by the utilisation of two knowledge systems that will be investigated here.

The examples will focus on two principle issues of Maori land management. Firstly, on how the legislation interfered with the indigenous knowledge system, and how Ngäi Tahu have countered this as much as is allowable under the restrictions of the legislation that governs the use of the land. The Ngäti Pikiao example demonstrates how a more holistic approach that begins from a Maori perspective accommodates a Pakeha [non-Maori New Zealanders of European decent] perspective on land use and development without compromising to the extent of losing group identity and values important to Ngäti Pikiao.

The theoretical framework for this paper will come from the school of thought that it is more realistic to concentrate on the similarities rather than the differences between Western and Indigenous thought. An understanding of how both systems function for the benefit of land management and use is particularly pertinent to Maori who operate within two cultural frameworks in New Zealand: they're own and that of the Pakeha majority. In this case Maori must incorporate various requirements that do not necessarily fit with their own management processes. Therefore, this paper seeks to apply a framework that will explain how Aotearoa/New Zealand landscapes are utilised and managed sustainably, while maintaining the cultural integrity and legitimacy of the Maori landowners.

Key words: land sustainability and use, Indigenous knowledge, Maori, New Zealand

CAZZOLA FRANCO
Università di Bologna

Il suolo agrario e la conservazione della fertilità nella bassa pianura

a) *bonifica, drenaggio e scolo delle acque*

La corretta regolazione delle acque da parte degli agricoltori è di vitale importanza anche nella vasta bassa pianura segnata dal corso del Po e in tutti i comprensori pianeggianti interni della Penisola che fungono da raccolta di acque meteoriche che presentano più o meno grandi difficoltà di smaltimento. Poiché l'eccesso di acqua nel suolo impedisce lo sviluppo e la maturazione di buona parte delle piante coltivate dall'uomo, si rende necessaria una costante azione umana rivolta ad eliminare l'eccesso di umidità dallo strato utile del suolo agrario.

L'alternativa, praticata dal XV secolo in avanti, era di coltivare il riso nelle zone più o meno permanentemente sommerse dall'acqua. Il fondo della risaia stabile era naturalmente dotato di fertilità.

Prima della utilizzazione di macchine e pompe per il sollevamento dell'acqua l'unica maniera di recuperare suolo agrario per colture cerealicole o foraggiere era quella di applicare una enorme quantità di lavoro umano per scavare canali di drenaggio, fossi e scoline dove si potesse

raccogliere il più velocemente possibile l'acqua meteorica e quella delle falde superficiali. La baulatura dei campi ottenuta con tecniche di aratura o con trasporto di terra al centro degli appezzamenti accelerava i processi di sgrondo delle acque e consentiva la coltivazione asciutta (frumento, orzo, legumi, canapa, lino, cereali inferiori, prati falciabili, ecc.) anche in terreni umidi e a bassa giacitura. La fertilità potenziale dei bassifondi poteva così essere valorizzata e sfruttata insediando agricoltori là dove attività prevalernti erano quelle di raccolta, pascolo, caccia e pesca.

La bonifica per drenaggio e scolo naturale aveva naturalmente come presupposto la regolazione delle acque a scala macroidraulica, ossia, in particolare la separazione di tutte le *acque alte* (provenienti da terreni superiori), dalle *acque basse* ristagnanti nei terreni a minore giacitura. La regolazione dei fiumi, la creazione di argini di contenimento e di grandi canali collettori vedevano la bonifica come interazione fra attività pubblica (comunità, signorie, stati) e attività privata svolta quasi sempre in forma collettiva e collaborativa da contadini, coltivatori e proprietari terrieri, riuniti in *consorzi*.

b) *Colmate di piano*

Dove i fiumi e i torrenti scendevano in pianura con percorso rapido e con grande trasporto solido una tecnica efficace era quella di derivare da essi acque di piena ad alta torbidità e convogliarle in bacini arginati il cui fondo doveva essere rialzato, fino ad ottenereun terreno a quote sufficienti a garantire uno scolo delle acque efficiente e stabile.

Le colmate accumulavano lentamente nelle *casse di colmata* il suolo ricco di humus e limi strappato dalle piogge alle pendici montane e collinari. Potremmo parlare in questo caso di *trasferimento* della fertilità dalla montagna alla pianura mentre, al contempo, si riduceva qui l'area occupata da stagni, paduli e acquitrini.

c) *Le zone umide come risorse e come riserve di fertilità*

La presenza nella Penisola italiana di vaste zone umide di acqua dolce e salmastra (nelle pianure costiere) merita attenzione non solo in quanto esse erano produttrici in massimo grado di biomassa utilizzabile (pesce, cacciagione, erbe palustri e cannuccia, pascoli e prati umidi, torbe, ecc.) ma anche in quanto riserva complementare di alimenti vegetali e di lettiera per le stalle che andava in definitiva ad alimentare la produzione di concime organico specialmente nella pianura del Po, dove l'espansione dell'area coltivata aveva drasticamente eliminato le superfici boscate. Molti proprietari di bestiame e molti contadini inviavano il bestiame nei mesi invernali a svernare nelle zone umide costiere, essendo di regola il podere mezzadrile di pianura e dotato di scarsi e spesso insufficienti spazi foraggieri. I poderi canapicoli del bolognese esigevano ogni anno diversi carreggi di strame di valle per accrescere la quantità di letame prodotto dall'azienda agricola.

d) *Gli animali*

Da quanto detto si deduce che il letame animale (compreso quello umano) rivestiva un ruolo centrale nell'agricoltura organica (o solare) nella quale si era andato fortemente riducendo, nel corso dell'età moderna, il ricorso al riposo periodico dei campi e alle pratiche del maggese. Queste ultime soluzioni meglio si addicevano per ragioni pedoclimatiche, alla regione peninsulare mediterranea, dove la prolungata aridità dei suoli obbligava a lunghi riposi e all'alternanza dei cereali e del pascolo come forma dominante di uso dei suoli e di reimmissione in essi della fertilità consumata. Rilevante era invece, per le aziende agricole della pianura asciutta, la necessità di mantenere animali (bovini, equini, asinini) all'interno dell'azienda agraria tradizionale non solo per ottenere sufficiente produzione di letame, ma anche, e soprattutto, per assicurarsi la più importante fonte di energia meccanica dell'agricoltura, il tiro bovino. Ciò comportava tuttavia la necessità di destinare una quota rilevante dei piccoli poderi ad usi foraggieri. Il ricorso a biomassa prodotta spontaneamente al di fuori dell'azienda agraria rispondeva in parte a questa esigenza, sia pure con un costo non trascurabile per l'azienda stessa. Un'alternativa era ospitare per il periodo critico invernale greggi di pecore su stoppie e

canapai, consentendo ai pastori transumanti una permanenza sui campi coltivati altrimenti non gradita.

e) *Gli alberi*

Non meno importante, anche per integrare la sempre scarsa dotazione foraggiera nei mesi estivi, quando le erbe si seccavano, era proprio la presenza di alberature sui campi, sia in filari (piantata padana), sia nell'agricoltura promiscua . Nelle sistemazioni agrarie di pianura gli alberi, disposti in filari lungo i fossi di scolo delle acque, contribuivano sia al drenaggio dei suoli, sia all'allevamento della vite, sia alla produzione di frasche e foglia utilizzabili come alimento per bovini e altri erbivori.

CHROMÝ PAVEL, JANÈÁK VÍT,WINKLEROVÁ JANA
Charles University in Prague, Faculty of Science

Land use and landscape conservation in peripheral areas of Czechia: potential or brake of the regional development?

In course of past 150 years in Czechia driving forces of landscape changes have became not only general processes (e.g. industrialization, urbanization, space polarization) but also specific events and processes complex historical development (transfer of Germans after the WW II, communism, postcommunistic transformation).

Recent effort of the research team, dealing with long-term land use changes in Czechia, is focused on predominantly quantitative evaluation of land use changes in the basis of cadastral units (resp. basic land units) and on qualitative evaluation (land cover) in selected model areas, which represents certain landscape types.

The contribution deals with landscape changes in peripheral areas of Czechia and tries to differ between general and specific features of the development, resp. regular versus eventual causes. The paper compares landscape and settlement structure changes (settlement downfall) in Czech borderland (affected by transfer of inhabitants) and in areas, which are (or were in the past) conform to specific regime (military training areas).

While landscape in borderland is from bigger part legislatively protected (and can be viewed as a good example) in case of other areas we only think about future function of the landscape. The contribution tries to call attention to the conflict between importance of the nature and landscape conservation and formation of "natural" heritage on the one side and functional (commercial) use of landscape as a potential for the regional development on the other side.

CLARK JOHN
AHRB Research Centre for Environmental History, University of St Andrews

The burning issue: the history of municipal waste incineration in Britain

As the twentieth century drew to a close, the British government resolved to reduce its mounting piles of rubbish through the mass burning of municipal waste. Far from being an innovative solution, the proposed construction of multiple municipal incinerators represented the third significant cycle of development in this area of waste management in Britain. On each occasion that interest was rekindled in waste incineration, discussion was devoid of the historical antecedents. This historical blindness was especially apparent when bold claims were made regarding the production of electricity from refuse. Although waste-to-energy incinerators dated back to the 1880s, an editorial in the Journal of the Institute of Electrical Engineers for 1963 implied that the heat produced from waste incineration had not previously been used to generate electricity. Similarly, American economist Richard Porter recently claimed that the 1980s ushered in a "new kind of incineration" because waste was converted to energy rather than just ash. Technological antecedents were not, however, the only neglected aspects of the history of waste incineration.

Although people, technology, legislation, and the composition of waste streams have changed, there have been some constants in the history of incineration. Approximately three different periods in British history (1876-1914; 1969-1981; 1996-2002) have witnessed elevated interest in municipal incineration of waste. Although each has been driven by unique circumstances, the ensuing discussions have consistently attempted to balance considerations of economy, efficiency, aesthetics, and public health. Through an historical examination of disputes surrounding the construction and operation of incinerators in late nineteenth- and twentieth-century Britain, this paper will examine waste disposal and related waste-to-energy strategies. An historical appreciation of the physical, social, and political parameters that shaped opinions discourages simple tales of the misuse and mismanagement of the natural environment. Moreover, it often highlights a truism of environmental history: “the means by which one environmental problem was resolved might so easily instigate another”.

CLEMENT VINCENT
Ecole Normale Supérieure LSH
SIMON LAURENT, PECH PIERRE
Université Paris 1

Reforestation policy in the Mountain of Lure at the XIXth century: national stake and local resistances against an imposed sustainable development project

Sustainable development, far from being a recent question, crosses the great forest debates since many centuries. It is in the heart of the reforestation policy of the southern mountains in France at the XIX th century. While underlining the ancientness of the durability concept in forest management, the authors analyse the stakes and contradictions of reforestation policy. Its implementation in the Mountain of Lure at the end of the XIX th century is based on the questionable state of deforestation of this Mediterranean area. The reforestation policy roused the resistance of the agrarian communities, which felt dispossessed of their common laws. It reflects the seizure of forest management in France by the forest engineer’s centralized corps. The forest space of Lure symbolizes a fundamental opposition between central power and agrarian society, between sustainable development and local development.

COATES PETER
University of Bristol

Gum tree blues: the eucalyptus controversy in California

The eucalyptus tree is a prime example of what a botanical historian has called a “transported landscape.” Since the mid-19th century, the `Universal Australian’ (Stephen Pyne’s phrase) has been transplanted and acclimatized around the Mediterranean basin as well as in countries such as India and Brazil. This large, fast-growing tree’s anti-malarial properties, commercial timber value and shade and ornamental qualities also attracted enormous interest in California, where the `miracle tree’ was first introduced in the 1850s. By 1900, however, the enormous hopes invested in the Tasmanian blue gum (the dominant variety) were largely dashed. Nonetheless, for many Californians, the blue gum became an integral and thoroughly desirable feature of the landscape (`as symbolic of the Golden State as the orange’). But for other Californians, especially native plant proponents, the tree remains a permanent and unwanted alien (the nation’s largest weed), representing a transported landscape whose delivery was never accepted. This paper concentrates on opposition to the tree expressed over the past thirty years, focusing on the controversy (1979-96) over removal of `invasive’ gum trees and their replacement with native species on Angel Island, an 800-acre state park in San Francisco Bay just north of Alcatraz (dubbed the `Ellis Island of the West’ because of its former role as entry point/detention centre for East Asian immigrants). The tree’s opponents (`eucalyptophobes') regarded it as ugly, dangerous and non-native. For its champions (`eucalyptophiles'), it was a beautiful, embattled symbol of

multihorticulturalism and tolerance. Broad themes to be addressed in this paper are the national identity politics of nature, ecological colonization and decolonization, tree hatred and botanical xenophobia, the role of trees as heritage and the value of nature as living history.

CONNELL DANIEL
Australian National University

Talking sustainability but dreaming production

Sustainability is a highly contested concept in Europe and those parts of the world that its emigrants have transformed. As an example of a widespread phenomenon this paper discusses the history of conflict over the meaning and significance of 'sustainability' in the Murray-Darling river basin in south-east Australia, a region remade by European settlers after they displaced the Aboriginal inhabitants in the early nineteenth century. In recent years the settler culture's commitment to economic growth and environmental exploitation has been called into question by the restraint implied by sustainability and related concepts such as integrated catchment management, the precautionary principle and inter-generational equity. These principles have been incorporated into much recent Australian legislation. In practice, however, they have only been implemented haphazardly. Efforts to reconcile them with core European values such as 'progress' have resulted in confused, incoherent and divisive public controversies. Growing support for sustainability principles is in part a response to obvious environmental degradation that threatens future production. It also indicates a sense of loss as people contemplate the remnants of the pre-European landscape in the river system and its hinterland. Dissident elements from within European culture, long present but marginalised, that celebrate 'nature' in various guises have become more influential. Aboriginal peoples have a very different relationship to the land and its rivers and they are also active in the debates. While many other societies have similar ideas and philosophies, sustainability is a European concept that exposes conflicts in the values of its culture of origin. This paper provides an example of how the debate about its relevance has been conducted in a continent where European settlers are still struggling to adapt to a bio-physical environment quite alien to that in which their culture evolved.

CORONA GABRIELLA
Issm-Cnr, Napoli

Politiche sostenibili per la città:Napoli come caso di successo

Sono esistite in Italia politiche urbanistiche che hanno prodotto effetti positivi sul piano ambientale e cioè in termini di riduzione del consumo del suolo, di miglioramento della qualità dell'aria e dell'acqua, di interruzione di processi abusivi di uso delle risorse e di salvaguardia del verde?

In un momento in cui una ampia letteratura denuncia gli aspetti scarsamente partecipativi della tradizione pianificatoria europea nel tentativo di introdurre strumenti e correttivi di derivazione americana ed espressione di interessi privati, l'analisi storica può mostrare i risultati positivi delle politiche urbanistiche in termini di gestione complessiva del territorio urbano e di freno a processi distruttivi, con particolare riguardo al caso di Napoli, ormai considerato dai territorialisti come esempio di successo sia sul piano ambientale che sociale.

CROOK DARREN
University of Hertfordshire, UK

Upland land use strategies in the commune of Montmin (Haute-Savoie) from 1561 to 1892, were they sustainable?

It is axiomatic that mountain environments are particularly vulnerable to changes in patterns of human use, over both long and medium terms, but also over quite short periods of critical activity. The rate and scale of these changes has implications for the sustainability of these

landscapes and the land use strategies adopted and adapted to these landscapes by endogenous peoples. This paper uses archaeological and documentary records to look at human impact on one such montane environment in the commune of Montmin in the pre-alps of Haute-Savoie, over the period 1561 to 1892. Land use patterns and nutrient balance are reconstructed for specific periods in the time between 1561 and 1892. Of these the 1730-1770s and 1840-1860s stand out as two discernible periods of heightened environmental pressure at higher altitudes, which manifest themselves as discernable lowland environmental problems, such as flooding, increased erosion and declining soil fertility in the Annecy Petit Lac catchment.

CUSSÓ XAVIER, GARRABOU RAMON
Departament d'Economia i d'Història Econòmica, Universitat Autònoma de Barcelona
TELLO ENRIC
Departament d'Història i Institucions Econòmiques, Universitat de Barcelona

Energy balance, land use and social metabolism in the agrarian system of Catalonia (Spain, 1860-2000)

The paper examines the energy balance of an agricultural region of Catalonia in the mid-nineteenth century, when it was still almost exclusively based on organic energy obtained from biomass. Our hypothesis is that, from the 18th century onwards, a number of different agrarian intensification methods emerged in Europe, leading to what Anthony Wrigley has referred to as advanced organic economies. Without the application of a large-scale external energy subsidy, they succeeded in increasing the quantity of biomass and energy in each unit of land that was directed towards human consumption. Having been produced within a framework that was still basically organic, the accomplishments achieved had perforce to be diverse: an advanced organic agriculture could not be the same in an Atlantic or continental-Europe environment as in another Mediterranean one. The results help to attain a better understanding of the two key factors that allowed to maintain in 1860/70 a relatively high energy yields in an intensive organic-based agrarian system: 1) strong integration between cropping, livestock breeding and forestry; and 2) the small amount of external inputs coming from outside. The integration between cropping, livestock breeding and forestry explains why the caloric equivalent of the final agrarian product still represented 59% of the solar energy fixed by photosynthesis, although losses from livestock conversion and re-use consume 41%. These figures changed a lot in the energy balances of the agrarian system in 1950 or 2000. In spite of the replacement of animal traction and manure by tractors and chemical products, the energy value of the final agrarian product accounted for a smaller proportion of the solar energy fixed by photosynthesis. This may help in achieving a better understanding of the two sides that have led to a lower energy performance after the so-called 'green revolution': 1) the injection of an external energy subsidy mainly coming from fossil fuels; and 2) the functional disconnection between the agricultural, pasture and forestry spaces within the agrarian ecosystem. It is worth distinguishing both sides, because the solutions to overcoming their ecological effects are necessarily different.

DALY AOIFE
University of Southern Denmark

Trade and Tree-Rings

Ancient building timber as a Dendrochronological resource for mapping the movement of traded goods in the Viking and Medieval Periods.

Oak timber is a material which has been utilised throughout history in buildings, in ships and in a multitude of everyday objects. Tree-ring data has been assembled into large regional "master chronologies" for dating additional oak timber, and has proved to be useful in the determination of the region of origin of certain oak objects, more specifically oak from ancient shipwrecks. These large regional master chronologies have been built for dating purposes and timber from

buildings or archaeological sites, which have been included in the chronologies, can have grown outside of the region for which the chronology represents.
I will present an analysis of tree-ring data from Northern Europe, to build a better tool for the determination of the provenance of oak objects. I will present some thoughts on what can be said of the traffic of timber as a raw material in relation to the decreasing availability of timber in certain areas. The research allows the presentation of some thoughts on timber as a valuable resource for people in the late prehistoric and early historic periods and the evidence for increasing transport of timber during this period and later. The problems facing me in using timber from historical buildings and archaeological sites as the geographically fixed reference when determining the provenance of moveable objects like ships and barrels will be outlined and the solutions which I will apply to the data to overcome this problem will be described.
I will also present the type of information, which is emerging from the provenance determination of certain oak shipwrecks. In addition I will show results of analyses of oak barrels - an otherwise everyday object but an object which was, in the past, the standard packaging for the transport of tradable goods – and I will show the connections between regions such analyses can reveal.

DAVIES ALTHEA
AHRB Rresearch Centre for Environmental History, University of Stirling

A tale of two valleys: adaptations to maintain agricultural productivity on an estate in the uplands of Central Scotland

Documentary evidence gives us insights into the motivation and perspectives of communities in the past but it seldom provides an unbiased or complete record of the environment in which they lived and the natural resources on which they relied. Consequently, the pursuit of environmental history from written sources alone can divorce people from their landscape, with the risk of misinterpreting their actions. This is especially the case in upland areas, where mismanagement of resources could have potentially disastrous consequences. So how can we reconstruct past environments which recognise the importance of place to people?
At the Centre for Environmental History, this issue is being addressed by integrating detailed palaeoenvironmental and historical records from a range of upland landscapes to understand the links between people and their environment, particularly how they managed and altered their natural resources to sustain their culture and economy. A case study from this project will be presented to illustrate the contrasting agricultural systems adopted in two parts of an estate in the Central Highlands of Scotland. Pollen-derived evidence reveals that these two areas were environmentally distinct, incapable of supporting the same farming systems. Both the environmental and historical evidence show that this was recognised and exploited over many generations, giving rise to subsistence systems that were adapted to the limitations of the local environment. However, this was not a one-way relationship, since technological and ideological changes also drove environmental change. The study shows how communities in different environments responded to changing market-driven economic forces.
Without the palaeoecological evidence for the spatial and temporal variability of past environments, economic specialisation could be assumed. However, this was a response to distinct environmental and technological constraints which demonstrates how past communities used their knowledge of their landscape to ensure their survival within changing socio-economic contexts. This case study of historic sustainability also has wider implications for the management of modern landscapes. With our current heightened awareness of the destructive impacts of people on the environment, it is important to be aware that some agricultural changes have had positive effects on plant diversity. These results call for more integrated approaches in environmental history, to ensure that we recognise the interdependence of human decision-making and the changing environment.

DAVIES SIRIOL
University of Stirling

How green was my valley:Management of pasture lands in the 18th century Scottish Highlands

In debates over the management of the Scottish uplands it is commonly assumed that systems of grazing practised in the pre-modern period were more sustainable than the intensive grazing which followed. Investigation of this assumption requires detailed study of the management of pasture in the 18th century Highlands. This is the aim of a project on the impact of transhumance undertaken by the Centre for Environmental History at Stirling University.

The early 18th century was a time of political upheaval in the Scottish Highlands. Two Jacobite rebellions resulted in physical damage to the landscape and later the annexation of rebel lands by the Crown. The gradual pacification of the area after the 1750s led to an intensive programme of agricultural improvement by both private landlords and Crown agents, who commissioned detailed surveys of their estates. The old mixed-farming economy based on joint tenancies was converted to a system of large single-tenant farms specializing in stock-raising. This necessitated the re-organisation of grazing lands. New farm leases included regulations on the management of summer grazing and dates of opening and closing of pastures.

The drive to increased profits led to the wholesale adoption of new breeds of sheep by the end of the century. On the estates of the Duke of Gordon in Lochaber, for example, sheep took over three quarters of the land. The introduction of large numbers of sheep led to a sharp reduction in arable land, since the valleys were required for winter pasturing. This meant the expulsion of former tenants who were either re-distributed among the less profitable farms of the estate or forced to migrate from the area. Contemporary writers argued about the necessity of removing the population in order to accommodate sheep. Different strategies for maintaining the population were proposed on the Gordon estate. Detailed 18th century surveys of the Duke's estate existing in the National Archives of Scotland permit an examination of the process of conversion from arable to stock-raising and the perceived conflict between the needs of stock and the preservation of the woodland. Such a study contributes a valuable perspective on the impact on the environment of the Highlands of political and economic change in this period.

DE KRAKER ADRIAAN M.J.
Free University Amsterdam

Dealing with Weather Extremes in Belgium and the Netherlands between 1400 and 1800. A Matter of changing perception in a Modernizing World

This paper deals with a variety of weather extremes in Belgium and the Netherlands on a time scale of four centuries. In particular it tries to supply an answer to the question whether statements such as 'the hand of God' or 'Gods' punishment' and 'a phenomena never seen before' are the perfect reflection of societies perception of natural events at any given time. Or do we have to make a distinction between weather extremes of a different nature? Whereas the period under consideration begins at the end of the Middle Ages and ends at the outbreak of the French revolution, it is automatically characterized by the transformation of medieval to modern thought. However, how automatically may we talk of this transformation of thought? And may we assume that such a transformation occurred among all social classes that witnessed or were affected by these weather extremes at the same time and at the same pace?

In order to have answers to the questions raised five types of weather extremes are being distinguished. First, thunder storms that caused a lot of damage to crops, trees and buildings. Second, storm surges causing large scale flooding in coastal regions. Third, winter severity that caused rivers and canals to be frozen for a long time and certain crops to be destroyed. Fourth, extreme rainfall causing cities to be flooded. Fifth, summer drought causing fire and damage to crops as well. Furthermore, in order to know if all social classes reacted in the same way to the

weather extremes, several social classes will be distinguished, such as the nobility, clergy, merchants, civil servants, farmers and artisans. Consequently a distinction in perception per social class to weather extremes will eventually also show how these differences in perception have evolved between 1400 and 1800.

DU PISANI JACOBUS A.
North-West University

Sustainable development – historical roots and evolution of the concept

The proposed paper will give an overview of the origin and evolution of the concept of sustainable development. It will start out by tracing the unfolding of the antecedents of sustainable development, i.e. "progress", "growth" and "development", in specific historical contexts over many centuries. The history of the idea of progress in the pre-modern and modern periods will first be investigated. Then the impact of the Industrial Revolution and the world economic system which it created will be traced, focussing on perceptions about the possibility of unlimited economic growth. Next the proposed paper will focus on the historical context in the latter half of the twentieth century when (1) development theories were formulated in an attempt to find solutions for the growing gap between the developed and developing countries, and (2) a growing awareness of the ecological crisis and the limits to growth emerged. In this context a paradigm shift in thinking about development occurred and the concept of sustainable development came into being. Because it was meant to be a compromise between opposing views with regard to development, sustainable development was a controversial concept from the outset. Some attention will be given to this controversy. Finally, the evolution of the concept of sustainable development will be traced from the publication of the Brundtland report in 1987 to the World Summit on Sustainable Development in 2002. The significance of sustainable development in the context of international political agendas will be assessed.

GILFOYLE DANIEL
Wellcome Unit History of Medicine Oxford

Inadequate Pastures: The Discovery of Livestock Malnutrition and Pasture Research in South Africa, c 1910-1940

During the late nineteenth century, state veterinarians in southern Africa linked a number of diseases and abnormal conditions in cattle, such as osteomalacia, pica (depraved appetite) and lamziekte (a form of botulism caused by eating contaminated carcass material), to mineral deficiencies in the pastures. Subsequently vets undertook formal experimental studies to determine the nature of these deficiencies. These experiments, which were related to the emergence of the study of human malnutrition, confirmed that the amount of phosphorous (and some other minerals) in some South African pastures was insufficient to sustain normal health and growth in cattle throughout the year. Mineral deficiency was therefore linked to poor productivity in the livestock industry and the dominance of poor grades of cattle in spite of attempts at improvement.

From approximately 1920, scientists at the Onderstepoort Veterinary Laboratories began to evaluate the mineral content of representative South African pastures in order to map areas in which the mineral content of the soil was insufficient to sustain productive pastoralism. These studies were paralleled by a series of experiments on mineral metabolism in cattle, aimed at determining the levels of different minerals necessary for optimum growth and the forms in which minerals were most easily absorbed. These studies confirmed that the mineral content of pastures over large parts of South Africa was insufficient for profitable commercial farming. As a result, the South African government adopted a policy of encouraging the use of nutritional supplements in the hope of improving the grade of cattle and productivity in the industry. This was groundbreaking research, which had implications for commercial pastoralism in the Empire

(and other regions) characterised by low mineral levels in the soil. This presentation also attempts to evaluate the impact of food supplements in areas such as the north eastern Cape, which had been badly affected by nutrition-related diseases in the early twentieth century.

GIMMI URS
Swiss Federal Research Institute WSL , Birmensdorf

History of human impacts on pine forest ecosystems in the Swiss Rhone valley

Large proportions of the Swiss Rhone valley (Canton of Valais) are covered with pine forests. Beside their function as protection against natural hazards and as recreational areas, pine forests offer important habitats for flora and fauna.

Since the 1990's, these pine forests show increased mortality and a shift in stand composition from pine to oak. In an interdisciplinary project, the reasons for this development are studied. Changes in forest use and management are an important factor considered, with a special focus on agricultural uses of the forests (e.g. woodpasture and litter collecting).

In order to reconstruct the anthropogenic disturbance regime in the pine forest ecosystem, a combination of different methods is used. The important forest-uses in the Valais during the 19th and 20th century are identified by the analysis of historical sources (e.g. forest management plans and annual reports of the forest districts). Contemporary literature helps to understand the socioeconomic background of these practices.

Oral history interviews offer an additional approach. In the Valais, traditional forest-uses were practiced until the mid 20th century. Contemporary witnesses, e.g., as old foresters or farmers, can provide first-hand information concerning the intensity and spatio-temporal extent of past forest uses.

This combination of different methods enables to describe and quantify past anthropogenic influences on pine forests over the last 150 years and to evaluate their potential impact on current forest development.

GIREL JACKY
Université Joseph Fourier

Use of town liquid wastes to produce hay and green manure within Alpine floodplains. The example of the city of Chambéry during 18th and 19th centuries

In the past the need for food production for an increasing population was partly resolved by the way of clearing for cultivation on hill slopes and floodplains. At this time, the subsequent problem of decrease in soil fertility explained the importance of fallow areas which was necessary in order to allow both natural restoration of soil resources and grazing for the cattle of poorest peasants. Nevertheless, from the 18th century, while population of the countryside increased to its maximum, cultivated meadows (legumes and grasses) and all the possibilities of fertilization (irrigation, use of all types organic wastes in addition with manure) were largely developed in order to produce greater volumes of plant biomass used as fodder and litter.

In Alpine valleys, as elsewhere in Europe, it was necessary to "change everything into fertilizer" in order to improve life conditions of urban and rural populations (epuration of liquid wastes and increasing in agricultural yields).

For example, downstream from Alpine cities such as Mailand or Chambery, intensive production of hay and green manure was developing through floated meadows irrigated by sewage. The liquid wastes released every day by the city were spread over artificial meadows and wetlands which were established over the floodplain. This organic fertilizer produced outside the farm area allowed in particular the production of huge volumes of fodder. Using waste waters to produce fodder by the means of ray-grass meadows was known from the Middle Age in Lombardy (Milano) and in Scotland (Edingburgh) from the 17th century. The "marcita" meadows of Milano have probably influenced the system used downstream from Chambery. During the frequent troubled times characterizing the 18th and 19th centuries, this garrison city

had a large population of horses and he-mules which were food demanding. Consequently, it was necessary to produce huge volumes of dry and green fodder near the city. By 1761, a company was created in order to use the sewage to produce biomass from floated meadows established on the large floodplain of the river Leysse , between Chambéry and the Lac du Bourget. The so-called “Prairie du Bourget” covered a 2000 hectares area; 500 hectares were managed to supply, from March to November, dry or green fodder (ray-grass) and litter (sedges and reeds).

This technique used from 1761 to 1930 has significantly changed the ecological landscape and decreased plant-biodiversity of the floodplain; nevertheless pollution and eutrophication of the lake have been probably slowed down thanks to the trapping of sediment and nutrients through these buffer zones. This paper will discuss the development of sewage use in the floodplain of the river Leysse and the ecological consequences of its use as fertiliser.

GISSIBL BERNHARD
University of Bremen

German colonialism and the mechanics of international wildlife preservation in Africa

Big Game Hunting and European colonialism were closely intertwined. The very nature of the hunt, the pursuit and eventual taming or killing of the wild animal by the civilized white male mirrored central aspects of the imperial mindset. European hunters shared the idea of being the unrestricted master of creation, not bound by any laws and borders. Often this was combined with a firm Darwinist belief that, as in Europe, wildlife would ultimately have to yield to the advancement of culture and civilisation. As a consequence, the advent of European soldiers, officials, settlers and adventurers in East Africa from 1885 onwards was soon to be followed by a rapid decrease in game populations. The extinction of many species was believed to be imminent. Therefore, German and British authorities took the initiative to convene representatives of the European imperial powers in London in 1900 in order to discuss international measures for the preservation of the wild fauna of Africa. This Conference set up one of the first international environmental agreements and established standards which were to dominate conservationist thinking in the 20th century. Among these were hunting licences, closed seasons, restrictions on the trade in animal products and trophies, the exclusion of indigenous modes of hunting, and the establishment of reserves and protected areas. Imperalism both spawned and handicapped international cooperation, and my paper takes German colonialism as a vantage point to explore the different attitudes of the represented powers towards wildlife conservation. It seeks to establish the mechanics of early environmental internationalism by analysing the transfer and entanglement of conservationist values in an imperial setting.

GLASER RUEDIGER
University of Heidelberg

Once Again it is Hermeneutics Versus Scientific Approaches – Or What Can We Learn About Climatic Change Since AD 1000 from Documentary and Natural Archives?

The paper compares and juxtaposes the research results in the field of historic climatology regarding the temperature developement in the last 1000 years with so called scientific hard facts derived from “natural archives”. What pictures are painted by, and what conclusions can be drawn from the two different appraoches. Are we fitting the results to certain methods, or are we nearing reality?

GLAVE DIANNE
Loyola Marymount University

Appease the Spirits of the Millions of Things Organic and Inorganic’: African American Spirituality in African Agriculture to American Sharecropping

Africans first transmitted their religious interpretations of nature through the onerous Middle Passage, a forced immigration into the United States. Their beliefs later evolved during antebellum slavery, with remnants lingering into the early twentieth century. Conversely, African Americans slowly drifted from their African roots assimilating Protestantism, the dominant culture's religion, eroding African interpretations of nature. During the late nineteenth and early twentieth centuries, the height of Progressive reform—a national movement in the United States defined by social reform, expanded bureaucracy, and scientific efficiency and management—African Americans worked with and for the government and schools who proselytized land conservation and agricultural techniques out of a blending of African spirituality and Protestantism, distinctive to African Americans in the American South. African Americans promoted or sold their ideas to improve agricultural productivity for profit—with science, religion, and nature entwined—paradoxical since African spirituality was based on reverence of nature and by extension the earth or soil. Although African and slave religions shared much with their free counterparts in the Progressive African American church, much changed over time. By way of an overview and brief introduction, what were the core spiritual and religious influences from Africa concerning nature? How did the environmental-spirituality of southern African American evolve from the syncretism of African and Protestant influences from slavery to the Progressive era, as they cultivated the land? How did African Americans proselytize land conservation among rural African Americans during the Progressive period, blending nature, religion, and science?

GODDARD NICHOLAS
University of East Anglia

Pestilential swamps'? The politicisation of Victorian sewage farming

The 1848 Public Health Act made provision for the establishment of boards of health with extensive powers over local environmental and sanitary policy, including waste disposal. It was the smaller urban centres, often situated in predominately rural areas and enjoying relatively salubrious living conditions that initially evinced most enthusiasm for the creation of local boards. As water-carriage sewage disposal systems were installed boards became challenged by legal actions initiated by riparian owners as previously uncontaminated watercourses, often with a high amenity value, became polluted by sewage which could be readily traced to a discrete discharge point. Reports of rural pollution were exploited by large urban places as an environmental justification for not investing in the costly infrastructure needed for sanitary improvement. It was legal action which forced local boards and other responsible authorities to address the question of sewage purification and it was sewage irrigation, rather than chemical treatment, that was best able to yield a tolerable effluent under suitable conditions. Irrigation was, however, a relatively expensive solution especially as the optimism current in the 1850s and 1860s that associated farming operations utilising the fertiliser potential of sewage would significantly defray treatment costs was found to be misplaced. Sewage irrigation grounds were themselves often a source of complaint from middle class interests who most benefited from their adoption and vigorous campaigns were launched against their establishment or extension. Sewage farming became highly politicised as reports of the alleged 'pestilential' condition of many sewage farms were readily exploited by northern industrial towns as a rationale for persisting in cheaper dry conservancy methods of waste disposal which in some urban localities persisted into the twentieth century.

The purpose of this paper is to explore how an issue which initially promised to unite the interests of town and country became exploited by sectional interests and was highly contentious.

GRAF VON HARDENBERG WILKO
Department of Geography, University of Cambridge

The Associazione Irrigazione Est Sesia: a case study on rights to access resources under fascist rule, 1923-1943

This paper presents a case study on rights to access resources and modes of resource use under fascist rule in Italy.

From an ecological point of view water is a public resource, but throughout history it has been interpreted as a private good and varying privileges of both feudal and capitalist origin have influenced its distribution. The complex vicissitudes of water resources appropriation consolidated in the Po valley over centuries in intricate systems of exclusive rights. The clash between traditional uses and new needs caused the outset of conflicts between conservative farmers and technocratic reformers.

My analysis focuses on the attempts made by the Associazione Irrigazione Est Sesia, one of the consortia managing the supply of irrigation water in the north-western Italian rice cultivation area, to modernise the water distribution system and on the conflicts arising among privileged landowners, the consortium, and the central fascist government.

Through the analysis of documents regarding the outcome of these conflicts I analyse the impact of fascist policies on the environment and on water management. In addition, the paper shows how far the modernising attempts were an effect of the influence of the international scientific and political debate, instead of an original fascist idea, as claimed by the Regime. Moreover, analysing the difficult relationships among different bodies within an authoritarian and heavily centralized system as the Italian Regime I test the theory of a polychratic structure of fascist governments, where a creative use of power conflicts could lead to an effective defence of local interests.

The questions I aim to answer in my paper are: how were the customary rights to access resources affected? Which were the strategies implemented by the actors to defend their positions or to impose reforms? Which conflicts did arise? How where they managed? Were the fascist policies environmentally sustainable?

GROSSMAN LAWRENCE
Virginia Tech

Changing Colonial Official Perceptions about Peasants and the Environment on Jamaica from the Late 1800s to the 1940s

This paper examines the changing nature of colonial concerns and discourses about environmental problems associated with peasant agriculture in the British colony of Jamaica from the late 1800s to the 1940s. It challenges a key assumption in the literature on "regional discursive formations" that long-term continuities are evident in colonial environmental discourses. Rather, this paper highlights the forces that have contributed to marked variations over time on Jamaica in colonial concerns and discourses about environmental problems associated with the peasantry. Moreover, it explores the relative importance of external and local forces in shaping such changing environmental concerns.

In the latter part of the 1800s, resident officials on Jamaica frequently expressed alarm about the impacts of peasants on forests resulting from squatting on forest lands, shifting cultivation, and charcoal making; their discussions about peasants and forests at the time were linked to scientific debates about the relationship among deforestation, rainfall, and climate change. Such official concerns were also accompanied by pejorative and racist views about villagers. In contrast, colonial interest in environmental degradation on the island declined significantly after the turn of the century as the role of peasants in the island's economy expanded significantly. Official colonial interest in environmental problems on Jamaica did not re-emerge until the

1930s, this time in relation to Empire-wide concerns about the perceived “menace” of soil erosion.

This paper examines the influences on these changing patterns of environmental concern on Jamaica, including directives from the British Colonial Office, correspondence from officials at Kew Gardens, commissioned reports by Indian colonial foresters, and local political pressures associated with the emergence of the Jamaican Agricultural Department.

GROVEN KYRRE
Western Norway Research Institute

Perception of sustainability - The history of local energy planning in Norway

Today climate change and energy use are among the issues that are most frequently mentioned in connection with the term sustainability. Before we learnt to know the mechanisms of human contribution to the greenhouse effect – and before sustainable development became a policy issue – the role of energy use as a major force in the ongoing environmental degradation (urban pollution, acidification, nuclear waste) was advocated mainly by environmentalists. The Brundtland Report ”Our Common Future”, published in 1987, lead to a shift in at least the European public opinion where a predominant focus on energy supply gradually was accompanied with a growing concern about the consequences of energy use. This development can be studied in the case of local energy planning in Norwegian municipalities. This planning tradition emerged in the late 1970’s, provoced by the energy crisis in 1973-74, and was aimed at securing local supply of energy (mainly hydroelectric power). It was rooted in similar planning at national level in the 1950’s and 1960’s. Since the late 1980’s the perspective of local energy planning has been widened in several directions, with relevance to the notion of sustainability: The energy supply orientation has been complemented by an energy use and energy efficiency approach; Different energy resources have been included, not only electricity; Planning for stationary energy use has been supplemented with mobile energy use by introduction of local transport and land use planning. In late 1990’s local climate and energy planning emerged, with the explicit ambition to reduce local contributions to greenhouse gas emisions. The history of local energy planning will be discussed in the light of environmental, energy and planning concepts of paradigmatic character.

HAINS BRIGID
Monash University School of Historical Studies

Where are all the giant lizards when you need them?': Koala and kangaroo culling in south-eastern Australia since World War Two

In the recent severe drought in south-eastern Australia, Australian newspapers published grim photos of starving kangaroos and koalas, undergoing the most brutal of population checks. Is this an indicator of an ecosystem out of order, as Aldo Leopold argued of the starving deer on the Kaibab plateau? Where are the predators that might act to limit the growth of herbivore populations to such excesses? Pleistocene extinctions eliminated most of Australia's large land predators, including the giant reptiles which may have filled top predator roles akin to those of large carnivores in the Old World, and European colonists were struck by the want of large predators in the landscape when they arrived in the late eighteenth century. Since then, indigenous hunting including with dingoes, has been severely curtailed, and some ecologists now argue that it should be replaced by culling, or even by the reintroduction of wild dingoes, a move reminiscent of the reintroduction of wolves in America's rangelands. Animal welfare groups, on the other hand, adamantly oppose culling of these iconic Australian mammals, or even any active interference in the 'natural' cycles of animal populations. Such controversy provokes very difficult questions about the way in which we construct the idea of a 'balanced' ecosystem, and highlights the significant philosophical gap between popular environmentalism,

with its emphasis on the 'balance of nature' and current scientific ecology, with its emphasis on stochastic change. This paper examines the history of population management of koalas and kangaroos since World War Two with an eye to these larger questions. To what extent do ideas of 'the balance of nature' remain undercurrents in recent ecological thinking, despite their official disavowal? Is this built into models of predator-prey population relationships? How does this history illuminate shifting ecological understandings of balance, diversity and sustainability?

HEDL RADIM
Botanical Institute, Czech Academy of Science

Botanical data as sources for assessment of long-term environmental changes in woodlands

Botanical records are a vast and easily accessible base of data. Floristic records (occurrences of individual species at particular places) and phytosociological relevés (lists of species at delimited plots) reach back from decades to a few centuries, being copious especially in Central Europe.

Plant species are good indicators of environmental conditions. This relation can be quantified for various factors, as light conditions, water and nutrient content in soils etc. Having sets of data of species occurrences for areas of various sizes (from individual forests to landscapes and regions) and different time points or periods, we may extrapolate on temporal changes of environmental conditions.

Although there are no better records of a similar character, botanical records have not yet been utilized in environmental history adequately. The aim of this paper is to show what methodology can be used and to point out the consequences for woodland history, presenting an example.

HENRICH ELMAR
Department of History of Dalhousie University, Halifax, Nova Scotia.

Fire on the Mountain: Deliberate Environmental Damage and Tactics of Scorched Earth in the Tuscan Apennines During the Later Sixteenth and Early Seventeenth Century.

In the later sixteenth and early seventeenth century mountain populations of the northwestern Tuscan Apennines resorted to tactics of scorched earth in their inter-communal conflicts. Particularly when competitors for resources - agricultural land, pasture, forests or streams - faced each other across borderlines, fighting easily escalated out of control. The rudimentary forces of early modern central governments were often too weak or distant to restrain the destructive energy of their subjects, whom the states armed and trained in the use of weaponry as part of their policies of territorial defense.

In this zone, villagers allegedly manipulated streams and rivers, going to great lengths to do harm to their neighbours' property, while protecting themselves from the damaging forces of floodwaters which poured down on the region with increasing frequency and violence because of changing climatic conditions and the effects of environmental degradation.

When facing defeat in their conflicts the villagers were apt to destroy the property in question, rather than to concede the use of it to their opponents. The tendency to engage in such hateful actions in close quarters was pronounced. The harm done to the livelihood could be considerable, when entire mountainsides, with forests and pastures for thousands of animals went up in flames or peasant maliciously stripped extensive areas of chesnut trees of their bark. In the larger conflicts that escalated into regional wars during the early seventeenth century such tactics were used and both sides engaged in retaliatory violence, going well beyond any measured response.

My presentation draws from research for my dissertation on the evolving relationship between the Lucchese mountainside and the republican government, but utilizes material from Estense and Medici sources as well.

HERMANSEN SALLY, HILCHIE LYNN, WYNN GRAEME
University of British Columbia

Reflections on the nature of an urban bog

Camosun Bog is located on the eastern edge of Vancouver's Pacific Spirit Park. Formed from a swamp that developed about 5000 years ago as the lake that occupied this site for some 6000 years after the retreat of the Wisconsinan glaciation filled with sediment and vegetation, the bog has existed for approximately two thousand years. At its maximum extent it was several hundred metres long and perhaps half as broad. In this high light environment with a high water table, sphagnum moss dominated and created a peat bog marked by very acidic soils low in both oxygen and nutrients.

Little is known about (possible) use of this area by indigenous people, but it was left essentially undisturbed by European newcomers until the twentieth century. Then, as the population of Vancouver and its neighbouring suburb of Point Grey (amalgamated with Vancouver in 1929) grew almost exponentially through the first decades of the century, the bog was subject to massively-accelerated change. In midsummer 1919, a fire that encompassed 500 acres burned across the bog. A decade later, as housing encroached on the area, a drain was installed near the southern edge of the bog. Water levels fell. Hemlock and salal began to invade the bog. They shaded out the bog plants. The bog shrank. In the 1950s it came under attack once again. The occurrence of polio in a neighbouring residential area was attributed to mosquitoes and blamed on the bog. Another drain was installed. In the 1960s, schools, playing fields and hydro substations were built on the increasingly desiccated fringes of the bog, a process that culminated, in 1972, in the use of the western edge of the bog as a landfill site by the University of British Columbia. By 1980 Camosun Bog was a tiny, endangered remnant landscape, little understood and less valued.

In the last two decades, however, a small group of volunteers has sought to revitalize the bog. Using a range of strategies – from the removal of invading, shade-producing trees by "helicopter-logging", through excavation of the bog-surface by hand to "raise" water levels, to the trans-planting of sphagnum and other bog plants – members of the Camosun Bog Restoration Society have begun to reverse the ravages of the last seventy-five years. Elevated walkways have been built through the bog to encourage its enjoyment (and thus to create a constituency for its defence) and to limit further damage to the ecosystem.

In this paper we will combine analyses drawn from careful mapping of the bog using Geographical Information Systems, evidence from aerial photographs, the scientific findings of a small handful of student theses on the botany of the bog, interviews with members of the Bog Restoration Society, and research in the City of Vancouver archives and newspaper files to detail the effects of human action upon the bog and to reflect upon what the history of this unique place reveals about changing attitudes toward nature in the city. This is a rich, important and also potentially poignant story, for just as restoration efforts appear to be succeeding and the ecological and aesthetic value of the bog is beginning to be appreciated, British Columbia anticipates the arrival of West Nile virus – for which mosquitoes are the vector. Given the proximity of expensive housing to standing water in the bog, the future of the reclamation effort and the fate of the bog itself may well hang in the balance of public fear of this new virus.

HERRMANN BERND
University of Goettingen

Report of an ad-hoc-research group of the 2nd ESEH conference on abundance of species in historic times.

The undersigned group apply for a (up to) 45 minutes session on stage of progress about a joint research project, set up at the 2nd ESEH Conference in Prague.
The group made the appointment to gather any available information and source on "superabundance of species" found in the literature or files. Concepts of sustainability in history often rely on unreliable numbers of individuals and species. Thus our project matches pretty much with the subject of the conference.
The projects aims at summarizing the results in a collect paper in order to provide a sound basis of such reports on superabundantly available species at given times and places in history. Research on historic biodiversity lacks from reliable data on abundance of individuals of species in history. Most of the data available are hearsay –data instead of reliable ones. Contrary to public discussions in nature conservation that often claim that abundance of individuals and species declined generally within history, it can be shown that such data might not be provided in general but has to refer to the situation of the very species instead. Species that are looked at may depend directly or indirectly from human activities und thus their abundance is influenced by the degree of hemeroby in a given area. Some species might have benefited from such anthropogenic licences that they generated in historic times far above their "natural" abundance. Decreasing numbers in recent times may be mistaken as endangerment of the species, whilst this is merely a regulation down to earlier numbers. There are also species that exhibit recorded "superabundance" in the 18th century, and became pretty rare in recent centuries. Laid under the superabundance was already visible a decrease in individuals since centuries, as hold true e.g. for the salmon.
The research group wants to qualify those data on abundances and to focus especially on "servant contracts". Servant contracts are agreements between servants and landlords to prevent servants from being supplied too many times with meat of abundant species, such as salmon. Frequently the historic literature purports that such contracts are indicative for the abundance of the species in question and can thus be taken as a proof. As unfortunately no sound information on that is available so far, the group wants to overcome this situation.
More than presenting first data, the task group would like to serve as an example and encourage ESEH members to cooperate in joint projects.
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HØYER KARL GEORG
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History of Alternative Transport Fuels

In this paper we shall focus on the history of alternative energy or fuels in transport. As alternatives to the dominant fossil fuels their history is very long, actually as long as the

motorised transport technologies themselves. The otto-motor - the dominating petrol engine of today -was for instance in the late 1800`s originally developed for the use of alcohol as fuel. And in the 1920`s and 30`s there was worldwide quite an extensive use of biological alcohols. During wartime these fuels were subject to a new expansion in use. Also cars with electric propulsion and batteries have a very long history as alternatives. Already in the early 1900`s their achievements – with lead batteries - were impressive. During that period as much as 1/3 of all road vehicles in major American cities would be electric. With links drawn to these longer historical threads the paper will in more detail highlight the later history of the alternative fuels. The first major pilot projects in this later history were launched some thirty years ago, in the early 1970`s. Largely they were not part of the environmental discourse at that time, but more considered as a matter of increased national security in fuel supplies. During the last decade there has however again been a renewed focus on alternatives in transport. This time they are very much integrated in a common global discourse on sustainable development. Several alternatives are discussed. New demonstration projects pop up almost every year; in Sweden expressed through the term "fuel of the year". This can be explained by the new context, which is different and much more challenging than before. The alternatives are now to be related to concepts as sustainable transport and sustainable mobility, which would have much more profound implications for the future transport systems.

INGRAM DARCY
McGill University

Civil Society and Environmental Regulation on the Saint Lawrence River, 1859-1914

This paper examines the role of civil society in the establishment of wildlife and wilderness conservation in the Saint Lawrence watershed of Quebec, Canada. I argue that the source of regulatory attitudes and practices regarding the region's wildlife is to be found not in the state, but in the civic culture of the nineteenth century. To do so, I focus on the work of bourgeois associations that took an active interest in the region's wildlife and wilderness habitat. While the protection societies and fish and game clubs that proliferated during the last half of the century were the most obvious of these, they were but part of an associational culture that included animal welfare groups, scientific institutes, literary and other societies deeply interested in the natural world. While this is readily apparent in Montreal, the seat of economic and political power in Canada during the period in question, the interest of bourgeois Montrealers in the Saint Lawrence wilderness was but part of a broad-based north Atlantic associational culture that linked Canada to the far more populated landscapes of Europe and the north-eastern United States. For bourgeois sportsmen and others from this north Atlantic world, the region's proximity, its relatively natural state, and its developing transportation systems presented a wilderness environment that was both easily accessible and in constant need of protection from overzealous sportsmen and the commercial and subsistence demands of rural and native populations. In terms of this year's theme 'history and sustainability', this paper will contribute to our understanding of the relationship of civil society to the state, to rural society, and to the maintenance of the wilderness environment.

ISENBURG TERESA
Dipartimento di studi internazionali dell'Università degli studi di Milano

Dissesto idrogeologico nell'Italia centro-settentrionale

Il territorio italiano soffre storicamente di un dissesto idrogeologico diffuso e profondo, con caratteristiche diverse a seconda delle aree e delle conformazioni geologiche. Le scelte di politica urbanistica del dopoguerra e quelle legate a interventi infrastrutturali pesanti e a volte affrettati degli ultimi 15/20 anni hanno aggravato la situazione, esponendo popolazione e beni a rischi elevati e a possibili danni economici superiori, in molti casi, a quelli prodottisi nel grande accadimento calamitoso del novembre 1966. Il paesaggio come obiettivo da costruire in modo

equilibrato e durevole si pone dunque come sfida centrale per il governo, o meglio il buon governo, del paese: per questo, in un contesto di insediamento diffuso e disordinato, è necessario riuscire a coniugare le eredità del passato con i segni, spesso le ferite, del presente conservando vigile attenzione ai vincoli dei quadri ambientali.

JAHNKE CARSTEN
Christian-Albrechts-University Kiel

Sea as resource Fishing in the Medieval Baltic Sea Area

In the Medieval fish was – by economical and ecclesiastical reasons – a very important foodstuff. A great quantity of this protein-source came from the western part of Baltic Sea Area. People used the sea there as an inexhaustible food-reservoir but registered also fluctuations of quantities and sometimes also of qualities of caught fish. In this paper it should be analysed, who was fishing, what kind of connection existed between "fishers" and the sea, if people and how they reacted on fluctuations of fish-stocks and if there was a kind of protection of fish-stocks in the medieval Baltic Sea Area at all. For these purposes some of the most important fishing-areas, the South- and West-coast of the Baltic Sea, and the fishing areas of Scania and the Bohuslän should be examined.

Fisheries in the medieval Baltic Sea stood in the tense of atmosphere of economical needs and ecological unpredictabilities. Only the full-time job as a fisher and extraordinary situations could lead to the development of an ecological-awareness. But could medieval fishers and authorities react on these situations? It should be tried to show, that they not only made God responsible for unusual fluctuations of fish-stocks, but also they tried to explain some phenomena's and change the situations.

Because of the lack of direct evidence, it should be found out if regulations, laws and narrative sources give indications if there was an awareness of the sea as an ecological system.

JEHLICKA PETR
The Open University

Tramps, brontosauri and scientists: pre-1989 formative experience of Czech environmentalism as a precursor to ecological modernisation

From its origin in the late 1960s, Czech environmentalism had been ostensibly concerned with politically benign activities of nature conservation and ecological education. Czech environmentalists were thus imbued with the notion that educated individuals would adopt environmentally friendly lifestyle which would ultimately lead to a harmonious relationship between the society and the environment. Later, a more political macro-level critique occurred. Environmental damage, manifested in the ever more apparent industrial air and water pollution affecting human health linked to production - resource-intensive old industries - became powerful symbols of the communist state's mismanagement of the economy and disregard for its citizens' well-being. Blaming environmental degradation on the excessively powerful, yet incompetent state, activists associated environmental reform with the retreat of the state, both from the economic and political sphere. What was undisputed, though, was the scientific-technological approach to resolving environmental problems, shared both by the communist authorities and their environmental critics.

The formative experience of the pre-1989 Czech environmentalism – the belief in the role of the conversion at the individual level facilitated by education and access to information, the insistence on the retreat of the state, the reliance on technological solutions, demands for introduction of economic market rationality and of a more flexible mode of environmental regulation - were conducive to the Czech environmentalism's embrace of the paradigm of ecological modernisation in the post-1989 period. The lack of experience of western radical environmental critique of capitalism was also propitious to the evolution of the pre-1989 Czech environmentalism as a relatively conservative, moderate movement, unprepared to address

structural causes of environmental crisis of liberal capitalist societies and ready to take on the role of an agent of the ideology of ecological modernisation promoted in the country by external actors since the early 1990s.

KARSKENS GRACE
School of History, University of New South Wales, Australia

The Penrith Lakes Scheme and Old Castlereagh: history and sustainability at Sydney's urban-rural interface

This paper explores the history, archaeology and environment of Old Castlereagh and the Penrith Lakes Scheme on the banks of the Nepean River in Sydney's west. Conceived in the late 1960s, this Scheme aims to 'rehabilitate' vast open-cut gravel and sand quarries by creating a series of huge lakes the size of Sydney Harbour. But the many research reports carried out over the decades for Environmental Impact Statements gradually revealed the rich palimpsest of earlier cultural and natural landscapes which the project will destroy.

The history of the Scheme offers a good case-study of Sydney's constantly reforming landscapes, the environmental impacts of its expansion, the city's relationship with the hinterland and its obsession with water. This paper explores the Scheme as a window onto the uncompromising demands and costs of urban growth, the vulnerability of local cultural landscapes, heritage and knowledge, as well as human attachment to place on the rural fringes of Sydney. Finally it explores the uses and limits of the notion of urban sustainability and discusses how historical perspectives can greatly enhance sustainable planning for the future of this place.

KINSEY DARIN
Université du Québec à Trois-Rivières

"Creating Fish in Illimitable Numbers": The Nineteenth Century "Aquatic" Revolution in France and its export to North America

Environmental historian John Reiger has identified the application of modern fish-culture practices by the sportsmen elite as a seminal movement in the American interest in conservation in the antebellum United States. Yet, modern fish culture was not an original New World discovery, but a technique with ancient roots borrowed from Europeans who had changed it and adapted it to a culture undergoing a significant transformation in its relationship with the natural world in the early part of the nineteenth century.

While the husbanding of fish has its roots in antiquity, and was widely practiced in medieval Europe, the ability to manually control the reproductive lives of fish was a product of the modern era. While some dispute exists as to the precise origins of the techniques of artificial spawning, there is little doubt that its widespread use began in France in the 1840s after the discovery of its use by a pair of illiterate peasant fisherman. French officials, naturalists and scientists moved quickly to turn this discovery into the panacea for the precipitous decline of their inland fisheries and in the process set in motion an environmental revolution.

In effect, these fish culture efforts were merely a part of a more general change in the relationship to the natural world in France as most particularly evidenced in the work of George Buffon in the eighteenth century and Isodore Geoffery Saint-Hillaire and the zootechnie movement a generation later. This paper seeks to examine the development of French fish-culture in the nineteenth century through the lens of the scientific and cultural milieu in which it evolved in an attempt to better understand how these practices traversed the Atlantic and in the process were, translated, transformed, and adapted to North America's particular cultural and geographical environment.

KISS ANDREA
University of Szeged

Intensity and extent of fishing on the great lakes of late medieval Hungary

In this paper, the intensity of late medieval fishing on the three large lakes of Hungary: Lake Balaton, Fertõ/Neusiedlersee and Lake Velence are discussed. On the basis of the available, partly unpublished late medieval urbaria, inventaria, charters belonging mainly to leading monasteries and noble families, the fully published medieval material of the royal town of Sopron as well as archaeological data a wide, though indirect picture can be drawn on the intensity of lake-exploitation and late medieval fishing.

Although there are many similarities in the way and extent of exploitation of these lakes, still significant differences appear in local regulations: level of territorial divisions, local protection of fisheries, specialisation of fishers as well as level and concentration of investments in fishing. Out of the three lakes, fishing in Lake Fertõ seemed to be the most strictly protected with highly controlled exploitation and concentrated investments while the economic value of Lake Balaton appeared to be the highest in general. Fishing industry of lake-waters, however, was not limited only to the basin of the great lakes: natural as well as artificially managed watercourses led the water from the great lakes to certain piscinae, beyond the lake-basins.

In the course of the presentation, I would like to provide an overview of the following objectives:

-main fishing centres, level of specialisation: equipments and fishers
-level of investments in hiring (e.g. system of fishing-bills) and technical equipments
-level of local division and protection (the appearance of „custos" of the lake)
-role of piscinae connected to the lakes as an additional basis of lake fishery
in the period of the fourteenth to the early sixteenth centuries.

KLEINEN JOHN
University of Amsterdam

The tragedy of the margins (Vietnam)

The Vietnamese state developed in the shadow of the mighty Chinese empire that subjected its southern neighbour to vassal status for more than one thousand years. Land-use and land control systems were based on Chinese principles but started to diverge from the tenth century onward. Land has always played an important role in Vietnamese history as is shown by the March to the South (Nam Tien) which started in the fifteenth century. Patrilineal groups held rights over land but individuals, even women, were entitled to property. Collective arrangements were upheld by village institutions but served also as instruments for elite appropriation of rice fields. State land was differentiated from common land. Land registration was well developed and reached its height in the nineteenth century. The main focus of the paper deals with the role and use of marginal lands (called "bai") along rivers and coastal zones which became the target of state or local land policies and developed into buffer zones for the poor but also served as ecological niches for later environmental protection.

KLEIN GOLDEWIJK KEES, EICKHOUT BAS
R.I.V.M.

Sustainable development: What 300 years of global change can teach us

Crutzen and Steffen (2003) discuss in their editorial comment the start of the so-called era of 'anthropocene'. The term suggests that the anthropogenic interference with the natural system has been dominant over natural influences in the last 100 years. Without going into detail about the exact start of the anthropocene, it is clear that the human influence on world's natural environment has increased during the last 300 years at a unprecedented rate. Dramatic increases in population numbers boosted the need for food and fodder production. Land needed for crops

and ranching expanded at the cost of forests and natural grasslands.

The temporal and spatial components of this unprecedented land expansion are discussed in our paper, where we pay much attention to the consequences of the atmospheric composition due to these land use changes. To address the possible consequences of those alterations of the global environment, we performed this study using an integrated model of global change (IMAGE, Alcamo et al., 1998), combined with a historical land-use database (HYDE, Klein Goldewijk, 2001). The possible consequences of human behaviour of the past three centuries are examined in the light of sustainable development issues for the next century.

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KNOLL MARTIN

University of Regensburg - Historical Institute

Power and Sustainability: Elite Hunting Culture in Early Modern Germany

In Old Regime Europe catching wild animals was subject to sophisticated legal regulation. Elaborate courtly hunting techniques could only be guaranteed when high game populations were available. As a consequence, norms that preserved wild game were issued. Since in the early modern context there were tight functional links and interferences between the different parts of landscape (woodland, openland, arable land, pastureland etc.) and the different forms of landuse (agriculture, sylviculture etc.), game hunt implied a broad range of ecological as well as socio-economic consequences. The arguments found in contemporary legal norms and administrative correspondence provide the logic of sustainability only with respect to game populations. From a present perspective, however, the study of the early modern elite's hunting and wildlife management raises questions concerning the sustainable use of economic resources as well as social and natural resources.

The baroque hunting culture at princes' courts in early modern Germany was an indispensible part of ceremony and everyday life. The control over nature (animals, landscape) that was exposed by the prince when hunting was a medium to display his power over his territory and his people. On the other hand there are indicators that the hunting practice and wildlife management in many aspects lead to a non sustainable use of natural resources: The extermination of the big predator species, the dislocation and super-regional exchange of wild game (red deer and wild boar for coursing, falcons for falconry), and the wood consumption of hunting infrastructure (e.g. the fences of huge hunting preserves). Contemporary complaints about wild game and hunting practice destroying agricultural production as well as obstructing forest development can serve as further indicators. The aim of this paper is to dicuss these aspects by taking the results of my PhD thesis on the Bavarian electors' hunting in the 18th century into consideration.

KRAUSMANN FRIDOLIN

IFF/Institute for Social Ecology,University of Klagenfurt

A city and its hinterland: The social metabolism of Vienna 1800-2000

The paper discusses the development of the social metabolism of the City of Vienna during the past 200 years. During this period the former capital of the Habsburg Empire experienced a

tremendous growth process which resulted in an 8 fold increase in population, a more than 20 fold increase in energy consumption and a fundamental restructuring of the cities metabolism. The empirical part of the presentation focuses on an analysis of the transformation of the energy system of the city and presents time series data on the development of the demand of food and feed and the consumption of fuel wood, fossil energy carriers and electricity. I will put an emphasis on spatial issues related to the restructuring and growth of the cities metabolism and explore the question of how the cities resource needs were related to its hinterlands and how the ecological footprint of the city changed over time.
In the final part of the presentation I will introduce a modelling approach to investigate biophysical aspects of city-hinterland relations: Based on empirical data on the metabolism of Vienna and local land use systems in its surroundings, a rough model is presented which allows to quantify the land requirements of a Central European city in order to satisfy its resource needs, the resulting transport requirements. The model can be used to assess the limitations for growth processes and spatial concentration under an area based solar energy system.

KRAYKOVSKIY ALEXEY
European University at St. Petersburg

The study of the fisheries in the Eastern Baltic in the 15th – 18th cc. – preliminary results and further perspectives

The project named "The Russian Baltic fisheries on the base of the Russian cadastres of 15th – 18th cc., and the comparison with the 19th c. data" is the very first attempt to study the history of the fisheries of the Russian part of the Baltic region. The project started in the late 2003 and was supported by the HMAP project. At the first stage the wide-ranging archival search has been undertaken, and the trial case studies were completed.
During the archival search a number of documents of the different kinds were obtained. The data on the fisheries was found in the accounting documents, in the cadastres and cadastre-like documents, statistical materials of all sorts (military and civilian) and on the maps. The diversity of the sources obtained turned out to be far more than it was expected in the very beginning of the project. Thus the new research methods were to be created to make the complex analysis of the information got from all these different sources possible.
Using this method we completed a number of pilot case studies. It turned out to be possible to reconstruct the general tendencies of the development of fisheries in the Bay of Koporye area, the Yamburg area (the downstream of the river Luga), the downstream of the Narova river and the Neva basin.
The perspectives of the project looks very promising. We hope to find more sources in the archives and to complete the study of the development of the fisheries in the Eastern Baltic from 15th to 20th c. At the same time we are trying now to establish contacts with the archaeologists to get the information on the fisheries of the early period.

KWASHIRAI VIMBAI
Linacre College, Oxford University

Shifting Cultivation: A Discourse in Deforestation and Conservation 1900-1915

My paper discusses diverse viewpoints expressed by Native Department staff in a national survey commissioned in 1909-1910 to determine the desirability and sustainability of shifting cultivation in colonial Zimbabwe. Sixty-three per cent of a total thirty responding Native Commissioners tacitly supported the agricultural practice. Together with top government officials, thirty-seven per cent of Native Commissioners condemned shifting cultivation for causing widespread deforestation and advocated for its ban. The minority view became official

policy depicting African agricultural methods as generally unsustainable and wasteful of available land and forest resources.

In pre-colonial times, less valuable trees and scrub were carefully cut down by peasant farmers in clearing land for cultivation but most trees notably big ones were seen as valuable and therefore conserved. Lopping tree branches was a specialized task with only branches judged to be unnecessary removed. Stumps were not uprooted since they promoted tree regeneration with the roots protecting the soil from soil erosion. Africans invariably left large trees in the fields. They seldom removed all vegetation as practised by settler farmers. Pre-colonial tree felling was neither a wasteful practice nor senseless vandalism on vegetation but a systematic science well adapted to tropical physical conditions in particular localities. The system allowed for natural restoration of vegetation and soil fertility. Soils were not over used. Shifting cultivation conserved and restored nature. However, the practice was unsustainable under conditions of increasing population visa-vice available finite land and forest resources.
Available archival evidence clearly suggests Native Department staff rationalized forest clearance as legitimate for farming purposes. Native Commissioners emphasized the desirability of shifting cultivation for proper food production under tropical vegetation conditions advising that only valuable species had to be legally protected. Forest clearance was preferable to food shortages among the indigenous inhabitants. Others discouraged state interference altogether justifying shifting cultivation on the grounds that soils allocated to Africans in the reserves were infertile. All Native Commissioners from Matebeleland reported that there was no 'senseless destruction' of trees since Africans already conserved important tree species for timber, fruit and other needs regarding shifting cultivation as a conservation measure of long drawn rotation between crops and forests. White settler miners and the railway companies were viewed as worst offenders in deforestation adding that landlords had a moral responsibility to preserving trees on their properties.
Top state officials and forest experts agreed that shifting cultivation should be gradually banned by means of punitive penalties or fines encouraging Africans to manure their fields with livestock dung. The 1908 Private Location Ordinance was used to regulate tree cutting, shifting cultivation and village expansion. All Native Commissioners had to report illegal vegetation clearance by Africans and punish offenders. Native Department officials closely monitored African farming activities putting restrictions on how much forest could be cleared for cultivation. African reserves were later subdivided into arable, residential, pasture and forest zones under the centralization scheme. The major goal was to exclude Africans from having access to commercial tree species especially the Zambezi teak, mtshibi, mahogany and mopani regardless of whether or not such species occurred in African reserves such as the Gwai Native Reserve. If at all, Africans could only cut down such important trees with a permit; a licence that was difficult to apply for and obtain. As was the case prior to colonisation, the role of Africans in deforestation was very inconsequential paling into insignificance when contrasted with the activities of mining, agricultural or construction companies.

LAJUS JULIA
European University of St Petersburg

The Barents Sea fish resources in the first half of the 20th c.: from local use to international exploitation

I describe the exploitation of the Barents Sea fish resources in the first half of the 20th c., when several nations (UK, Germany, Russia, Norway) rushed for the fish to this region. I will focus on the development of the trawl fisheries in Russia, but will put it into broader context and use available quantitative data for other nations. While Soviet fisheries were focused on cod and in the 1930s on herring, German trawlers were more interested in haddock and British in plaice. This specialization helped to restrain the competition, but did not diminish the human effect

upon the ecosystem in general. I would like to show the human pressure upon the fish populations and the effect of the climate change (warming) in 1920-1930s on the distribution range of commercial fish species, which influenced the development of fisheries.
The rapid modernization of marine fisheries urged by Soviet authorities was supported by scientists and managers, who focused their interests on resources themselves in the opposite to the other group, more concerned with the fate of local fishermen. In 1930s a new work force was created and the world of traditional culture and style of using of fish resources was almost totally destroyed. About 20 Russian trawlers only fished in the Barents Sea in the end of 1920s, but already 60 in 1933. In two decades annual Soviet catches in the Barents Sea grew up from 1 to 200 thousands metric tones, but the fishing became more and more extensive with decreasing of catch per unit effort and rapid extension of the fishing area. This mode of use of fish resources predetermined the overfishing and serious change in the Barents Sea ecosystem, providing the perfect illustration for the "tragedy
of the commons".

LAZZARINI ANTONIO
Università degli studi di Padova

Problemi del dissesto idrogeologico in area veneta nell'Ottocento

L'area veneta, a differenza di quella lombarda dove i laghi costituiscono grandi serbatoi naturali che smorzano l'impeto delle acque, è solcata da fiumi a carattere torrentizio che trasportano a valle consistenti deiezioni, col conseguente innalzamento degli alvei e quindi con la necessità di erigere arginature sempre più alte: arginature soggette al pericolo di rotte frequenti, con alluvioni dagli effetti disastrosi, estesi impaludamenti delle pianure e costante pericolo di interrimento degli specchi lagunari litoranei.

L'attenzione degli organi di governo e degli esperti d'idraulica, a lungo polarizzata prevalentemente (ma non esclusivamente) sul corso inferiore dei fiumi, con interventi di grande portata per portarli a sfociare al di fuori della laguna di Venezia, fra Sette e Ottocento va spostandosi al corso superiore, e quindi alle aree montane.

Aumenta l'interesse per l'assetto idrogeologico del territorio e cresce l'allarme per lo "svegro dei monti", per l'espansione delle colture a spese di pascoli e boschi. Si denuncia l'avanzare del processo di deforestazione, attribuito al rapido incremento dell'uso di legna da fuoco e carbone vegetale come fonte di energia, di legname da costruzione per l'edilizia e le costruzioni navali.

Si guarda con apprensione al ripetersi di frane, piene, inondazioni, pronosticando il generalizzarsi di eventi catastrofici. Si dibatte sulla legittimità e l'opportunità dell'intervento dello stato, nello scontro di idee liberistiche e tesi vincolistiche. Si agitano proposte discordi sulla qualità degli interventi a difesa del suolo: dai lavori di rimboschimento propugnati da Francesco Mengotti alle opere di sistemazione idraulica tentate da Pietro Paleocapa ed altri.

Risponde tutto ciò ad un effettivo allargamento dei fenomeni di erosione e del degrado ambientale, indotti dall'espansione della popolazione e dal crescere delle attività manifatturiere ad alto consumo di legno?

Oppure si tratta soltanto di una maggiore sensibilità per tali questioni derivata dalla consapevolezza delle cause e dalla fiducia nella possibilità di intervenire servendosi della scienza per dominare la natura?

LEVASSEUR OLIVIER
Université de Haute-Bretagne

The beginning of "la culture de l'eau": The development of marine aquaculture in eighteenth and nineteenth century France

At the beginning of the eighteenth century, French authorities were becoming alarmed by a severe decline in marine fish stocks, especially those used as a food source. The situation

demanded action. Such would be the impetus for the gradual development, over the course of nearly two centuries, of marine aquaculture in France. This development took place in three distinct phases; the first consisted of period of scientific observation, followed by governmental legislation which led to systematic exploitation.
The culture of aquatic resources came to be seen as one of the solutions to the crisis, yet the aquatic environment remained little understood, poorly managed, and marginalized. Consequently, the first phase, which lasted until the beginning of the nineteenth century, was the description and understanding of the aquatic landscape and of the biology of the marine environment. This work remained largely the role of local naturalists and scientists. Government would only intervene in the role of conservators with the goal of preserving resources from the overexploitation of man.
The experimental phase began around 1850, when some individuals, largely inspired by efforts in Great Britain and Italy, attempted to change the nature of aquaculture efforts from an artisinal pursuit to a managed national industry. Local initiatives quickly multiplied, yet were rarely successful. Nevertheless by 1875, when the term “ostréculture” (oyster culture) first came to be used, production soared, and came to be not only encouraged but also shaped by the state.
This paper will examine the development of the oyster culture industry in an attempt to reveal a widespread and progressive movement by the French state to appropriate the littoral regions. Oyster culture came to be considered “aquatic agriculture,” and as such a class of farmers were needed to cultivate this landscape. In the nineteenth century, the profitable management of this landscape became the focus of the state, even as it was becoming clear that there use would not ultimately solve the crisis of the decline of fish populations.

LIPHSCHITZ NILI
Tel Aviv University

Man's impact on the landscape as evident from fendroarchaeological research.

Man's impact on the past landscape is due to clearance of forests for settlement and for agriculture, exploitation of wood as a source of energy for heating and industry, introduction of foreign crop plants, cultivation of plants, and damaging of the vegetaion by grazing. Dendroarchaeological research, based on identification of archaeological wood remains up to the species level, enables to reconstruct the native arboreal climax vegetation during ancient times, to learn about cultivation of native plants, and to follow the changes that were caused to the environment following man's interference with nature.
The accepted viewpoint of the geobotanists in Israel until recently claimed that four different plant associations dominated the Mediterranean region of the country: 1.Aleppo pine forest; 2.Deciduous Mt. Tabor oak forest; 3.Maquis of evergreen Kermes oak; and 4. Maquis of Carob.Comprehensive dendroarchaeological reseach showed that during antiquity the arboreal native climax association that dominated the Mediterranean territory of Israel was of Kermes oak -Terebint. Olives were then wild, and constituted one of its components in small percentages. Since the Early Bronze Age onwards, due to olive cultivation, olive orchards became very prominent in the landscape, substituting the native arboreal cover.
Over-usage of trees as a source for heating, as well as grazing, turned forests and maquis into deforestated lands, and secondary and tertiary plant associations replaced the dominant native climax association of Kermes oak and Terebinth.

LODRINI SARA
Politecnico di Milano

The sanitary register of houses

At the end of XIX° century, important European cities felt some problems reported to the increase of inhabitants and to the urbanization that caused overcrowding, high inhabitant densities and bad sanitary and hygienic conditions.

In those conditions developed the “hygienist utopia” to cure the unhealthy city.
During the first years, sanitary engineers concentrated their work on the statistical analysis of the cities’ sanitary conditions; they used different statistical instruments like the “Sanitary register of houses”.
The “Sanitary register of houses” grew in several European cities (Paris, London, Rome, Milan,...) to draw the hygienic conditions of the houses and to understand the sanitary conditions of the inhabitants.
The first complete Sanitary register of houses was developed in Paris in the 1840s; it became an example for all the other European cities.
The Sanitary register of houses allowed the sanitary engineers to have a clear identification of the city’s zone that had the major problems from the healthy point of view.
The Sanitary register of houses supported the urban planning, in particular the urban renewal plan (the “hygienist utopia” is an important matrix of the modern planning).
This paper, after an introduction on the social, cultural and disciplinary contest of the “hygienist utopia”, treats the instrument of the “Sanitary register of houses”.
In particular, the paper analyses the case of Paris like first sanitary register of houses and example for all European cities, with a specific attention to relation between this instrument and the urban planning.

LUEBKEN UWE
German Historical Institute, Washington, DC

Nature, risk, and insurance - the history of flood insurance in Europe and the United States

The industrial revolution tremendously increased the commercial as well as the destructive potential of rivers. With the concentration of material wealth at riverbanks, the incoherent and unpredictable character of natural “behavior” led to an explosion of uncertainty. Insurance schemes constitute an important means to deal with this contingency.
In 1846 the first flood insurance policy was offered by the Austrian company Azienda Assicuratrice in Triest. The Austrian enterprise was short-lived but others soon followed. From the very beginning the structure of the flood insurance business was heavily influenced by natural events. Intense floods more often than not were an incentive to found new societies. Flood insurance companies depended as much on floods as they awed them. On the one hand, public interest in insurance policies was low as long as the rivers stuck to their beds. On the other hand, the compensation of flood victims drew heavily on the capital stock of the newly found companies so that many, sometimes all of them were driven out of the market after a large flood.
Despite of, or rather because of the failure of the private sector to provide adequate protection against flood damage at reasonable premium rates, there has always been considerable public con-cern about a lack of insurance after severe floods and a large demand for some kind of state inter-vention. Today, in most countries where flood insurance is available, it is supported in one way or another by the government - by the way of subsidized premium rates, tax deductions or by a genuine federal program.
Insurances are an innovative way of spreading the cost of flooding in time and space while at the same time enabling individiuals, companies and societies to reap the benefits from commercial activities at or near waterways. The various flood insurance schemes are important to environmental history, for they are significant of western societies increasing vulnerability to natural forces. Using archival sources as well as a wide array of contemporary literature, my paper will trace the history of flood insurance in Europe and the United States.

MACLENNAN CAROL
Michigan Technological University

Invasive Industries: An Eco-Industrial History of 19th Century Hawai'i

Plantations are invaders of their environment, creating unsustainable human and biological communities. This idea, introduced by anthropologist Eric Wolf, is examined in the case of Hawai'i's sugar industry. Beginning in the mid-19th century, small sugar plantations and their simple mills began to dot Hawaii's tropical island environment utilizing wood, water, native labor, and cultivable acreage. By the end of the century, sugar cultivation and milling expanded it's domain over all the islands, invading not only the landscape, but also claiming sovereignty over governance and the peopling of the native Kingdom. This fifty-year period of sugar production industrialized the Hawaiian landscape as American and European planters and capitalists confronted the hydrological, bio-geographical, and demographic limitations of a remote oceanic island chain. The result was that by the mid-20th century, Hawaii was the most efficient producer of cane sugar in the world.

This paper presents an eco-industrial history of 19th century of sugar production in the Hawaiian Kingdom—the period in which the political and ecological foundations of this powerful industry developed. It examines the essential features of an industry-ecological exchange where business and technological decisions were continuously made in response to the plantation's radical transformation of the Hawai'ian ecosystem. Changes in forests, hydrology, soil, and sometimes climate required innovative responses from planters and capitalists to make plantations sustainable as income producing units. The result was an industry organized by a small number of vertically-integrated and co-operative firms, based upon extensive investments in science and technology, and centralized in its control over the landscape and political institutions of the islands. While this strategy created a highly profitable industry, it left Hawaii with a political and ecological legacy of an unsustainable human and biological community.

MAJCHROWSKA ANNA

Lodz University, Department of Physical Geography

Ancient and recent woods in Central Poland

Woodlands cover about 28% of Poland. Almost nothing remains of the former natural forests that once covered most of the country. Much of the present woodland has been planted only during the last century on land that had not previously been wooded for several centuries at least. Nevertheless, research showed that sites that had beed continously wooded for at least the past few centuries (and possibly longer) - termed ancient woods - were more likely to be richer in native plants and animals. Ancient woodland is therefore regarded as the most important category for nature conservation.

The paper present the results of the inventory of ancient woodland in a part of Central Poland. The inventory has been produced for the area of 2422km2 of which approximately 17% are forested.The selection of ancient woods was made from a study of old maps at a scale of about 1:100 000. The maps represented the following dates: ca 1800AD, 1830, ca 1900 and 1930. The current state of the woods was determined from Corine Land Cover survey that was based on Landsat imagery. By comparing the current extent of woods with their presence and size on the historical maps an estimate was made of woodland persistence over the last 200 years. Geographic Information System analyses were used to measure ancient and recent forests and to relate their distribution to the location of protected areas.

MASEMANN CHARLOTTE

Carleton University

The Pressures of Cultivation: Sustainability in the Urban Gardens of Medieval Ghent and Lübeck

This paper will address the extent to which sustainability was an issue in the ur ban gardens of Ghent and Lübeck. The city of Lübeck during the Middle Ages was surrounded by gardens

owned by the city, particularly to the south and west. Surrounding villages also contained gardens. There is evidence for open space in the blocks of land that had been laid out as early as 1173. There is evidence of population pressure within the city, shown by increased density of building within its walls, as well as by building on previously open land, possibly used for cultivation. A city ordinance from the fifteenth century forbids, howerver, the erection of dwellings outside the city walls. The records of rents collected by the city show little evidence that new land was put under cultivation around the city during a two hundred year period. Given these restrictions, were the gardens in and around Lübeck sustainable?

A similar question can be asked of medieval Ghent, although circumstances there were dissimilar. There is little evidence of garden cultivation near the city, and records kept of rents on gardens within the city do not indicate whether these gardens were used for cultivation. Garden produce sold within Ghent came from areas up to fifty kilometres outside the city. This evidence may suggest that the land closer to the city became too valuable to use for cultivation, and that instead it was used for housing Ghent's population, already at 60,000 in the sixteenth century. Lübeck's, in comparison, was 25,000 during the same period. It is possible that in Ghent we see evidence that gardens close to the city were no longer sustainable as the city grew, and that the hinterland had to grow in response to population pressures.

MATHIS CHARLES-FRANCOIS
University Bordeaux III

Victorian England as an industrial nation: a sustainable identity ?

Sustainability could be defined as the conditions under which economic growth could be realised without threatening the future or even undermining the fundamental basis of life. In Victorian England the industrial system was seen by a (growing) part of the population as a challenge to the nation's identity. Was it sustainable for the country's national character, for its morals, to be defined as an urban and industrial nation ? What was at stake here was the core of the nation's identity, that some people considered as threatened by the urbanisation and industrialisation of ""Merry England"". How could it be protected ? Those are the questions my paper would like to focus on, dealing with the following main elements :

First of all, the emergence of such a definition. It is not before the 1830s that the industrial system was seen as something entirely new which would change the whole face of the country. Before, debates already aroused, questioning the opportunity of an industrial development (Maxine BERG, 1980 ; Nigel EVERETT, 1994). But the new ""identity"" was finally accepted by the great majority, as was shown in the Crystal Palace exhibition of 1851.

It is – unsurprisingly – at that period, in the 1840s, that the first preservationist movements (led by Wordsworth or Ruskin) appeared (James WINTER, 1999 ; B.W. CLAPP, 1994). Their main concern was not with the effects of urban growth and pollution on nature as such. It was on their impact on the spiritual values of the nation, which were – according to them – alive only in its countryside and its nature. Or, more precisely, in its landscapes. The fear of a uniformity (in minds, life, environment) brought by industrialisation was at the core of the reaction against the latter. Could England go on like that without loosing its own specificity, its deep-routed identity? What were thus the answers of the preservationists ?

Broadly, one could distinguish in the period two types of attitudes: on the one hand the utopians, who wanted to stop industrialisation, destroy its material and ideological basis, and return to a golden age (Ruskin, Morris in a sense, most of the socialists and Blatchford or Carpenter especially) ; on the other hand those who could be called the pragmatists. The utopians' point was that the industrial development of England was not sustainable with its ""real"" identity. As for the pragmatists, they tried to answer the threat of cities and industries by protecting some parts of the nation's identity, i.e. some landscapes.

The definition of England as an industrial nation was thus a challenge to what some preservationists considered as its identity, and their attempts at protection was an original step towards sustainability as we understand it now on more ecological terms.

MAUELSHAGEN FRANZ
University of Zürich

Disasters and the State of Exception: The Socio-Political Order of Coping

Emergency legislation has always belonged to the measures taken by European governmental authorities to deal with social disorder (riots, plundering, etc.) caused by disaster. It is still part of disaster management. Nevertheless, only since the 18th century has it been described as a "state of emergency" or "exception". This is due to the invention of the modern constitutional state, based on the separation of powers, as it creates a ficititious "state" of normality placing "emergency" outside its framwork. As a result, it has become a matter of debate among theorists whether or not the "state of exception" shapes a sphere within or outside law (see Giorgio Agamben, Stato di eccezione, Torino 2003). As early modern European authorities followed a different concept of law, they understood disaster as to impose its own order. "Order" is, in fact, the term that used to be common for describing legislation in general, making no difference between normality and exception. The difference was not a matter of legislative procedure but a matter of substantial requirements. Obviously, the gap between pre-modern and modern times cannot be bridged if one holds onto a "constitutional" understanding of the "state of exception". Instead, I will suggest an alternative that considers "emergency" as a social category that describes a situation, caused by disaster, that affects "normal rights" and custom while political authorities are trying to impose a social "order of coping." The paper is to be understood as a contribution to the larger question of how long-term impacts of disasters on institution and state building can be described.

MEIER THOMAS
Ludwig-Maximilians-Universitaet

The Limits of Environment

The term "environment" is filled with quite different meanings through time and cultures. In any case it also includes (a part of) the external conditions of life like climate, soil, water, etc., in short: the natural environment.

Today, we are regarding this part of the environment as a kind of independent system. Before any interference with man, we are terming it nature. This, however, seems to be a construction of modern science, piecing together the world logically from clearly separable entities. But such kind of "ecological" thinking obviously was quite unknown to former societies: In the material and written record there are no reflections on ecological interaction perceivable. The reason may be different conceptions of environment.

E.g. during the Viking age as well as during the Middle Ages at least some aspects of nature were connected with (often malevolent) ghosts: They were inhabiting e.g. forest, caves or springs and natural disasters often were explained in terms of devil's action or divine punishment. Deposits in bogs, rivers, caves, etc. let us assume that this religious concept of nature was common also in prehistoric periods.

Altogether the attitudes and concepts of natural environment are quite differing through time, always favoring some aspects of nature and hiding others. Our perception of environment is limited by the barriers of science, ecology and economy. They are allowing only for some aspects most probably not identical with the aspects of historical societies. So it is not surprising that we do not find much reasoning about ecological aspects of nature in former times. Neither did they think as we do, nor do we have the capacity to fully understand their concepts.

MEYER EDGAR

Micheletti Foundation

Gathering Archives in Italy: Creating Links and Forging Alliances

The new Centro sulla Storia dell'Ambiente (Institute of Environmental History) of the Micheletti Foundation in Brescia has created the first archive of environmental history in Italy. Important early contributions to the collection are the papers of Giorgio Nebbia and Laura Conti, two prominent Italian environmentalists. I will describe some of the challenges in adding this new field to the existing collecting strategy of the Foundation and some of the initial responses to the availability of this type of information.

New collections in the archives are announced in the online journal AltroNovecento: ambiente - tecnica – società (http://www.altronovecento.quipo.it/). It also provides a venue for publishing on the topic of environmental history and discussion of the research needs of the discipline.

MEYER EDGAR

Environmental journalist

"The birth of the World Wildlife Fund Italy and Italian society"

The Appello Italiano per il World Wildlife Fund was created in 1966, just five years after the birth of the international organization. This event marked both a continuity and a breakdown in the history of Italian environmentalism. A continuity because the young founders came from historical associations such as Italia Nostra in which it was impossible for them to create a environmental section. A breakdown because of the new environmentalist and managerial culture they imposed on the organization. These features of the original leading group of the Italian WWF help to explain the success of the association, the first environmental group in Italy to show a great number of members and which has enjoyed large popularity since the beginning of the 1970s.

MILLS ROGER

Oxford Forestry Information Service

Are you still alive? I thought you were closed down years ago…

Trees are slow-growing organisms, and studying their role in environmental change requires data gathered over decades or indeed centuries. Some gets published in books and mainstream journals, but by and large information which allows analysis of changes in forest cover, land use, management patterns and so forth is contained in grey literature, institutional reports, working plans etc. – hard to identify and even harder to locate.

For one hundred years the Oxford Forest Information Service (OFIS) has been working to alleviate this problem. Open to all, its collections have become internationally known and cover forest-related literature from all over the world in many languages. They are fully abstracted, much has been microfilmed and now digitization is beginning. However, constraints of space, staff and money have almost led to closure many times in the past, and rumour of closure leads to loss of confidence in users and potential depositors, even when the service in fact continues unchanged. This paper looks at the new international initiatives and local management changes which aim to ensure that data of historical importance continues to be collected, preserved and made available to the global community, in consultation with users and focused on expressed needs.

MONSON JAMIE

Carleton College, USA

Common Citizens or Citizens of the Commons? Negotiating Rights to Resource Use in SouthernTanzania, 1930-2000

In their effort to understand the transition between colonial and post-colonial ecology control in East Africa, scholars such as Michael Sheridan have argued that the structures of Indirect Rule in British colonies reinforced ""customary rights"" to resource use. In the post-colonial era, this

argument goes, these customary rights have been abandoned as national ideologies of post-ethnicity (and therefore post-custom) have led to the ""opening up of the commons."" As a result, systems of ecology control that were based upon generations of indigenous knowledge as well as local strictures on resource use have been summarily dismantled.
Yet when we look more closely at the era of Indirect Rule, it becomes apparent that the ""customary"" was not so much reinforced by colonial structures as it was disputed by local claimants to power. District level conflicts over use rights to natural resources were based on ongoing contestation over ethnic boundaries, movements of people, agro-ecological practices and rights to resources such as forests and fisheries. Thus rather than being an era of reinforcement and preservation of customary use rights, Indirect Rule was a period in which competing groups used the language of ""custom"" to make claims for colonial recognition of their rights to nature. In their arguments over rights to natural resources, these groups engaged larger colonial ideas about ethnicity, locality and the rights of the indigenous.
In this paper, I will argue that the post-colonial era in Tanzania has seen continuity rather than rupture in these debates over nature. Rather than constituting a significant break with colonial practice, contemporary struggles over resource control in the Kilombero valley of Tanzania replicate colonial-era competition over customary rights to forests and fisheries, albeit on a different scale. Rights to natural resources have been defended in the post-colonial period on the basis of custom and the rights of the indigenous. Discourses about environmental degradation are framed using the language of local (customary) vs. exogenous (illegitimate) rights. By examining both the colonial and the post-colonial contexts of claims to natural resource use in the Kilombero valley, it is possible to see the transition from colonial to post-colonial as one of continuity rather than rupture.

MOON DAVID
University of Strathclyde, Glasgow, Scotland, UK

The Dokuchaev Expedition to the Steppes and Sustainability in the Russian Empire in the 1890s

In 1892, in the wake of the drought, harvest failure and famine in the steppe region of the Russian Empire, the noted soil scientist Vasilii Dokuchaev was commissioned by the Ministry of State Domains of the Imperial Russian government to lead an expedition to the steppes to investigate ways of placing agriculture in the region on a more sustainable basis. The paper will consider Dokuchaev's plan drawn up in 1892, the work of the expedition, and the development of his ideas of sustainable agriculture. The paper will be based on Dokuchaev's extensive published works, the publications of the expedition and, Russian archives permitting, the files of the Ministry of State Domains.

MURDOCK CAITLIN
California State University Long Beach

Tourists in a Landscape: Territory and Identity in Saxony 1880-1933

In the late nineteenth and early twentieth centuries middle- and working-class Saxons became increasingly eager tourists exploring their own home region. As part of the emergence of new national and regional patriotic movements in the nineteenth century, Saxons, like Germans elsewhere in Central Europe, set out enthusiastically to explore and document the landscape and natural world in their own home region and to tie what they learned to changing regional, state, and national identities and allegiances.
This paper will explore the projects and attitudes of Saxon tourists and promoters of tourism from the 1880s to 1933. Saxon regional patriots saw tourism as a way to connect the landscape and territory of Saxony to emerging categories of regional, state, and national affiliation. Yet they not only identified Saxony’s historic territory as part of their homeland but stressed northern Bohemia’s and southern Saxony’s closely connected histories, culture, and landscape

to make the case that that homeland in some ways extended across state lines. Indeed, by the 1930s advocates of tourism in Saxony described the Saxon-Bohemian borderlands as the quintessential Saxon landscape, the center of Saxon identity, and, in its very nature as a crossroads between two different German-speaking populations, the geographic core of the German nation. Saxon regional patriots and tourists further differed from their counterparts in other regions by embracing both a romantic idea of regional identity grounded in a natural landscape and their role, especially in the southern borderlands, as a major German industrial center. Thus industry and industrial architecture were an important part of what tourists to Saxony were supposed to explore. Thus Saxon understandings of the local landscape and Saxon tourism bridged and sought to reconcile a variety of apparent divisions: the political border between territories of the German and Habsburg Empires (and later Czechoslovakia), the on-going debate over grossdeutsch and kleindeutsch models of political organization in Central Europe, the tension between ""natural"" and industrial landscapes, and the web of connections and conflicts among regional, state, and national allegiances.

MURRAY SETH
University of North Carolina

(Un)sustainable commons?: a historical ecology of Basque common property regimes

This paper explores the development of Basque common property resources (CPRs) over the past three centuries in the border region of southwestern France, and contextualizes their sustainability within the theoretical framework of historical and political ecology. We argue that Basque CPRs in France have been influenced over time by 1) national and international decisions and policies, and 2) by intra-local competition over access to ecological and economic resources. In order to evaluate how Basque CPR management practices in the Pyrénées Mountains respond to these external and internal influences, this paper first analyzes the legacy of a series of border treaties between France and Spain since 1750. These treaties highlight the continuous national and international stakes involved in regulating CPR management. So as to understand the nature of historical and contemporary connections between local community and nation, this paper then draws from ethnohistorical field research to illustrate how Basque farmers negotiate and experience the policies of the French state. Since the 18th-century, CPRs have been safeguarded through a Basque farmers syndicate, which shares oversight and management of local CPRs with the Office National des Forêts. This partnership stems in part from a local initiative to maintain certain historical usages of CPRs, such as transhumant pastoralism and open pastures. But it also originates from the French government's push to more closely regulate agriculture and ecology, an impetus accelerated under the Common Agricultural Policy of the European Union. We argue that this co-management venture has impacted Basque communities by weakening the solidarity of local social networks that operate outside of the syndicate structure, and by increasing intra-local competition over CPRs. We suggest that the dialectical relationships between Basque farmers and French state institutions, between local and national interests, have allowed CPRs to persist, but ultimately questions its future socio-economic viability and ecological sustainability.

NAVARRO GUILLERMO
CATIE, Costa Rica

Transitions into sustaianable forestry in Costa Rica

Only a few developing countries, such as Costa Rica and Korea have been able to arrest deforestation, which is a prerequisite for transitions towards sustained yield forestry and sustainable forest management.

Costa Rica lies between Panama and Nicaragua in Central America It has a total land area of 51,000 km©÷, of which 39 % is covered by forests. It has a population of 3.9 million people and population density of 77 inhabitants per square km. FAO reported an average deforestation

as 16,000 ha/a in the 1990s, but the domestic sources indicate that during the latter part of the 1990s deforestation has been overcome. Costa Rica had GDP per capita of 9,460 USD (PPP) in 2001. It presented a Human Development Index (HDI) of 0.832 and a rank of 42 among 151 countries assessed by UNDP. Life expectancy at birth was estimated as high as 77.9 years. Costa Rica has recently not only stopped deforestation, as just about the only tropical country, but also created markets for biodiversity, ecotourism, watershed protection and carbon sequestration as forestry services increasing the value of remaining forest. This kind of services-based forest development can be regarded unique in the world and highly interesting for a case study.

The government and the market are the two traditional means in market economies, how to control the allocation of inputs, production and distribution of forest goods and services for satisfying of human needs. This model allows, however, on the private side also contracts, e. g. forest certification, or traditions, such as common access to recreate in all forests to be considered. In Costa Rica, especially the NGO activity has been identified as a strong factor. The public and private means can be viewed both as substitutes and complements to each other in Costa Rica.

After the collapse of the Soviet Union and a transition from a plan to a market in numerous other previous socialistic countries, an increased interest on the roles of the government and the market has appeared also in forest economics. A search for an optimum mix of markets and public policies is considered as a priority in Costa Rica.

NEBBIA GIORGIO
Università di Bari

"Il Novecento, per una rilettura ecologica"

Dal punto di vista dell'ambiente il Novecento è un "secolo lungo" che comincia con la rivoluzione francese e con la nascita dell'industria chimica, meccanica tessile; il primo grande scontro moderno fra potenze imperiali aveva bisogno di acidi, prodotti chimici, tessuti, energia, metalli, zucchero, e tutti questi potevano essere ottenuti per trasformazione di materie prime naturali offerte sia dall'Europa, sia dai paesi coloniali.

In pochi decenni furono fatte le scoperte dei materiali, merci e processi che non sono molto cambiati fino ad oggi: i processi per produrre acidi e concimi dal sale e dallo zolfo, metalli dai minerali di ferro e rame e dal carbone, energia dal carbone, zucchero dalla canna e dalla barbabietola. In questi decenni si manifestarono i primi problemi "ecologici": inquinamento dell'aria, ma anche recupero di nuove merci dalla depurazione dei fumi; produzione di metalli per riciclo dei rottami; di panni e carta dagli stracci; conservazione e trasformazione delle carni e recupero dei relativi scarti come il sego dalla lavorazione dei maiali; depurazione delle fogne urbane; invenzione di surrogati artificiali delle materie naturali, con relative crisi dei paesi di origine, eccetera.

La relazione si propone di percorrere brevemente i principali eventi "ecologici" del secolo lungo "Novecento" per mettere in evidenza che tutti i problemi "ecologici" che crediamo di osservare come novità degli ultimi decenni, si sono già verificati e hanno avuto una soluzione e che le soluzioni dei conflitti di oggi, che vedono contrapposti inquinatori e inquinati, si possono trovare utilmente nella conoscenza dei simili conflitti che si sono verificati nei duecento anni passati.

Sono cambiate le materie prime, i processi, le merci e le scorie, ma tutti i processi hanno dovuto fare i conti con la scarsità delle risorse offerte dalla natura e con la limitata capacità ricettiva dei corpi naturali per le scorie; si sono cioè scontrati con la limitata *carrying capacity* della natura e nella violazione di tale proprietà affondano le radici dei conflitti "ecologici", ma anche le radici dell'avidità capitalistica.

NERI SERNERI SIMONE
Università di Siena

Urbanizzazione e ambiente nell'Italia contemporanea, 1950-1970

Nei due decenni considerati, l'Italia sperimentò il definitivo passaggio da una società prevalentemente rurale ad una società urbano-industriale. La crescita rapida e massiccia dei sistemi urbani (e, in discreta sintonia, dell'apparato industriale) comportò profondi cambiamenti nelle modalità e intensità d'uso delle risorse naturali utilizzate a fini produttivi e riproduttivi, che l'altro provocò estesi fenomeni di inquinamento delle acque, del suolo e dell'aria. Di quelle nuove modalità d'uso delle risorse si intende dar conto, illustrando come esse da un lato furono intimamente connesse allo sviluppo socio-economico ed in specie all'urbanizzazione del paese in quella fase, dall'altro furono all'origine di gravi e a lungo irrisolte tensioni negli assetti ambientali delle città e, più ampiamente, delle aree territoriali più densamente urbanizzate. Nel far ciò, si richiameranno anche sommariamente i primi elementi di riflessione, di dibattito e di conflitto attorno ai problemi dell'inquinamento urbano che in quegli stessi anni si registrarono anche nel nostro paese.

OAKES CHERYL, ANDERSON STEVEN
Forest History Society

Finding a Home for History: Creating Environmental History Archives

When the Forest History Society was established in 1946, one of its principle goals was to ensure that the primary materials of forest history were being saved. It used the connections of some of its founding members to locate pertinent collections and then linked potential donors to institutions that would appreciate, preserve, and promote these collections. It established a network of approved repositories in universities and historical societies across North America that were interested in forestry and conservation. Archival preservation and promotion continues to be one of the main goals of the Society, with the size of its various collections now numbering in the millions of documents.

An organization such as the European Society for Environmental History represents a natural network of proponents for environmental history archives. Whether collections are located in a new central archives or established in existing regional or local archives, environmental historians have a vested interest in saving and sharing the sources they contain. This paper will offer suggestions for ways to become involved in the process from the earliest stages.

Archives must modify collecting policies in order to anticipate changing research needs. If they do not, they will not be used and will become mere storage facilities. We will recommend actions that you can take to help your favorite archivist plan for the future.

OLDFIELD JONATHAN
University of Birmingham, England, UK

Russian Approaches to Society-Nature Interaction

This paper explores the connections between pre-revolutionary Russian understandings of society-nature interaction and more recent state-led interpretations of sustainable development. In particular, the paper focuses on the work of the Russian scientist Vladimir Ivanovich Vernadsky (1863-1945) and the conceptual framework of the biosphere-noosphere through an analysis of his published work in the area.

The scientifically-grounded approach to nature-society interaction promulgated by the work of Russian natural scientists such as Vernadsky, Voeikov, Dokuchaev and others during the late nineteenth and early twentieth centuryies is contrasted with the largely symbolic employment of holistic terminology in recent documentation issued by the Russian government within the framework of sustainable development.

OOSTHOEK JAN

University of Newcastle upon Tyne

The use of waste water from potato starch and strawboard factories for agricultural purposes in the Northern Netherlands, 1850-1918

In the mid-19th century the first potato starch and strawboard factories were established in the province of Groningen in the Northern Netherlands. These factories increased in number until there were around thirty in 1900. These industries brought jobs but also water pollution and stench. This pollution was caused by the fact that the potato starch and strawboard factories released thousands of cubic metres of waste water into the canals. However, pollution was not an issue at the time but it was realised that tons of useful minerals and organic substances were "wasted" by dumping it with the waste water into watercourses. Soon attempts were undertaken to use waste water as fertiliser for agricultural land by running it over so called "flowing fields". In addition experiments were set up to extract useful minerals and other substances for the production of fodder or fertiliser.

The aim of this paper is to investigate the rationale behind extracting and using wasted material from waste water and the experiments to do so. It will also highlight why these early experiments failed and the consequences of this for water quality in the province of Groningen.

ORAM RICHARD

University of Stirling

Planters and Improvers in 17th-century Scotland: Shifting the Frontier

Traditional historiography presents agricultural and general land 'Improvement' in Scotland as a later 18th-century phenomenon, a product of the 'Age of Reason'. Current research, however, indicates that substantial programmes of estate improvement were under way by the mid-17th century, involving regimes of soil improvement, drainage, development of commercial forestry and other woodland exploitation mechanisms, abandonment of traditional grazing systems, and introduction of new species and breeds. These developments had a profound impact on the environment of lowland and upland Scotland and laid the foundations of the patterns of exploitation that would become general in the later 18th and 19th centuries. 'Improvement' was as much a political/economic as an intellectual/philosophical statement, with many of the improving landowners being active participants in the colonial plantation developments in the Americas. These men were importing colonial exploitation regimes to their home estates.

This paper will explore the Scottish plantation phenomenon in the period c.1600 to c.1725. It will offer an overview of the modes and patterns of improvement, and of their consequences for both traditional exploitation regimes and the wider environment. It will conclude with a preliminary assessment of the distribution, scale and impact of plantation on the environment of 17th-century Scotland.

ÖSTLUND LARS

Swedish University of Agricultural Sciences, Umeå

Long-term changes of forest ecosystems in boreal Europe – human impact, sustainable use and methods to interpret ecosystem change

Studies in historical ecology often focus ecosystem changes and the cause for this change, i.e. the scientific questions asked are traditional ecological questions, but use methods from the humanities, the social sciences as well as the natural sciences. This fact calls for a discussion of methodological aspects and what is required to succeed in interdisciplinary research. In this presentation I will discuss three different case studies on the forest history of boreal Scandinavia and how different methods were applied based on the scientific questions asked in each study. The first case deals with culturally modified trees in boreal Scandinavia and how to combine dendrochronology, medieval historical records and archaeology to interpret scars on live and dead trees. The second case deals with the transformation of coniferous forest ecosystem studied with an integrated approach using pollen analysis and dendrochronology. The third case deals

with deforestation of alpine forest ecosystems c. 1000 years ago interpreted by archaeological investigations, pollen analysis and ecosystem modeling. Finally I will present my view on interdisciplinary work in historical ecology and discuss problems and possibilities for the future.

OVERGAARD CHRISTINE
University of Southern Denmark

Multi-national competition on cod fishing in the North Sea during the 19th century - a precursor of today's unsustainable cod stock?

The paper is based on an analysis of French and Dutch evidence for 18th and 19th century cod fisheries in the North Sea which bring out two crises: a technological confrontation between British trawling and French oyster fishery in the eighteenth century and a technological confrontation between British trawling and Dutch long-lining in the mid-nineteenth century.

PALMIERI WALTER
Istituto di Studi sulle Società del Mediterraneo

Il dissesto idrogeologico nel Mezzogiorno ottocentesco

Il territorio meridionale è particolarmente fragile: la sua conformazione orografica, i suoi caratteri fisici originari, la sua instabilità geologica rendono qui il problema del dissesto idrogeologico più grave ed urgente che altrove. Si potrebbe addirittura sostenere che, se osservato dal punto di vista della predisposizione alle catastrofi naturali, il Mezzogiorno presenta un'uniformità per molti versi maggiore di quella che si è soliti attribuirgli quando si fa riferimento al suo tessuto economico e produttivo. Eppure nonostante questa fragilità, nonostante il fatto che frane e alluvioni hanno spesso segnato profondamente la storia di molti territori e popolazioni, i fenomeni di dissesto idrogeologico sono stati poco o nulla presi in considerazione dalla storiografia. Se per quanto riguarda il Novecento sono disponibili numerosi dati ed informazioni – raccolti ed elaborati prevalentemente dai geologi – quasi nulla si conosce in merito al verificarsi di questi fenomeni nel XIX secolo. Eppure tutte le testimonianze dell'epoca concordano nel denunciare il diboscamento e la forte riduzione del patrimonio boschivo a sua volta causato – come rileva peraltro molta storiografia – dell'incremento demografico tardo-settecentesco e della ricerca di nuove terre da mettere a coltura. Proprio in quel secolo inoltre iniziarono a manifestarsi nuovi comportamenti economici che conducevano sempre più spesso ad un uso dissipativo del territorio. L'Ottocento si presta dunque ad essere un periodo particolarmente interessante per capire in che modo l'attività antropica agiva sui delicati equilibri idrogeologici. Particolare attenzione sarà poi dedicata al raffronto tra passato e presente in un'ottica diacronica che cercherà di cogliere similitudini e differenze tra i fenomeni di dissesto ottocenteschi e quelli dell'odierna società contemporanea.

PALO MATTI
Seoul National University

Transitions into sustainable forestry in Finland

Finland was selected as an ideal case in sustainable forest amanagement among the three case study countries. It has a land area of 304,509 square km, forest area of 21.9 million ha, which cover 72 % of the land area. It represents the top forest cover in Europe. Finland has a population of 5.2 million people and a population density of 17 inhabitants per square km. For Finland HDI has been assessed as 0.930 with a rank of 14 among the 151 assessed countries in 2001. GDP per capita was 24,430 USD (PPP).

Finland is the second largest net exporter of forest products in the world with only 0.5 % of the total global forest area, while Costa Rica and Korea are net importers. Finland has been able to create a unique cluster around the various linkages of forest industries. Finland has also reduced poverty and created wide scale welfare by its forests.

Finland has had a most peripheral geographical location in Europe. Therefore, it has concentrated in forest-based development, because other investment options were traditionally scarce. Finland has, however, been able to create via forest-based development one of the highest levels of living among all the nations.
However, deforestation was a long-living social threat until nearly the middle of the 20th century. A Grand Land Reform (Isojako) was mobilized already since the 1770s. It clarified the division between the private and state forests both in the fiels and in the archieves. After numerous forestry acts the first effective legislation was launched in 1917. Along with a continuous increase of real stumpage prices, of the real value of standing forest and in forestry and logging works and wages, deforestation era was then finally overcome.
The path towards sustainable forest management in the above broad sense has been long and crooked. The strong and clear tenure of forest holdings, and primarily in private individual hands, has been one cornerstone for a success in this front. Another cornerstone has been an expanding demand for industrial wood. An increasing trend of real stumpage prices has been one consequence of these changes. A mix of market and policy instruments has been successfully applied. Ten subsequent national forest programs since the 1960s have been a distinguishing the Finnish way of forest policy with increasing public and private investments in forest management intensification.
Presently the growing stock of timber in Finland is estimated at the same level as it was for two centuries ago. The timber stock most likely will still grow at least until 2030, although roundwood production would be higher than today. Economic sustainability has thus been achieved but there is still much work ahead towards ecological, social, cultural and spiritual sustainabilities.
Globalization creates new opportunities and threats to the Finnish forest sector. The 1998 National Forest Program has to be amended in order to consider these impacts. No more public subsidies for timber production will be relevant. They can be reallocated in support of ecological and social sustainability. The Finnish global forest industry corporations can satisfy their demands for roundwood by increased imports, by expanding their fast growing tree plantations in the southern hemisphere and by foreign direct investments in new mill capacities. A replication of the success the Finnish forest-based development in the developing countries and in the countries with their economies in transition will not be easy in a changed and globalized world. However, some useful implications comprise advancement of stable government, democratization and transparency, the fight against corruption and illegalities, creation of adequate social, institutional and juristic infrastructures and the key roles of innovations and human capacity building as well as value added in timber processing and in ecotourism and in other forest services.

PANAGIOTAKOPULU EVA
University of Sheffield

The end of Norse Greenland: A natural catastrophy or gradual attrition?

The disappearence of the Norse from Greenland during the 14C in the Western settlement and the 15th C in the Eastern, has always been a topic for discussion. It is often put forward as a classic example of the impact of climatic deterioration on farmers who were reluctant to modify their subsistence base. However without the dead left in the farms, the archaeological data are not conclusive and the palaeoenvironmental data now emerging only seems to add to the confusion. In particular, fossil fly data from two farms from the Western Greenland provide very precise information about the different phases of occupation of the farms. The use of fossil fly puparia in environmental reconstruction is a very sensitive tool that can pick up many of the activities inside the farms, abadonment period and occasionally the reasons for desertion. The contrasting pictures of everyday life from the farms GUS and V54 that have been produced on the basis of their fly faunas, add more clues to the interpretation of the end of Norse

Greenland.Was it a natural catastrophy that evacuated the Western Settlment in Greenland at 1350 AD, three centuries after primary occupation or just a non viable place was abandoned by its inhabitants?

PAPA CATIA
Università Roma Tre

"Struggles for the health and the environment in the Italian 1970s"

One of the most important heritages of the revolt of 1968 in Italy was the birth, at the beginning of the 1970s, of so-called ""political ecology"". The new environmentalist approach was particularly effective in its critique of academic knowledge about health and its relation with environment.

PESCATORE TULLIO, SENATORE MARIA ROSARIA
Dipartimento di studi geologici ed ambientali, Unversità del Sannio

Scenario naturale del territorio vesuviano nel 79 d. C.

L'antica città di Pompei, ubicata alla base del Somma-Vesuvio e a circa 2 km dal mare, fu fondata nel VII sec. a.C. e si espanse fino alla sua scomparsa, sepolta dai depositi piroclastici dell'eruzione del 79 d.C. La ricostruzione dello scenario naturale del territorio vesuviano è da anni oggetto di studio da parte di geologi dell'Università del Sannio che studiando le caratteristiche dei sedimenti, sia in affioramenti che in sondaggi (circa 400), sono riusciti a delineare il paesaggio presente prima di tale eruzione, in particolare la linea di costa distava circa 1 km dalla città ed era parallela a quella attuale. Inoltre sono stati individuati depositi messi in posto da fenomeni naturali catastrofici avvenuti nel lasso di tempo in cui la città si è sviluppata e che potrebbero averne determinato fasi di declino. Questi studi hanno portato alla scoperta di un canale, in gran parte artificiale, che scorreva a nord della città e che probabilmente veniva utilizzato per l'approvvigionamento dell'acqua. Tale canale, partendo dalla grande ansa dell'attuale Canale Conte Sarno, scorreva verso ovest lambendo le mura nella zona di Porta Capua e poi continuava in direzione di Villa dei Misteri. Raggiunta tale villa piegava verso sud scorrendo al margine occidentale della città ed infine sfociava in mare.

PFISTER CHRISTIAN
University of Bern

Weeping in the Snow: Little Ice Age Climates and their Impacts on People in Central Europe 1500 to 1670

A history of climate tailored to the needs of the historian needs highlighting changes in the frequency of those climate patterns which can be demonstrated to have affected everyday life in the early modern period. This paper proposes a concept on how the frequency and severity of climate impacts may be become an important element of an integrated history of climatic variability and human history. Biophysical impact studies may identify the direct effect of climate anomalies on plants, domestic animals and disease vectors through a study of their climatic sensitivity. An ideal type-model of biophysical "Little Ice Age-type Impacts" is developed for Central Europe from monthly temperature and precipitation indices. The numerical output of this model is then compared to fluctuations of grain prices and vine production over the period 1550 to 1670. It is demonstrated, that periods of low and high climate impact levels need to be distinguished in the "durée moyenne". At the same time the spatial dimension of such impacts is highlighted. Results provide a starting point for discussing changes in the vulnerability of affected groups or societies.

PHILLIPS DENISE

University of Tennessee

Regional Tourism and the Saxon Countryside: Science, Taste, and Perceptions of Nature, 1770-1830

By the early 19th century, published guidebooks existed for numerous regions of the German countryside. In large part, these guides developed out of earlier, more learned genres of writing, such as the topographical study and the local flora. In leading their readers through a landscape's various points of interest, they integrated information, sets of practices, and forms of perception that had previously belonged almost exclusively to the cultural repertoires of university-educated men. These guides, and the travels they helped structure, were an important medium through which early modern learned activities became marks of Bildung for a much broader, more socially diverse 19th-century public.

This paper will examine works published about the striking mountain scenery accessible in a few days' travel from the Saxon city of Dresden. Using both guidebooks and travelers' diaries, it will analyze how travelers around 1800 perceived the relationship between nature and culture in the landscapes they traversed. Part of the allure of a trip to the Sächsische Schweiz was the time spent in ""freie Natur."" ""Nature,"" however, did not have to be untouched by human hands to inspire affection and admiration. Marks of human activity in the countryside were some of the rural landscape's standard attractions - travelers visited manufacturing sites and marveled at well-managed forests, orchards and fields. They also took an interest in cultivated, exotic species of plants when they came across them; a fascination with the ""native"" charms of a region did not curb enthusiasm for recent exotic imports. An appreciation of nature's beauty was closely intertwined with perceptions of its utility. As a result, these limited and local forms of tourism offer important insight into both the aesthetics and ethics that governed the urban middle classes' cultural relations with the countryside.

PICCIONI LUIGI

Università della Calabria

"Luigi Parpagliolo, between movement and institutions"

At the beginning of the 1920's the Italian Parliament approved a general law for the protection of the landscape and a small but efficient system of national parks. These measures allowed Italy to figure among the pioneer States in Europe for environmental protection. They were made possible thanks to a large and composite movement comprising writers, naturalists, politicians, leaders of tourism and Alpine associations, all of them members of the left wing of the liberal majority. Nevertheless, the mind that conceived and patiently carried out both the law and the creation of the national parks was a bureaucrat: Luigi Parpagliolo, chief officer in the Ministry for Public Education.

PIPER LIZA

York University, Ontario, Canada

To Tap Canada's 'Inland Seas', 1921-1960

In Canada's northwest there are four massive glacial lakes: Great Bear, Great Slave, Athabasca, and Winnipeg. Ceded by aboriginal peoples between 1899 and 1921, the dominion government acquired the lakes and surrounding lands to expand industrial resource operations in this remote and "pristine" region. This paper explores the manipulation of the lake habitats by state and private interests from 1921 to 1960.

Over-fishing led to the collapse of the Lake Winnipeg fishery in 1930 and stimulated the extension of species-specific commercial fishing onto Lake Athabasca and Great Slave Lake. Freshwater fish products were profitable export commodities as ninety percent of the catch went directly to the United States. State agencies (scientific and administrative) concerned with conservation, encouraged the expansion of the fisheries under their own close supervision. In the late 1920s the Department of Fisheries initiated biological research into whitefish

reproduction, predation, and disease. By the mid-1940s state regulation of the industry included seasonal surveillance of catches and the marketing of fish products by crown corporations.
The fisheries were also crucial to the spread of settlement and industry on the large lakes, where major gold, lead-zinc, and uranium mines were established after 1920. Subsistence fishing fuelled local working populations and transportation networks for exporting fish were adopted for freighting industrial products. Yet, industrial mining and transportation severely disrupted aquatic habitats. Dredging, extraction of ores from lakebeds, and dumping solid waste directly affected lake basin morphologies. Water pollution further modified fish habitat.
The dominion government encouraged companies to harness the manifold lake resources (water, fish, mineral-rich rocks) and extend industrial resource operations into remote regions of Canada. This paper argues that despite efforts at conservation focused on fish populations, industrial mining and fisheries involved the commodification and manipulation of aquatic habitats, with significant ecological consequences.

POGGIO PIER PAOLO
Fondazione Micheletti, Brescia

Storia dell'ambiente in età contemporanea: il caso italiano

Agli inizi degli anni Settanta, in perfetta coincidenza del pieno manifestarsi della crisi ecologica e alla chiusura dei "30 anni gloriosi" dello sviluppo, la storiografia italiana si apriva ampiamente e tumultuosamente alla storia sociale, sotto l'influsso preminente se non egemonico della scuola delle "Annales", i cui principali esponenti: Marc Bloch, Lucien Febvre, Fernand Braudel avevano, in termini diversi, ma con grandi risultati, dimostrato la massima attenzione alla storia dell'ambiente. Sembravano esserci tutti i presupposti per una intensa stagione di studi di geografia storica, di storia sociale e culturale della tecnica, di storia della trasformazione industriale dell'ambiente. In realtà le cose sono andate ben diversamente per effetto di molteplici fattori, alcuni specifici del contesto italiano, altri comuni alla scena culturale europea ed occidentale. Tra questi una cristi interna alle stesse "Annales", più in generale di tutti i tentativi di dare uno statuto epistemologico forte alla storiografia, per effetto della concomitante crisi dell'ideologia del progresso e dello sviluppo. Di qui il ritorno ad un approccio narrativo e individualizzante e l'abbandono del tentativo di abbracciare unitariamente il corso storico in una storia totale della società e della natura. Nel contesto italiano hanno poi agito negativamente una serie di altri fattori che qui ci limitiamo ad enumerare:

- una crisi tanto rapida quanto scarsamente elaborata dal marxismo;
- la tenace sopravvivenza attraverso continue riformulazioni della separazione tra le "due culture";
- l'impostazione astorica con cui vengono trasmessi i saperi scientifici in Italia;
- lo scarso apporto del pensiero filosofico italiano alla riflessione sul significato della crisi ecologica;
- la frantumazione all'infinito, in nome della specializzazione, delle discipline storiche;
- il ritorno della storia generale su un terreno strettamente politico, anche per effetto della crisi dell'identità nazionale;
- il permanere, nel senso comune e ancor più nella corporazione, di un'adesione acritica allo sviluppismo;
- l'inadeguatezza e comunque la scarsa penetrazione in campo culturale e storiografico del pensiero "ambientalista".

Come risultato, sul piano della ricerca storica, si è avuta una debole presenza in generale e una prevalente attenzione, in materia di storia dell'ambiente, per le epoche preindustriali. In Italia, nel perdurare di una evidente marginalità, solo molto recentemente si è cominciato ad indagare nei suoi termini storici la crisi ecologica prodotta dallo sviluppo industriale.

POULSEN BO

University of Southern Denmark

Spatial patterns of the North Sea herring fisheries, c. 1600-1860

One of the foremost exploitations of a natural resource in pre-modern Northern Europe, was the herring fisheries in the North Sea. This paper reconstructs the historical herring fisheries, 1600-1860, through a combination of ecological modelling and archival sources such as logbooks and registers of landed herring.

Especially the Dutch herring fisheries has left a staggering amount of material, which is used to shed light on the fishermen's movements following the migration patterns of different herring populations roughly starting in Scotland/Orkneys in the summer then fishing more and more to the south along the Scottish and English coastline and Dogger Bank in the autumn. The paper assesses the ecologic and economic interplay between man and the natural resource, and the environment as an influential factor for the economic development of the North Sea fisheries in the Early Modern period.

RIENZO MARIA GABRIELLA
Università di Foggia

L'addomesticamento delle acque: conseguenze ambientali della costruzione delle dighe nel Mezzogiorno

L'addomesticamento delle acque per l'irrigazione agricola, il suo uso potabile e industriale, hanno fatto sì che l'acqua divenisse la condizione indispensabile per ogni forma di insediamento umano. L'acqua stagnante minava la salute ma l'acqua imbrigliata nei canali e irreggimentata dalle bonifiche era risorsa per la vita e per lo sviluppo, sicuramente una delle risorse più importanti.

Il lavoro delineerà l'attenzione rivolta all'uso e al controllo dell'acqua nella storia del Mezzogiorno, mettendo in evidenza la progressiva maturazione di una sensibilità da parte delle istituzioni nei confronti di una indispensabile risorsa per lo sviluppo.

Si traccerà un sommario quadro dell'assetto idrogeologico del territorio meridionale e delle opere realizzate per un uso razionale dell'acqua, facendo particolare riferimento alle conseguenze ambientali causate dalla realizzazione delle opere. L'attenzione si soffermerà sul caso degli impianti idroelettrici silani (bacini del Neto, Arvo e Ampollino) degli anni '20 del Novecento e sugli schemi idrici realizzati in Puglia dal Consorzio di Bonifica per la Capitanata (diga di Occhito e diga del Celone).

ROTHERHAM IAN D., EGAN DAVID
Sheffield Hallam University

The Economics of Fuel Wood, Charcoal and Coal: an interpretation of coppice management of British woodlands

The coppice woods of medieval Britain fueled much of the early industry of the country, along with supplying a majority of the people with essential energy for domestic use. However, the parallel development of different fuels – mineral coal, wood, charcoal, and peat or turf is rarely considered in detail. Many early accounts describe the medieval iron masters as destroying the woods, whereas in fact they managed most of them sustainably as coppice. To the untutored eye, a recently cut coppice could appear to be devastated.

Traditional, managed coppice was a system applied in England for over a thousand years, though it was generally in terminal decline by the mid 1900s. The reasons for this are many, and the consequences for nature conservation are still being felt - the loss of associated wildlife species and the alteration to both landscape and to local economies. Understanding the interactions between competing uses, and different fuels helps to unravel the historic drivers that have led to major changes in the woodland resource and its utilisation. Furthermore, the use and availability of different fuels to supply energy needs in contrasting areas has left major impacts in the landscapes still visible today. However, finding data to inform this debate and to provide

insight into the economics that underlie the use of the various energy sources is difficult. Information is often localised in time and in place.
However, the compilation by James E. Thorold Rogers (A History of Agriculture and Prices in England) published in 1902, provides data for a period from 1259-1793, from a diversity of sources and across a wide geographical area. This unique compilation in eight volumes, with its detailed accounts of the prices of fuels, other raw materials, and manufactured products, provides a starting point for our analysis.
This comparison is then placed in context with detailed case studies and supporting archaeological evidence.

RUDOLF BRÁZDIL, VALÁŠEK HUBERT, CHROMÁ KATEØINA, DOBROVOLNÝ PETR, MACKOVÁ JARMILA
Masaryk University

Climatic and Weather Extremes in Moravia and Silesia during the Past 500 Years and their Impacts: Lessons for the Future

Documentary evidence about climatic and weather extremes in Moravia and Silesia (eastern part of the Czech Republic) since AD 1500 is discussed. Extreme precipitation and droughts, strong winds including tornadoes, floods and hailstorms are topics of analysis. Their variability is studied based on long-term series of these phenomena with respect to frequency, severity, seasonality and human impacts. Perception of extreme phenomena is discussed. Conclusions for the recent extreme phenomena observed in Moravia and Silesia are derived with respect to recent global warming process. Concept of an atlas of natural disasters is presented.

RUSSO SAVERIO
Università di Foggia

Il paesaggio del Mezzogiorno continentale

Il contributo al panel riguarda due diversi temi che fanno riferimento alle trasformazioni del paesaggio nel Mezzogiorno continentale in un arco temporale che va dai primi decenni dell'Ottocento, segnati da una rinnovata attenzione al territorio, all'età giolittiana.

La sempre più spinta "ruralizzazione" delle colline e delle montagne meridionali, soprattutto a partire dal secondo Settecento, propone su scala più vasta il problema delle lavorazioni dei terreni in pendio e delle sistemazioni necessarie. Il tema è ancora piuttosto trascurato nel dibattito agronomico del primo Ottocento e non acquisirà neppure in seguito la centralità che aveva già raggiunto nelle agricolture dell'Italia centrale. Non è, tuttavia, di scarso rilievo indagare sulle soluzioni tecniche che dopo l'Unità si proporranno su questo tema, anche per controllare i movimenti franosi e gli smottamenti legati spesso a dissodamenti e disboscamenti e alle cattive pratiche colturali.

Un altro tema, rilevante soprattutto nelle grandi aziende agricole di pianura, investite precocemente, almeno a partire dalla fine dell'Ottocento, dalla meccanizzazione di quelle pratiche colturali che facevano ricorso al lavoro animale, è quello della scomparsa dei pascoli per gli animali da lavoro, in molte aree del Mezzogiorno definite "mezzane". Tali pascoli erano normalmente alberati con perastri, olivastri, querce e rendevano mosso il panorama delle vaste pianure meridionali, povere di alberi. Con la palese "inutilità" dei pascoli per gli animali da lavoro e il loro dissodamento, nonché con la diffusione della macchine per la mietitura, le piante – presenti talvolta anche nei seminativi - diventano un ingombro di cui ci si libera appena possibile, semplificando ulteriormente il paesaggio meridionale.

RUZZENENTI MARINO
Fondazione Micheletti, Brescia

Censimento dei siti industriali inquinati per un atlante storico dell'industrializzazione a forte impatto ambientale

E’ intuitivo per chiunque considerare come la fragilità dell’ambiente Italia abbia necessariamente subito tremendi insulti da un’industrializzazione che nel passato ha considerato il territorio come un sito su cui collocare le imprese esclusivamente in funzione di convenienze tecnologiche ed economiche. Gli ultimi decenni hanno visto esplodere, anche con notevole clamore, alcune emergenze che segnalano una sofferenza importante a questo proposito del rapporto fra tecnica e natura. Manca però un quadro d’insieme che dia il senso della portata qualitativa e quantitativa del disastro ambientale che si è consumato nel Belpaese nell’era dell’industrializzazione.
E’ questa in sintesi la motivazione del lavoro che di seguito viene presenato.
L’intersecazione fra storia e geografia è fondamentale per descrivere, pur per sommi capi, l’impatto che ha prodotto l’industrializzazione, in particolare del Novecento, sul territorio italiano.
A tal fine un’impostazione metodologica rigorosa consente una sistemazione coerente ed un progressivo completamento di un quadro estremamente complesso e per molti aspetti ancora inesplorato.
Il lavoro non può non attingere a diverse discipline: non solo geografia e storiografia, ma anche geologia, orografia, urbanistica del paesaggio, ecologia dell’impatto ambientale, tossicologia, …
Punto di partenza sono le priorità riferite ai settori produttivi che presentano un impatto ambientale più rilevante: la chimica, la siderurgia e la metallurgia, la lavorazione dell’amianto, l’industria estrattiva e mineraria, l’energia (raffinerie, il nucleare, centrali termiche…); le concerie; gli inceneritori; i depositi di scorie e rifiuti industriali connessi.
Le fonti impiegate sono le più diverse e con problematiche specifiche: istituzionali (Ministero dell’Ambiente - siti inquinati; anagrafi dei siti inquinati delle singole Regioni; archivi delle Asl, delle Arpa, e delle istituzioni locali di riferimento); imprenditoriali (bibliografia specifica; archivi aziendali; riviste specialistiche di settore); sociali (archivi sindacali; dei movimenti ambientalisti e per la salute…) .

SABA ANDREA FILIPPO
Università Alma Mater Studiorum di Bologna

Casi contro. Paradigma elettro-irriguo e retorica dello sviluppo nell’Italia del Novecento

Nel momento del *take off* italiano, al torno fra XIX e XX secolo, si pose il problema di un adeguato rifornimento energetico alle strutture produttive e questo venne assicurato grazie allo sfruttamento del cosiddetto “carbone bianco”, l’elettricità generata dai complessi idroelettrici. Ai primi serbatoi giornalieri e settimanali, ben presto furono affiancati bacini di ritenuta con capacità anche pluriennali, che talvolta aggiunsero a quella primitiva anche una funzione irrigua. La rapida imposizione di tale modello produttivo – ipotizzato soprattutto dall’ingegner Angelo Omodeo, ma non solo - causò però numerose controversie e provocò danni, anche con gravi effetti, e contestazioni, talvolta dai lunghi strascichi giudiziari, che mettevano in luce le difficoltà tecniche sorte e il rifiuto di un dato percorso tecnologico deciso dalle *élites* tecniche ed economiche del paese. A casi più clamorosi di fallimento, come quelli tragici del Vajont nel 1962 (peraltro notissimo quale oggetto riscoperto di divulgazione di altissimo profilo culturale), di Molare nel 1935 e di Gleno nel 1923, vanno affiancati contenziosi giudiziari di più basso profilo come per il basso corso del Tirso, il lago del Matese e altre situazioni ancora, di minore impatto sull’opinione pubblica ad essi contemporanea, ma utile alla formazione di un giudizio storico che possa esaminare criticamente tale paradigma dello sviluppo.

SAMOJLIK TOMASZ
Mammal Research Institute Polish Academy of Science

Utilization of Bialowieza Forest in the times of Jagiellonian dynasty and its traces in the contemporary forest environment

Under the rule of the Jagiellonian dynasty (15-16th century) the Bialowieza Forest had a status of the royal forest. It covered about 1800 km2 and - as evidenced by palinological studies - it was a continuous woodland. A large part of it was not exploited in any way. The dominant form of exploitation were access rights - by the noblemen and clergy, i.e. the rights to use certain renewable resources in the king's land. Several different forms of exploitation allowed by access rights are described in written sources from the 16th century. The most widespread were: scything of meadows along the forest rivers (82% of all access rights); traditional beekeeping in beehives carved mainly in pine trees (73%);fishing in forest rivers (39%).
The first form of exploitation has led to creation of deforested river valleys (width 0,1 - 2 km). Anthropogenic river-side meadows have still been mown in Belarussian part of BF. In the Polish part where meadows were abandoned in the 20th century, secondary forest succession in river valleys is observed. Based on hay-making activity, the system of supplementary winter feeding of free-living European bison, a royal game species, was developed.
Traditional bee-keeping, located mainly in coniferous forests, introduced frequent fires and contributed to development of pure stands of pine, Pinus silvestris, the species resistant to ground fires. Since the 19th century, where the role of man-caused fires declined, invasion of spruce Picea abies into pine forest has been recorded.
Logging and other wood processing has not yet started in Bialowieza Forest in the 16th century.

SARATSI EIRINI
University of Athens

Maintaining a Productive Landscape: the case of Zagori, NW Greece

Transformations in the Greek upland landscape physiognomy started at the beginning of 20th century and are still ongoing. In the Zagori area of the Pindos Mountains, Northwest Greece, agricultural activity gradually halted and large numbers of livestock previously supported by the area declined dramatically. Zagori impresses the visitor with its apparently natural beauty, the pronounced relief and the diversity of the wildlife it supports. However, this paper argues that a more careful inspection of this landscape would bring to light features that speak of another time when every piece of land was actively used as a productive resource. By uncovering the function of these elements on the landscape, it describes a well-organized system of activities, one that made the most efficient use of the surrounding environment in order to support both people and animals, and one shaped through a local administrative system actively governing the type and time of its utilisation. The paper combines insight from oral histories with that of archival documents in an attempt to investigate the historical continuation of these management practices and the associated landscape features. It goes on to describe how the landscape might have responded to these earlier practices in order to identify how it will do so in the future. In particular, the paper seeks to investigate what happens when management practices are intensified or diminished. It suggests that many such practices should arguably be valued in the sustainable landscape management in the future.

SCHLEYER CHRISTIAN
Humboldt University of Berlin, Resource Economics

Economic and Ecological Transformation Processes in Post Socialist Water Management Regimes

Abrupt changes in a nation’s political and economic structure - such as the German reunification in 1990 - very often have destabilising and destructive impacts on existing management systems for local natural resources like water. Such all-encompassing societal changes might result in completely altered resource use patterns, new actor constellations of resource users, reallocation of property and use rights on the resource or on the related management infrastructure as well as

in decisive changes at all levels of administration. In order to ‘design’ future concepts for a sustainable natural resource use one has to develop a deeper understanding of these transformation processes and their historical determinants.
Taking an economic historian perspective, this paper will focus on economic and ecological transformation processes in post socialist water management regimes by looking into the case of the fen land region ‘Schraden’ in the East German federal state of Brandenburg. Here, a long-standing intensive arable farming - enabled by reclamation - has caused soil deterioration and high water runoff. More than ten years of economic and political transformation has worsened the situation and even added new problems. The visible consequences are drought periods in the summer, waterlogged plots in the spring and worn-down water management facilities that operate in an uncoordinated or even unauthorised way.
Given the local public good character of some features of the fen land, the common-pool character of the ecosystem’s intermittently scarce resource water, and the conflicting interests of regional stakeholders, it is argued that the reallocation of property rights over reclamation systems, together with ineffective coordination mechanisms, have caused the physical and institutional failure of the water management system and so impeded appropriate resource use. The article will also provide a comprehensive overview of the history of land and water use and water management in the region before 1990.

SCHMID MARTIN
IFF Cultural Analysis and Center for EH

“Magic and Power as Topics of Environmental History”. Case Studies from Early Modern and Preindustrial Austria

Environmental History is a genuinly interdisciplinary field of research. Hence we need plausible concepts of interactions between the natural and the cultural system as they change over time. This paper, which is part of my current dissertation project, aims to contribute to this crucial and ongoing theoretical challenge of our field.
Firstly, the paper is a confrontation of theoretical models with historical sources. The models were developed in recent interdisciplinary studies of the environmental history of villages in Austria and aim to describe the interactions between nature and society on a general level or in preindustrial agro-eco-systems in particular (e.g. Project Group Environmental History 2000). The sources I use were written in different Austrian regions: an agricultural textbook from about 1600, a land register (“Urbar”) dating from the early 18th century with illustrations of dominated landscapes, and an autobiography of a female mountain farmer in the first half of the 20th century. I use the models as tools for the historical interpretation of these sources, and on the other hand I discuss these models from the viewpoint of an historian, trying to understand the relationship of people and nature in a particular cultural and environmental context. Sometimes we feel a 'real need' of explanation for the ways people in the past dealt with nature, because we observe them from a cultural distance. In fact we do not observe them but only the things they produced and that were not lost in time. For example: When the author of an agricultural textbook suggests magical practices for pest control how can we be sure, that these were real practices, that they were performed? If yes, what can we say about the motives of people using magic in agro-eco-systems? And what can we know about the material impacts of magic in the natural system?

SCHMID NESET TINA, LOHM ULRIK
Department of Water and Env. Studies, Linköping University

Historical metabolism of food consumption and production - Sweden, 1870-2000

A specific amount of resources such as nutrients and water, as well as space is needed in order to sustain an individual’s consumption of food. The shifting human diet leaves its imprint in this production area, depending on demands and prerequisites of agricultural practice. It reflects the

shifting relative share of animal products in consumption as well as increased yield for different crops. Two possible ways of quantifying the impact of human food consumption on the environment are the spatial imprint and the flow of nutrients for the system of food consumption and production. The ecological footprint compiles a spatial equivalent of biologically productive land. This study focuses on the area needed for the production of food using the local yield of the case study area, but compares the potential of a regional food production in 2000 with the actual share of a global food import. Parallel, the method of material flow analysis (Baccini and Brunner, 1991) is applied in order to define the flow of phosphorus for the specific system of food consumption and production, which enables a comparative analysis of both ways of quantifying the impact of human consumption on the environment.
The case study is based on an average inhabitant of the city of Linköping, southeastern Sweden, for 1870-2000. The food consumption of the average inhabitant is based on a study of dietary regulations in 37 different Swedish hospitals from 1870-1928 and hereafter a compilation of national investigations and official statistics. Information on agricultural practices and yields were mainly found in the archives of the county's agricultural society (Hushållningssällskapet) as well as in agricultural literature and national statistics. The questions that will be raised are concerning both the spatial imprint of a regional opposed to global food consumption and the flow of phosphorus in a regional and global food supply system.

SCHMIDT UWE EDUARD
Albert-Ludwigs University

Coppices in the Low Mountain Ranges of Germany

Of all the raw material and energy resources at our disposal, biomass plays a special role because it is the only resource which grows again, that is to say, embodies the most decisive trait of a resource – the ability to regenerate. Thus, the management of coppices succeeded in using the vegetative regeneration of hardwood. It is accepted that the Romans introduced the coppices in the valleys of Rhine, Mosel, Neckar and Ahr in combination with the viticulture in order to supply stakes. Later coppices are documented all over in Germany during the medieval time. The use of coppices was manifold. Especially agro-forestry was based on the management of coppices. Trees with sprouting capacities were cut down after 7 to 20 years and used as firewood. The bark of oak could also be extracted for tanning acid. Afterwards the remaining wood was burnt and the ash was ploughed under as fertilizer, which allowed the cultivation of corn for two years. But not only the forests in the agricultural parts of Germany were dominated by coppices. Particularly the industrial areas were dependent on coppices to produce firewood for boiling brine water and to burn charcoal for smelting ore. Due to permanent salt and iron production, sustainable management started principally in the most intensively used German forests like Aachen (1215), Freiburg (1289) and in the saline forests of Bad Reichenhall (1509). Until the second half of the 19th century, the German iron industry was completely based on charcoal. Unsustainable forest management in the 18th century led to an existential wood shortage and scarcity of charcoal. Efforts to invent methods to use pit coal were mostly financed by the German states and succeeded finally in producing coke and in using special "Puddel" furnaces. Since the second half of the 19th century most of the coppices were transferred into high stands, whereas the reforestation of deteriorated forests started with conifers like pine and spruce. The monoculture of conifers still leads to many biotic and abiotic problems. Altogether, from a retrospective-analytical point of view, mainly the transfer from the never ending resource of wood to the limited resource of pit coal results in many ecological problems. Most have lasted until today and still have their effects.

SCHMITT FELIX
independent researcher

Explaining medieval ecology – one example and many patterns

From a modern point of view, we are asking questions derived from contemporary theories. Some of the main theories are naming branches of historical investigation, e.g. social history, economic history, environmental history. Within the research project "Ecosystem, Social Structures, Land Use in Medieval Bavaria" we are applying these modern questions and up-to-date methods. By using the tools of archaeology, anthropology, zoology and botany, history and geography we seem to get a close picture of the live a thousand and more years ago. The paper will present some current results.

On the other hand there is a lack of evidence to answer some very simple questions, e.g. the adaptation to changes in climate. It is widely accepted that it became colder during the later Middle Ages until modern times. In our pre-alpine sample (ranging up to 1300 m) there is, however, no simple adaptation in agriculture. Land use changed, but not in the time nor even in the direction expected.

This arises some questions. Firstly: Did a remarkable change in microclimate happen at all? If so, secondly, is the focus on a small landscape reasonable to get the expected correlation to land use? Or are the people living there linked so closely to the people of southern Germany and the alpine countries that the acclimatization of population and land use system can only be understood on this scale? Thirdly: Is it sufficient to use this ecological modelling – or is it a question of economy? Can the economic terms of price and scarcity be derived from scarcity of certain goods due to weather conditions? Or are there other predominant powers influencing scarcity like "lifestyle"? And finally: What ideas do we have of the medieval translation of the later? The paper will discuss these questions using a case study sponsored by the Volkswagen Foundation.

SHAW DENIS

University of Birmingham, England, UK

Lev Semenovich Berg (1876-1950) and the Development of Landscape Science in Russia

Academician Lev Semenovich Berg, president of the Geographical Society of the USSR from 1940 to his death, was a leading proponent of the concept of landscape (landshaft) as the central component of geographical science and as a scientific means of promoting and controlling environmental transformation in Russia. His work led to establishment of landscape science as a key part of physical geography, having significant implications for current ideas of sustainability. The paper will focus on Berg's concept of landscape and of its place in geography, the relationship between his ideas, those of the Dokuchaev school of environmental thought, and contemporary European notions of landscape and related concepts, and the implications for later understandings of the nature-society interface.

SHOWERS KATE B.

Centre for World Environmental History,University of Sussex, UK

From Forestry to Soil Conservation: British tree management in Lesotho's grassland ecosystem

The Kingdom of Lesotho - the Protectorate of Basutoland when part of the British Empire - is the mountainous region of southern Africa's savanna ecosystem. Nineteenth and twentieth century perceptions of Lesotho's vegetation were grounded in the environmental discourses and beliefs of Europe and the British Empire, particularly those of the Cape Colony and South Africa.

This paper will trace missionaries' and officials' changing perceptions of trees in the Lesotho landscape, discourses that informed them, and resulting government programmes from the late 19th through mid-twentieth centuries. Suggestions will be made about the reactions of the indigenous people, the Basotho, to these interventions.

Initial belief in a landscape denuded by careless indigenous people mandated restorative afforestation. Then, notion of trees as soil healers and protectors resulted in plantings at vulnerable locations on government and missionary land. The idea of afforestation to restore an imagined closed canopy forest gave way to afforestation defined as the establishment of tree plantations, and tree planting for fuel and fruit in gullied land and gardens. Ideas about the superiority of trees and their use in erosion prevention and control persisted, becoming a kind of fixation, if not an ideology.

SIEVERT JAMES
Independent scholar

Marsh, Cattaneo and Italy's Artificial Homeland

The late nineteenth century brought changes to the centuries-long perception of an aesthetically constructed nature, which had been of a piece with the Italian notion of civilization. Industrialization in nineteenth-century Italy upset the idea of landscape as a harmonious architectural modeling of nature. This talk will examine the views of two major nineteenth-century observers of the Italian landscape: George Perkins Marsh, who labeled Italy's tunnels, bridges and land reclamation projects stupendous achievements, and Carlo Cattaneo, who called his native Lombardy a built landscape, an artificial homeland, that was 90% the work of man, 10% the work of nature

SMITH DAVID
Department of History University of Sydney

Animals the Environment and the Politics of Change in Germany 1975-2004

Alongside emerging consciousness of environmental degradation in the latter part of the twentieth century came a renewed social focus upon humans' treatment of other animals. Both concerns have forced modern societies to consider the ramifications of human action on the natural world, and both have given rise to extensive and diverse social and political movements. With both a long and ambiguous history of nature and animal protection and the early emergence and success of a 'modern' green movement and party, (West) Germany is well suited to function a prism through which to view and assess the relationships between environmentalism and animal advocacy.

Looking historically at the positions of the German Greens shows that they have offered considerable promise in the revision of human-animal relations, certainly more so than other parties and movements. A brief glance at state and federal electoral programs repeatedly reveals policies to end factory and intensive animal agriculture and develop more species-appropriate ways of raising animals, as well as measures on vivisection, hunting, and the preservation of wild species and diversity. A number of working groups came into being, and alliances with organised animal protection societies set up. Green policies on animals were of course embedded in broader concern for the environment, anti-nuclear, and peace positions, but are made especially interesting by recent developments in Germany.

Following the discovery of 'mad cow' disease in Germany, a Green has occupied the position of minister for agriculture, who has attempted to implemented a so-called 'agricultural turn' towards sustainable, environmentally and animal friendly agriculture. This clearly offered, and continues to offer, scope for considerable if not radical change to a fundamental area of human-animal relations. My paper will offer a critical assessment of the degree to which Greens have been able to influence and affect change in the way humans, animals and the environment interact.

SONNLECHNER CHRISTOPH
University of Vienna

Perception, Role, and Use of Woodlands in the Early Middle Ages

The significance of wood and woodlands for early medieval societies in continental Europe, especially north of the Alps, is known. Studies undertaken in the last two decades have helped to achieve clearness referring to terminological questions. Terms like saltus, forestis and silva can now be better assigned to their legal function and in parts also to their use. Going beyond these findings with the focus of an environmental historian is the aim of this paper.

Wood and woodlands were perceived and used differently in different regions of the Carolingian empire. Northern alpine agro-ecosystems shaped by mixed farming as well as pre-industrial use will be the subject here. The paper will deal with alpine regions of present day Austria but also with evidence from the whole Frankish empire. The vegetational component of this topic will be considered appropriately in a comparative approach, as we do find various types of (potential) natural vegetation in the regions underlying this study.

Depending on the "producer" of a historical document, meaning and appraisal of wood was varying. Charters, polyptichs and property catalogues of the period 700 to 900 survive, forming the pool of sources to be dealt with in this paper. These materials make it possible to extract information about the role of wood in different agro-ecosystems. Perception of woodlands as border regions, vast royal hunting grounds and deserted areas will be treated as well as their use as a resource for salt production, alpine pasturing and for pig fattening.

STAROSTIN DMITRY
Pontifical Institute of Mediaeval Studies, Toronto

Water, Land, and Social Change: Cremona in the High Middle Ages

This paper will make use of sources from medieval Italian city of Cremona that have been largely unavailable to scholars in the West in the last one hundred and twenty years. They have been kept in the archive of the Institute of History in St-Petersburg. These sources were will show the ways in which study of technology, social history, and cultural interpretations can be employed to address the uses of water and other natural resources in the Middle Ages. Taking an Italian city of Cremona as an example, this investigation will highlight political, social, and cultural effects of technological advance, and it will demonstrate how medieval urban communities constructed their identity by their peculiar exploitation of rivers and alluvial lands. It will examine the ways in which the uses of water can be understood in the political, social and economic contexts. This study will also illustrate how social effects of the political struggles between the Empire and Italian communes intermingled with those produced by changes in land and water use, the change prompted by the development of water use.

SZABO PETER
Central European University

Traditional Woodland Management in Central Europe

Woodland management in Central Europe is nowadays dominated by modern forestry. The composition and appearance of woods is largely, though not exclusively, the result of the direct and indirect influences of forestry operations. Recent research, however, demonstrated that before the emergence of forestry (ca. 200 years ago), different traditions prevailed in the management of individual trees and woods.

This paper examines these traditions. The primary focus is coppicing (cutting deciduous trees close to the ground every few years which then grow again from a permanent basis) and pollarding (same as coppicing except that the tree is cut higher to prevent browsing animals from reaching the young shoots). Coppicing and pollarding are presented as they appear in written sources and also as they can still be seen in the landscape. The geographical scope of the paper is present-day Hungary and the Czech Republic, and comparative analyses are made to show how similar or different traditional woodland management was in these countries, and

how these similarities or differences are created or reflected in the sources, both written and archaeological.

TACKE CHARLOTTE
University of Bielefeld

„Verbessern" or „Moltiplicare": Hunting, Wildlife Management and Wildlife Conservation in Germany and Italy at the Beginning of the 20th Century

At the end of the 19th Century, in Germany as well as in Italy a crisis of hunting was perceived and communicated in terms of an imminent „end of hunting". However, the perception of this crisis, its explanation and respective suggestions for resolving this problem differed significantly within the two countries. Whereas German hunters diagnosed the ‚degeneration' of the indigenous game and proposed qualitative – racial - measures to improve the game (Hege mit der Büchse), Italian hunters experienced a quantitative crisis, that is the decline of the game's numbers, and proposed ‚rational' measures of artificial breading and reproduction (ripopolamento) to increase the game's numbers. Trying to reduce both policies and related hunting practices to one term, one could oppose the Italian ‚moltiplicare' to the German ‚verbessern'. ‚Increasing' respectably ‚improving' at one and the same time meant the game and its hunters, thereby elucidating the socially related perception of nature.

The differences in the perception of the natural crisis and in the proposed measures of wildlife management and conservation will therefore be discussed and analysed as the result of differences in the social perception of nature in the two countries. The paper will show, that measures of wildlife management and conservation did not aim to all kinds of game in an equal way but, on the contrary, reflected socially constructed and historically changing ‚natural' orders and hierarchies. This is not only true for the distinction between the so-called ‚useful' game on the one hand and the ‚predators' on the other, but also for the ‚social' hierarchy inside the group of ‚useful' game. As an example, the paper will confront the „ennoblement" of the roebuck (that is its advancement to the big game) in Germany and the „ennoblement" of the pheasant in Italy at the beginning of the 20th Century and discuss the changing ‚natural' order as an result of socially selective perceptions and policies of game preservation in both countries.

TAUDAL POULSEN RENÉ
University of Southern Denmark

How large were the nineteenth century North Sea fish stocks?

This paper is situated within the field of marine environmental history. Based on historical methodology enriched with marine ecology, the paper will ask: How large were nineteenth century North Sea fish stocks? The paper will focus on a case study of the cod and ling stocks of the northern North Sea and Skagerrak in the 1870s and 1880s. The paper will present the methodology used to estimate historical fish stock abundances as well as results of the case study on the North Sea cod and ling stocks. I will argue that human extractions from the sea have severely depleted the North Sea ecosystem. The findings will not only be of relevance to historical evaluation of past marine ecosystems but also inform fisheries management of a baseline for rebuilding the marine ecosystem. This work is conceived within the History of Marine Animal Populations project of the Census of Marine Life.

TERWIEL BAAS
University of Hamburg, Germany

Property Rights in Siam 1700-1900

Among historians it is commonplace to describe pre-modern land-owning in Siam with the simple sentence: 'all land is owned by the king'. After all the very concept 'king' is in Thai cao phaen din 'lord of the surface of the earth'. In the sakdina-system almost all inhabitants were allocated ranks that were counted in units of land. The king's nominal ownership also provided

a justification for the state to levy tax on certain types of arable land. In practice, there was an oversupply of arable land and anyone could settle upon vacant land, plant a crop and continue to do so in perpetuity. In this contribution, traditional ideas about landed property are explored in ancient legal texts and in inscriptional sources. In the course of the 18th and 19th centuries, many now regions were opened up, in particular by Chinese immigrants. It is possible that the system of land-holding, traditionally designed for rice-land, caused many Chinese, particularly those opening up sugar plantations to abandon their plots immediately after harvesting so as to avoid taxation.

UHLÍØOVÁ LENKA;KLÍR TOMÁŠ
Charles University in Prague, Faculty of Science

Spatial-temporal analyses of landscape changes in Kosmonosy district (Central Bohemia)

The paper deals with spatial-temporal analysis of landscape changes in Kosmonosy district based on information gained from the early maps, aerial photos and archival written data about land utilization in the past.
For the analysis GIS technology was used as a convenient solution, because geographical information and GIS technology can facilitate historical inquiry. Historical GIS provides the tools to combine geography and history to study patterns of change over space and time.
A crucial issue of the work was the integration of the early maps into the GIS. Integrating the early maps into GIS to analyse the spatial information they contain, or layer them with other spatial data, requires that the maps must be scanned and georeferenced. It is almost impossible to perfectly align an early map to modern coordinate systems because old mapping methods often only very imprecisely represented scale, angle, distance, and direction. The oldest maps we used are county maps from the year 1741 that are accompanied by land registers. Later periods are represented by First and Second military mapping (1780 resp. 1850) and maps and registers of Stable cadastre (1842).
Despite of the difficulties, the early maps provide unique information on historical land utilisation structure. It pointed out also a picture of past stream and road systems. Interpreted information in combination with written archival sources (e.g. cadastral data, land registers, chronicles, etc.) pictures the historical landscape and its utilization by a man and provides worth data for landscape and nature conservation.

VEAL ROBYN
University of Sydney

Evidence for a Sustainable Market Supply of Wood Fuel in Pompeii c. 350BC to AD79: charcoal analysis of the Casa delle Vestali.

Charcoal analysis from one dwelling in Pompeii suggests the city had a sustainable wood fuel and charcoal supply from quite an early stage in its history. This papaer overviews ancient documentary sources on wood supply and charcoal production before examining the charcoal recovered from the excavations of the Casa delle Vestal;i from its modest beginnings c.350BC to its destruction in AD79. The dwelling, excavated 1995-2000 by the Anglo-American Project in Pompeii, forms part of ongoing excavations of an entire city block in Regio IV.i. taxa identified show strong selection of high calorific fuels throughout the 400 year time period. Tree rings suggest use of mostly small branches (less than seven years old) - providing some limited evidecne for coppicing. it is postulated that Pompeiian wood fuel timbers were grown predominantly in a managed montane environment some distance from the city either on Mt. Vesuvius, the Lattari Mountains and/or the Campanian Apennines.

VERSTEGEN WYBREN
Vrije Universiteit, Amsterdam

Thinking about sustainability: the reception of the Brundtland-report in the Netherlands (1987-89)

Sustainability as formulated in the Brundtland-report Our Common Future should not be considered as a timeless entity but as a compromise to reconsider three important issues at the time of publication: economic recession due to the oil crises of the seventies and eighties, poverty and the debt crisis in the Third World and the rise of environmental awareness during the same period due to publications such as The Limits to Growth, Blueprint for survival and the Global Report 2000. In environmental historiography the Brundtland-report has so far not been analysed in that way. The usefulness of 'sustainability' as a tool for environmental management seemed to be too self-evident. I will test whether this self-evidence holds up when confronted with discussions in the Netherlands about Our common future. The published reactions of four key political players, who dwelled at length on Our common future will be analysed:
The council for environmental protection (Centrale Raad voor Milieuhygiëne, CRMH)
The council for the protection of nature (Natuurbeschermingsraad)
The council for social and economic affairs (Sociaal-Economische Raad, SER)
A co-operation of six NGOs concerned with environment, peace and the Third World
The reactions of the four players will be interpreted with the following questions in mind:
To what extend did the actors consider the Brundtland-report as an adequate or even essential response to the perceived environmental, political and economic needs of the time?
Which recommendations were made and under which conditions could or should sustainability be brought into practice?
To what extent were opinions formed by the intense discussions about 'limits to growth' and related studies in the seventies?

Placing the Brundtland-report and the concept of 'sustainability' in its historical context might improve our understanding of the political and economic ideas and preconceptions behind (Dutch) environmental thinking.

VLASSOPOULOU CHLOÉ
University of Picardie Jules Verne

Automobile pollution: agenda denial vs agenda setting. The emergence of a new environmental problem in early 20th century France and Greece

The commercialisation of motor vehicles, in the beginning of the 20th century, was followed by a public debate on the harmfulness of car pollution. That debate did not take the same form in France and in Greece as the approach to the problem strongly depended upon the perception of this new means of transport within each social context.
Our contribution consists of revealing two very different processes of taking into account the external effects produced by car traffic. In Greece, the problem was very early defined as a field of public action and strict regulatory steps were taken. In France, on the other hand, public authorities constantly sought to avoid automobile pollution being officially identified as an issue to be dealt with by public agencies. Thus, we are faced with two very different situations - one of early agenda setting and one of agenda denial - which reveal a paradox: Greece reacted earlier to the new urban pollution problem despite the fact that its number of vehicles was definitely lower than that of France and that public health concerns were practically inexistent, unlike France were such concerns were placed at the centre of a welfare state.
An informed comparison between those countries allows for an explanation of this paradox. Greek public authorities were easily able to place the problem on the political agenda primarily because of the absence of a car industry in the country. In France, on the other hand, where the

motor industry constitutes a influential lobby, it is the image of the car as a source of progress (and not as a source of problems) that predominates. The presence of powerful economic interests seems indeed to have reduced the regulatory capacity of the French state, which chose to underplay this problem for over a century.

VON HELLERMAN PAULINE
School of Anthropology, University of Sussex

Making an 'abnormal' forest 'normal': The (failing) quest for sustainable forest management in colonial Nigeria

Forest management in Nigeria, as in the whole of the British Empire, was shaped by ideas and practices developed in colonial India, which in turn largely derived from German and French forestry. Underlying the different silvicultural methods and "working plans" developed was the fundamental belief that proper forest management depended on science, planning, control and order. In Nigeria, however, colonial foresters found themselves confronted with a rather difficult situation to master. Thus, hampered by limited resources, the Forest Department was struggling to actually implement any kind "scientific forestry" for much of the first half of the 20th century. Only after the Colonial Development Act of 1941 were enough resources available to develop proper "working plans", and to start large-scale forest regeneration programmes under the Tropical Shelterwood System (TSS). However it soon became apparent that both the design of working plans and the TSS were not only highly labour intensive and expensive, but also failing to bring about sustainable forest management. For although indeed rich in mahogany and other timbers at the onset of the colonial period, the forests of Southern Nigeria never regenerated as foresters expected or hoped them to. This was because these forests were actually the product of a long history of human habitation and, as is now becoming increasingly clear, of a much more turbulent climatic past then previously assumed. Interestingly enough, colonial foresters like "Timber" Thompson or later F. S. Collier themselves soon became aware of the significant role of past human cultivation in shaping the forest. Moreover, a number of foresters took an active amateur interest in the history of the area they were living in (for example Cyril Punch, Philip Allison and John Redhead). However, "history" was ignored when it came to developing proper forest management; the forest was merely described as "abnormal", and had to be made "normal", in order to bring about scientific and sustainable forest management.

Exploring these themes and contradictions, this paper argues not only that "scientific forestry" is inappropriate for the forests of Southern Nigeria, but also that "sustainability" itself is ultimately not a useful concept as it relies on ideas of perpetuity and timelessness, and denies "history".

VOX LISA
Emory University

How many future generations?: American Christians and Environmental Policy

Ronald Reagan's Secretary of Interior James Watt famously said in the early 1980s that the world might end soon (with the Second Coming of Jesus Christ), implying that ravages on the environment might not be that important in the long term. Since Watt's pronouncement in 1981 religion as a justification for environmental policy has emerged from both extremes in the United States. George W. Bush's recent policies such as withdrawing from the 1997 Kyoto treaty on greenhouse gas emissions and his emphasis of economic growth over environmental concerns suggests a return to the particularly hostile 1980s partisan bickering over the environment. Bush's stance as a born-again Christian appeals to the Religious Right, which is distrustful of any big government scheme, while Christian liberals have become more outspoken on the way in which pursuing a healthy environment can be a spiritual endeavor.

This paper argues that Watt's famous statement was only the beginning of two decades of U.S. Christians wrangling over the human relation to the environment with Christian teachings

providing the underpinning of the debate. With Bush in the White House, the Religious Right has gained a powerful ally in its assertion that, as the God of Genesis dictated, man has dominion over nature. Religious liberals, in turn, use Christian beliefs to bolster their arguments, attempting to similarly appeal to the Christian majority in the United States. These liberals, Al Gore for instance, have become more vehement that humanity must respect ""God's earth."" The impact of the insertion of Christianity into the environmental debate in the US is not yet clear, but it is an important trend that demonstrates a liberal unwillingness to cede the spiritual higher ground to the Religious Right on seemingly secular issues.

WARDELL D. ANDREW
University of Copenhagen,

Governing access to woodlands in Burkina Faso - Macro-politics and the benefits of non-compliance

Forest conservation measures introduced by francophone colonies in the Sudano-Sahelian region were distinguished by a particular preoccupation with regulating and controlling the production, transport, and marketing of wood fuels. A wood fuel filière (commodity chain) exhibits many distinctive features of Mamdani's bifurcated state, and it is suggested that a retrospective examination of the colonial state can illuminate the failure of a recent wood fuel 'development project'.

The paper traces the origins and evolution of state intervention in the wood fuels filière from the early colonial era, under the auspices of the federated Gouvernement Général de l'Afrique Occidentale Francaise, through the late colonial period to the new millenium. The article contextualises the application of early legislation and subsequent Code Forestiers (1935 and 1997) in a colonial backwater - Haute Volta (present-day Burkina Faso) - by exploring the critical rôles of the Service des Eaux et Forêts and other actors at different scales of governance, and in different eras. The paper adopts a 'studying through' approach to explore the dynamics of the interface between global and national perceptions, policies, plans and institutional responses to the wood fuel 'problem', and how these have been informed (or not) by local struggles over land and access to resources and markets in the politically marginal Lélé-speaking areas of Sanguié Province, Central West Region.

A case study is presented of an externally-funded programme in the 'Traditional Energy Sector' (RPTES) to illustrate how processes and institutions other than (but often mediated by) the state cut across scales and generate their own set of social, political and institutional conflicts. The paper suggests that recent (i.e. post-1981) responses to the wood fuel 'problem' have been accompanied by increased central government and line ministerial control which have strengthened the positions of both urban transporters of firewood (including several categories of grossistes militaires - military transporters), and global actors. These trends have hollowed out local resource users' participation and control in woodland management and sometimes weakened the positions of deconcentrated state structures.

WILSON DOLORES
University of Virginia

"Without Which The Forests Cannot Be Preserved": Magna Carta, Ecclesiastics, and Forest Sustainability

The Magna Carta issued by King John of England in 1215 contained four provisions related to Forest Law. The magnates had insisted on the forest provisions to free them from the royal forest system injustices, which had developed over the course of the twelfth century. Some of the northern lords quickly took advantage of the sweeping language of the Magna Carta to deforest swathes of land. A group of ecclesiastics, headed by the archbishops of Canterbury and Dublin, filed a letter of protest with King John. They declared that the intention of including the forest provisions in Magna Carta was not to abolish all customs of the forest, but only to rid the

country of gross injustices. In their words, the customs ""without which the forests cannot be preserved"" must be retained. In response, the forest provisions were extracted from Henry III's Magna Carta and became their own document, Forest Charter of 1217.
This paper will investigate the motives behind the ecclesiastical protest and their notions of forest sustainability in relation to English forest law. The English Church of the twelfth and early thirteenth centuries had grown heavily indebted to the Royal Forest system for daily provisions. They had obtained numerous concessions in almost every forest. They relied on the system of forest laws to guarantee their rights to firewood, timber, and grazing. For the church leaders, the presence of the forest law directly effected their ability to manage their environment and extract its resources. The English forest law was more than an administrative system built to levy fines and taxes; for the ecclesiastics, the forest system acted as a set of environmental laws that sustained resources for the long term.

YOUN YEO-CHANG
Seoul National University

Transitions into sustainable forestry in Korea

The Republic of Korea lies between Japan and China in East Asia. It has a total land area of 98,730 square km and a population of 47 million people. The forest area comprises 6.2 million ha. Korea has most unique achievement among all the nations in the world, when it is maintaining simultaneously as high forest cover as 63 % of the land area and a high population density of 471 inhabitants per square km. In just about all other countries increasing population density is decreasing forest area. GDP per capita was 15,090 USD (PPP) in 2001 and HDI 0.879, which ranked 30th among the 151 assessed countries. The life expectancy at birth in 2001 was assessed as 75.2 years. The Korean transition from deforestation to sustainable forestry is of utmost interest to study.

Since the end of the 1960s Korea became reforested in about 15 years. The growing stock of timber is continuously increasing.
Among the underlying factors of the increase in forest resources are strong and clear property rights, prevailing private ownership of forests, stable government,low corruption in forestry, low government and market failures, increasing income per capita, urbanization, decreasing population growth,increa-sing imports of forest products, effective forest and agricultural policies.
These factors have favored Korea from nearly totally deforested situation after the Korean war up to the contemporary high forest cover. Korea established four successive National Forestry Programs since 1961to complement the forestry laws and acts. Korean traditional culture also appreciates trees and forests as identified by the strong mountain spirit heritage, the location of the burial grounds and temples in the forests. The Arbor Day has palyed a respective socio-cultural role, as a pay holiday in April in order to mobilize all people to plant trees.
For most less developed countries a transition from deforestation to sustainable forest management will remain a distant dream. No socialistic forestry country in the world, where the majority of the forests are owned by the state, can be identified clearly on its way towards sustainable forest management. One conclusion is that an optimum mix of markets and policies is really needed for transitions to sustainable forest management.
How to transit from deforestation and forest degradation towards sustainable forest management (forest ecosystem management), or a kind of postindustrial forestry, is the hottest issue of the contemporary global forest politics. Korea is one country which can demonstrate an evolution, if not yet to postindustrial forestry, but how to transit from a preindustrial forestry to industrial forestry and the first steps towards postindustrial forestry.

YURCHENKO ALEXEI
European University at St. Petersburg

Humans, seals and diamonds: a case of collapse of the White Sea seal hunting

This paper discusses the history of conflict around the seal hunting in the White Sea since the early 1990s till 2004, when the hunting has collapsed.

The social aspect of the seal hunting was of its high importance for the local population of the White Sea coast being one of the few businesses giving people an opportunity to earn money.

In the early 1990s both Russian and international conservative organizations initiated movement for prohibition of the seal-calves hunting as a cruel to animals business and that became an ethic aspect of the "seal conflict".

In the late 1990s exploitation of diamond mines in the upstream of river Zimniaya Zolotitza by private enterprise started and thus an industrial pollution of the river began, where the villages - centers of the seal hunting are situated. Undoubtedly complaints by the local people about pollution made the enterprise authorities to wish the downstream villages and thus the seal hunting did not exist at all. Thus a strange situation appeared when the conservative organizations and enterprise that polluted a river coincided with their interests towards the seal hunting.

The conflict was settled however by the State in a very original way. In the year of 2003 the new law on using the natural resources was passed that did not prohibit the seal hunting, but made it unprofitable. And it seems to be the economical decision of the "seal conflict" as in the year of 2004 was no hunting for seals in the White Sea.

The aim of this paper is to investigate the conflict from the points of view of the all characters of this story: seals, local population, conservative organizations, diamond productive enterprise and the State.

ZELLER THOMAS
University of Maryland

Consuming Landscapes: Creating Landscapes for Tourism in the Germany and the United States, 1920-1970

For the 2005 ESEH conference, I propose to give a paper on "Consuming Landscapes: Creating Landscapes for Tourism in Germany and the United States, 1920-1970." The proposed talk stems from a larger book project examining the ideological, technological, and environmental preconditions, decisions, and consequences of the manufactured landscapes of parkways in Germany and the United States. In particular, I am studying the 750 kilometer-long Blue Ridge Parkway in Virginia and North Carolina in the USA and its German counterpart, the Deutsche Alpenstrasse, the German Alpine Road extending 450 kilometers on the northern mountain crest of the Alps. Both roads were built as tourist parkways starting in the 1930s to stimulate traffic and open up neglected tourist regions in the proximity of major population centers; and both presented particular versions of nature.

It is my goal to bring together the study of consumption and the study of environmental and technological change by analyzing the sculpted landscapes of the Blue Ridge Parkway and the Deutsche Alpenstrasse, and in the process shed light on a neglected aspect of the car tourism of the 20th century. These roads were created specifically for car drivers and passengers to enjoy scenic views from their cars without having to leave them. This scenery, however, was not a given, essentialist entity; it only became an experience through the selective efforts of civil engineers and landscape architects designing these roads. The paradoxical goal was to enable motorists to gain a new appreciation of nature, an escape from industrial society, while using cars, one of the main icons and means of consumerism in the 20th century. Rather than treating these roads as a brief interlude in the history of tourism, I ask why the first major environmental transformation of the car culture focused on sculpting roads in order to create pleasant vistas. The comparative angle of the project should enable me to overcome notions of "national styles"

and instead help to trace the parkway ideal of touristy nature as an international phenomenon indicative of larger changes in 20th-century Western societies.

ZELLJADT KATHERINE
Harvard University

Dig, Snapshot, Museum: Amateur Historians and their Activities in Turn-of-the-Century Berlin

This paper will examine and interpret some of the activities of the Berlin Historical Society (Verein für die Geschichte Berlins), an amateur organization founded in 1865 by a group of middle-class Berliners. In the late nineteenth and early twentieth century, the Society was the largest and most diverse amateur historical association in Germany's capital, meeting at least twice a month for lectures and discussions. On weekends, members scoured the city and the surrounding countryside for historic markers, participating in excavations or directing the establishment of memorials and monuments, archiving their work with photographs of important sites. Taken during a period of intense urban and regional re-organization, these photographs provide the only glimpses of many historic buildings in Berlin's soon-to-be-demolished city center. The cityscapes and landscapes provide a fascinating point-counterpoint of early preservation aesthetics, as well as insight into the use of ""modern"" technology to capture and collect historical data and collective memories. In contrast to today, amateur historians in turn-of-the-century Berlin did not draw a sharp distinction between natural and cultural historical artifacts, and the local history museum they created exhibited objects (particularly pre-historical objects) from both realms, eliding the notion of nature and culture. The paper will highlight the ways in which the amateur activities of the Berlin Historical Society shaped and transformed the public, cultural, and natural preservation movements in Germany before World War I.

POSTERS

ADELEGAN JOSEPH
University of Ibadan, Ibadan, Nigeria

The History of Pollution Control and Environmental Policy in sub-Saharan Africa (1900-2003): The Challenge for Sustainable Development

The discharge of wastewater into surface waters and the resultant deleterious changes in water ecology have been reported by several researchers in Africa (Law, 1980; Okoronkwo and Odeyemi, 1985; Odokuma and Okpokwasili, 1993) who also expressed concern over human health and the possible accumulation of human enteric pathogenic microorganisms by aquatic organisms.

Right from the inception of British Rule in the 1900s in Nigeria, the colonial economic development policies and plans contain little or no stringent rules to conserve the natural resources or to limit pollution. Later the 1979 Federal Constitution was centered on environmental hygiene. Thus the formative years of institutional environmental regulation in Nigeria could be said to have been characterized by the absence of clear scientific criteria and standards on toxic wastes and on pollution levels.

However, the discovery of an Italian ship in May 1988 of some imported toxic chemical wastes and the hostile media reaction hastened the creation of the Federal Environment Protection Agency by decree as part of the emerging coordinated approach to environmental issues.

So far, there are no clear formulated policies in Nigeria aimed at coordinating and monitoring the relationship between environmental management and sustainable development. This is in spite of all the efforts of the Federal Environmental Protection Agency. Presently, there are no

incentives for the adoption of pollution abatement measures and very few disincentives for polluting the environment.
A critical examination of environmental regulation and sustainable development principles in Nigeria shows that the nation need to integrate the principles of sustainable development into the country policies and programme in order to reverse the loss of environmental resources. However, if the adverse effects of pollution are to be mitigated in sub-Saharan Africa, there has to be a reform in the environmental policy and paradigm shift in the current pollution control regulation.

ALTUNBAS DERYA
Canakkale Onsekiz Mart University

An Ottoman village Cumalikizikin Turkey

Cumalikizikis a very old -550 years old-village near Bursa on the north west part of Turkey.I pointed out that the policy on the cultural and historical heritage of Turkey and its sustainability possibilty.Firstly defining the organisational structure of conservation decisions after than Cumalikizikvillage physical or typical architectural structures also. Difficulties beyond the survive of this village will give in the perspectives cultural and historical sustainability because of the very low income level, migrations to bigger settlements and very old population meanwhile expensive building restoration problems. At the end the solution proposals will explain for this village and the necessities in organisational changing for historical and cultural sustainability in Turkey.

ANDRIANTIATSAHOLINIAINA LUC AURELIEN
Technical University of Crete

Sustainability Assessment by Fuzzy Evaluation

Most existing methods of sustainability assessment use either pure economic or environmental criteria. However, it is widely accepted that sustainability should embrace both concepts. In our poster, we develop a model called Sustainability Assessment by Fuzzy Evaluation (SAFE), which provides a mechanism for measuring development sustainability and its history. The S.A.F.E. model encompasses environmental (land, water, air, and biodiversity) and human (economical, social, educational, and political) criteria that are treated individually and then combined with the aid of fuzzy logic to provide an overall measure of sustainability. The output of the model is a degree (%) of sustainability of the system under examination (locality, state, country, etc.) and comparisons can be made over different areas or times (months, years, decades, etc.). The model is open to new inputs as reality and experience change, and it weighs all inputs according to their impact.
Using commonly available indicators of sustainability, crisp measures of overall sustainability are derived. A number of selected economies are tested and respective degrees of sustainability are derived for the last two decades 1980's and 1990's. No country exceeded 50% of overall development sustainability due mainly to a bad condition of its environmental system.
Sensitivity analysis of the S.A.F.E. model permits to determine the evolution of sustainability variables subject to perturbations in the values of basic indicators. Thus, it allows the design of the system so as to achieve better sustainability. About eighty indicators are used and classified according to sensitivity as promoting, impeding, or having no effect on sustainability.
The SAFE model is expected to provide a new tool to track, to manage, and to predict, to some extent, the historical level of sustainability.

CUNFER GEOFF
Southwest Minnesota State University

Grassland Settlement: Land Use and Population in Kansas, 1860-1940

This poster describes a four-year interdisciplinary research project recently funded by the U.S. National Institute for Child Health and Human Development (NICHD). This new project is at the leading edge of environmental history research in its interdisciplinary research team, its empirical approach to questions of land use history, and in its application of GIS and multi-level statistical analysis to questions of past human interactions with nature. The project will investigate the interrelation between population structure, land use practices, and environment on an agricultural frontier, using the Kansas homesteading era as a laboratory. The research team is currently collecting detailed data about 2500 farms and farm families in Kansas. The database will eventually contain all variables from the population and agricultural censuses for each farmstead and family in 25 Kansas townships. Researchers will link population and land use data for individual farms, then follow those farms through 80 years of demographic and agricultural change. The team will create a historical GIS that can evaluate both spatial and temporal processes. The primary sources for the Grassland Settlement project are manuscript censuses of population and agriculture collected by the U.S. and Kansas state governments at roughly 5 year intervals. The research team includes historians, anthropologists, sociologists, biologists, and climate modelers. As the project progresses from 2003 through 2007 it will make available to all researchers a rich database tracing nearly a century of social and environmental change as Euro-American farmers imprinted a unique cultural signature onto the prairie landscape. This poster describes and illustrates the background, historical questions, methods, and sources of the project during its first two years.

CUVI NICOLÁS
Student at Universitat Autònoma de Barcelona

Environmentalism in twentieth-century Ecuador: the case of Misael Acosta Solís

The poster introduces the life and work of the geobotanist Misael Acosta Solís (1910-1994), as a leading figure of the environmentalism in Ecuador from 1935 onwards.

In his view, nature conservation was closely linked to its efficient management: wild forests were perceived as useful lands in economic terms. But at the same time, Acosta had a romantic vision of nature, praising the aesthetics of forests, plants and rivers. Conservation, preservation, mechanics and animism came often together in his discourses.
He was very dynamic in creating new institutions, environmental acts, ecological farms, publications, etc. But in spite of that, environmental ideas did not fertilize in Ecuador until the late 1950's. Embedded in a «developing» process, where restoring nature's entropy was not a priority, the prevention of environmental problems was not a central interest of Ecuador's governments at that time, and scientists' claims had only a very minor influence among political circles. For example, in 1937 Acosta led a demand for the official protection of the Galapagos, but it just gained political influence with the arrival of international commissions interested in the protection of the islands in the 1950s and 1960s. This has contributed to construct the idea that conservation and preservation were inexistent before the arrival of such commissions. Acosta's career shows how in countries such as Ecuador, before the «second wave» of environmentalism in the 1960s, the movement went further from the so called «environmentalism of the poor». And his activity in the international meetings shows how «peripheral» actors played a significant role in the international discussion of environmental problems that progressively shaped the environmental discourses of the 1960s and 1970s.

DEBRAS FRANÇOIS
INRA

Hedges : Evolution of their ecological functions and sustainable agriculture

Hedgerows have always shaped the European agricultural landscape. During centuries they have evolved and their changes often preceeded technological or sociological progress. For

example, the network windbreak of Provence (South of France) appeared at the beginning of the century after a change of cultivation (cereals towards market gardening). This change occured after digging irrigation channels and building railways, which allowed to quickly export agricultural products to cities. The hedgerow landscape changed with time and its role evolved from protecting cultivations against cattle to delimiting properties, then producing wood for furniture or heating and producing fruits. Nowdays big changes occured along with the mechanization and the intensification of agriculture and led to the eradication of thousands of kilometers of hedges every year.
In the 70's, the landscape and environmental preoccupations pointed out the advantages of banks and hedges and the consequences linked to their destruction showed some of their essential ecological functions. These functions: windbreak, hydraulics, fight against pollution, reservoir of biodiversity contribute to developping sustainable agriculture. At the same time the evolution of the knowledge on prey/predator relationships and the possibility of controlling pests by auxiliaries present in fields environment open a new way of using hedge diversity : pest regulator. However, we know little about hedge functioning and the exchanges of populations between hedges and cultivations. The work achieved here consisted in monitoring forficule (Forficula. auricularia L and Forficula pubescens L.) movements between a mixed-species hedge and a pear tree orchard to show in which way the hedge contributed to pest regulation.
If the hedgerow landscape and roles changed drastically these last decades they still remain a major element for the development of sustainable agriculture

ELLEDER LIBOR
Czech hydrometeorological institute Prague

Hydrological Reconstruction of Historical Floods - Potentialities and Pitfalls

The disastrous floods in the Czech Republic in 1997 and 2002 have obviously resulted in the attempts to compare these with the historical floods. Direct measurements providing us with needed records go back to 1825 in Prague and to 1851 in Czech catchments and to 1880 in Moravian catchments.
The above period, however, is apparently not long enough for full assessment of the recent 2002 flood evaluated as 500-year in Prague and even as 1000-year in the upper part of the Vltava catchment. For this reason it is neccessary to use for comparison also floods from hydrological early instrumental or even pre-instrumental periods. The indirect sources are the source of information and the invaluable comparing material for these periods. The flood marks are used for reconstruction of the peak discharges, transport time and the extent of the flooded area. The records on flooding of different buildings present an additional potent information source. In some cases, however, only the relative links between floods without the knowledge of the absolute flood levels are obtained.
The contribution focuses on the issue of using the indirect information sources for hydrological flood reconstruction and discusses the possibilities of their cross-verification in the Czech part of the Elbe catchment. Moreover it reconstructs several cases of historical floods in the Vltava and the Elbe catchments.

FIALOVÁ DANA
Charles University in Prague, Faculty of Science

Changes in recreational use of landscape in south hinterland of Prague (Czechia)

Urbanization processes deeply affect pattern and use of landscape in Czechia. Aside from material changes, there is also radical change in life style of the inhabitants and change in their value hierarchy. Expansion in leisure time activities and mainly in recreation is an integral part of the current life style. Civic inhabitants focus main part of their recreational activities in free landscape and change its pattern for purpose of their recreational requirements.

South hinterland of Prague has disposed of high recreational potential, predominantly natural. In the last 100 years significant changes have happened in this area pertinent to recreational use. The poster deals with analysis of processes, which document changes of landscape pattern, and familiarizes with circumstances that were causes of significant cumulation of recreational facilities (second households, summer houses etc.) and activities (scouting, tramping etc.) in this area and with future direction of the recreational use of landscape.

FLORES GUZMAN INES ROSARIO
CEPLAG, Universidad Mayor de San Simon

Vale un Potosi

The main purpose of this poster is to communicate a Potosi´s ecological history in its colonial era (in construction), which coincides with the period of silver excavation supported by the Spanish crown.

In the colonial epoch, the rich silver mines of Potosi were the main source of the capitalist development of Europe for more than two centuries. ´Vale un Potosi´was a common phrase that represented everything whose price could not be named. In the XVI century, Potosi, the most populated, most expensive (...) city of the world was born and created at the bottom of the mountain that emanated silver. This mountain, called ´Cerro Rico´swallowed people. Communities were left without men, which marched from everywhere into the doom of the mountain´s insides. The mountain was cold as ice on the outside, but on the inside, it was hell. From every ten workers that went into the mine, only three came out alive. Ironically, this condemned mine workers generated the fortune of the Flemish bankers, the Genovese and the German. These workers, this ´indios´were the ones that accumulated all the wealth, which transformed Europe into what Europe is. What happened though, Bolivia? A hollow mountain, and endless quantity of dead ´indios´killed by extenuation, and palaces sorrounded by ghosts. (E. Galeano).

This escenary of ecological destruction were maintained with:

- Forced labor (´mita´), that destroyed the original society,
- Silver enhancement techniques,
- A complex hydraulic system,
- Supported geography for the haulage of food and ´coca´.

The history of colonial Potosi has emphasized on richness, splendor and ultimately the waste of its society. We need it ecological history, for an ecological activity that impacted worldwide, that deeply interfered in the natural background with a cultural landscape organized for work, that was lost is deeply missed.

HAHN FRIEDEMANN
University of Freiburg

The Limits to Growth in Germany

Only a small step lies between apocalypse and sustainability: The 'Club of Rome' study ""The Limits to Growth"", which was published in 1972, serves as a basis for a global and forward-looking perception of environmental problems.

The 'Club of Rome' report started a wide and public discussion about the gaols of economic growths and its impacts on the earth as a whole in West Germany. This debate on ""The Limits to Growth"" did not take place in the mass media alone. Furthermore, certain parts of the public sphere like political parties, churches, and unions took part in an environmental discussion.

An analysis of theses suabltern public spheres concerning environmental perception and problems is still missing. To fill the gab, the 'Club of Rome' study serves as a central subject. Therefore, press articles as a basis for investigating the reactions to the report are not sufficient. The presented analysis includes newspapers, magazines, and other publications of these types of public sphere. The impact of the ""Limits to Growth"" on environmental consciousness and

environmental perception, and the range of themes, which followed the growth debate, will be analyzed.

Despite the fact that the main scientific criticism towards the report were its so called non scientific appearance and methods, the report was a controversial issue in public. The prognosis of the 'Club of Rome' did not come true at all. Also during the oil price crisis and the following economic recession the Club's thesis took a great deal in forming a public environmental consciousness in the western part of Germany.

HUENNIGER DOMINIK
University of Goettingen

PhD-Graduate School in Environmental History at Goettingen University, Germany

The poster aims at introducing a group of young scholars in environmental history working at the University of Göttingen (Germany) starting in July 2004.

The German Science Foundation has provided grant money for a research training group of 13 PhD-students collaborating in a postgraduate school in environmental history for so far 56 months (individual terms 3 years at the most). This is the first research training group of that kind in Germany and one encouraging example to support young scholars in environmental history.

The poster aims at introducing the group to the community of the ESEH and to give a brief outline on topics and scopes of the school.

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Inviting these scholars to present such a poster would provide the encouraging support that is pretty much needed from the community to stimulate the students and to make them feel welcome.

KISS ANDREA, CZINEGE ANETT, GRYNAEUS ANDRÁS
Department of Physical Geography and Geoinformatics, University of Szeged

Past land use on man-made terraces: an example from Northern Hungary

Up to the present terrace research in Hungary, on one side, has been mainly concentrated on archaeological and archaeobotanical investigations (e.g. the field-sytem survey of the deserted village of Sümeg-Sarvaly). On the other side, natural scientific investigations have been carried out studying the recent and historical conditions and secondary vegetation of deserted fields (former areas of vineculture) in a wider context (e.g. investigations in the Tokaj-Hegyalja region).

The present research on abandoned terraces took place in a by now mainly reforested area, in the neighbourhood of the town of Nagymaros, a late medieval oppidum close to the late medieval royal residence of Visegrád, where man-made terrace systems with stone hedges and water channels in good condition were found in several places. Our test area is a set of individual, but particularly well-preserved terrace-systems, where large stone hedges and water channels divided the former parcells. As in case of the majority of known historical terrace-systems in Hungary, this type of land management is typically connected to viniculture. Cultivation types can be followed in the area directly from the second half of the 18th century up to the early 1950s, however, indirect information is available already from late medieval times.

In the present study, on one hand, we display a reconstruction on historical land-use and vegetation changes based on old maps, visual representation and written material. On the other hand, as a result of field measurements, soil investigations as well as dendrochronological and -morphological survey, in certain cases a detailed overview can be provided on the former appearance and functioning of terraces located in the study area.

KOPPITZ ULRICH

University of Duesseldorf

A struggle for sustainability: salmon protection in the river Rhine (1800-2000)

In a so-called post-industrial period, when river pollution in central Europe is decreasing and commercial overfishing almost absurd, the key factor for salmon populations and aquatic life in general seems to be river habitat. Contemporaries in the 19th century, however, made several more stress factors responsible for the obvious decrease in salmon catches and introduced counter-measures against almost any of these threats to sustainability. This poster will discuss dangers perceived and protection strategies undertaken in comparison to the long-term development of salmon catches in the Rhine.

KRAUSMANN FRIDOLIN, GRÜNBÜHEL CLEMENS, SCHANDL HEINZ, FISCHER-KOWALSKI MARINA

IFF/Institue for Social Ecology

The transformation of societies natural relations. Changes in the social metabolism of Austria and the United Kingdom since 1800

How does systemic change in society-environment-relations occur and what processes shape the interaction between socio-economic activities and the natural environment, both historically and in the contemporary period? How are contemporary transformation processes in society's natural relations bound to past patterns of society-environment-relations and how might this influence future sustainability?

The poster presents conceptual issues and empirical results from an ongoing research project which proposes a biophysical paradigm to investigate historical aspects of society-nature interactions. We introduce the social metabolism approach to environmental history and empirically apply it to investigate the historical process of industrial transformation quantitatively in biophysical terms, as well as the concomitant changes in society's environmental relations, for two specific cases for the past two centuries: the United Kingdom (the pioneer of industrial transformation in the 18th and 19th Century) and the Austro-Hungarian Monarchy (one of the European late comers) respectively the succession countries Austria, Czech Republic and Hungary. Emphasis is put on the development of in land use, socio-economic energy and material flows and time use and the specific interrelations between these main biophysical domains of societies natural relations.

KRUGLIKOVA NINA

Herzen State Pedagogical University of Russia

Agents for Change towards Sustainability: an examination of environmental posters from a historical perspective

The proposed presentation aims at exploring posters in the social settings of their production and consumption within a sustainability context. Notably, not only has little been done specifically on environmental posters in this respect, but those concerned with visual material have been often confined to investigations of designed products in isolation with little or no attention to social processes.

The presentation intends to illustrate how environmental posters have advocated the ideas of sustainability from a historical perspective. It also looks at the constitutive role of their visual and verbal discourse with regard to sustainable development. It addresses the potentials and limitations of environmental posters in influencing public debate on various aspects of sustainability. Then it examines a diversity of environmental posters which have been produced by different social groups – government bodies, political parties, commercial enterprises and non-governmental organizations. This discloses those driving forces in society which were concerned with sustainability in their own way in different time periods.

The persuasive power of the posters can be achieved by a particular set of strategies of persuasion. The linguistic repertoire and visual depictions play their role in getting the message

across to the widest possible audience. The semiotic traditions alone fail to interpret signs where they are used to negotiate historically located tasks and struggles. No discourse exists in an ideological vacuum and considerations of socio-historical modalities with regard to environmental posters and sustainability can be viewed as foundational within this context. The investigated material demonstrates that economic, social and environmental values found in posters reflect different approaches to the principles of sustainability at different stages of societal development.

In addition to the semiotic analysis of rhetorical devices, the research is put into the broader context of social sciences based on the ideas developed in post-structuralism and the disciplines of science and technology studies, discourse analysis, works on ecolinguistics, visual sociology and visual culture studies.

LA PORTA NICOLA,
I.A.S.M.A.
TURRI DANIELA
Politecnico di Milano

Cupressus sempervirens in the Trentino's landscape: historical overview and future perspectives

This study presents the results of a landscape research on the common cypress (Cupressus sempervirens L.).
The study started from a database with a georeferenced inventory of both single individuals and groups of cypresses on the complete area of the Provincia Autonoma di Trento.
Moreover, several methodological approaches were integrated to analysed environmental and vegetational components peculiar of this species in the history of Southern Trentino's landscape: phytosociological survey was performed in closed cypress groups present in the area; analyses of vegetational belt database of Trentino; literature data present at the Civic Museum of Rovereto and Tridentinum Museum of Natural Science of Trento of Mediterranean flora.
In addition, was carried out an historical analysis in order to know when the cypress appeared in Trentino and to know how and in which way this plant was appreciated by the local people and by the visitors. To verify these points we investigated in photos collected from old archives as well as paintings and prints of Trentino's cities and landscape, land registers, and place names.
We observed how these species, into its proper vegetation area, is very important and significant for the Trentino landscape perception.
Finally, some guidelines are proposed for the conservation and the further diffusion of C. sempervirens, as landscape element in Trentino and in other suitable sites in North Italy.

PETIT-BERGHEM YVES
University of CAEN (France)

Agrarian Landscapes of the Cotentin (Normandy, France)in the XIX th and the XX th centuries

The peninsula of La Hague is located in the northern extremity of the Cotentin (Normandy). This Norman district is an Armorican piece of land where the landscapes can still appear very wild to many people. In fact, it is not the case in so far as the presence of a vast number of clues reveals the strong hold of man in this region.
In an attempt to apprehend this human factor, we have chosen two specific sites (two communes of the peninsula in the vicinity of the sea : Omonville-La-Rogue and Herqueville) that have the same overall structure but that are part of two different natural settings. We show that the agrarian landscapes evolve differently from a littoral to another, and in order to try to explain these divergences and these transformations, we choose to start from the old cadastres before describing the main contemporary evolutions that these landscapes have gone through.

Fragmented organizations according to the cadastral maps and variations in the use of the soil in Omonville–la-Rogue and Herqueville are examined from the registers of the ""États de section"" (according to the Napoleonic cadastre and its successive updatings in the first half of the XXth century). The end of this paper shows that large areas of the Cotentin are still covered with atlantic heaths. The writer studies the distribution of these heaths in regard the leading ecological factors. At first, characterictics of bioclimates and soils are evoked. Then, consequences of human activities are made clear to the mind because, for a long time, the heath formed the major basis of the whole agrarian system. Today, man again plays a preponderant action in the heaths birth, their localisation and their evolution.

SAIKKU MIKKO
University of Helsinki

This Delta, This Land: Natural Space and Cultural Place in the Yazoo-Mississippi Delta

The Yazoo-Mississippi Delta, the floodplain between the Yazoo and Mississippi Rivers in the northwestern corner of the present-day state of Mississippi, has experienced enormous environmental change since the Civil War. Agriculture, lumbering, and remaking of the floodplain hydrological system have transformed the landscape originally dominated by mature bottomland hardwood forest beyond recognition and resulted in irrevocable alteration of local ecology. The long-term environmental history of the Delta, however, emerges as immensely more complicated. Significant human impact on the Delta's natural environment goes back much further than the late nineteenth century, and shows remarkable fluctuation even during the last 150 years.

This poster identifies the most significant patterns of environmental change on the floodplain since the arrival of the first humans. Applying concepts originating from both the humanities and natural sciences, the poster establishes the Delta as a valid ecological complex, i.e., a natural entity with clearly definable borders, for the study of bioregional history. Beyond ecological parameters, bioregional history is constituted by the diversity of human cultures across both space and time. What were the natural preconditions for particular productive practices in the region, and how did those practices merge into their larger cultural environment?

The poster therefore aims to be a precise spatial application of Fernand Braudel's histoire de la longue durée: instead of making wide geographic generalizations in shallow time, deep time is analyzed in a single locality. Different ecohistorical formations on the floodplain are identified, and an ecohistorical periodization for the Yazoo-Mississippi Delta is presented.

SANTIAGO CABALLERO CARLOS
London School of Economics

Climatic change and Imperial Spain

Historians accept the influence of climate in specific historical events and very concrete chronological frameworks. However the fact that this influence can be maintained in time affecting not only to very specific units like armies, but to nations during decades and even centuries is not very clear.

The paper is an attempt to test the climatic theory, and to what extend the influence of climatic variability can be relevant or not over large regions in the long term. Imperial Spain has been selected as a case study, and a group of provinces as representative sample. The reason to cover Spain are clear, geographically is a country with huge extensions of marginal land, and historically the main power of the epoch. The chronological framework (1500-1700) was chosen to analyse the effects of the little ice age, a process of global cooling that affected all Europe. The methodology analyses the evolution of climatic variables such as temperatures and rainfalls, and match them with the progress of economic variables like population and agricultural production.The initial results suggest that climate may have been a relevant force in

order to explain the evolution of the seventeenth century crisis in Spain, especially during the last decade of the cinquecento and the first four of the seventeenth century. Agricultural production fell even in per capita levels that did not recover the intensity of the sixteenth century. At the same time the evolution of baptisms suggest that a profound demographic slump was suffered in all Spain until the 1640s, when the demographic paths diverge between central and peripheral provinces.

SCHÖNACH PAULA
University of Helsinki, Finland

Waste incineration and urban air pollution in postwar Helsinki

In the post-war period 1945-1983 the city of Helsinki faced a serious problem with the increasing amount of urban solid waste and its proper disposal. Dissatisfaction of various interest groups in the city with the different disposal technologies has labelled the historical development. Combustion of waste was considered as a hygienic and cost-effective method to manage urban waste and in the late 1940s and 1950s small in-situ incinerators were built around the city. One decade later a large incinerator was started. The attitudes of citizens towards incineration have altered during the years from extremely positive to absolute resistance. Incineration decreased the nuisances caused by alternative waste disposal methods, like landfills, but soon air pollution and health hazards caused by it became a topic of debate. The health authorities restricted the incineration case-specifically and with the closure of the large incinerator of Helsinki in 1983 the combustion of waste was completely abandoned as a technology to manage solid urban waste.

The poster discusses the historical development of incineration of waste in Helsinki during 1945-1983 and urban air pollution caused by it. Special attention is paid to the argumentation in the administration and in the public for and against incineration during different times of the period under study.

SINGH MONIKA
Oxfam GB

People-Forest Relationship

Tribal lifestyle has been shown to be either utopian or destructive in terms of conservation of natural resources. While making conservation policies, indigenous people have often been labeled as responsible of deforestation. The study presented is based on the researcher's experiences of living in interior areas of Gujarat and Madhya Pradesh State, India, where the Bhil tribes reside. The study illustrates people-forest relationship and their forest management systems, some of which have changed over a period of time. This is divided into two sections – the regular yearly cycle of ceremonies that is community based (and some that are individual based e.g. death and marriage); and the changes that have happened in recent years due to government forest policies.

Ancestor worship and worshiping gods that reside in some trees have ensured the protection of these trees despite orders of clear felling by the state authorities. The ceremonies themselves have an element of conservation of flora and fauna by ensuring the presence of certain species that regulate moisture and temperature of the region. In some cases restriction is endorsed for entire hillocks that have religious significance and very rich biodiversity. These practices have survived despite monetary temptations by outside agencies.

While the indigenous people are very possessive of their identity and culture, they have adopted those activities from state authorities that they were able to connect with their lifestyle and culture. The willingness to mould their cultural practices for the sake of conservation is clearly visible. Changes in practices of protection, housing materials, fuelwood and fodder collection are some indicators.

While designing conservation policies that will need to get implemented at the village level, it is very important for the state to recognize the already existing practices of the people in the region and strengthen those that have very high conservation significance.

SKOKANOVA HANA
Institute of Geography, Masaryk University Brno

Historical Changes of Lower Dyje River

This article concerns the monitoring, on the basis of historical and contemporary mapping, of changes and development of the Lower Dyje river channel and land use of its surrounding land during the last 200 years.

To this end maps from Stable cadastre, 3rd military survey maps, topographical maps from 1970s and 1990s and contemporary aerial photos were chosen for the monitoring.

In its lower reach the river Dyje flows through lowland, creating a wide alluvial plain where it meanders. Through this process incised meanders are created and these increase the diversity of the landscape. The situation before significant anthropogenic adjustments is represented by maps of Stable cadastre from the beginning of 19th century.

The more or less natural development of Lower Dyje River was disturbed by river engineering of the channel which started in the 1830s and culminated with complex river engineering works and the construction of Nove Mlyny dam between the 1960s and 1980s. The river engineering was motivated mainly by the need to protect a settlement on the banks of Lower Dyje river and its surrounding farmland against floods.

Natural meandering of the channel was precluded, meanders were cut off from the channel and new incised meanders were created. The construction of Nove Mlyny dam caused the ground water table to decrease which endangered the unique floodplain forests of the Morava and Dyje confluence. This situation was unsustainable and lead to revitalization of Lower Dyje River and it’s tributaries in 1990s; the result of which was improvement of alluvial plain hydrological conditions.