

Programme Book

Fourth Conference of the European Society of Environmental History

“Environmental Connections. Europe and the wider world”

Editors

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Colophon

Production and coordination

MCCM Meeting Management, Harmelen, the Netherlands

Value:

€ 10,--

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Welcome

The organisers of the Fourth Conference of the European Society for Environmental History welcome you to Amsterdam. The theme of the conference is 'Environmental Connections: Europe and the wider world.' It is hosted by the Faculty of Arts and the Faculty of Earth and Life Sciences of the Vrije Universiteit (VU University).

The ultimate question for our generation concerns the sustainability of human activities within the ecological carrying capacity of the earth. In the past this question emerged at a variety of spatial scales, from the largest to the smallest, but today it has become especially relevant on the global scale. Understanding the past is a prerequisite for facing the future. This applies to questions of sustainability even more than to many other subjects. Research in environmental history makes an important contribution to understanding the past by collecting and processing information about the complex relationship between humans and nature over an extended period of time. In this way, environmental historians can contribute to constructing new worldviews about the interactions between humans and nature in the past and the present. We hope to motivate educators, policy makers and entrepreneurs to devise attitudes, policies and forms of corporate responsibility capable of safeguarding both the future of our planet and us.

Environmental history is a small but lively field of study in the Netherlands. In particular the history of water management has a great tradition. The present interest in climate change (in this country, records are being broken continuously; we just had an extremely warm and dry spring), makes the future of our low-lying country a serious concern. Correspondingly, the study of historical sources that enable insights into the climate history of the last millennium is a flourishing field of study.

Since the first meeting in 2001, the ESEH conference has grown to be the international meeting place for all scholars working on the environmental history of Europe. For the present conference, we follow the basic layout of the earlier conferences. The keynote lecture is delivered by Jane Carruthers from the University of South-Africa, Pretoria. We host a Plenary Poster Session and in the Regional Session Dutch and Flemish scholars will present the latest developments in environmental history. The final day, Saturday, is reserved for field excursions. New elements in this conference are the Publishing Workshop on Wednesday, where editors of leading journals discuss their policies, and the Plenary Panel Session on Friday, featuring the panel chosen by the Scientific Committee as the best panel of the conference.

Finally, we want to thank all people who have contributed to the realisation of the conference. The Scientific Committee, the Advisory Board, the panel organisers, and those who provided technical assistance during the preparation all deserve our gratitude for their excellent work. Also we gratefully acknowledge the most generous support of our partners.

We wish you an inspiring meeting!

Petra van Dam

Karel Davids

Adrie de Kraker

Hans Renes

Wybren Verstegen

Organisation

Local Organising Committee (LOC)

Dr. Petra van Dam, Vrije Universiteit, Amsterdam, (head)
prof. dr. Karel Davids, Vrije Universiteit, Amsterdam (chair)
Dr. Adriaan de Kraker, Vrije Universiteit, Amsterdam
Dr. Hans Renes, Vrije Universiteit, Amsterdam/ Utrecht University, Utrecht
Dr. Wybren Versteegen, Vrije Universiteit, Amsterdam

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Prof. dr. Timo Myllyntaus, University of Turku, Finland
Dr. Richard Oram, University of Stirling, Schotland
Dr. Peter Szabo, Eotvos Lorand University, Budapest, Hungary
Prof. dr. Erik Thoen, Ghent University, Belgium

Advisory Board (AB)

Prof. dr. Jan Luiten van Zanden, International Institute of Social History (IISG)/ Utrecht University, Utrecht (chair)
Prof. dr. Jan Boersema, Vrije Universiteit (Vrije Universiteit, Amsterdam)
Prof. dr. Peter Boomgaard, Royal Netherlands Institute of Southeast Asian and Caribbean Studies (KITLV), Leiden
Prof. dr. Erik Thoen, Ghent University, Belgium
Prof. ir. Klaas van Egmond, Netherlands Environmental Assessment Agency (MNP), Bilthoven

Venue

The conference takes place at the Vrije Universiteit (VU University), Main Building, De Boelelaan 1105, Amsterdam.

How to get there

The VU is well accessible by local public transport. From the city centre, you can take:

- Tram 5, direction Amstelveen/Binnenhof. The stop “De Boelelaan/VU” is next to the VU Main Building. It takes some 25 minutes from Amsterdam Central Station.
- “Sneltram” 51 (combined metro/express tram), direction Amstelveen/Westwijk. The stop “De Boelelaan/VU” is next to the main building. It takes some 16 minutes from Amsterdam Central Station.
- Tram 16, direction VU Medisch Centrum. The stop “VU Medisch Centrum” is in front of the Vrije Universiteit’s Hospital, which is next to the university’s Main Building (a five minutes walk). It takes some 20 minutes from Amsterdam Central Station.

Your hotel service desk can advise you about the best connection from your hotel.

When arriving directly from Schiphol Airport, you take a direct train to Amsterdam Zuid WTC Train Station, and either walk to the main building (5-10 minutes) or use tram 5 or sneltram 51 (one stop, same directions as above).



Inside the building

The VU's conference facilities are located in the university's main building, De Boelelaan 1105, Amsterdam. To find your way inside the building, the following directions may be useful (see also the map of the main building on the next page):

- The registration/conference desk is on the ground floor, immediately to the right when entering the building through the main entrance. (The reception desk of the Vrije Universiteit is immediately to the left when entering the building through the main entrance).
- Plenary sessions are held in the university's Aula, having its entrance on the first floor, right above the registration desk.
- Parallel sessions are held in lecture rooms on various floors of the main building's A-wing.
- Lunches will be in the university restaurant, on the ground floor level and close to the conference desk.
- Coffee breaks take place in the lobby area on the first floor, right above the main entrance.

See the map of the building on the next page for further details.

Access to conference activities

The name badge that you receive upon registration entitles you to enter all session rooms and to enjoy complementary coffee and lunch services arranged for participants. We kindly ask you to wear the badge at all conference events. Additional vouchers or invitations should be shown for access to the Global Reception, the ESEH Awards Dinner and the field excursions. These will be included in the personal envelope that you receive upon registration.

Smoking

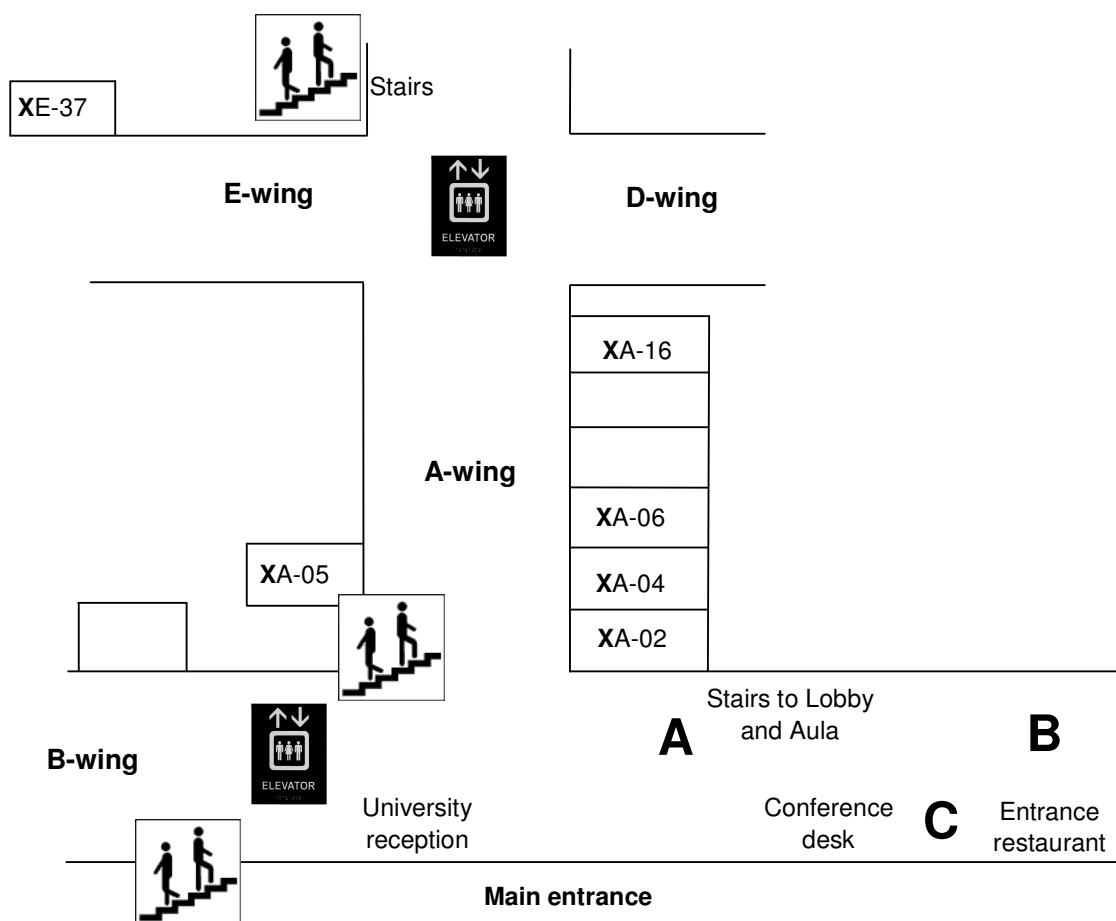
Smoking is prohibited in public buildings and public transportation. Smoking in the university, and on public transport stations, is allowed only in designated smoking areas, or outside the building.

Map of the building

Parallel sessions are held in rooms on several floors of the A-wing of the university's main building. These floors can be reached by the central elevators near the main entrance, by various (emergency) stairs, and by elevators and stairs halfway into the A-wing.

The room coding is such that, for example, room 2A-05 is room 05, on floor 2, of the A-wing. Floors are numbered such that the ground level is level 0.

The schematic map below shows the relevant locations on the ground floor level, and – using bold capitals to indicate locations – on higher levels of the main building.



LEGEND

- A**, first floor: Lobby (Coffee breaks and Posters)
- B**, first floor: Aula and Auditorium
- C**, basement: Copy shop and other shops
- X**: Rooms on floors. **X** means floors 1 and up

Social Programme

Welcome Reception (Tuesday, June 5, 17.30 – 18.30)

Lobby Area, Vrije Universiteit

All participants and their partners are welcome at the Welcome Reception. Free drinks and bites will be served.

Global Reception (Wednesday, June 6, 18.30 – 20.00)

Museum Restaurant Ekeko of the Royal Tropical Institute (KIT), Linnaeusstraat 2, Amsterdam

Restaurant Ekeko is part of the Royal Tropical Institute and can be reached from the VU by tram 5 to "Leidseplein", then change to tram 7 or 10 (stop: Mauritskade). Free drinks and small bites will be served.

All pre-registered participants are welcome to use the free boat transfer. Please come to the Registration desk at 17.00 hrs. for a guided walk to the boats.

Welcome Reception (Thursday, June 7, 18.15 – 19.15)

Foyer, City Hall (Stopera building), Amstel 1, Amsterdam

The City Hall is located in the city centre, next to the Waterlooplein and can be reached by trams no. 9 and 14, and all metro's except line 50. From the Vrije Universiteit, you best take 'sneltram' 51 direction Central Station, stop: Waterlooplein.

ESEH Awards Dinner (Friday, June 8, 19.00 – 22.00)

Artis Party Centre, Plantage Middenlaan 43, Amsterdam

Artis Party Centre is part of the Municipal Zoo and can be reached with trams no. 9 and 14, stop Plantage Kerklaan/Artis. From the VU you best take 'sneltram' 51 to Centaal Station, stop Waterlooplein and change to these trams

Field excursions

On Saturday, June 9, several excursions have been organized.

Participation in these excursions should have been booked when registering via the conference web page. A voucher will be included in the personal envelope that you receive upon registration; please remember to bring it along. Participants who have not registered but want to join an excursion may contact the registration desk to check availability. There is an additional, non-refundable fee of € 40,-- for participation in these excursions.

Excursion 1: Waning wetlands. The history of wetlands in North Holland.

Guided by Hans Renes

The bus for this excursion will depart on Saturday, June 9 at 09.00 hours in front of the VU Main Building and return at approx. 16.30 hrs. Lunch boxes will be provided in the bus.

The excursion will show how a wetland landscape was reclaimed for agriculture during the Middle Ages and has had drainage problems ever since. Especially subsidence of peat soils made continuous adaptations by society necessary. During some periods, the population changed their livelihood from agriculture to fishing and shipping; in other periods financial investments and technical innovations made a recovery of agriculture possible. With changing climate and rising sea levels, the future of these landscapes is again under discussion.

Excursion 2: Roaring rivers. The history of living along risky rivers.

Guided by Adriaan de Kraker

The bus for this excursion will depart on Saturday, June 9 at 09.00 hours in front of the VU Main Building and return at approx. 16.30 hrs. A seated lunch will be provided

The Dutch river area is located in the centre of the Netherlands and comprises three main rivers: Rhine, Waal and Meuse. The area has a northern boundary with ice-pushed ridges as far as Utrecht and a large peat area stretching out towards the North Sea. To the south-east there is a sandy landscape, which changes into a marine clay landscape to the southwest. This river landscape has a long settlement history, with highlights such as the Roman Limes and trade centres dating from the Viking age. Dike building started as early as the 12th century and several towns and strongholds were built at the period. Once the 'diking' started, people in the river area lived with the continuous hazard of flooding. This was the worse in the peaty western part of the area where a slow process of land subsiding took place.

Bicycle Tour

People taking part in the bicycle tour are requested to report at McBike- east, Central Station. South-side (not the IJwaterfront!) at 10.30 hrs. If you face the city with your back to the station, McBike is on your left, in front of the white wooden house of the Tourist Office.. Further instructions will be handed to you at the congress. You will make a tour by bicycle in Amsterdam, have a look at the dikes and sluices which protect harbour and city against flooding, visit old Dutch picturesque villages nearby and take a look at 'invasive species' in the ecologically interesting Flevopark. Experienced bikers only! Start: 10.30 h and return at approximately 16.30 h.

General Information

Opening hours conference/registration desk (ground floor, right of main entrance)

Tuesday, June 5: 10.00 – 18.00
Wednesday, June 6: 08.30 – 18.00
Thursday, June 7: 08.30 – 18.00
Friday, June 8: 08.30 – 18.00

Emergency contact

During the conference hours you can contact the conference desk. Phone: +31 (0)20 5985793.

Luggage storage

For participants travelling directly to or from the airport, there is a limited storage facility for their luggage behind the conference desk during conference hours. Please note that the organizers will not accept any liability whatsoever.

Congress assistants

There is a number of congress assistants ready to help delegates and to provide technical assistance in the session rooms. Congress assistants are easy to identify by their red badges.

Food and drink

All lunches, and drinks and bites during the morning and afternoon intervals, the Welcome reception, the Global Reception and the City Hall reception are included in the registration fee. Access is only guaranteed on condition you have signed up for these events.

The ESEH Awards Dinner is 100% organic. For the other food we strive to have a large share organic and there will be a good choice for vegetarians.

If you want to host an (informal) business meeting during lunches or so of any sort, contact us so we can reserve a room.

University Restaurant

The VU-University has a large *mensa* (catering for faculty and students) with a broad array of wholesome food at low prices (including vegetarian choices, but not organic), situated in the basement. Simple dishes like pasta and sauce are available from € 3,50 onwards.

Opening hours: 10.00 – 19.00, but hot food is only served at midday and after 17.00.

Books Exhibition

For delegates it will be possible to display books, journals and other published material in the Foyer. Although this facility will be guarded, the conference organisation takes no liability.

Internet

Computers with an internet connection will be available for delegates in Room 10A-02 of the Main Building (in the A-wing on the 10th floor). The room will be open from Tuesday – Friday from 09.00 – 17.00 hrs. To get access to the network, a login name and password are required, which will be included in your registration pack. Printing on these computers is not possible. You are advised to download files on a USBstick and print it in the photocopying and printing centre in the basement of the University. The number of available computers is finite. Etiquette stipulates that in case of a queue, a user will not keep a computer occupied for more than 30 minutes. In case of technical problems, please consult one of the congress assistants. Please be informed that eating and drinking are not allowed in this room.

Photocopying and printing

Photocopying and printing facilities are available during office hours in the basement of the University's Main Building (below the main entrance). Copy cards can be purchased at the Main Building's reception desk, immediately to the left of the main entrance upon entering the building. A card valid for 50 copies costs € 2,50, for 120 copies € 6,00. The photocopying and printing centre is open 08.00 - 16.30 h daily.

Cash dispenser:

A cash dispenser is located at the outside of the main building on your left hand side (leaving the building through the main entrance).

Public transport

The personal envelope that you receive upon registration contains a public transport pass. Please stamp this pass the first time you use it (in the yellow stamp machine inside the tram, on the platform, or with the bus driver). After stamping, you can make unlimited use of trams, buses, metro's and night buses in the city of Amsterdam for a period of 96 hours.

Taxis

Taxis can be ordered at the university's reception desk, immediately left to the main entrance of the Main Building. The reception staff are the only persons allowed to order a taxi for the Vrije Universiteit campus.

Prizes

ESEH Best Article Award

This is a biannual prize, awarded by the ESEH for the best article in environmental history published in the last two years. A special prize committee selects the article, this year chaired by Christof Mauch, Director of the German Institute in Washington, D.C., USA. The prize is sponsored by the German Institute.

Conference City Panel Award

The Amsterdam Local Organizing Committee has founded a new prize. The Conference City Panel Award is given to the best panel of the conference, selected by the Scientific Committee on the basis of the abstracts. The prize is sponsored by the Stichting Professor Van Winter Fonds. This foundation is one of the main sponsors of this conference and provided also funding for Educational Grants. The LOC hopes that the next host will maintain the initiative.

Session information

Presentation technology

A lap-top and beamer will be available in each room for presentations. Our default assumption is that you will use these for your PowerPoint presentation, which you can bring along on diskette, CD-ROM or USB memory device (risk averse individuals bring along at least two of these). To avoid the loss of time, hooking up of personal lap-tops is discouraged. Presenters are invited to the room at least 15 minutes prior to the start of the session, so that presentations can be copied onto the lap-top before the session starts. Please avoid the use of file names like eseh.ppt, as this may replace your colleagues' presentations. Our congress assistants will be happy to assist in case of technical difficulties. If you wish to use traditional overhead slides, please inform us beforehand so that we can arrange an overhead projector.

Chairs

Chairs are invited to come to the room 10 minutes prior to the start of the session. They introduce the session and the speakers, make sure that the time available is divided equally over the papers to be presented, and chair the discussion with the floor following the presentation.

Posters

Posters are displayed at boards in the foyer. Poster presenters are advised to stay with their posters during all morning and afternoon breaks. On Tuesday all poster presenters are expected to present their poster in the Plenary Poster session in the Aula, for some 2 minutes each, with the aid of a Powerpoint slide as was handed over to the organiser, Wybren Versteegen, in advance of the conference.

ESEH/Publishing Workshop (Wednesday, June 6, 11.00 – 13.00, Auditorium)

This session is open to all but if scarcity of room will appear, preference is given to young and starting scholars. This session is followed by half an hour of drinks in order to facilitate young scholars to discuss with the editors of the journals present. The session is sponsored by the N.W. Posthumus Research School for Economic and Social History.

Full Programme

Tuesday, June 5, 2007		Room
10.00 – 18.00	Registration Desk open	
10.00 – 12.30	ESEH Board Meeting	7A-09
12.30 – 13.00	Break	Lobby
13.00 – 14.30	Opening Session <i>Chair: Karel Davids</i>	Aula
13.00 – 13.20	Welcome by representatives of the Vrije Universiteit, and by Petra van Dam, on behalf of the Local Organizing Committee	
13.20 – 13.40	How worldviews explain environmental problems; <i>Prof ir. Klaas van Egmond, Environmental Assessment Agency, The Netherlands</i>	
13.40 – 14.30	Environmental history: Revitalising connection, context and coherence in historical studies; <i>Prof. Jane Carruthers, University of South Africa, Pretoria</i>	
14.30 – 15.00	Break	Lobby
15.00 – 16.30	Parallel Session 1	
Session 1.1	Animal connections: Europe and the world's fauna <i>Chair: D. Brant</i> <i>Organizer: E.P. Russell</i>	2A-06
O051	From genesis to genetics: The evolution of ideas about origins of dogs and dog breeds in Britain and the USA; <i>E.P. Russell</i>	
O052	Over here (or ecological imperialism in reverse?) American animals in Britain; <i>P.A. Coates</i>	
O058	"Correcting a blunder by a crime": Animals and acclimatization in New Zealand; <i>G. Wynn</i>	
Session 1.2	Archival sources on climate in the Middle Ages and Early Modern Times (1): Problems and prospects. <i>Chair: A. de Kraker</i> <i>Organizer: C. Rohr</i>	8A-04
O240	The bridge master accounts of Wels (Upper Austria) as a source for the reconstruction of floods (1441-1599); <i>C. Rohr</i>	
O241	Ship's logbooks as a source of historical climate data (1650 – 1850); <i>D. Wheeler</i>	
O243	From visual daily weather records to early instrumental meteorological observations: Tools for the study of past climates in Czech lands; <i>P. Dobrovolný, R. Brazdil, L. Reznickova</i>	
Session 1.3	Diffusion and comparison of different environmental model <i>Chair: B. Herrmann</i> <i>Organizer: SC/LOC</i>	10A-05
O121	Between pollution and Wasserverschmutzung: Transfers of scientific knowledge and management practices in the Franco-German borderland (1870 – 1925); <i>R. Garcier</i>	
O191	The diffusion of an environmental model. French wetlands and Netherlanders in the 17 th century; <i>R.M. Morera</i>	
O277	A comparison of water management schemes in pre-20 th century American and Chinese societies; <i>Y. Gao</i>	
Session 1.4	International perspectives on Russian environmental thought and practice <i>Chair: J.D. Oldfield</i> <i>Organizer: D. Moon.</i>	2A-05
O117	The landscape concept in Russian environmental thought – the international context; <i>D.J.B. Shaw</i>	
O118	Conceptual underpinnings of UNESCO's Man and Biosphere Programme (MAB): the role of the USSR; <i>J.D. Oldfield</i>	
O119	Concern over the exhaustion of fish resources: Russian attitudes in international perspectives, 1850s - 1930s; <i>J. Lajus</i>	

Session 1.5	Civilizing nature: The global transfer of the National Park Idea <i>Chair: C. Mauch</i> <i>Organizer: P. Kupper</i>	4A-04
O075	Transatlantic relations: Europeanizing national parks; <i>P. Kupper</i>	
O076	African connections: National parks and wildlife reservation in German history; <i>B. Gissibl</i>	
O077	Framing the heritage of mankind: National parks and global reserves on the international agenda; <i>A.K. Wöbse</i>	
Session 1.6	Land-use patterns and representations of landscape: European and North American perspectives <i>Chair: V. Winiwarter</i> <i>Organizer: S. Castonguay</i>	8A-05
O161	The development of the Viennese Lobau since the 18 th century. The historical basis for an urban alluvial floodplain national park; <i>G. Haidvogel</i>	
O211	Reconstructing reforestation: Changing land use pattern along the Saint-Francois river in the eastern township of Quebec; <i>S. Castonguay, D. Saint-Laurent</i>	
O212	Reforestation in an urban landscape: Changes in canopy cover in Ottawa (Canada) 1927-1967; <i>J.E. Dean</i>	
Session 1.7	Resources, trade and industry <i>Chair: B. Verkuyse</i> <i>Organizer: SC/LOC</i>	10A-04
O230	Linking natural resources and environmental technologies: International timber and Dutch local-scale water management (1650-1800); <i>S. Zeischka</i>	
O192	New Zealand: Trade and environment of an antipodean settler's colony; <i>M. Gradwohl</i>	
O160	Early birds and latecomers: Foreign trade, industrialization and the environment in the United Kingdom and Austria 1800-2000; <i>S. Gingrich, F. Krausmann, H. Schandl</i>	
16.30 – 17.30	Plenary Poster Session <i>Chair: S.W. Verstegen</i>	Aula
P044	Bone remains of horses in the culinary residues found in the excavations of medieval towns of Belarus; <i>N. Aleksandrovich</i>	
P104	Urban sanitation services in late medieval Europe; <i>D.M. Joergensen</i>	
P110	Railway revival as the most ecological mode of transport; <i>A. Dzhalava-Chonkova</i>	
P122	The evidence of climate change in bogs and other palaeo-environmental records: a comparison; <i>Ü. Sillasoo</i>	
P141	Integrating geology, culture and historical environment or how to reevaluate the Dutch colonial fortress Nieuw Amsterdam within its physical and historical context; <i>W.P. Pauw</i>	
P150	Reconstruction of climate base on historical data of growing grapevine in Czech Republic; <i>P. Zahradnický, R. Brázdil</i>	
P152	Reconstructing disappeared landscapes of wet areas. Problems and new possibilities applied to a test area in western Flanders in the Flemish coastal plain; <i>N. Vanslebrouck, A. Lehouck, E. Thoen, J. Vervloet</i>	
P184	Unusual migration patterns of Arctic marine mammals in the coastal waters of the North Atlantic from the early 19 th century; <i>Y. Alekseeva</i>	
P218	Modernisation of agriculture and its consequences for the landscape in the canton of Berne (1750-1880); <i>D. Salzmann, C. Pfister, M. Bürgi, M. Stuber</i>	
P235	Environmental factors in the process of land and water management in coastal plains; <i>A. Verkuyse</i>	
P247	Linking the local to the global: Scientific networks in the global sugar economy, 1920-1940; <i>F. Björk</i>	
P288	The history of remnant woods in south-western Slovakia in re to plant species diversity; <i>J. Ružičková</i>	
P290	Landscape heterogeneity through dimensions and arising of self-similar fractals in land-use pattern; <i>P. Mares</i>	
P291	Preindustrial cultural landscape of Czechia shown on the examples of three cadastres – Horní Stakory, Bystřice and Živohošť; <i>L. Uhlířová</i>	
P292	Regional differentiation of land use changes in Czechia 1845–2000 and its environmental consequences: Case study peripheral regions; <i>V. Jancák</i>	
P298	The river Vltava in changes of time; <i>D. Fialová, T. Hudeček, P. Chromý, M. Marada</i>	
17.30 – 18.30	Welcome Reception	Lobby
19.00 – 21.00	Environment & History, Editorial Board meeting	12A-11

Wednesday, June 6, 2007		Room
08.30 – 18.00	Registration Desk open	
09.00 – 10.30	Parallel Session 2	
Session 2.1	Animal crossings in the modern era: How livestock imported into Europe, the United States and Brazil challenged the cultural order <i>Chair: E. Stoykovich</i> <i>Organizer: G. Wynn</i>	2A-06
O100	European animals in America: How British and European agriculture influenced the American farmer, 1783-1859; <i>E. Stoykovich</i>	
O101	The ethnocentric steer: Perceptions and obsessions in the introduction of European livestock science into Brazilian tropical cattle ranching, c.1880-1950; <i>R. Wilcox</i>	
O102	The Chinese pig in Europe: The making of the modern pig in 17 th century Europe; <i>S. White</i> .	
Session 2.2	Archival sources for climate in Middle Ages and Early Modern times (2): Weather extremes <i>Chair: D. Wheeler</i> <i>Organizer: C. Rohr</i>	8A-04
O244	Weather anomalies and extremes in late-medieval Hungary: The role of written evidence; <i>A. Kiss</i>	
O245	History of droughts in the Czech Republic from documentary sources; <i>R. Brázdil, M. Trnka</i>	
O246	From a scourge of God to an insurable risk: The background of German hail storm insurance; <i>F. Oberholzner</i>	
Session 2.3	Water problems and social implications <i>Chair: S. Ciriaco</i> <i>Organizer: SC/LOC</i>	10A-05
O220	People who managed water. A comparative study into conflict analysis about water management practices in Holland and Flanders in the Middle Ages and the 16 th century; <i>C.G.D. de Wilt</i>	
O087	Transient islands: Early-modern attitudes toward a radically unstable environment (River Rhône, 17 th -18 th centuries); <i>P.C. Reynard</i>	
O050	Colonial exchanges of irrigation knowledge and technology; <i>M.W. Ertsen</i>	
Session 2.4	Conservation and countryside: Biodiversity in the 'Neo Europes' of South Africa, Australia and the United States <i>Chair: S. Soerlin</i> <i>Organizer: L. Robin</i>	2A-05
O136	Biodiversity and production: Converging ideas for Australian conservation; <i>L. Robin</i>	
O137	'Keep it simple, keep it wild': European and settler influences on wildlife and environmental management in South Africa 1900-1940; <i>J. Carruthers</i>	
O138	Losing Hemlocks: The historical nature of New York's urban forest; <i>B. Hains</i>	
Session 2.5	National park development <i>Chair: N. Orsillo</i> <i>Organizer: SC/LOC</i>	4A-04
O135	Lithuanian protected areas; <i>A. Klimiene</i>	
O190	Modes of conservationist knowledge transfer in Southern Africa 1900-50; <i>V.C. Kwashirai</i>	
O285	An American view of Czech national parks and history; <i>G.B. Blank</i>	
Session 2.6	The environmental impact of post-war reconstructions: France, Hungary and Italy after 1945 <i>Chair: A. Dix</i> <i>Organizer: W. Graf von Hardenberg</i>	10A-04
O172	Reconstructing the forest, reconstructing the nation: Restoring the environment in post-1945 France; <i>C.J. Pearson</i>	
O006	The politization of water in central-east Europe during the cold war; <i>V. Pal</i>	
O127	Environmental policies in post-war Italy between reconstruction and economic boom; <i>W. Graf von Hardenberg</i>	

Session 2.7	Places apart? Polar environmental history <i>Chair: K. Oslund</i> <i>Organizer: K. Oslund</i>	1A-05
O167	Homeland or wilderness: Danish conceptions of Greenland and its inhabitants, 1721-1925; <i>K. Oslund</i>	
O168	Terra incognita-investigating the unknown southern environment during the first German Antarctic expedition (1901-1903); <i>K.D. Oslund presenting for C. Luedecke</i>	
O169	Shirase's Antarctic laboratory: The Japanese expedition of 1910-1912 and the testing of the nation; <i>W. Stevenson</i>	
10.30 – 11.00	Break	Lobby
11.00 – 12.30	Parallel Session 3	
Session 3.1	Animal conquests: Reproducing natures and economics in 19th century Europe and North America <i>Chair: G. Wynn</i> <i>Organizer: M. Wise</i>	2A-06
O181	The internationalization of domestic swine: Big pig breeding in the 19 th century Atlantic world; <i>N. Mink</i>	
O182	Europeans on the American great plains: Mormons, nature, and the overland trail; <i>N. Prendergast</i>	
O183	Wolves and whiskey: Economy, ecology and predation in the whoop-up country; <i>M.D. Wise</i>	
Session 3.2	Archival sources for climate in Middle Ages and Early Modern times (3): The long term <i>Chair: R. Brazdil</i> <i>Organizer: C. Rohr</i>	8A-04
O248	Italian documentary sources for past climate reconstruction: Winters in the Po Valley during the last millennium; <i>M. Sghedoni, S. Enzi, D. Camuffo</i>	
O251	English climate from the 13 th to the 15 th centuries; <i>K. Pribyl, C. Pfister</i>	
O253	The Stockholm temperature series reconstructed back half a millennium by use of proxy data; <i>L. Leijonhufvud</i>	
Session 3.3	Water and development in mountain agriculture <i>Chair: D. Crook</i> <i>Organizer: D. Crook</i>	10A-05
O163	Fertilization techniques and plant production in montane environments of France and French speaking Switzerland during the 18 th and 19 th centuries; <i>J. Girel, D. Crook</i>	
O165	Pre-Hispanic terraced farming in the central Andes and climate change: Past lessons and future responses; <i>A. Kendall</i>	
O166	Observations on the late-Ming-Dynasty hydraulic organization of the Puyang River in the mountains of southern Zhejiang Province, China; <i>M. Elvin</i>	
Session 3.4	ESEH Posthumus Publishing workshop <i>Chair: M. 't Hart</i> <i>Organizer: P.J.E.M. van Dam</i>	Auditorium
	Environment and History; <i>G. Endfield</i> Environmental History; <i>E. Russell</i> Journal of Global history; <i>P. Vries</i> Global Environment; <i>M. Agnoletti</i>	
	<i>Followed by drinks with the editors until 13.00 hours.</i>	
Session 3.5	Nature preservation and conservation: Origins and Ideas <i>Chair: S. Zeischka</i> <i>Organizer: SC/LOC</i>	4A-04
O086	Romanticism and early nature preservation in Central Europe – from ideas to the first nature sanctuaries; <i>K. Stribal</i>	
O109	The international congress on the preservation of landscapes, 1909; <i>C.F. Mathis</i>	
O186	Nature protection and conservation in former Belgian Congo: From ideas to colonial practices (1885-1960); <i>P. Van Schuylenbergh</i>	

Session 3.6	Disconnected spaces: How military strategies influenced the development of forests in 19th and 20th century <i>Chair: R. Tucker</i> <i>Organizer: B. Grewe</i>	10A-04
O304	Autarchy, wood and science - the second world war, forestry and the upswing of the forest and wood sciences in Germany; <i>M. Bemman</i>	
O305	Footprints of war: Military impacts on the borderland between France and Germany; <i>B.S. Grewe</i>	
O216	The 'Dog-in-the-Manger': Forests and forestry in the Ottoman empire, 1850-1910; <i>S. Dursun</i>	
Session 3.7	Recycling in the global market place <i>Chair: F.A. Joergensen</i> <i>Organizer: F.A. Joergensen</i>	1A-05
O078	Teaching consumers to recycle: Approaches to aluminum can recycling in Norway and the US; <i>F.A. Joergensen</i>	
O080	Recycling and modernity: Waste and the politics of environment; <i>T. Cooper</i>	
12.30 – 14.00	Lunch WCEH 2009 program committee lunch meeting (table reserved)	Restaurant
14.00 – 15.30	Regional sessions on the environmental history of the Low Countries, part 1	
Regional 1 (part 1)	Eat or to be eaten. The history of food processing <i>Chair: J.M. van Winter</i> <i>Organizer: S.W. Verstegen</i>	Auditorium
	Introduction; <i>J.M. van Winter</i>	
O314	Production and consumption of vegetables in Belgium, 1850-1910; <i>Y. Segers</i>	
O313	Food and fraud in Brussels, 19 th century; <i>P. Scholliers</i>	
	Examples of historical films on food production (30 min.): 'Pork Plaza' (2000) and 'Charcuterie mécanique' (1895)	
Regional 2 (part 1)	Warm, wet and windy? Sources for climate history <i>Chair: E. Thoen</i> <i>Organizer: A.M.J. de Kraker</i>	4A-05
O320	A millennium of weather, winds and water in the low countries, a reconstruction on a seasonal base on high resolution records; <i>A.F.V. van Engelen</i>	
O321	Stormy weather in the Low Countries: Results and perspectives; <i>A.M.J. de Kraker</i>	
O310	Climate change and the safety of The Netherlands; <i>L.M. Bouwer</i>	
Regional 3 (part 1)	Free or not free. Autonomy of water boards <i>Chair: J.L. van Zanden</i> <i>Organizer: M. van Tielhof</i>	6A-05
O309	Peasants versus elites. On the medieval origins of water boards in Flanders; <i>T.E.G. Soens</i>	
O308	Explaining varieties. Autonomy of water boards in Holland (1300-1800); <i>M. van Tielhof</i>	
O307	Respected institutions or wracks? Dutch water boards in the early 19 th century; <i>H.C. Toussaint</i>	
15.30 – 16.00	Break	Lobby
16.00 – 17.00	Regional sessions on the environmental history of the Low Countries, part 2	
Regional 1 (part 2)	Eat or to be eaten. The history of food processing <i>Chair: J.M. van Winter</i> <i>Organizer: S.W. Verstegen</i>	Auditorium
O312	Adapting pigs into mass production: Development of intensive pig breeding in the 20 th century; <i>P. Koolmees</i>	
O311	Genetically modified potatoes; <i>E. Jacobsen, R.C.B. Hutten</i>	
	Discussion	

**Regional 2
(part 2)**

Warm, wet and windy? Sources for climate history

Chair: E. Thoen

Organizer: A.M.J. de Kraker

Reconstruction of precipitation and vegetation by using carbon and oxygen isotopes of carbonate of land snakes; *K. Beets*

On site demonstration: VU Centre on climate research (corals) and climate impact

**Regional 3
(part 2)**

Free or not free. Autonomy of water boards

Chair: J.L. van Zanden

Organizer: M. van Tielhof

On site demonstration of water policies: Water Board (Hoogheemraadschap) of Amstel-Gooi-Vecht, Amsterdam, followed by boat transfer for session participants from the Water Board building to the Royal Tropical Institute.

17.30 – 18.30

Boat trip to the Royal Tropical Institute (voucher required)

Partner: Nederlandse Waterschapsbank

18.30 – 20.00

Global reception at the Royal Tropical Institute (voucher required)

Thursday, June 7, 2007		Room
08.30 – 18.00	Registration Desk open	
09.00 – 10.30	Parallel Session 4	
Session 4.1	Culicoides, Tsetse flies and Mosquitoes: Entomological barriers to conquest and agriculture colonization in South Africa and East Asia <i>Chair: J. McNeill</i> <i>Organizer: K. Brown</i>	2A-06
	O145 African horsesickness – an entomological challenge for a European animal in the Cape Colony; <i>C. Andreas</i>	
	O146 The ecological and chemical campaign against livestock trypanosomosis in Zululand 1896-2000; <i>K. Brown</i>	
	O147 Filariasis: the unexpected enemy in the South Pacific theatre, 1941-1945; <i>K. Fox</i> .	
Session 4.2	Climate and environmental changes <i>Chair: C. Pfister</i> <i>Organizer: SC/LOC.</i>	8A-04
	O012 The crisis of the Indus river system and desertification in the Indian sub-continent during the early medieval period; <i>G.L. Devra</i>	
	O066 Influence that the 'Little Ice Age' had on people and their environment in the three-border region 'Triplex Confinium' (the Ottoman Empire, the Habsburg Empire, and the Republic of Venice); <i>H. Petric</i>	
	O134 August Krogh and climate change, or how to forget an inconvenient truth; <i>T. Kjærgaard</i>	
Session 4.3	Water resources and rivers <i>Chair: V. Winiwarter</i> <i>Organizer: SC/LOC</i>	10A-05
	O024 Enlightenment rivers and African water cycles: Encounters between European and Neo-European river management and the African continent, 1625-2005; <i>K.B. Showers</i>	
	O214 The history and the current status of integrated water resources management; <i>F. Mukhtarov</i>	
	O284 Development of the water supply system and its environmental impacts in North-Central Namibia; <i>H.O. Siiskonen</i>	
Session 4.4	Ideas and movements in environmental history <i>Chair: L. Jelecek</i> <i>Organizer: SC/LOC</i>	2A-05
	O250 Sustainability and cultural critique in the intentional communities movement; <i>J. Lockyer</i>	
	O254 The natural and artificial seasons in late medieval law; <i>T.G. Siistrunk</i>	
Session 4.5	Natural catastrophes and their environmental and political impact <i>Chair: L. Robin</i> <i>Organizer: D. Garden</i>	4A-04
	O196 Fire in cities in the medieval and Early Modern Islamic world; <i>A.A. Akasoy</i>	
	O176 The eruption of Krakatau in the Netherlands East Indies: Local and global interpretations; <i>M. Dörries</i>	
	O180 Droughts and flooding rains: 19 th century El Ninos in Australia and New Zealand 1864-66, 1876-78 & 1895-1902; <i>D.S. Garden</i>	
Session 4.6	(Cancelled)	
Session 4.7	Uses and practices of natural resources <i>Chair: L. Uhlířová</i> <i>Organizer: SC/LOC</i>	1A-05
	O151 Heritage of environmental practices in landscape: A case study of the Baltic Sea coast, Latvia; <i>I. Sture</i>	
	O273 Seeing like a land surveyor: Quebec's nomadic bureaucrats write about the land, 1800-1820; <i>D. Rueck</i>	
10.30 – 11.00	Break	Lobby

11.00 – 12.30	Parallel Session 5	
Session 5.1	Parasites and pets <i>Chair: R. Oram</i> <i>Organizer: SC/LOC</i>	2A-06
	O112 No rats, no fleas: Transforming the early medieval pandemic; <i>T.P. Newfield</i> O027 A review on parasite remains from mediaeval latrine and cesspit deposits; <i>B. Herrmann</i> O039 Russian compassion: A comparative study across national boundaries of the imperial Russian Society for the Prevention of Cruelty to Animals, 1865-75; <i>B. Bonhomme</i>	
Session 5.2	Data about climate change <i>Chair: M. Kempe</i> <i>Organizer: SC/LOC</i>	8A-04
	O014 Why are historical data crucial for future global (climate) change; <i>K. Klein Goldewijk</i> O084 Climatological changes and its impacts on the transatlantic slave trade in the late 18 th century; <i>S.N. Norrgard</i>	
Session 5.3	Historicizing forgotten and marginalized fisheries: People and oysters from Brittany to San Francisco Bay <i>Chair: A. Macias</i> <i>Organizer: D. Kinsey</i>	10A-05
	O210 Seeding the shores: The reciprocal influences in the development of marine aquaculture in the 19 th century; <i>O. Levasseur</i> O226 Immigrant oysters in San Francisco Bay, 1860s-1930s: How they got there, and why they disappeared; <i>M. Booker</i> O088 Marine research in New South Wales 1900-1950; <i>A.L. Jacobsen</i> O208 'The forgotten fish' a reconnaissance of the eel in the cultural and ecological history of the North Atlantic basin; <i>D. Kinsey</i>	
Session 5.4	Over national boundaries: Circulation of environmental ideas <i>Chair: C. Neri Serneri</i> <i>Organizer: SC/LOC</i>	2A-05
	O094 Narratives of (inter)national environmental history: The case of Austria in times of globalization; <i>M. Schmid, O. Veichtlbauer</i> O115 Africa and European views of sustainable development, 1992-2002; <i>J.A. Du Pisani</i> O111 Blue rivers in red China: Environmental debate and the image of China in Germany during the early 1970s; <i>F. Hahn</i>	
Session 5.5	Transfrontier conservation areas in Southern Africa and Western business philanthropy <i>Chair: H. Wels</i> <i>Organizer: M. Spierenburg</i>	4A-04
	O020 Private interests and public values: Enterprising Afro-Euro environmentalists; <i>M.A. Draper</i> O022 Green capital and environmental sponsorship; <i>M. Ramutsindela</i> O023 Conservative philanthropists, royalty and business elites in nature conservation in southern Africa; <i>H. Wels</i>	
Session 5.6	Comparative perspectives on the emergence of pollution regulation <i>Chair: R.G. Rodger</i> <i>Organizer: G. Massard-Guilbaud</i>	8A-05
	O059 The French and English pollution regulations; <i>G. Massard-Guilbaud</i> O067 The Canadian legal framework regarding nuisances: An overview; <i>M. Dagenais</i> O062 Belgium: From the French heritage to a specific national system; <i>C. Deligne</i>	
Session 5.7	Managing natural resources in the Soviet North: Transformations in ideology and regimes of colonization <i>Chair: J. Lajus</i> <i>Organisier: A. Bolotova</i>	1A-05
	O178 Towards an environmental history of modernization in the Soviet North; <i>A.R. Bruno</i> O232 Turning rivers to the south: Debates on the river diversion projects in USSR; <i>D. Vorobyev</i> O234 Getting minerals from the Soviet North: Changes in regimes of natural resource use in the USSR; <i>A. Bolotova</i>	
12.30 – 14.00	Lunch	Restaurant
13.00 – 14.00	Envirotech business lunch (Signed up delegates only)	7A-06

14.00- 15.30	Parallel Session 6	
Session 6.1	Exploring transnationalism in environmental history: Park system planning, river floods and livestock diseases in the North-Atlantic World	2A-06
	<i>Chair: C. Mauch</i> <i>Organizer: U. Luebken</i>	
O158	Canned pigs and delirious cows on the move: Transnational livestock diseases as an (inter)national problem in Europe and the United States in the late 19 th century; <i>D. Brantz</i>	
O157	The environment as risk: River floods and flood control in Germany and the United States; <i>U. Luebken</i>	
O154	Municipal and metropolitan park system planning as an international phenomenon: National traditions and transnational exchange in the United States and Europe; <i>S. Duempelmann</i>	
Session 6.2	Soils, woods, waters: Ecological connections maintaining productivity and creating traditional European agroecosystems	8A-04
	<i>Chair: G. Haidvogel</i> <i>Organizer: R. Hoffmann</i>	
O057	Soils and fertility maintenance in historic European agriculture; <i>V. Winiwarter</i>	
O054	Sustainability and ecology of managed woodlands in Champagne, France, 9 th -15 th centuries; <i>R. Keyser</i>	
O046	Connecting traditional aquaculture to land, water, and agro ecosystems; <i>R.C. Hoffmann</i>	
Session 6.3	Traditional knowledge of fish, fishers and fisheries management from the Middle Ages to the present	10A-05
	<i>Chair: J. Barrett</i> <i>Organizer: B.P. Poulsen</i>	
O269	Liberalisation or governmental control – An institutional perspective on the resource exploitation in Danish fisheries 1849-73; <i>A.H.M. Husum Marboe</i>	
O270	The human factor in fisheries. Measuring the 'skipper effect' in a long term perspective; <i>B.P. Poulsen</i>	
Session 6.4	Environmental thinking: Some protagonists	2A-05
	<i>Chair: H. van Zon</i> <i>Organizer: SC/LOC</i>	
O085	Lady Eve Balfour: A pivotal figure in the development of the UK organic movement? <i>E.J. Gill</i>	
O120	Adolf Erik Nordenskiöld - transformer of environmental thinking; <i>S.A. Niemi</i>	
O257	Milton, Humboldt and the American environmental movement; <i>M.R. Stoll</i>	
Session 6.5	Intercultural exchanges and the use of forest resources. The global transfer of cultural, scientific and economic practices	4A-04
	<i>Chair: B.S. Grewé</i> <i>Organizer: M. Mutz</i>	
O170	World wide (pulp)wood. Business, science and forests in the globalisation of modern paper production; <i>M. Mutz</i>	
O188	Selecting the best for Germany's forests. Scientific forestry and the transfer of foreign tree species in Germany in the 18 th century; <i>I.M. Knap</i>	
O189	Reserving the world's forests. Domestic peculiarities and intercultural experience of German foresters in the 19 th and 20 th century; <i>R. Hoezl</i>	
Session 6.6	Sanitary engineering and the urban environment (XIXth -XXth centuries): A history of connections	8A-05
	<i>Chair: G. Massard-Guilbaud</i> <i>Organizer: S. Frioux</i>	
O129	Urban environment and French sanitary engineering connections, ca. 1880-1940; <i>S. Frioux</i>	
O177	Paths not taken: Engineering and wastewater treatment in Germany and the USA, 1900-1939; <i>C. Closman</i>	
O264	International transfers of technology in urban sanitation: A perspective from backward Europe (Lisbon 1850-1910); <i>A. Ferreira da Silva</i>	

Session 6.7	Connecting religion and the landscape in pre-modern Europe <i>Chair: B. Meijns</i> <i>Organizer: E. Arnold</i>	1A-05
O262	Woodlands, miracles and monastic identity; <i>E. Arnold</i>	
O265	Prayers in the new lands: The construction of religion in the coastal wetlands of Flanders, 10 th -13 th century; <i>D. Tys</i>	
O275	Monastic exploitation of nature in the early Middle Ages; <i>R.S. Babcock</i>	
15.30 – 16.00	Break	Lobby
16.00 – 17.30	ESEH Plenary Meeting	Auditorium
18.15 – 19.15	Welcome reception at the City Hall Partner: City Council of Amsterdam	City Hall

Friday, June 8 2007

		Room
08.30 – 18.00	Registration Desk open	
09.00 – 10.30	Plenary Session: Award panel New environments and strange specimens: Botanical encounters and exchanges between Europe and the Asian tropics, c. 1620-1890's <i>Chair: P. Boomgaard</i> <i>Organizer: P. Boomgaard</i>	Aula
O200	Mapping floral flows: The search for medicinal plants in the Philippines, c. 1680's-1890's; <i>R.A.G. Reyes</i>	
O201	Assembling a knowledge of regional flora and fauna in the 17 th century: The case of Ceylon versus Malabar; <i>H.J. Cook</i>	
O203	A hub of plant exchange: Batavia (Java), the Dutch East India Company and the networks of European botanists, 1620's to 1800's; <i>P. Boomgaard</i>	
10.30 – 11.00	Break	Lobby
11.00 – 12.30	Parallel Session 7	
Session 7.1	Interpretation problems in environmental history <i>Chair: M.L. Allemeyer</i> <i>Organizer: SC/LOC</i>	2A-06
O029	Architects of nature: Environmental infrastructure and the nature-culture dichotomy; <i>E. Kreike</i>	
O107	Issues in environmental history; <i>J.D. Hughes</i>	
O222	Bridging the arts/science divide in history teaching: Enabling learning in environmental history; <i>K.J.W. Oosthoek</i>	
Session 7.2	Agriculture and landscape <i>Chair: D.M. Joergensen</i> <i>Organizer: SC/LOC</i>	8A-04
O105	Agriculture's effect on the soils and landscape of the northern half of the Isle of Arran, Scotland; <i>C.M. Gravatt</i>	
O195	Land use and animal husbandry in the Roman period in the eastern Dutch river area; <i>M. Groot</i>	
O306	History of fishponds in central Bohemia and their environmental relations; <i>Z.F. Lipsky</i>	
Session 7.3	Water animals in environmental history <i>Chair: D. Huenniger</i> <i>Organizer: SC/LOC</i>	10A-05
O055	The salmon tragedy in historical perspective: The role of ten centuries of water mill construction in migratory fish decline; <i>H.J.R. Lenders, W.C.E.P. Verberk</i>	
O202	The origins of commercial sea fishing in the 1st and 2nd millennia AD: Archaeological approaches; <i>J. Barrett, W. Van Neer, A. Ervynck, I. Enghoff, A.K. Hufthammer, C. Amundsen, S. Hamilton-Dyer, J. Harland, D. Heinrich, A. Jones, C. Johnstone, L. Jonsson, A. Locker, L. Lõugas, D. Makowiecki, W. Prummel, C. Roberts, M. Richards</i>	
O204	How to use historical data for the assessment of ecosystems in Europe? The case of fish in Alpine rivers; <i>G. Carrel</i>	
Session 7.4	International environmental movement <i>Chair: L. Racz</i> <i>Organizer: SC/LOC</i>	8A-05
O043	Michigan autoworkers and the origins of modern environmentalism; <i>C. Montrie</i>	
O164	Connecting metaphors: The 'spaceship earth'-metaphor and the international environmental movement (1963-1973); <i>K.F. Huenemoerder</i>	
O205	Environmentalism and the common good. Conflicting interests in the controversy over Frankfurt Airport (1960-1984); <i>S. Dworog</i>	
Session 7.5	Sustainability and forest management <i>Chair: R. Unger</i> <i>Organizer: SC/LOC</i>	10A-04
O149	Searching for exemplary environments from history – commissions of forest restoration; <i>T. Myllyntaus</i>	
O272	Forest management in the medieval Mediterranean from the perspective of shipbuilding technology; <i>C. Canavas</i>	
O144	From Indian forest to American tinderbox: Environmental change and the failure of fire-management policies in Southern California; <i>R. Perez</i>	

Session 7.6	Downwind from the first industrial society: Scientific and social responses to air pollution, 1850-2000	4A-05
	<i>Chair: M. Osborn</i> <i>Organizer: H. Platt</i>	
O128	'A network of trust': Building an air pollution monitoring system in Britain, c.1910-1960; <i>S. Mosley</i>	
O130	The internationalization of smoke abatement reform in the late 19 th and early 20 th centuries; <i>P. Thorsheim</i>	
O132	The understanding and regulation of acidity in historical perspective: Transformed British uplands and the development of transboundary pollution regulation in the late 20 th century; <i>M. Osborn</i>	
Session 7.7	Tiny animals	6A-05
	<i>Chair: P. Szabo</i> <i>Organizer: SC/LOC</i>	
O301	Introductions and extinctions - the impact of human settlement on North Atlantic island insects; <i>E. Panagiotakopulu</i>	
O028	Concepts of vermin control in the 18 th and early 19 th century; <i>B. Herrmann</i>	
O193	Human history of biotic invasions: The introduction of carp from Austria and Yugoslavia to Israel as a study case; <i>D. Tamir</i>	
12.30 – 14.00	Lunch	Restaurant
14.00 – 15.30	Parallel Session 8	
Session 8.1	Grassland construction and deconstruction: Global perspectives	2A-06
	<i>Chair: G. Cunfer</i> <i>Organizer: D. Moon</i>	
O069	Deconstructing Canadian subarctic grasslands; <i>P.A. Mc Cormack</i>	
O252	The reputation of perennial Ryegrass in New Zealand pastures: Responses to the 'Ryegrass Controversy'; <i>G.V. Wood G, P.G. Holland, E. Pawson</i>	
O093	The construction of the grasslands in 'Newest England': New Zealand 1850s-1920s; <i>T.W.H. Brooking, E. Pawson</i>	
Session 8.2	Land problems	8A-04
	<i>Chair: C. Dahlke</i> <i>Organizer: SC/LOC</i>	
O237	Landslides as a natural risk in history. A case study of the Swabian Alb in Germany; <i>A. Dix</i>	
O280	Differential land rent and its geographic/environmental impacts on land use changes: Casestudy Czechia 1845–2005; <i>L. Jelecek</i>	
O293	Land use/land cover change within Czech-Austrian and Czech-Polish border area (1845–2006); <i>R. Rasin, P. Chromy</i>	
Session 8.3	Individual papers I	10A-05
	<i>Chair: M. Agnoletti</i> <i>Organizer: SC/LOC</i>	
O071	EHDA Environmental History Database Austria; <i>O. Veichtlbauer, M. Schmid</i>	
O278	Tigers versus Tribals? The historical precedents of a contemporary conservation debate in India; <i>E.D. Rashkow</i>	
O283	The rise of the nature conservation movement and national styles, the case of the Netherlands; <i>H.J. van der Windt</i>	
Session 8.4	The environmental history of foreign trade	8A-05
	<i>Chair: F. Krausmann</i> <i>Organizer: F. Krausmann</i>	
O153	Afro-European trader-kings, Creole entrepreneurs and Mende warriors: Local agency and environmental deterioration in Sierra Leone's 19 th century timber trade; <i>A. Fenda</i>	
O155	Good times, bad times: Britain, Burma, India and the teak tree, 1700s-Present; <i>B.M. Bennett</i>	
O011	Impact at a distance: Food trade in the Atlantic world during the 19 th Century; <i>R.R. Wilk</i>	
Session 8.5	Royal forest in East-Central Europe	10A-04
	<i>Chair: M. Schmid</i> <i>Organizer: P. Szabo</i>	
O064	Royal Forest in the Czech Lands: The first approach; <i>R. Hédí</i>	
O060	Castles, trees and game: Royal Forests in Hungary; <i>P. Szabo</i>	
O068	Royal Forests in 15 th -18 th century Poland: The example of Białowieża Forest; <i>T. Samojlik</i>	

Session 8.6	Urban studies <i>Chair: G. Corona</i> <i>Organizer: SC/LOC</i>	4A-05
O065	Transformations of subsistence systems of market-towns in the Hungarian plain during the Early Modern times (16 th -18 th centuries); <i>L. Rácz</i>	
O116	Economic development and environmental change. A case study: Florence and its conurbation (1945-1995); <i>F. Paolini</i>	
O289	Urban agriculture in Europe and the wider world; <i>G.R. Erling</i>	
15.30 – 16.00	Break	Lobby
16.00 – 17.30	Parallel Session 9	
Session 9.1	European and overseas natural histories and concepts of nature parks <i>Chair: J. Mathew</i> <i>Organizer: J. Mathew</i>	2A-06
O223	Fashioning a regional natural history: The fauna of British India series; <i>J. Mathew</i>	
O173	From animal sanctuary to primeval forest. Changes in the function of national parks and the perceptions of an 'ideal' nature in Germany during the 1960s and 1970s; <i>U. Hasenoeuhl</i>	
O300	Submerging our past: 'Salvage archaeology' behind the Aswan and the Glen Canyon dams; <i>M. Hall</i>	
Session 9.2	Agriculture on the edge: Pasture and plough in grassland environments in North America and Eurasia <i>Chair: G. Cunfer</i> <i>Organizer: SC/LOC</i>	8A-04
O037	The Russian steppes under ploughing and cropping; <i>D. Moon</i>	
O041	Rangeland science and grazing management in the U.S.A.; <i>J.D. Helms</i>	
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ORAL PRESENTATIONS

In case of multiple authors, the presenting author's name is underlined

O006

The politicisation of water in central-east Europe during the cold war

V. Pal

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This paper will discuss the politicisation of the environment in Central-East Europe, in the form of two main case studies in different localities, touching different aspects of environmental issues and covering the temporal scope from 1945 to 1990.

Case studies are made in the context of local, regional and global history. In addition, local politicisation is examined in a comparative historical context with various cases of Western Europe, which shows additional features of the formation of environmental policy in Central-East Europe. Out of these detailed instances of discourse analysis are extracted.

The cases studies are: the creation of the urban water supply system in Miskolc situated in industrial zone of river Sajó in Hungary 1945-80; and the Gabčíkovo- Nagymaros dam project on river Danube, between Hungary and Czechoslovakia 1952-1990. Cases cover the time from the "pre-history" of environmentalism, to the "environmental awakening".

This paper will draw new notions on the history of environmental policy of Central-East Europe, because, much has been written about the biological degradation of the river basins and about the legal battle over the Gabčíkovo project, but little exist which relate interdisciplinary data together systematically.

O011

Impact at a distance: Food trade in the Atlantic world during the 19th century

R.R. Wilk

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Our attention has recently been focused on the globalization in the 20th century. But globalization has a long history and deep roots. This paper explores the global food economy of the nineteenth century, which connected producers and consumers around the globe in ways that had serious but widely dispersed environmental impacts. We know quite a bit about plantation agriculture, and the way many parts of the tropics were turned into cane monoculture to feed the growing appetite for sugar and rum in Europe and North America. But products taken from nature moved much more widely in the Atlantic system, creating vast flows of preserved foodstuffs, timber, animal skins, spices and dyestuffs in many different directions. This paper focuses on four commodity chains, which connected countries in the north to colonies and territories in the south. These include mahogany and green sea turtles moving from the Caribbean to North America and Europe, and salted herring and pork moving in the opposite direction. Recent work in historical ecology is now for the first time making it possible to account for some of the disruptive effects which these industries had on entire ecosystems.

O012

Crisis of Indus River system and desertification in the Indian sub-continent during the early medieval period

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After the period of fourth century major ecological changes appeared on the world scene; Europe experienced an intensively cold phase and tropical lands, like India suffered from severe drought conditions. From 7th to 10th century the level of Nile River most of the time remained low and rivers of northwest parts of the Indian Subcontinent either changed their path or become seasonal channels. Aridity crept into the central parts of the northwest regions and where desert conditions were already present got further intensified. Traditional sources provide enough hints about such changes but a detailed study with the support from local tales, legends and other kinds of literature could be made.

Several channels connecting Sutluz- Beas- Ghaggar Rivers of Indus system had dried up and as a result of that the vast area of *Lakhi Jungle* (Dark forest), located in the southern regions of Punjab considerably declined. The lower channels of Indus also started dwindling and ultimately lost its character. Therefore, the limits of the *Thar* Desert extended and by the beginning of 13th century it covered the vast areas of Rajasthan, Haryana and Punjab. Famous trade route of the subcontinent running through Sind and Rajasthan lost its vitality and a number of towns either lost their eminence or trickled to the path of unknown destiny. Damage earlier caused by the Huns to the political and economic systems could not be repaired on the face of fresh Turkish invasions and continuous internal strife at the local level. All these combined factors forced a good number of clans and tribes to move away from their homes and indulged into other economic activities chiefly animal stocking. At the social level they merged into other ethnical groups or castes. Deforestation was further caused by the penetrative activities of animal rearing and grazing taken on part of these new colonizers.

O014

Why are historical data crucial for future global (climate) change?

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Introduction: Currently, global (climate) change is in the centre of attention of many people. Not only scientists and governments, but also the media and the general public pay more and more attention to the extent and possible future implications of global climate change. An important part of the discussion is focused on to what degree and for what time period mankind has been responsible for the perturbation of the atmosphere.

Methods: This paper will discuss a wide array of archaeological, historical and ecological evidence for man's influence on the global environment. It's beyond doubt that the formidable increase of fossil fuel use over the past three centuries has had a profound impact on the globe, and will continue to do so, but what about the (large scale) expansion of population, agriculture and mining across the globe? To what extent did these changes contribute to global (climate) change?

Results: Results will be presented of a coupled global assessment of the updated History of the Global Environment (HYDE) database and the Integrated Model to Assess the Global Environment (IMAGE) for the last three centuries and the one to come. Both the database and the model have been extensively published and peer reviewed in the literature.

Discussion: Evaluated will be the historical changes in land use, population, climate, energy use, food production and other resources. It clearly demonstrates the need for globally consistent historical data(sets), needed to run and improve integrated models of global climate change.

Private interests and public values: Enterprising Afro-Euro environmentalists

M.A. Draper

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Exploring the relationship between 'personal troubles of milieu' and 'public issues of social structure' is as, C. Wright Mills maintained in *The Sociological Imagination*, 'most fruitful'. His concluding maxim, that 'the problems of social science, when adequately formulated, must include both troubles and issues, both biography and history, and the range of their intricate relations', provides the springboard into this study of the global networks of private capital at work in conservation in Africa.

This paper extends the author's published work with Gerhard Mare called 'Going In' inspired by John Aspinall: the late eccentric wealthy English aristocrat, private zoo owning conservationist, gambling casino czar, 'white Zulu' patron of the Inkatha Freedom Party in South Africa, and conservative Euro-sceptic politician. He became infamous in many spheres, not least for his advocacy and practice of what he called 'going in'. This refers to keepers crossing the boundaries between 'wild' animals and people, entering the zoo enclosures, and bonding with animals such as wolves, tigers and gorillas. Through following Aspinall's career in all the above spheres, we showed how, at the level of the elite around the globe, disparate national identities marry and work together to shape environments.

Current debates about disciplinary boundaries came into question in Aspinall's world, which saw the natural as ascendant over the cultural. He points us to and guides us through a contested terrain of contemporary intellectual life, namely the groundswell of desire for biology to subsume the social sciences. This we traced to the roots of environmentalism itself since Aspinall's ideas share a pedigree with the English environmentalists of the 1960s and 70s. Indeed, he has been noted as one of the original 'green warriors'. As scholars of the south, we showed that such intellectual flights of the imagination have very real consequences for societies and their environments. The importance of studying and coming to terms with the ways in which the 'other' of the north understands the nature of the world becomes apparent.

'Going In', however, is not only about risking death with wild animals, it is also about risking capital in enterprising ventures with philanthropic spin offs for African people and wildlife. It is about what Foucault called the 'limit attitude' which accepts venture abroad as being rich with risk and political instability an opportunity to be creative. This is inspired by the Zulu warrior ethic and shows how hybrid are identities and cultural motivations. Several other biographical networks are explored to discover the local and global milieu in which motives to invest in conservation and philanthropic enterprises arise.

O022

Green capital and environmental sponsorship

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The involvement of capitalists in environmental issues has a long pedigree that includes the historical founding of the famous Club of Rome. In South Africa, one of the first major links between capitalists and environmentalists was forged through the creation of the Southern African Nature Foundation. My aim in this paper is to show how the Foundation performed the twin roles of environmental philanthropy and business marketing in the last decade of apartheid rule, 1980 to 1990, and how and why companies sponsored environmental conservation through the Foundation. I argue that, beyond philanthropy, the business sector was made to see, and indeed saw, the Foundation as a way to gain international popularity and the share of the international market, particularly in Europe. This was to be achieved by linking South African business to the world's largest private conservation organisation, WWF. Conservation projects were tailor-made to suit the company's marketing needs and improve its image. At the domestic front, corporate conservation sponsorship also served a political agenda. South Africa's economy was weak, a situation that was compounded by President Botha's refusal to effect significant political changes. Under these circumstances the Foundation encouraged conservation sponsorship as a way of making a bold gesture of faith in the future of South Africa. The paper concludes by reaffirming the view that, under certain conditions, environmental philanthropy contributes to the socio-political agendas of a country in which it is practiced. This begs the question of when does environmental philanthropy cease to be philanthropic.

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Conservative philanthropists, royalty and business elites in nature conservation in southern Africa

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The late Prince Bernhard of the Netherlands is well-known for his donations to nature conservation, especially in co-operation with his recently deceased friend and South African billionaire Anton Rupert who joined the board of trustees of the WWF in 1968 and who developed the idea of the establishment of the '1001 Club'. 'The "one" was Prince Bernhard. The other one thousand were wealthy individuals who could be persuaded to part with \$ 10.000,-' (Bonner 1993: 68). Relatively many South African businessmen were included in the list, at a time that South Africa was still officially boycotted by the world business community. Nevertheless, on the 1989 list, '(...) at least sixty individuals were from South Africa' (ibid), many of them member of the highly politically influential Afrikaner Broederbond. Political conservatism was directly linked to nature conservation. Its exact influence we will never know because of the highly secretive nature of the 1001-club.

In the early nineties, however, Anton Rupert played an important role in initiating talks with the African National Congress which led to the first democratic elections in South Africa in 1994. Around the same time he established the Peace Park Foundation (PPF) in South Africa, the primary lobby organization for the development of Transfrontier Conservation Areas (TFCAs) in southern Africa. Prince Bernhard, as good friend of Rupert, was also part of the set up again. Rupert started another club of wealthy businessmen to finance his operations, this time called the '21-club', 'with membership fees set at \$1 million' (Domisse 2005: 385). Prince Bernhard was one of them. In this paper we will explore possible political influences of these types of philanthropic structures on nature conservation in southern Africa, focusing on the longstanding relationship of Prince Bernhard with South African nature conservation (Ellis 1994).

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O024

Enlightenment rivers and African water cycles: Encounters between European and Neo-European river management and the African continent, 1625-2005

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Seventeenth and 18th century Italian ideas underlay 18th century European, and 19th century North American and Australian neo-European, beliefs about natural rivers' imperfection and the importance of river control for the state. That dams and diversions should alter stream flow to suit agriculture, industry, and transportation was incomprehensible to the vast array of societies encountered on the African continent. Whether foragers, herders, fishers or farmers, Africans understood rivers to be part of the larger landscape – complex systems with many attributes, all of which should be respected. Africans used rivers for agriculture, manufacturing and transportation, but there was more to a river than its separate uses.

The perception of defective rivers needing improvement arrived in Africa with settlers at Cape Town in 1625, spreading north and inland with Dutch, French and English explorers, missionaries and settlers. Diversions and dams for irrigation were early concerns in semi-arid southern Africa; expertise was sought from North American and Australian neo-Europe's. Later, as well as farther to the north, rivers were dammed for power production and industrial use, as well as agriculture. The era of large-scale dam construction began on the Zambezi River at Kariba in the late 1950s, and spread across the continent. African resistance to interference with river function was overwhelmed by the power of the modernist state – first colonial, then independent.

This paper will chart the flow of river management across the African continent by describing the arrival and activities of significant people and their ideas. River control will be linked to both political and environmental disturbance, and implications for the looming continental water crisis will be discussed. That modernism, rather than colonialism, is the source of current river crises will be demonstrated.

O027

A review on parasite remains from mediaeval latrine and cesspit deposits

B. Herrmann

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Latrine deposits provide information on human intestine parasites from their eggs preserved. In my studies of such deposits, I developed methods for analysing respective soil samples and to draw conclusions with respect to the ecology of humans as well as of the parasites. I could offer a review of this work including that of other scholars ("pleoparasitologists", mostly from GB) and I will show benefits and limitations of information of this source material. It is important to stress to environmental historians that "archives" other than written documentations also provide information on humans and their environment in the past.

O028

Concepts of vermin control in the 18th and early 19th century

B. Herrmann

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The paper will outline basic epistemes of vermin control during the passage from magic to rational scientific paradigms in central Europe from the early 18th through mid 19th century.

Vermin control is considered of being a concept to evaluate species in terms of useful or not useful to human purposes, needs, and demands and thus reflects basic epistemes of the use of nature. This metatheoretical approach will be underpinned by examples drawn from archival records and will demonstrate the multiple assignments and interrelations of the subjects with societal developments.

O029

Architects of nature: Environmental infrastructure and the nature-culture dichotomy

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Despite path-breaking research about environmental change in Africa and elsewhere over the last decades, the conceptualization and analysis of environmental change remains rooted in a one-dimensional Nature-Culture dichotomy that depicts environmental change in unilinear, static, and monolithic terms. The Nature-Culture dichotomy exclusively defines human and non-human entities and their products as either part of Nature or of Culture. For example, plants and animals are wild (and part of Nature) or domesticated (and part of Culture). But many plants and animals do not fit neatly into this binary framework, including feral animals and the so-called “semi-domesticated” plants.

The study introduces the term “environmental infrastructure.” Environmental infrastructure operates a level below the scope of conventional infrastructure, serving to conceptualize what exists in the nebulous zone between Nature and Culture, for example, landscapes created by fire regimes and/or shifting cultivation, abandoned urban and rural landscapes, as well as anthropogenic soils, fruit trees and orchards, coppice woodland, and “traditional” water harvesting technology.

O037

The Russian steppes under ploughing and cropping

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Introduction: The purpose is to trace the impact of ploughing and cropping on the environment of the Russian steppes over the eighteenth and nineteenth centuries by analyzing a succession of contemporary descriptions by scientists and officials.

Methods: The paper focuses on two regions where the author carried out detailed research in local archives and libraries: The Don Cossack region along the lower Don river and Samara province on the left bank of the mid and lower Volga river, but will also draw on other parts of the steppes. The main sources include: a survey of forest resources in the Don valley in 1699; accounts of the Academy of Sciences expedition of the 1760s-70s; statistical descriptions of the nineteenth century by the General Staff and local governments; detailed studies by scientists in the late nineteenth century.

Results: The sources reveal major changes in land use as vast areas of grassland were ploughed up and woodland felled. Soil exhaustion, erosion, drifting sands, dust/sand storms and gull eying were seen as growing problems. Water tables were believed to be falling and the climate was widely believed to be becoming more extreme and drier. Increasingly connections were made between all these phenomena.

Discussion: The sources show a growing awareness of human impact on the environment and the development of scientific methodologies to trace and to try to reduce this impact. The contemporary perceptions of human impact on the Russian steppes can be compared and contrasted with the findings of later scientific studies and other grasslands around the globe.

O039

Russian compassion: A comparative study across national boundaries of the imperial Russian Society for the Prevention of Cruelty to Animals, 1865-75

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The Russian Society for the Prevention of Cruelty to Animals has been little studied and is not well known, especially outside the community of Russian speakers. In addition to a basic overview of the organization's founding, mission, and early activities, this paper explores the Society's concerns with animal treatment as an indication of national character and identity, and with its ideological, philosophical, institutional, and other links to foreign counterparts, especially the British Royal Society for the Prevention of Cruelty to Animals, which was in many respects the Russians' explicit model. The Russian Society's connections to wider domestic social and political issues are also explored.

O041

Rangeland science and grazing management in the U.S.A.

J.D. Helms

Natural Resources Conservation Service, Washington, DC, United States

This paper discusses historical developments in range management policy in the United States. Natural resource management on public lands and advice to private land owners is strongly linked to the state of sciences as taught in the land-grant universities of the United States. Range scientists trained in botany and ecology at the University of Nebraska under Frederic Clements and his protégés profoundly affected the practice of range management in federal agencies. Arthur W. Sampson made plant succession a tenet of range research and planning in the Forest Service before he moved to the University of California and authored the first range management text. Forest Service range scientists developed methods of inventorying and surveying range. To a considerable extent Forest Service range scientists were frustrated in their desires to actually alter range usage. Western Congressmen and Senators wanted few restrictions on ranchers who held permits for using rangeland on national forests.

The Soil Conservation Service, now the Natural Resources Conservation Service, worked predominantly with ranchers on private lands, although those ranchers might also have permits on public lands. Clementsian concepts of grassland communities found expression in the range site and condition concept, in which range condition was classified according to its proximity to the climax condition. Assessment of the range condition and knowledge of the potential climax state served as starting point for range improvement or conservation. Ecologists' critique of the climax concept, but also internal inconsistencies within the system, led to review, contention, and alteration. In 1997 NRCS altered its policy and instituted the development of "ecological sites," as a starting point for management considerations. The Forest Service and Bureau of Land Management joined NRCS in developing a common system of ecological site classification. The inexorable progress toward a climax was no longer a central tenet of range management.

O043

Michigan autoworkers and the origins of modern environmentalism

C. Montrie

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This paper addresses the conference theme of “environmental ideas, movements, and organizations.” The main focus is on the role played by Michigan autoworkers in the development of modern environmentalism. It argues that active and increased interest in hunting and fishing as well as encouragement and institutional support from the United Auto Workers (UAW) union both contributed greatly to growing and sustained interest by autoworker families in conserving natural resources, enhancing outdoor recreational opportunities, and controlling pollution.

In the early twentieth century, in the state of Michigan, where the American auto industry was cantered, a large number of male auto plant workers attended to a new-found sense of estrangement from nature by hunting and fishing. To facilitate those activities they formed local sportsmen’s clubs as well as a state organization, which worked with existing conservation groups to lobby the legislature on fish and game laws. By the late 1940s, many working-class sportsmen had begun to develop a basic ecological consciousness as well as growing concern with pollution, particularly municipal sewage and industrial waste. Not coincidentally this paralleled efforts by their union, the United Automobile Workers, to address environmental problems.

Under the leadership of Walter Reuther, the UAW took the lead among unions to mobilize workers to pressure local, state, and federal governments to deal with environmental concerns. Union leaders as well as the rank and file lobbied public officials, provided critical testimony at hearings, and exercised their electoral power to increase and enhance outdoor recreational opportunities, cleanup and protect area waterways, and improve air quality. By the late 1960s, much of this work was done by the Conservation and Resource Development Department, under the direction of Olga Madar. Women autoworkers and male autoworkers’ wives also established United Active Women to address industrial pollution problems in the Detroit River and River Rouge.

O046

Connecting traditional aquaculture to land, water, and agroecosystems

R.C. Hoffmann

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Traditional environmental knowledge of ecological connections shaped the advanced aquaculture practiced in most of medieval and early modern Europe, namely the selective breeding and rearing of common carp (*Cyprinus carpio* L.) in specially designed and fully controlled artificial ponds with a 4- to 6-year production cycle. This system emerged in central France during the 12th-13th centuries and had by the early 16th spread across Europe north of the Alps. Record sources from 14th century Burgundy, later medieval England and Upper Franconia, and early 16th century Austria, Bohemia, and Poland reveal similar enterprises supplying fresh fish, the European elite's preferred substitute when meat eating was taboo, to inland consumers.

Purposeful instructions on rearing fish first appear in certain late 13th century Anglo-French estate management tracts and independently by 1309 in Italian Pietro de Crescenzi's later widely-circulated agricultural manual. Extensive free-standing treatises on carp culture came out only in the 16th and early 17th centuries. Authors self-consciously conveyed traditional practice, not the latest innovations.

Carp culturists purposely cycled water, nutrients, and biomass between their enterprises and surrounding ecosystems. Pond designs observed land forms, soil types, vegetation, and water supply. Dams, sluices, overflow and bypass channels used local earth and wood. Managers sustained annual output by stocking selected fish of a single year class in each pond, which they rotated between productive wet years and recuperative dry years to renew fertility and eradicate disease. Pond muck provided valued nutrients for arable fields and meliorating soils. Locally knowledgeable expertise thus fit aquaculture into larger human relations with the land, water, vegetation, and animal life.

O047

Soils and fertility maintenance in historic European agriculture

V. Winiwarter

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Pond muck and forest litter are two obvious examples of connections maintained between different types of land-uses to maintain the fertility of the soil, the most important resource of pre-industrial agriculture. Horticultural systems world-wide have come to be regarded as highly integrated, highly connected, intensive, sustainable systems of land-use management (Netting, 1993). Among historical land-use systems, mainly tropical systems have been investigated for their agro-ecological connectivity. The paper explores the multi-faceted connections between agriculture, aquaculture and agro-forestry by focusing on soil fertility issues. Among these, manuring and soil restoration through the addition of minerals will figure most prominently. The paper is based on a wealth of agricultural literature, on learned, but eminently practical treatises abundant in Europe since Antiquity. Within this material, the paper will focus on the late medieval and early modern periods, discussing in particular those manuals which offer a complete treatment of all matters pertinent to the management of an estate, and thus comprising all branches of land-use. By using the same sources as the other papers in this panel (such as Petrus de Crescentiis, Konrad Heresbach or Abraham von Tumbshirn) the question of connections becomes apparent also as a matter of organizing knowledge. By using some additional sources which are particularly pertinent to the issues of soil fertility, such as e.g. Ibn Al Awwam, Johann Glauber or Johann Gerhard Andreae, the central agricultural issue of maintaining soil fertility can be shown to be a question of maintaining environmental connections between different, yet systematically united agro-ecosystems. Pond muck becomes a matter of significance, as do forest litter, cuttings from hoofs and horns or pomace and yeast, the latter particularly in vineyard management.

Reference: Netting, Robert McC., Smallholders, Householders. Farm Families and the Ecology of Intensive, Sustainable Agriculture. (Stanford 1993).

O050

Colonial exchanges of irrigation knowledge and technology

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In the global history of irrigation development, several regional irrigation orientations have developed (like the American, French, British or Dutch). Within these orientations ('irrigation regimes'), irrigation systems show similar characteristics, and designers select specific, regime-related solutions within designs. Between 1880 and 1950, irrigation activities (especially in the colonies) developed at a fast rate in the respective areas. Different irrigation regimes focused on different technical issues, and developed specific scientific knowledge. More and more the involved actors (mainly engineers) took into account rules of experience and specific solutions (technologies) when designing irrigation schemes. These rules and developed knowledge found their way to upcoming engineering schools and universities. Irrigation regimes have not developed in complete isolation; each region has sent delegations to visit other areas. This paper will focus on the exchange networks of irrigation knowledge and technology between and within different colonial powers. The networks will be conceptualized as knowledge systems consisting of actors and intermediates, with knowledge being transferred in time and space between different actors through the intermediates. One encounters several types of intermediates: the irrigation works designed and built by engineers, the multitude of articles and paperwork that was produced, and visits to irrigation areas. For example, French, British and Dutch delegations visited Spain and Italy. The colonial powers exchanged ideas, for example within the "Institute Colonial International". Still, this exchange has not resulted in a homogeneous irrigation design practice, as delegations always interpreted their impressions from their own regime-based perspective. Within regimes, exchanges between colony and colonizer occurred too. French irrigation techniques developed in Northern Africa found their way to France. Within the Dutch regime, however, the Dutch-based and Netherlands East Indian-based water-related knowledge systems remained separated.

O051

From genesis to genetics: The evolution of ideas about origins of dogs and dog breeds in Britain and the USA

E.P. Russell

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Although science and religion competed to explain the origins of dogs and dog breeds in the nineteenth and twentieth centuries, science held the upper hand in Western Europe and North America. But within science, a number of views competed. This paper traces the development of ideas from the eighteenth to twenty-first centuries. The French Comte de Buffon argued that dog breeds descended from one progenitor breed—the French shepherd's dog. Britons, unsurprisingly, looked askance at Buffon's canine family tree, but they struggled to replace it with anything cogent. Many breeders and natural historians, including Charles Darwin, thought the range of varieties of dogs necessitated a range of ancestors, including probably jackals, hyenas, and wolves. Modern genetics has enabled scientists to argue that all dogs descended from Asian wolves, that dog breeds separated only recently from each other, and that traditional groupings of breeds often reflect wishful thinking rather than ancestry.

Writers also struggled to explain how wild ancestors became domestic breeds. A classic explanation held that humans captured wolf cubs and raised them to be tame. Russian experiments with foxes in the mid-twentieth century shed light on how domestication could have occurred through simple, unintentional actions on the part of canines and humans. Simply selecting, in each generation, the individuals that came closest to humans resulted over time in foxes that looked and behaved a lot like dogs—they barked, had drooping ears, ran to and licked humans, wagged tails, and had white fur with dark spots.

O052

Over here (or ecological imperialism in reverse?) American animals in Britain

P.A. Coates

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Alfred Crosby's seminal work (1986) on the impact of European flora and fauna intentionally and inadvertently brought to the Americas introduced environmental historians to the theme of ecological imperialism. Crosby emphasized the asymmetry of biotic exchange between the 'old' and 'new' worlds: North America had given Europe hardly any 'problem' species in return for the many pests that Europe had inflicted on the Americas. The flow of biotic traffic across the Atlantic wasn't quite as one-directional, however, as Crosby insisted. We must also question the assumption that European consciousness of the distinction between native and non-native species was far lower than that of that of (Euro) Americans and that they have been far more relaxed about biotic reshufflings and interchanges. In Britain, there are plenty of controversial immigrant animals in terms of their alleged impact on native counterparts. And the most heavily contested of these foreign creatures are all deliberate transplantations from North America (a number of which subsequently escaped from human control): the gray squirrel (1876), muskrat (1920s), mink (1940s), ruddy duck (1940s), signal crayfish (1970), and, most recently, the American bullfrog. The coypu (nutria, 1929), another notorious invasive, hailed from South America (its eradication in the late 1980s – and that of the muskrat in the 1930s – are arguably the only successful instances of the elimination of non-indigenous species). This paper will focus on the cultural dimensions of British debates over the desirability and impact of American immigrant animals, concentrating on the relationship between anti-American sentiments (implicit and explicit) and objections of a more material (economic and ecological) nature.

O054

Sustainability and ecology of managed woodlands in Champagne, France, 9th-15th centuries

R. Keyser

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This paper examines customary norms and practices for managing woodlands in Champagne, France, from the ninth to the fifteenth centuries. Although by the thirteenth century commercially-oriented methods of intensive coppicing, short cycles of cutting and regeneration of hardwoods, had become widespread, these techniques were sustainable and fit into a wide variety of ecological conditions and economic uses. This paper draws on charters, legislative texts, and fiscal sources, and compares norms from northern France with those described in the widely successful agricultural manual of Pietro de Crescenzi (1309), which circulated both in the original Latin and in French translations.

Notwithstanding a primary focus on the production of small wood, intensive coppicing accommodated other uses, including timber, grazing, fishing, and hunting, and to a lesser degree farming. Thus most woodlands combined coppiced trees with a smaller number of taller trees grown for timber, called standards. Similarly, grazing and hunting continued on most woodlands, though subject to strict temporal and spatial regulation. Most Champagne customs, which were written down in the later Middle Ages, restricted grazing rights in woodlands to local residents, and prohibited most grazing for five years after woods-cutting. Traditional practices to manage these multiple uses of woodlands, such as pasturing livestock, cutting hay, and controlling access by erecting palisades, are best documented for the enclosed “parks” or hunting preserves of rulers and barons, but are also attested in other woodlands. These practices were not only highly sustainable, but also linked woodlands to every aspect of the surrounding environments and societies.

O055

The Salmon tragedy in historical perspective: The role of ten centuries of water mill construction in migratory fish decline

H.J.R. Lenders, W.C.E.P. Verberk

Radboud University, Nijmegen, Netherlands

The Atlantic salmon (*Salmo salar*) is the figurehead of ecological rehabilitation of the river Rhine and other northwest-European river systems. The species is believed to have declined from the beginning of the 18th century on as the result of interplay of large-scale river regulations, weir building, intensive fisheries and deteriorating water quality. From archaeological and historical sources, however, there are strong indications that the decline of the salmon started well before modern times. Although most historical information on salmon abundance and developments therein is anecdotic, we were able to make a quantitative historical reconstruction based on data from zoo-archaeological excavations and historical sources such as prices paid for salmon, taxes levied on salmon fishery and the number of salmon brought to fish auctions. From these data it appears that salmon already had become rare and was declining from at least the 11th century onwards. Most typically, this was especially the case in those regions of north-western Europe where a manorial system had developed. The most obvious link between the manorial system and salmon decline is the construction of large numbers of water mills in the middle Ages (often amounting up to circa 10% of the manorial value). These water mills and accompanying dams either blocked upstream spawning areas of salmon or made the species' spawning grounds unsuitable. Quantitative historical data concerning the growing number of watermills in the catchment areas of Rhine and Meuse support this hypothesis. From this, important lessons can be learned for rehabilitation of river systems. Restoring river biodiversity cannot be attained solely by rehabilitating processes and patterns in the main stream of rivers but has to reach as far as the headwaters and smaller streams from which these rivers originate.

O056

Dora and the birds: A study of the relationship between the British people and birdlife during the 1914-1918 war

F.S. Milton

University of Newcastle, Newcastle upon Tyne, United Kingdom

In 1919 the author Hugh Gladstone published a synopsis of his collection of newspaper articles on the effects of World War One on birdlife in Britain. This neglected volume contains accounts that detail the use of wild birds as food when rationing was imposed, the direct effect of warfare upon habitat and bird migration, reports of birds in the battle zones and most importantly the continuing debate that encompassed 'economic ornithology'. This centred on whether birds helped or hindered the agriculturalist tasked with producing vital foodstuffs for the nation. Gladstone also noted the effects of the Defence of the Realm Act (DORA). This ordered restrictions on all facets of life in Britain during the War, including banning seemingly innocuous activities as feeding wild birds, for which individuals were convicted, sometimes following alerts by neighbours to the authorities.

There has been an increased interest by environmental historians on warfare and its environmental consequences. Much of this work has concentrated on the direct results of fighting and its aftermath. This paper aims to illustrate the effects of warfare on wildlife at the 'home front' by re-analysing Gladstone's newspaper sources. Further data will be provided from contemporary nature conservation journals. Of relevance are the efforts of the Royal Society for the Protection of Birds to source new supplies of nest boxes from America as pre-war German suppliers were off limits, but also the Society's sharp criticism of governmental legislation that ordered the destruction of peregrine falcons and house sparrows, both of which were thought to hamper the war effort. This paper will therefore illustrate how warfare affected not only birds but also people's behaviour and attitude towards them during the 1914-1918 War in Britain. It will also begin to address Gladstone's wish that 'the subject of birds and the War is one which it is hoped will one day be tackled scientifically and internationally'.

O058

“Correcting a blunder by a crime”: Animals and acclimatization in New Zealand

G. Wynn

University of British Columbia, Vancouver, Canada

The acclimatization movement had its roots in Europe and in imperial ambitions to remake the world, but its most concentrated and profound impacts were, arguably, in relatively small and distant settler colonies, where introduced flora, fauna and avifauna radically altered local ecologies and landscapes. Addressed directly to the ESEH Conference theme, 'Environmental connections: Europe and the Wider World' and particularly to the history of exchange of biota strand, this paper examines the introduction of various animal species to New Zealand, and considers the motivations behind and consequences of these actions. This entails initial engagement with the broad parameters of the acclimatisation movement through its roots in the Societe Zoologique d'Acclimatation in Paris (1854), and the work of Kew and other Botanic Gardens as well as with the endeavours of eccentric Englishman Francis Buckland. It also requires brief discussion of the differences between acclimatization initiatives (and the reasons for these) in different colonial settings, before focusing in upon New Zealand, long considered the apogee of acclimatisation's effects, both good and ill. Here particular attention is paid the introduction of various species of deer as well as rabbits, goats, mustelids, possums, hares and hedgehogs, a veritable menagerie of animals that spelled pleasure for hunters, despair for farmers, ruin for some types of vegetation and the near-extinct of several indigenous species of birds. In the end this inquiry finds some justification for the condemnation, by New Zealand ornithologist and natural historian W.H. Guthrie-Smith, of introductions as blunders and crimes, but seeks to offer a more complicated and nuanced account than this.

O059

The French and English pollution regulations

G. Massard-Guilbaud

Ecole des Hautes Etudes en Sciences Sociales, Paris, France

This panel aims to shed light on the way in which the term 'pollution' appeared in different industrialised societies, and how it became a problem that required specific forms of regulation. More than a technical term, the word 'pollution' is a category of thought that has evolved over time, in line with social, cultural and technological transformations. It is the result of a process of cognitive construction, subject to wide variations across both time and space. Appearing initially during the Middle Ages in both French and English, the term 'pollution' came, in the 19th century, to replace 'nuisance' in the designation of problems caused by the processes of urbanisation and industrialisation. This semantic shift reveals both qualitative and quantitative developments in this field.

In the wake of economic and social upheavals (new sources of power, mechanization, the shift to mass production, large-scale migration toward cities), the problem of nuisances presented itself with increasing acuteness, particularly in countries experiencing rapid and sustained industrialisation. Certain nuisances that were considered harmful at the beginning of the 19th century no longer were fifty years later, as their innocuousness had been demonstrated or industrial advancements had succeeded in neutralizing them. Conversely, new forms of pollution appeared during this period, either because the harmful nature of a particular product was discovered, new products were developed, or new substances, known to be polluting in certain circumstances, began to be used. Moreover, something considered a source of pollution in one place was not necessarily seen that way in others. It is this construction of the notion of pollution, and the variations of its meanings according to places and periods, that will be at the heart of this panel.

The three papers will present the initial results of a collective and comparative research project of major scope, analysing these issues in four countries: France, England, Belgium and Canada. The principal themes the speakers will address are the construction of the concept of pollution in its contemporary usage, a comparison of the initial forms of legislation on the subject in both Roman Law and Common Law countries, and finally, the modes of exchange and borrowing among the various countries.

O060

Castles, trees and game: Royal Forests in Hungary

P. Szabo

ELTE Archaeological Institute, Budapest, Hungary

Royal Forests, territories reserved in some form for royal hunting, were once widespread in Europe. Developed around the seventh century AD in Frankish territories, they created intricate cultural landscapes throughout the continent.

From the eleventh century onwards, there were several places in the Kingdom of Hungary that were Royal Forests (*silve regales*). By the thirteenth century, they became fairly distinct units with their own territories and administration. This line of development, however, was broken in the fourteenth century, and the Forests, with few exceptions, disintegrated into the common county system. Hungarian historiography has long been aware of Royal Forests, but failed to recognise them as parts of a European phenomenon, and therefore did not get far with their interpretation.

This paper aims to outline the common characteristics of thirteenth century Hungarian Forests in light of the general European line of Forest development. In particular, two Forests: Pilis and Bakony will be analysed through archaeological, written and ecological sources. In these two cases, the later histories of the Forests will also be discussed.

Through ongoing research, there appears to emerge a pattern characteristic of Forests in East-Central Europe (Poland, Czech Republic, Hungary). Another aim of this paper is to point out some of the common features of Forests in the region, and to indicate directions for future studies.

O062

Belgium: From the French heritage to a specific national system

C. Deline

Université Libre de Bruxelles, Brussels, Belgium

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O064

Royal forest in the Czech lands: The first approach

R. Hédli

Institute of Botany, Czech Academy of Sciences, Brno, Czech Republic

There had been territories denoted „Royal hunting area“ (or “Royal Forest”) within the territory of the Czech Lands (Bohemia, Moravia and parts of Silesia). The best-known is Krivoklátsko area, a forested hilly area southwest from Prague. Knowledge about its medieval extent, time span and regime (management regulations, etc.) is very vague. In contrary, information on natural conditions (geology, flora, vegetation, fauna etc.) is very good.

Aim of this paper is i) listing areas identified as Royal Forest in the Czech Lands; ii) providing results of historical survey concerning Krivoklátsko area; iii) characterizing natural conditions of Krivoklátsko as the product of specific regime in the past.

Focusing on Krivoklátsko, sources of data are threefold: i) primary non-field: written documents (Latin, German and Czech) and historical maps (all available); ii) primary field: brief field survey on landscape, flora, vegetation and fauna features; iii) secondary: monographs on natural conditions and history (royal castles etc.).

O065

Transformations of subsistence systems of market-towns in the Hungarian plain during the Early Modern times (16th-18th centuries)

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Keywords: subsistence system, ecosystem, environmental changes

Main question: How adapted the subsistence systems of market-towns of the Great Hungarian Plain to very changeable political, economical and ecological conditions of early modern times?

Historical background: Early modern centuries were one of the most upset periods in the Hungarian history. In the middle of 16th century southern and central belt of Hungarian Kingdom was occupied by Turkish Empire and Hungary become warfare zone until the end of 17th century. The 18th century was the time of reconstruction in the political frame of Habsburg Empire. This is the time of Little Ice Age which influenced mainly precipitation of the Carpathian Basin.

Subsistence systems of market-towns: The market-towns (Kecskemét, Debrecen, Nagykőrös...) of the Great Hungarian Plain in the late Middle Ages specialized different branches of economy (wine production, cereal crops, animal husbandry...) adapted to their economical and ecological environment. Population of these cities changed between 1'000 and 20'000 persons. The age of Turkish wars transformed political environment of these cities, formation of European economy directed very efficiently the structure of Hungarian economy (mainly unified) and the influence of Little Ice Age were sensible in environmental processes. In my analysis I follow the processes and the models of transformation of subsistence systems how adapted these market-towns to different historical factors.

Influence that “Little Ice Age” had on people and their environment in three-border region “Triplex Confinium” (the Ottoman Empire, the Habsburg Empire, and the Republic of Venice)

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a) Introduction: «Little Ice Age» was a period, lasting approximately between AD 1400 and 1850 in three-border region (“Triplex Confinium”) of the Habsburg empires and the Venetian Republic and the rest of Europe.; b) Methods: This research is based on both publicized and unpublicized sources.; c) Results: Results Here the climate was significantly different then from today’s climate. Cold spells in the early modern history in many ways influenced the people and the environment of the “Triplex Confinium” (three-border region). First, frequent river freezing over enabled almost uninterrupted crossing of the Ottoman armies into the Habsburg Empire and vice-versa. Second, lowering of temperatures could probably influence the changes in flora and fauna, which influenced sustenance of the local population and decrease in their numbers. Third, it’s possible, at least in part, to link migrations of Orthodox Vlach population with global cold spells. Due to cold weather, they moved down from mountain regions into the valley and lowlands. Here the area was already populated with other inhabitants, so it provoked conflicts, but there was a possibility of peaceful coexistence. From the late 16th century reports of fortification builders, the obvious influence of low temperatures on Military Border (Frontier) forts is seen as a disturbing factor that diminished defence strengths.; d) Discussion: The period of the first half of 17th century could have been somewhat warmer than the previous and the following periods. The author here tries to find answers to the following questions: could the lowest temperatures around the year 1600 be linked in some way to the 1593-1606 Ottoman-Habsburg war? Could the resettlement and arrival of the new population to the Habsburg areas on the turn of the 16th to 17th century, among other reasons, be linked to the weather change and cold spells? Was warming up in mid-17th century in any way related to faster economic and demographic growth of border towns and settlements?

O067

The Canadian legal framework regarding nuisances: An overview

M. Dagenais

Université de Montréal, Montréal, Canada

This panel aims to shed light on the way in which the term 'pollution' appeared in different industrialised societies, and how it became a problem that required specific forms of regulation. More than a technical term, the word 'pollution' is a category of thought that has evolved over time, in line with social, cultural and technological transformations. It is the result of a process of cognitive construction, subject to wide variations across both time and space. Appearing initially during the Middle Ages in both French and English, the term 'pollution' came, in the 19th century, to replace 'nuisance' in the designation of problems caused by the processes of urbanisation and industrialisation. This semantic shift reveals both qualitative and quantitative developments in this field.

In the wake of economic and social upheavals (new sources of power, mechanization, the shift to mass production, large-scale migration toward cities), the problem of nuisances presented itself with increasing acuteness, particularly in countries experiencing rapid and sustained industrialisation. Certain nuisances that were considered harmful at the beginning of the 19th century no longer were fifty years later, as their innocuousness had been demonstrated or industrial advancements had succeeded in neutralizing them. Conversely, new forms of pollution appeared during this period, either because the harmful nature of a particular product was discovered, new products were developed, or new substances, known to be polluting in certain circumstances, began to be used. Moreover, something considered a source of pollution in one place was not necessarily seen that way in others. It is this construction of the notion of pollution, and the variations of its meanings according to places and periods, that will be at the heart of this panel.

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O068

Royal Forests in 15th-18th century Poland: The example of Białowieża Forest

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The idea of Royal Forests, adapted from Western Europe, was developed and gained some new qualities in Polish-Lithuanian Commonwealth, especially visible in the example of Białowieża Forest. From the 14th to the end of the 18th century Białowieża Forest (now located in the borderland between Poland and Belarus) was a royal property within the Polish-Lithuanian Commonwealth. It was protected by a significant number of various forests services and served as a game reserve for kings' hunts. In the same time the neighbouring forests without the Royal Forest status were put under devastating use. Although attempts were made to introduce several forms of use also to Białowieża Forest, its position and value prevented its destruction. Today, Białowieża Forest contains parts of the best preserved primeval forest of the lowland Europe.

The paper is based on the results of research on environmental history of Białowieża Forest and attempts to describe and summarise the properties of Białowieża as a Royal Forest. This group comprises all features of the protection of the forest, organisation of royal hunts, and evolution of utilisation of a variety of resources in the forest. It is noticeable that in the case of Białowieża Forest the focus of royal interest during centuries moved from hunting ground to the source of income to the kings' personal treasury. Thus, the pressure on abating the protection of royal forests was always present, deepening in especially turbulent times.

O069

Deconstructing Canadian subarctic grasslands

P.A. McCormack

University of Alberta, Edmonton, Canada

Native peoples of what is now northern Alberta and the southern Northwest Territories practiced regular controlled burning as part of a regime of environmental management and cultural construction of landscape, producing extensive grasslands throughout this subarctic region. As late as the early 20th century, the lands bounded by the Peace River, the Slave River, and Great Slave Lake – now encompassed by Wood Buffalo National Park – constituted a vast subarctic prairie which supported the last wild bison in existence and an array of other animals hunted and trapped by local Chipewyans, Slaveys (Dene Tha), Crees, and Metis. These grasslands began to disappear when the federal government initiated a program of fire suppression. Not only did federal bureaucrats fail to understand the roles played by Native peoples in land management, but the replacement of grasslands by forest had serious consequences later for wildlife management policies in the park.

O071

EHDA Environmental History Database Austria

O. Veichtlbauer, M. Schmid

IFF Klagenfurt University Center of Environmental History, Vienna, Austria

EHDA is a bibliographic database available on the web. The service is free of charge. The database covers Environmental History in Austria in all its aspects. EHDA is a new tool offering several practical features to the WWW community of Environmental History. For us, Environmental History is an interdisciplinary field, therefore EHDA is an interdisciplinary bibliographic database, presenting a formidable bibliographic challenge. EHDA contains information on publications produced from 1945 to the present, and can either be browsed by selecting a bibliographic category (i.e. author, date, title, publisher) or searched by entering a thematic cluster, a location or a period. A set of 41 thematic clusters was developed especially for EHDA. The keywords for these clusters were defined to reflect our understanding of Environmental History as an interdisciplinary field. EHDA is more than a bibliography or research documentation: EHDA is a National Resource Center servicing the scientific community. Its main objective is to secure easy access for the Austrian research community to bibliographic data, but it also supports networking across the traditional sector boundaries.

Additionally, in showing thematic repertoires, focal points and blind spots on the 'map' of Environmental History research in Austria, accomplishments and potentials of Environmental History in Austria are made visible. This paper will present the database and show some analyses based on these data both with regard to publication structure and to content. Furthermore, the process of arriving at 41 clusters will be presented.

Connections of green revolution. State and technological change in Costa Rica, Mexico and Spain.

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What Green revolution means? Three decades after his first public mention prevails the dual use of this concept. Green revolution is synonymous of “agricultural modernization” in the Third World. Also it is used to indicate the adoption of the high-yielding varieties in the grain production in Asian agricultures. Green revolution is an efficient concept to describe to the general and the specific thing. But, does this denomination include the totality of the implemented technological change in agricultures of the Third World as of 1950? Can be included openly in the “box” of the Green revolution events like the generation of hybrid seeds of wheat and maize in Mexico, the modernization of agriculture of coffee in the mountains of Costa Rica or the mechanization of the grain agriculture in the Valley of the Guadalquivir in Spain? In this communication it is tried to analyze the institutional transformations that experienced agricultures of Costa Rica, Mexico and Spain between the decades of 1940 and 1970. The objective is to describe the evolution of its agrarian public institutions to identify potentials common (or singular) patterns in the forms and the mechanisms through which the technological model of the Green revolution was implemented. The comparison between national cases is a connected route little explored. Nevertheless, it can be very useful to explain the extraordinary rate of expansion of this model from its years of germination and that has turned it a global phenomenon. Consequently, it can be useful to reformulate the concept of Green revolution. In order to question the vision of this revolution like a simple neutral (and progressive) process of technical change and to explain the bonds between the processes of modernization experienced by agricultures located in different spaces and times, under equally different rates.

O075

Transatlantic translations: Europeanizing national parks

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At the turn to the 20th century the American national parks increasingly inspired nature conservationists in Europe. In 1909 Sweden was the first European country to establish national parks, followed by Switzerland in 1914. Other countries like Germany and the Netherlands also protected first large areas without labelling them as national parks.

In the American history the creation of national parks closely interrelates with a peculiar American nationalism, particularly with regard to the myth of the frontier. What are the consequences for the design of national parks if this ideological framework is absent? The paper explores the translations of ideas, techniques and practices of national parks over the Atlantic. It also considers European traditions and interconnections to the colonial world. Furthermore it points to differences in Europe and investigates into national and local contexts of adoption and transformation of the national park concept.

In the latter case special attention is given to the creation and development of the Swiss national park, analysed as a specific local site of a global conservation history. The foundation of the Swiss park was promoted by leading Swiss scientists of the time and supported by the Swiss federal state. Preserving a large natural reserve in the Alps was perceived as a major scientific and national task. A key role in creating the Swiss park was performed by Paul Sarasin, a natural scientist and explorer in the tradition of Humboldt, who had spent several years doing field work in the Dutch colony of Celebes and who became a main activist of the international conservation movement on the verge of World War I. In his person national, colonial and international traditions and connections of the conservation movement came together. The paper examines to what extent these initial constellations remained effective throughout the 20th century.

O076

African connections: National parks and wildlife preservation in German history

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Germans first introduced spatial preservation according to the Yellowstone model in their East African colony in 1896. Game reserves represented the keystone of early colonial wildlife preservation. Their establishment entailed the exclusion of Africans and the loss of environmental control in the vicinity of the reserves decades before they were formally turned into national parks from the 1930s onwards. Although Germany lost its colonies after the First World War, African wildlife and its preservation continued to appeal to Germans in phantasy and practice. After the Second World War, the Frankfurt Zoologist Bernhard Grzimek successfully campaigned for the preservation of Serengeti National Park to the exclusion of the pastoral Massai. The example of Serengeti National Park in East Africa influenced the debates surrounding the establishment of the first German National Park in the Bavarian Forest in 1970. The paper traces the reception and implementation of the National Park concept in East Africa and identifies the hidden connections between ideas of wildlife preservation in Germany and Africa during the 20th century. It will focus on the conflicts that arose from the clash of interests of colonial and post-colonial elite conservationists in Europe and the local necessities of environmental utilisation and control. The paper shall argue that in both settings the preservation of wild nature was tied to and served to reinforce notions of civilization and nationality which functioned as powerful mechanisms of competition and exclusion.

O077

Framing the heritage of mankind: National parks and global reserves on the international agenda

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Over the last decades, Biosphere Reserves and World Natural Heritage sites have proven to be among the most successful and popular strategies for conserving nature and ecological diversity all over the world. Both programs are derived from early concepts of national parks. Apparently, international organisations have been the driving forces behind the standardisation and emanation of such environmental programs and doctrines. Rather small networks of experts and individual actors used the infrastructure of international organisations to promote supposedly universal values and 'civilizing' concepts of nature protection.

From the outset the League of Nations intended to create binding standards for saving spots of natural beauty world-wide and thus dividing the world in spaces to be protected and spaces to be exploited. It collected data from national parks all over the Western world and their colonies and developed an 'ideal model' which was to form the basis for the creation of global programs and networks. Under the auspices of the United Nations, UNESCO and IUCN collaborated to foster global labels of protection. The paper explores the evolution and transfer of these concepts via the League of Nations and its successor, the United Nations. It looks at the various traditions of aesthetic and scientific argumentation and analyses to which extend traditional Western ideas of nature have shaped today's global conservation strategies.

O078

Teaching consumers to recycle: Approaches to aluminium can recycling in Norway and the US

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This paper examines how and why recycling systems for aluminium cans in Norway and the US have achieved highly different results. I will argue that successful recycling systems requires both infrastructure and consumer participation. One of the strategies for increasing this participation has been information campaigns on teaching consumers to recycle. When aluminium cans were introduced in the US in the 1950s and 1960s, the industry-organized deposit systems fell by the wayside. Disposable containers became a massive litter problem. The industry-funded organization Keep America Beautiful (KAB) tried to change consumer littering behaviour through informational campaigns. At the same time, KAB actively opposed a nationwide deposit system. The result was that recycling rates never reached the levels glass bottles previously had achieved. In contrast, when aluminium cans were introduced in Norway in 1996, the government demanded a nationwide recycling system with high recycling rates. Business interests established the consortium Resirk to ensure this. Using the history of these two contrasting systems, their business strategies and promotional materials, this paper examines the strategies for teaching consumers how to recycle. In Norway, the deposit on beverage containers served as a financial incentive to recycle. Although the message in the Norwegian information campaigns had many similarities to KAB's, KAB did not have the financial component added by deposit systems. By understanding what has made some of these strategies more successful than others, it is also possible to say something about *why* consumers recycle.

O080

Recycling and modernity: Waste and the politics of environment

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Modernity is riven by the tensions between youth and senescence, progress and decline. The promise of the modern capitalist mode of production, in economic, scientific and cultural life, has been ever increasing wealth, unending achievement, borderless improvement. Yet, as John Scanlan has shown in his magisterial essay *On Garbage*, while modernity promises the creation of new value, it cannot do without waste. Yet that waste is at the same time a mirror in which capitalist modernity's false promises are revealed, the garbage of our streets and the pollution in our skies are an inescapable challenge to the modern claim to progress. Waste speaks the truth of failure. It reveals the true, irrational ends of alienated labour. Waste, then, is an ideological weapon against capital. Never has this been clearer than in the age of environment, but the need to challenge claims of inefficiency has been omnipresent in the age of capital, and it has been largely done through the development of the idea of recycling. Recycling is a thoroughly *modern* notion. Capitalist modernity may depend upon waste, but it also claims to be able to reabsorb its own wastes, to feed off its own excretions. This paper provides a brief survey of the idea and application of recycling in Britain, its relationship to modern conceptions of waste, and its role in the reinforcement of capitalist ideology.

O084

Climatological changes and its impacts on the transatlantic slave trade in the late 18th century

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The main purpose of the paper is to present the climatic changes and anomalies that took place in the late 18th century and their possible propitious effects on the Atlantic slave trade from West Africa to the Caribbean. The most important question to be answered is to what extent the climate affected the transatlantic slave trade. How did El Niño and La Niña affect the slave trade and the demand for slaves in the Caribbean, and how did climatic changes in Africa affect the supply of slaves for the slave trade? The paper will be focusing on the English slave traders and their sources.

Most slave trading theories have rather focused on the pull effect (the demand for goods and labour) of the Caribbean and Europe, rather than the push effect in Africa (why the supply of slaves actually existed and how it was upheld). In this paper the emphasis lies on the possible push effect created by climate changes.

Earlier research has shown that the climate in the 18th century was in an "unstable period", with environmental alteration that led to and contributed to social dislocation in Africa. This paper will show that these changes created a push effect in Africa, which formed a basis that the slave trade, to a large extent, relied on. The social disturbances - wars and other outbreaks that defines part of the West African history during that century - was partly a result of changes in the climate and partly of the demand for slaves, but the slave trade existed only as a result of this collaboration of factors.

O085

Lady Eve Balfour: A pivotal figure in the development of the UK organic movement?

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This paper investigates the role played by Lady Eve Balfour in transforming the UK organic farming and food movement from a loose network of small clubs and semi-secret societies into a modern campaign boasting sufficient power to challenge industrial agriculture and its supporters.

In 1946 a new 'organicist' organisation emerged in the UK, the Soil Association, with the aristocrat Lady Eve Balfour its most high-profile member. The Soil Association sought to encourage farmers to embrace compost-based, natural farming in lieu of intensive, chemical-based techniques. Today, the Soil Association is the world's largest organic campaigning organisation.

Lady Eve Balfour (1898-1991) committed the majority of her life to the promotion of the organic cause and is often held up by the Soil Association as the movement's most important early figure. But what was the nature of her contribution and did she play the leadership role the Soil Association contends she did?

Family letters and internal Soil Association documents demonstrate that while Lady Eve Balfour's role was of huge importance, the reasons behind the successes and failures of the post-war organic movement (1950-1980) are more complex than the myth of Lady Eve Balfour's leadership might suggest. A great many external factors played their part as did the activities of a good number of organic campaigners, some of whom worked independently of Eve Balfour and her entourage.

This paper examines the coalescence of the organic movement in post-war Britain and considers the challenges that dissident, pro-organic agriculturists were up against as industrial agriculture became entrenched. It investigates the strategies employed by the organic movement and their achievements – or lack of them – realised during the 'difficult' period of 1950-1980.

O086

Romanticism and early nature preservation in Central Europe – from ideas to the first nature sanctuaries

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Romanticism as a movement placed special emphasis on the value of nature, and the ideas that arose from romanticist thinking encouraged care for nature for nature's sake and led to the creation of the first nature sanctuaries. This connection between ideas and nature protection can be best seen in Central Europe, and this paper will focus on developments mainly in the Czech lands.

New attitudes towards nature arose during the entire 18th century, with a turn from a preference for rural nature towards an appreciation of wilderness clearly visible in European thinking. The same could be seen in Central European thinking about nature and the value of nature – we can find many new ideas from philosophy, aesthetics, art criticism and nature sciences, especially German *Naturphilosophie*. These ideas influenced new attitudes to “free” or “wild” nature, mostly with an emphasis on forests and mountainous country. We can also see reflections on the complexity of nature and organisms, and the concept of nature as a living being. New terms appear – for instance, “natural monument” (A. von Humboldt) – and we see the first ideas of the need to care for individual natural objects and whole landscape parts. Good examples can be found in Central Europe, including the Czech lands – for example the creation of the first nature sanctuary, “Žofínský prales” (forest), in the southern Bohemian region of Nové Hradky by philosopher of nature Lord Longueval-Buquoy in 1836. This forest was created to reflect nature in its natural state. Other similar examples of caring for individual natural objects can be found in the romanticist period or tightly connected with its ideas. This includes the protection of animals (bears, 1880, Josef II., Lord of Schwarzenberg) or other types of landscape (“Forest of Boubín”, 1858, Jan, Lord of Schwarzenberg).

O087

Transient islands: Early-modern attitudes toward a radically unstable environment (River Rhône, 17th-18th centuries)

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Until the 19th century, the braided channel of the powerful river Rhône carved and regularly transformed a uniquely transient environment. Hundreds of islands appeared, grew, changed shape, and disappeared in erratic cycles spread over years or decades. To enhance their claims to and uses of these transitory environments, villagers and authorities tried to instil an element of continuity where nature offered only change, but they did so in remarkably flexible ways.

Royal administrators, seigneurs, and local communities negotiated elaborate legal customs allowing owners of disappeared lands to claim equivalent lots when another island materialised nearby. Claims were arbitrated under a series of assumptions reflecting distinct regional environmental perspectives as well as local socio-economic structures. Along the upper Rhône, new islands were assumed to be constituent part of a village *terroir* torn away by the vagaries of the river and relocated in a manner that called for mediation. Further south, new islands were recognised as the “disguised” re-materialisation of islands disappeared decades earlier, making room for even more sophisticated arbitration exercises. Superposed to these claims were complexes of crops successions, harvest cycles, and modest earth-works intended to stabilise this environment - within limits. These techniques reflected regional distinctions, but all used the river’s sediments to consolidate and fertilise the islands, without, however, attempting to permanently alter the flood activity that regularly upset the local geography. These practices supported both individual and collective uses, in varying proportions.

This unique environment, distinct from better-known marshes or flood plains, offers exceptional insights into the nature of the land claims that stood at the heart of an agrarian society. They most notably illustrate how stable social, political, and economic structures could accommodate a radically unpredictable landscape, suggesting that the relationship between a community and its environment is perhaps best seen as an adaptative process, rather than an equilibrium.

O088

Marine research in New South Wales 1900-1950

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The paper will describe the rise of marine research in New South Wales, Australia in the early 20th Century and document its progression until the 1950s.

The development of a sea fishery was a deliberate accomplishment of the New South Wales Government, and both State and Federal marine research institutions played leading roles in forming it. From the 1900s marine research and experiments was influenced by both Norwegian and British biologists, and the North Sea experience became the model to understand the New South Wales sea ecosystem, about which little was known. As a New South Wales fishing industry developed it became apparent that the dynamics of the southern hemisphere ecosystem differed from the North Sea in ways that quickly made the British style of trawl fishery unsustainable.

By the 1930s New South Wales was facing the environmental and economic consequences of heavy exploitation of the stocks. Australia's two leading marine research institutions, CSIRO and NSW Fisheries, tried to understand the nature of the problem and provide functional management advice to the New South Wales Government.

In light of this background, the paper seeks to answer these questions:

1. What was the nature of the marine research done by CSIRO and NSW Fisheries in relation to pelagic fishing in New South Wales?
2. Was there a competitive relationship between CSIRO and NSW Fisheries and did it affect or delay the management advice they gave?

How did the working relationship between the marine research institutions and the sea fishing industry change over time as a result of hardship in the industry?

O092

Crop yield and soil fertility on the great plains frontier

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Case studies at research stations suggest that Euro-American farmers depleted soil fertility during their first 60 years of agricultural settlement on the U.S. Great Plains. Nitrogen and carbon that had accumulated during 10,000 years declined by about 50 percent in plowed cropland, a drop of about 1 percent per year. Continuous cultivation, even on organic, horse-powered, family farms, was a soil-mining operation and was probably unsustainable. This paper evaluates the process systematically by measuring the extent of the problem in all Kansas counties at annual intervals between 1874 and 1944. The paper is based on land use data from agricultural censuses and rainfall data from weather stations, assembled in a GIS. Annual corn and wheat yields act as a proxy for soil fertility. To what extent did crop yields decline in tandem with declining nitrogen and organic carbon content? Were there regional or temporal variations? Were plains farmers on track for cropland abandonment before fossil fuel based synthetic fertilizers rescued them in the 1940s? This paper addresses each of these questions, shifting the scale from the small research plot or single county to include all 110 Kansas counties at a medium-level regional scale.

The construction of the grasslands in “Newest England”: New Zealand 1850s-920s.

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This paper analyses how British settlers after 1850 converted about 18 million acres of forest, tussock and swamp into pasture lands using ‘English grasses’, thereby creating what the American progressive journalist Henry Demarest Lloyd described as ‘newest England’ when he visited in 1899. The creation of these ‘carpets’ of rye grass, cocksfoot, white and red clover, larger in extent than in England itself, has long been taken for granted, rather than acknowledged as a remarkable example of imperial environmental transformation. How did British settlers achieve such a rapid engineering of nature, and what drove the reconstruction of an ancient environment that had never before carried ruminants or any large based mammals? The project on which the paper is based this seeks to combine older style agricultural history with a more broadly conceived and interdisciplinary environmental history.

The paper will seek to critique simplistic centre periphery explanations of New Zealand’s development as the grassland farming specialist of the British Empire; counter the thesis that gentlemanly capitalists based in London drove its grassland construction when colonial farmers, capitalists and agricultural scientists played a more dynamic role than their British counterparts; discuss methods employed by farmers, seed merchants and the state to trial and develop a narrow suite of grasses and grass mixtures; underscore the importance of ideology, especially the yeoman ideal and its privileging of the family farm; emphasise the significance of New Zealand’s lack of minerals and the consequent failure to develop alternative economic strategies to explain the development of a virtual grass monoculture; and highlight the role played by key individuals in promoting the hegemony of grassland utopia.

O094

Narratives of (inter)national environmental history: The case of Austria in times of globalization

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A current book project serves as an example for discussing conceptions and narratives of Environmental History. The paper will offer an in-depth-analysis of an Austrian case and compare it with other national (e.g. Sheail 2002) and global 20th century Environmental Histories (e.g. McNeill 2000).

The book series limits did not allow an encyclopedic approach which necessitated a decision about what was quintessential about Austria's Environmental History. Although it is of crucial importance for us not to reduce environmental history to the history of environmentalism or conflicts about power plants, one of the four essays addresses these topics. A second one deals with the fundamental changes in agroecosystems after 1945.

The book contains two more experimental parts, where we try to connect mentality and material, the essayistic environmental histories of two "index fossils": The history of diapers shows how debates about waste and pollution overlap with demographic change and gender politics in practices of everyday life. The history of bananas highlights not only the history of consumption, transportation and changing ideas of luxury, but also the role of plants and plant diseases. In the late 1980ies bananas once again became luxury goods in Austria, when consumers from neighbouring countries with recently collapsed communist rule overran Viennese shopping streets.

Such case oriented, national approaches are necessary, a case in point is Ted Steinberg's (2006) history of the American lawn. Even if environmental pollution and degradation cannot be confined to national boundaries, environmental attitudes are, and thus, national narratives are important for reflecting societies' relationship to nature.

O100

European animals in America: How British and European agriculture influenced the American farmer, 1783-1859

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In the years after the United States became independent from the British Empire, the new American republic did not cease to be informed about agriculture, livestock, and improved farming techniques from the European continent. Political separation did not create cultural or biological division. In fact, in some areas of agriculture, the influx of animals and ideas about animal agriculture between Europe and the United States might have increased as the 19th-century progressed. Importations of merino sheep, shorthorn cattle, Saxony sheep, and Berkshire swine into North America certainly sparked special interest for different breeds among certain experimental American farmers, such as Thomas Jefferson, E.I. DuPont, Robert Livingston, John Hare Powel. Yet, even beyond the impact on elite Americans, most agricultural newspapers and farm books in America by the 1820s and 1830s covered agricultural and livestock issues with a very Anglo-centric focus. American farmers and breeders enlisted European knowledge about the improvement of the soil, the reading of the climate, the understanding of the laws of reproduction and veterinary care of animals. By the 1850s, American farming gentlemen, like Henry Colman and Frederick Olmsted, readily sought to change the character and productivity of American agriculture in the 19th century to reflect the best of British high farming or Prussian soil chemistry. These Americans, however, often faced radically different social and environmental conditions in America that made it difficult to use such improved livestock or such intensive cattle soiling practices on a wide-spread basis. Farm labour was very expensive, while the expanding frontier lands within the U.S. were cheap. Instead of an agriculture bounded by tight enclosures and managed livestock, the North American environment of the mid-19th century became one of backwoods pastures, increasingly industrialized livestock production, and large-scale ranching. Americans could take the livestock out of Europe, but they could not import the cultural meanings and social structures of European farmers necessary to North America.

O101

The ethnocentric steer: Perceptions and obsessions in the introduction of European livestock science into Brazilian tropical cattle ranching, c.1880-1950

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Over the nineteenth and twentieth centuries, the expansion of global demand for meat stimulated advances in animal science such as breeding, disease prophylactics, animal nutrition, etc., leading to the development of larger, healthier, and more marketable animals. Much of the knowledge was exported overseas, and while the impact for beef raisers in Europe and North America has been studied in some detail, less attention has been paid to other lands. In several countries, guided by local or foreign animal scientists convinced of the impeccability of science originating in "developed" nations, ranchers incorporated "modern" cattle raising methods into their operations. In Brazil, however, many experienced desultory or even disastrous results as they attempted to transfer successes achieved in northern temperate conditions to the tropics. Convinced of the "innate" inadequacies of Brazilian ranchers, scientists and governments launched programs to educate ranchers in the most up-to-date methods developed overseas, refusing to acknowledge that much of this technology was inappropriate to the ecological conditions of the region. The limited efficacy of these programs caused some Brazilians to seek alternative solutions, either applying some of the knowledge to their experience with "native" cattle that over several centuries had become adapted to tropical environmental conditions, or adopting the Indian zebu breed. This paper examines the often rancorous and even "ethnocentric" debates surrounding animal science in nineteenth and twentieth century Brazil, as protagonists sought to assess reasons for the lack of "productivity" of Brazil's beef industry, often assigning blame to ranchers or animals with little or no understanding of the specific environmental conditions of the country. This experience illuminates an important chapter in the "imperial" relationship between science originating in the north and its application in the "less developed" south, a process that often retarded the very development it was intended to stimulate.

O102

The Chinese pig in Europe: The making of the modern pig in 17th century Europe

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The exchanges of animals within the Old World have often been forgotten in the historical perspective of animal movement during the Columbian Exchange. This paper will examine the transformation of European pigs made possible by the introduction of Chinese pig stock, a transfer now confirmed by DNA evidence. It will trace their separate domestication and breeding at the two ends of Eurasia and demonstrate the different consequences for pigs, both biological and cultural. Pigs in Europe up to the 17th century were strange, half-wild creatures by the standard of today's hog. Their breeding was unselective and their maintenance an annual cycle of droving and foraging. Their unusual place in European culture and lore, recently examined the work of Claudine Fabre-Vassas and others, reflected this biology and ecology. On the one hand, pigs took part in murder trials and anti-Semitic legends. On the other, they lived closely with people, and their raising and slaughter played an intimate part in the rhythm of the seasons. In East Asia, however, pigs had long been penned, bred, and fattened on scraps. Their appearance differed little from modern pigs, and they belonged to a more intensive system of agriculture. They carried few of the same cultural associations. When the first Chinese breeding pigs arrived in Europe in the 17th century, they came at a time when northern Europe was also transforming its farming techniques, enclosing land, growing new crops, and clearing the forests where pigs had foraged. Europe effectively recreated the ecological conditions for pigs long present in East Asia, and in these conditions came to produce the modern pig. In so doing, I will argue, they also dropped the cultural baggage that pigs once carried and instead created the fat, harmless, familiar creature of today.

Agriculture's effect on the soils and landscape of the northern half of the isle of Arran, Scotland

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As environmental historians we are all aware that one cannot separate human history from the environment. This study examines the effect of Scottish agriculture as a result of the "Improvements" of the late eighteenth and early nineteenth century. The Medieval run-rig and lazy bed methods of agriculture produced deep furrows which can still be seen on today's landscape. Tillage using rigs dug by a plough or hand-cut lazy beds consisted of deep furrows with alternating high ground in long rows that ran parallel to the slopes thus affording dry ground for the crops and drainage troughs for the nearly perpetual rain of the Scottish climate. The conversion of marginal land into arable ground severely changed the landscape. Not only can the effects of those changes still be seen today, but they are the inspiration for the island's main economy, tourism. Visitors are drawn to the wild and "natural environment". But it was the agricultural changes of 240 years ago that have contributed to the shape, quality, composition and nutrient levels of the soils, plant diversity and the topography of today's landscape.

A survey of the tenant farms on Arran can be found in the eighteenth-century journals of John Burrell, factor for the Duke of Hamilton, owner of much of the island. Listed in these journals are the acreage of ploughed land vs. pasture lands, crop types, number of cattle, horses, sheep, etc., and, in many cases, soil types. Soils are dynamic entities. Their investigation makes a significant contribution to the understanding of agricultural effects on the environment. Today, the northern half of Arran includes humus-iron podzols and gleys, peaty gleys, and peat. Rough pastures used by sheep and deer overlay what had been tilled and arable land. Some of the farming communities have become lost within forestry plantations. Biodiversity is limited on much of the former agricultural lands. Rush and sedge mires and bog lands occur in areas which had been drained by the former rigs.

Through this comparison of the eighteenth century soils with the conditions of today, a baseline will be set for the agricultural effects on the landscape of Arran and that will assist in creating the process of environmental decision-making for the island's tourism industry.

O107

Issues in environmental history

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Environmental historians, along with historians in general, while undeniably producing carefully reasoned case studies, have sometimes been accused of being light on theory. The charge may have some validity across the field, although there have been notable exceptions. This paper discusses a few of the salient theoretical issues that have concerned and divided environmental historians, specifically professionalism, environmental determinism as opposed to anthropogenic causation, declensionist narratives, social construction and presentism, political-economic explanations, and environmentalist advocacy. The debates on these issues seem unlikely to recede; rather, it is most likely that similar issues will continue to arise. The contention of the essay is that more prevalent discourse between multiple theoretical viewpoints, carried out in a reasoned manner, would strengthen the field.

O108

The relevancy of the European grand social theories of the 19th century to the contemporary universal environmental thought (A conceptual model of key ideas over the last 200 EH years)

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The conceptual model outlines the history of environmental thought over the past two centuries, particularly the role of two universal concepts today: "carrying capacity" and "sustainability." The methodological aspects are the conceptualization and reflection of the ideas over the past 200 years, in periodical context.

The tension between the environment and population was a "hot" issue in the public and scholastic arena during the 19th century, in Europe. Malthus, Marx, Spencer and Darwin, had referred, respectively, to the environmental issue as reflected in their entire social theory.

With a "slight" jump of almost a century, to the end of the 1960's, few breakthrough research groups have evoked the academic, as well as the public, debate with their research results. The first one began as an initiative of the Club of Rome (the MIT cosmopolitic group headed by Meadows,) whose "The Limits to Growth" (1972) alarmed the world with its scenario of limited resources. This was followed by a study by a group from Sussex University, entitled "Thinking About the Future - A Critique of the Limits to Growth" (1973), which, to a great extent, contradicted the Meadows group's results.

These studies of the 70's resulted in two things: 1) Raising environmental awareness not only as a concern of green groups or mere individuals, but also as an international political interest, and 2) Turning the debate into a deeply thought process that led to the formulation of the a UN document Bruntland Report (1987), which defined the environmental attitude of "sustainable development," and subsequently to the Earth World Summit in Rio and the "Our Common World" conference of 1992, followed by the ten-year perspective at the Johannesburg Summit in 2002.

The proposed model describes the intellectual history of sustainability until Johannesburg in its historic, cultural, political and geographical contexts.

O109

The international congress on the preservation of landscapes, 1909

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Following the industrialisation of Europe and North America in the 19th century, movements for the protection of "aesthetic environments" emerged in most of the European nations and in the United States. But there were very few connections between them, especially as they invested their landscapes with national values. However, in such a context of growing nationalism, and at the initiative of the Society for the Protection of French Landscapes, an international Congress on the subject was held in Paris in October 1909. The obvious purpose was to enhance the communication between the different countries invited, and to give an international visibility to the movement. Nonetheless, the organisation of the conference raises many questions. It was presented as a preparatory meeting for the international congress suggested by Theodore Roosevelt on the preservation of natural resources; but what were the real relationship between those movements and other environmental organisations? Moreover, there were no Americans at the conference and no British either. The absence of the latter is all the more surprising as Britain could be considered a model for the protection of landscapes at the beginning of the 20th century, with societies such as the *National Trust*. How can we explain then the predominance of German and French delegates? What were the results of the conference? Did it help to build personal or institutional connections, or to strengthen ideological links? What were its consequences on an international level: did it facilitate the constitution of an international (or European?) movement for the protection of landscapes? As such, the International Congress on the Preservation of Landscapes can be considered as a particularly interesting case study on the success and failures of international environmental connections.

O111

Blue rivers in Red China: Environmental debate and the image of China in Germany during the early 1970s

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The image of the People's Republic of China today shows a country of environmental disasters: Rivers are contaminated or forced into channels and lakes to produce energy and electricity. The dragon hungers for economic growth, so it has to be fed.

Thirty years ago, by contrast, China under Mao appeared to be an ecological paradise as many Western German left wing publications put it. In the early 1970s, when environmental problems became an issue of public interest, explanations were clear cut: In the opinion of left wing organizations environmental debate could be seen as evidence for a crisis of capitalism. Environmental Policy was supported by mass media and large companies to distract working class from revolution.

But environmental protection and working class interest was not seen as a severe contradiction: The People's Republic of China served as an example of how needs of the working class and the environment could be combined. Environmental protection in China (e.g. recycling and urban management) was approved not only by members of the left but also by economic scientists: A bridge between environment and development also seemed to be possible. China was regarded as a role model not only for developing countries, but for western societies.

Although visits to China showed a different picture environmental debate nevertheless got new arguments and ideas from the Far East: Mao's China served as a screen for western ecological utopia.

O112

No rats, no fleas: Transforming the early medieval pandemic

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In the late 530s CE what is now known as the early medieval pandemic (EMP) erupted somewhere near Ethiopia. The disease subsequently reoccurred in fourteen waves at intervals averaging sixteen years, connecting populations from Ireland to Iraq, Finland to Egypt. Relevant written sources, stemming from Europe, the Middle East and North Africa, are numerous, providing many details regarding symptoms and epidemiology, and varied, consisting of annals, chronicles, letters and saints' lives. Published scholarship is, conversely, miniscule; what exists seeks to understand the demographic and political impact of reoccurring infectious disease in different political principalities. What all the scholarship has in common, however, is the understanding that the disease was bubonic plague. In fact, historians of the EMP have frequently exploited the epidemiology (a pathogen's modes of transmission, and rates of mortality and morbidity) of bubonic plague to make up for the lack of quantitative source material and in order to speculate on the EMP's demographic impact, as any appreciation of the environmental disaster relies on some understanding of the severity of population contraction it caused. Yet no one has systematically surveyed the epidemiological properties of the EMP evident in the sources and compared them to those of bubonic plague. Such a survey is the focus of this paper. I cover the written sources and document evident epidemiological properties and changes in these properties over time therein. Comparison of these properties to those of bubonic plague, as known by nineteenth and twentieth-century science, clearly indicates that the EMP was not bubonic plague. Thus historians cannot superimpose the epidemiology of bubonic plague onto the EMP. We must instead be interdisciplinary in approach, recognizing the importance of epidemiology and utilizing archaeological evidence to weigh the pandemic's impact. Historians need not worry about insufficient evidence for bubonic plague's rat hosts and flea vectors. (299 words)

O115

African and European views of sustainable development, 1992-2002

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From its introduction in the 1970s as an important item on international agendas, sustainable development has been a compromise between proponents of economic growth and ecological conservation. This is evident from the range of strong and weak definitions of sustainable development, which have evolved. At first, in the 1970s and 1980s, African commentators often expressed scepticism about the alleged potential for sustainable development to become a tool in widening the gap between the developed and developing world still further. However, in the longer run, African leaders managed to appropriate sustainable development in such a way that it could be used to the benefit of African interests. In the 1990s, when sustainable development was an important component in North-South debates and development discourses, Africa managed to promote and consolidate the linkages between sustainable development and poverty reduction. The fact that the United Nations Secretary-General, Kofi Annan, was an African, was significant in this regard. In the proposed paper I will compare African and European views of sustainable development and its triple bottom-line in the period between the Rio Earth Summit of 1992 and the Johannesburg World Summit on Sustainable Development (WSSD) of 2002 and indicate how the different approaches to sustainable development on the two continents, informed by their different and often conflicting interests in the context of international relations in the post-Cold War period, changed and shaped interactions between representatives from Africa and Europe.

O116

Economic development and environmental change. A case study: Florence and its conurbation (1945-1995)

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Beginning from the 1940s, we have witnessed the expansion of a city whose metabolism has undergone an extraordinary rate of growth in the consumption of energy and of natural resources.

This was a metropolis which expanded its suburbs out of all proportions over rural districts, which traditionally provided for its agricultural requirements. The repercussions of this tumultuous urban and industrial process upon the environment have been enormous to the extent that, to quote Martin Melosi, we can speak of "*urban crisis in the age of ecology*".

Mine is a contribution to the analysis of political, social and economic processes which lay at the roots of the environmental transformation of the city. In this endeavour I have chosen Florence and its metropolitan area for two reasons.

The first concerns its environmental make up: this area occupies a district in part plain and in part hilly, affected by an important drainage system centred upon the Arno river. Thanks to its peculiarities this district has preserved, in spite of its high population density, a high degree of biodiversity, spanning from deciduous woodlands to marshes.

The second concerns the peculiarities of urban development in the area, which in little over 20 years (1951-1973), has gone from a district of small towns, villages and farms, into an urban conglomerate with a strong industrial vocation, set in the midst of a profoundly urbanized rural district. The repercussions of such urbanization and industrialization processes upon the environment have been significant as to make one speak of a true "ecological crisis" whose chronology may be summed up into three periods: a first phase (1945-1971) characterized by near indifference towards environmental problems; a second phase (1971-1982) when institution began to become aware of the seriousness of environmental damages; a third phase (1982-1995) characterized by the first concrete measures aimed at resolving ecological damage.

O117

The landscape concept in Russian environmental thought – the international context

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The landscape concept has played a significant role in physical-geographical and environmental thought in Russia since before the first world war. The paper traces the origins of the Russian concept in both the ideas of the Russian soil scientist V. V. Dokuchaev (1846-1903) and in the German geographical notion of landscape. The paper notes the divergent developments in the landscape idea in Russia, Germany, the UK and the USA under the influence of twentieth-century scholars like Lev Berg, Karl Troll, H C Darby and Carl Sauer, arguing that for a variety of reasons the Russian/Soviet concept emphasized the biophysical nature of landscape as reflected in the study of landscape science. The latter part of the paper considers the recent revival of a broad interest in landscape science in central Europe as a result of growing environmental concerns, the ways in which this is being reflected internationally including in Russia, and the prospects for a *rapprochement* in approaches towards landscape in the light of global environmental difficulties.

O118

Conceptual underpinnings of UNESCO's Man and Biosphere Programme (MAB): the role of the USSR

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UNESCO's Man and Biosphere Programme (MAB), which was initiated in 1970, was a direct response to the growing concerns over humankind's influence on the natural environment. This paper is focussed on the conceptual origins of this international scientific programme and, in particular, the role of the USSR. Holistic conceptions of society-nature interaction and the Earth's biophysical systems were strongly represented in Soviet intellectual circles of that time. Furthermore, the work of the Russian scientist Vladimir Ivanovich Vernadsky (1863-1945) with respect to the biosphere provided an influential conceptual framework for fleshing-out the initial structure of the MAB programme. Drawing from a range of sources, the paper explores the nature and extent of the USSR's contribution to the formative years of the MAB initiative.

O119

Concern over the exhaustion of fish resources: Russian attitudes in international perspective, 1850s – 1930s

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Concerns over diminishing fish resources were brought to the attention of natural scientists and governments in several countries during the mid-19th Century. The Russian government was one of the first in the world to organize large-scale studies of fisheries. These studies began in 1851 under the leadership of Karl Ernst von Baer, who was at the time one of the country's leading natural scientists.

In this paper I will discuss Russian theoretical and practical approaches towards the problem of decreasing fish resources from the time of K.E. von Baer through to the 1930s, when such concerns were undermined by the Soviet industrialization drive. At the same time, these approaches will be placed within the context of contemporaneous international understanding. For example, networks of fishery scientists emerged with the organization of international fisheries exhibitions and congresses during the 1880s and 1890s and these facilitated the establishment of international organizations such as the International Council for the Exploration of the Sea (1902), which tried to understand the reasons behind fluctuating fish populations.

O120

Adolf Erik Nordenskiöld - transformer of environmental thinking

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Adolf Erik Nordenskiöld (born in Finland 1832 - died in Sweden 1901) found the Northeast Passage in 1878-79. He was the first man who sailed with his crew around Europe and Asia on the steam/sailing ship "Vega". He was also among other things the first person in Scandinavia who expressed his anxiety about how technology was overwhelming nature. He recommended in 1880 in his essay "Förslag till inrättandet af Riksparker i de nordiska länderna" that national parks should be established in order to conserve the untouched nature, and to give humans the possibility to perceive the genuine beauty of their own country.

It appears that he brought the conservation movement to North Europe from United States of America after visiting The Centennial Exposition in Philadelphia year 1876. The Yellowstone National Park was just established in 1872, and there had been eager discussions around conservationism in the USA. So Nordenskiöld is an important link between America and Europe in the conservation movement.

Adolf Eric Nordenskiöld had, supposedly, a good environmental literacy. Environmental literacy is a combination of observations, experiences, knowledge, attitudes, and values, which together result in interpretation, definition and a holistic understanding of nature. Environmental literacy is always interlinked with communal, cultural, societal and historical factors. Ability to understand environment and its processes is a prerequisite for sustainable interaction between human and nature, and therefore an important and interesting research subject

O121

Between pollution and Wasserverschmützung: Transfers of scientific knowledge and management practices in the Franco-German Borderland (1870-1925)

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The annexation of Lorraine and Alsace by Prussia in 1870 provided Germany with regions replete of natural riches, which were the foundations for the development of heavy industrial activities (most notably, steel mills, coal and salt mining and transformation). These industries had a tremendous impact on regional water quality, most notably on the Moselle river and its tributaries. These regions were returned to France after World War I. They provide an interesting case study to compare how France and Germany dealt with industrial water pollution, and what knowledge transfers took place between both countries in the field of water pollution management.

This paper is based on archival work both in public and private companies' archives. My argument is that the French management of river pollution drew on the practices and institutions laid out by the Germans. The level of German expertise and experience in the field was higher than the French, except in the field of bacteriology. The German administration also took a tougher stance on chronic polluters. However, the overall impact on the environment was not substantially alleviated, since the German had developed at the time a theoretical body around the notion of "Opferstrecke" (sacrificed sections) that was put to use in the Ruhr region and to a lesser extent, in Lorraine. It placed the well-being of the industry over the preservation of streams. This management practice was adopted by the French when the region was returned to them, thus explaining the dismal state of some industrial rivers that have not yet recovered, some decades after the industrial climax was reached.

O127

Environmental policies in post-war Italy between reconstruction and economic boom

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The 1950s have been a crucial period in the formation of the political, industrial, and economic structures of Italy. The aim of this paper is to analyse from an ecological perspective the dramatic problems, hidden behind a blind trust in progress and industrialisation, of a country lacking for the whole period of reference of effective legislative and normative tools in the field of landscape planning and environmental policies.

The legislation of the Italian Republic focussed mainly on emergencies and lacked a sound planning culture that could lead to long-term solutions. Article 9 of the Italian Constitution of 1947 stated that the Republic safeguards the landscape: an important assertion, that was however not supported by a real engagement in the development of an effective legislation or by a culture aware of the environmental risks posed by an uncontrolled economic development. Thus the preservation of the landscape from the damages of a chaotic industrial and urban growth was left over to a Fascist law of 1939, the activities of a specialised preservationist association (*Italia nostra*), and the propagandist effort of an intellectual elite, supported by the engagement of a small part of the press and of the entrepreneurial class.

The most evident features of such a situation were the surrender of any development process to the spontaneity of the economic actors and the multiplication of policies of patronage that stonewalled any attempt to impose effective planning policies. This state of things greatly impacted on many environmental issues, such as the location of new industrial plants, the reconstruction of a heavily damaged transport system and the chaotic development of urban growth.

O128

“A network of trust”: Building an air pollution monitoring system in Britain, c.1910-1960

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By the turn of the twentieth century, high levels of atmospheric pollution had enveloped British cities such as Birmingham, Glasgow, London, and Manchester in a permanent smoke haze. Legislative and educational measures aimed at controlling urban air pollution had enjoyed little success, in no small part because of a lack of accurate information on which to ground decision-making and build consensus for meaningful action. This paper examines the origins and development of a nationwide monitoring network to systematically collect data on atmospheric pollution that could be used to support the work of city authorities in regulating smoke. The Advisory Committee on Atmospheric Pollution (ACAP), founded in 1912 with observation stations in just 17 localities, had by the mid-1960s expanded its research activities to involve over 500 cooperating authorities and organisations in almost every major British town and city. To date, the construction and operation of this pioneering monitoring system is an under-researched aspect of air pollution history.

Stressing the importance of technical standard setting in providing reliable and policy-relevant knowledge about environmental problems, this paper will explore how a disparate body such as the ACAP (encompassing the Meteorological Office, the Department of Scientific and Industrial Research, the Medical Research Council, numerous municipal authorities, the coal, gas, and electricity industries, and non-governmental organizations such as the National Smoke Abatement Society) overcame obstacles to integration to speak with political authority. Expert knowledge produced by the ACAP was used to inform and implement clean air strategies. To conclude, while measuring and monitoring air pollution might have appeared to be neutral, purely scientific acts, the construction of the ACAP network was in reality inextricably intertwined with economic and political interests.

Urban environment and French sanitary engineering connections, ca. 1880-1940.

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Despite its status as the nation of Pasteur, at the turn of the 20th century and in the era of bacteriological revolution, France was suffering from an unhealthy urban environment in most of its cities. While international congresses fostered scientific connections between hygienists and public health officials, as can be seen in Paris in 1900, France's leading engineers were still complaining about the poor sanitary conditions in the provincial towns.

First of all, this paper will show the role played by French hygienists on the European scene of sanitary engineering, by acting as experts in other cities (like engineers of the *Corps des Ponts et chaussées* working in the Parisian administration) or by attending and speaking in international conferences. For instance, the International Union of Local Authorities organized its conference in 1934 in Lyons on the theme of waste collection and disposal.

Secondly, it will underline the means they found to develop sanitary engineering in France and to clean up the urban environment:

- International exchanges and study tours, particularly in Britain and Germany, (but not only... for instance in 1896 the mayor of Limoges went to Amsterdam to study the "Liernur" sewage system). They helped to establish the French industry of sewage and garbage treatment at the turn of the 20th century. At this time, while the British garbage destructor was being implemented across the colonial Empire in South Africa, India, and Australia, the Parisian City Council was appointing several commissions to visit the main garbage treatment plants in Great Britain, Germany and Central Europa.
- Correspondence between cities and negotiations between private companies and municipalities.

Examining these exchanges, in addition to a better comprehension of the decision-making process could provide new insight on the spread of urban sanitation technologies and perhaps help to find some national characteristics in the manner and chronology of urban sanitation.

O130

The internationalization of smoke abatement reform in the late 19th and early 20th centuries

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As Daniel T. Rodgers demonstrated in *Atlantic Crossings: Social Politics in a Progressive Age* (1998), the late nineteenth century witnessed a great deal of interaction and cooperation between individuals in the United States and Europe who sought to ameliorate problems brought by rapid industrialization, urbanization, and unbridled capitalism. This paper explores a largely forgotten aspect of that history: the internationalization of smoke abatement reform. In the four decades prior to the First World War thick clouds of coal smoke from households, railroads, and factories obscured the skies over many cities in Europe and North America. On both sides of the Atlantic, scientists began to study the composition, causes, and effects of this pollution, and reformers sought ways to reduce or eliminate it. Drawing on an extensive study of conference proceedings, scientific reports, government publications, and unpublished correspondence, this paper argues that technical experts, lay reformers, and government officials from many of the world's largest coal-consuming countries surmounted political and linguistic barriers to exchange ideas, learn what legislative or technical approaches had worked or had failed elsewhere, and make clean air an issue of greater prominence at both the local and the transnational levels.

O132

The understanding and regulation of acidity in historical perspective: Transformed British uplands and in the development of transboundary pollution regulation in the late 20th century

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Following the 1956 Clean Air Act, and an industrial decline, the most visible aspects of the smoke nuisance in Great Britain were greatly diminished. However, the invisible noxious gases associated with coal combustion did not receive the attention they merited. The regulation of smoke did not solve the problem of acidity as many thought it would. This was especially obvious in the rainy upland Pennine communities east of industrial Lancashire.

Removal of acid forming compounds from emissions is much more complicated and costly than the removal of smoke. This technological difficulty, acidity's invisibility, the less obvious impacts on human health, and its ability to travel far from where it was produced combined to keep it from being properly regulated. Downwind from industrial Lancashire, the upland Pennines served as a sink for this area's acidity for over 200 years, resulting in a severely compromised and less diverse ecosystem. This paper will argue that the study of acidification in the human and natural communities of Lancashire and the Pennines played a considerable role in advancing understanding of the impacts of acid deposition. However, this growing understanding was not enough to prompt action. It was the widespread adoption of tall stacks in Britain that led to the long-overdue effort to better regulate acid waste. The switch to a new sink for Britain's acidity in the second half of the 20th century led to a much more complex international understanding of atmospheric chemistry and the long-range transport of pollutants, resulting in ground-breaking international treaties regulating transboundary pollution.

O133

Schmutz in the Baltic: Capitalist nature and pollution in historical materialist perspective

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The paper I propose adopts an historical materialist approach to trace the origins and outcomes of major pollutants in the Baltic to explore the boundaries between capitalism and nature; the connections and disconnections in politics and social production around the sea since the middle of the 20th century and a 'capitalist nature' thus constituted. With the peculiar geomorphic qualities of the sea itself, the Baltic is a repository of long term industrial processes, urban water management, social, political and ecological connectivity. Traces of these historical processes remain suspended as particles of industrial and biological pollutants in the water of the sea.

Pollution itself has entered a murky sort of commodification as state and commercial interests seek solutions to ecological problems-- including factoring in the costs of inaction-- mobilizing the threats of ecological degradation to engage in the re-allocation of funding into new institutions, into old surveillance technology and new sciences, in the processes of 'cleaning-up'. Seen in this light, the contemporary clean-up of the Baltic can be seen as one of the last of the Cold War Projects.

This paper thus treats pollutants as commodities and maps out a methodology for addressing them following the models laid out in anthropological commodity studies. The specifics of local urban water treatment, local agricultural and industrial effluents articulate with those of other localities as well as the policies and politics of many states, and the global financial and corporate bodies that have historically shaped them.

Starting from the recognition that capitalism would even seek to profit from environmental degradation, this project traces the historical sources of industrial and biological pollutants in the Sea itself and the historical, social, political and ecological dynamics in play in dealing with them.

O134

August Krogh and climate change, or how to forget an inconvenient truth

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One of the first to call attention to the dangerous connection between fossil fuel, carbon dioxide and climate change was the Danish Nobel Prize winner August Krogh (1874-1949) who, in 1904, after a scientific expedition to Greenland published a paper entitled "The Abnormal CO₂ –Percentage in the Air in Greenland and the General Relation between Atmospheric and Oceanic Carbonic Acid" (Meddelelser om Grønland, 26). This highly sophisticated paper by one of the leading scientists of the day was largely ignored.

The purpose with my paper is twofold: (1) to call attention to an important, although forgotten pioneering work by a major Scandinavian scientist (2) to investigate the reasons why exactly this part of Krogh's otherwise widely read and internationally appreciated research has been ignored. My claim is, that the reasons for ignoring this part of Krogh's research were three: (a) a diffuse, never seriously discussed doubt about the validity of carbon dioxide as an explanation of warming, whose existence per se in the North Atlantic was generally recognized no later than 1920 (b) a general conviction that warming was a good thing, especially in the North Atlantic region where the cod came in and fishing flourished after 1890, conveniently compensating for the devastating social and economic set-backs caused for instance in Danish Greenland by a sudden decline in train-oil prices after the rise of petroleum as a lightning material since 1870 (c) "wishful thinking," i.e. a very strong will to believe with the climatologist Thomas A. Blair that climate "is not influenced by the activities of men except locally and transiently" (1942).

O135

Lithuanian protected areas

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Recent attention to parks in Lithuania benefits from trends prompted by EU attention to preservation and conservation. However, the basis for having areas to protect dates from the reserves of the Middle Ages and some Lithuanian SSR efforts in the 1970s. This paper will look at the predecessors of present day nature preserves in Lithuania, including the Soviet zapovedniky model, explaining how the ideologies behind these different types of reserves contribute to present day protection and tourism. The period after Lithuanian independence (1991) resulted in several new national parks, including Dzūkija, Kuršių Nerija and Žemaitija national parks and Trakai Historical National Park, with thirty regional parks being established in 1992. Today there are 5 national, 30 regional parks, and 265 state reserves. Reserve territories in country occupy over 7.5 thousand km² or 11,5 %. National parks in this area make about 20 %.

The goals behind establishing Lithuanian national and regional parks are more than preservation of the landscape of natural and cultural value but also propagation and support of ethnic-cultural traditions of Lithuanian regions, creation of conditions for recreation, and, first of all, cognitive tourism, a term which will be explored in this paper.

Biodiversity and production: Converging ideas for Australian conservation

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Conservation Biology has been defined as a science of 'crisis' – 'a mixture of science and art'. This paper will trace the science and the crises that have shaped its expression in the Australian context.

In the 1960s, A. J. Marshall, foundation Professor of Zoology at Monash, published *The Great Extermination*. His feisty prose railed against the 'Anglo-Australian Wickedness, Cupidity and Waste' in clearing bushland habitat. Conservationists lobbied passionately for nature reserves to conserve the biota that were not already extinct. The Australian Academy of Science created a scientific method, Gap Analysis, to deal logically, not emotionally, with the selection of suitable reserves for conservation. This method also informed the work of the International Biological Programme (IBP) in the Australian context.

Australia still leads the world in 'reserve selection algorithms', but the new conservation biology defines the crisis differently. Reserves are important to 'separate the biodiversity from processes that threaten its persistence', but the surrounding landscape, the 'matrix' is also part of scientific initiatives. Biodiversity is threatened everywhere – and it has become a priority for production landscapes as well as reserves.

Science is now interested in human-modified landscapes and reserves are no longer solely government controlled. The state has historically assumed responsibility for conservation whilst business and private ownership has focused on pastoralism, particularly in the arid zone. The distinction has begun to blur, as pastoralists have increasingly embraced conservation as part of sustainable land management, and many pastoral properties have been bought by philanthropic organisations to be managed for conservation. The European idea of 'countryside', where people live with nature and conserve biodiversity alongside production, has new resonance as Australians move beyond wilderness models that have separated nature from people.

O137

'Keep it simple, keep it wild': European and settler influences on wildlife and environmental management in South Africa 1900-1940

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While environmental history is burgeoning, the historiography of the nexus between landscape and culture has not yet been well mapped for southern Africa. This paper contributes to the literature by exploring the genesis of a cluster of natural sciences, usually referred to as conservation biology or wildlife management, that have had direct and considerable impact on the way in which contemporary South Africans regard 'countryside'. The aim is to explain how, with reference to the protected mega fauna of South Africa, these disciplines evolved and to what extent their contours were determined by ongoing European cultural traditions and scientific connections. It has been said that 'Biology, in particular, [must be] examined ... for its interaction with the institutions of the society which spawns it.' (1)

A distinctive aspect of South African biology in the first half of the twentieth century was its emergence from under the carapace of European ideas of game and domestic livestock management. Later, so successful was South Africa's wildlife management philosophy and practice that the country came to enjoy a high international profile, even during the apartheid years. But as well as recent political change there is evidence of an alteration in environmental ideology that begs historical analysis. South African conservation scientists are moving away from interventionist management by including human action within biodiversity conservation and managing minimally or merely for the unexpected, thinking that resonates with earlier environmental ideas around game reserves and national parks.

(1) *Journal of the History of Biology* 1(1), 1968, Editorial foreword by Everett Mendelsohn.

O138

Losing Hemlocks: The historical nature of New York's urban forest

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The New York Botanical Garden contains a rare survivor of pre-colonial times: a small remnant forest of hemlocks and hardwoods, representative of the very extensive forests which still cover large areas of the northeastern United States. The NYBG Forest has undergone very significant successional changes during the twentieth century, particularly in the past decade, which has seen the loss of most of its hemlocks to infestation by the Hemlock Woolly Adelgid. This paper examines the ecological changes in the forest using contemporary tree surveys in comparison with surveys conducted in 1937 and 1985. The NYBG promotes the management of this forest as an 'old-growth' forest in an urban setting, but it increasingly seems that only intensive management will preserve something that looks like a native American forest. As hemlocks are a late successional or 'climax' species, being long-lived, vulnerable to certain disturbances, slow-growing and shade tolerant, the loss of hemlocks in this and other forests has extremely wide-ranging implications for the future character of north-eastern US hemlock-hardwood forests. Furthermore, it raises issues of what we mean by continuity, stability, and acceptable levels of change and disturbance in an 'original forest'. What decisions do managers make about this contingent, historical, human-dominated landscape in order to communicate something about the value of naturalness and biodiversity? The fate of this urban forest provides a highly concentrated emblem of the fate of forests in the United States more generally. The centrality of the wilderness ideal to American conservation is being challenged and a paradigm more like the European model of interlocking human and natural factors is being called into being. These issues are central to understanding forest change and establishing coherent, historically grounded conservation strategies for disturbed, but still highly valued, ecological systems.

O144

From Indian forest to American tinderbox: Environmental change and the failure of fire-management policies in Southern California

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The various aboriginal peoples of Southern California, such as the Kumeyaay, Chemehuevi, Cahuilla, and Tongva, maintained frequent and systematic use of controlled burning as part of their overall land-management strategies prior to the arrival of Spanish invaders in the late eighteenth century. Colonial authorities, beginning with the Spanish and continuing with Mexican and United States regimes, increasingly curtailed these aboriginal strategies. While controlled burns are utilized in certain areas of the United States, various federal, state, and local governmental agencies have been reluctant to utilize them in Southern California forests. The result is a virtually perpetual risk of massive wildfires and rampant overgrowth of flammable underbrush. The paper will explain aboriginal fire management techniques and the history of their replacement under colonial regimes. It will also address the ramifications of the new policies for American Indians. For example, fires have been prohibited in the San Bernardino forest for several years. This prevents many Indians from performing important rituals and ceremonies in the mountains and forests because they need to have a fire to properly conduct them. Deer populations have been adversely affected by the explosion of undergrowth due to a lack of burning and this in turn had limited hunting possibilities for Indians and non-Indians alike. The paper will link all of these issues together.

O145

African horse sickness – an entomological challenge for a European animal in the Cape Colony

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In the context of intercontinental exchanges of biota, the insect-borne African horse sickness provides an interesting example of an endemic disease barrier against an introduced animal that played a vital role in European colonisation of Southern Africa. While the causing virus does not affect any indigenous species, it produces an enormous mortality among horses, and exotic species newly introduced by the Dutch East India Company (VOC) in mid-seventeenth century. In the Cape Colony the disease was not endemic, but, in years with a climate particularly suitable for its insect vector, it spread into the Cape and caused enormous epidemic outbreaks, the worst of which occurred in 1854-5. At the time the transport system was already severely affected by the recently imported lung sickness that decimated the colony's draught oxen and thus the loss of about 40 percent of the country's horse population was even more severely felt. The enormous mortality among the horses of the army, police force and post contractors not only became costly for the government, but increasingly undermined the smooth working of colonial administration, and ultimately threatened to become a security problem for a colony that bordered impoverished and hostile African societies. On instigation of the local Agricultural Society that was dominated by merchants and gentleman farmers, the government conducted a country-wide survey of the environmental and climatic causes to which the disease was commonly attributed, and of preventative strategies and possible remedies. A local gentleman farmer then synthesised the replies by local officials, farmers and members of the medical and veterinary professions to this survey into a pamphlet. This pamphlet and the replies to the survey itself provide valuable insight into contemporary knowledge and concepts about a disease that had challenged the colonists almost from the beginning of settlement, and about disease and the local environment in general.

O146

The ecological and chemical campaign against livestock trypanosomosis in Zululand 1896-2000

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Bovine Trypanosomosis (nagana) severely restricted livestock production in Zululand until the 1950s. Before 1896 the link between the trypanosome, insect vector and mammalian host remained scientifically unproven. Heavy mortality in the mid-1890s, combined with the political desire to open up Zululand to white farming, encouraged the Natal government to recruit the services of the bacteriologist David Bruce. Bruce was the first scientist to microscopically prove that the tsetse fly did transmit trypanosomosis to susceptible animals.

Bruce's discovery contributed significantly to the emerging discipline of 'tropical medicine' in which insects and parasites/protozoa, thought to be specific to certain environments, were shown to play a direct role in disease causation. Subsequent research in South Africa, demonstrated the important part environmental variables such as vegetation, soils, climate and wildlife distribution played in explaining outbreaks of nagana.

From 1896 onwards scientists, politicians, Zulus and settlers debated how to control or eliminate this disease. The inability to devise a vaccine or an easily administrable cure generated alternative approaches to disease control. At different times and in response to specific developments in technology, South Africa pursued policies of bush clearance, game culling and fly trapping. These efforts brought limited success, but following the Second World War, South Africa became the first country to use DDT to kill the tsetse fly, and by 1954 had eradicated the primary vector, *Glossina pallidipes*. This led to a rapid decline in disease incidence. Yet 35 years later nature hit back. In the early 1990s two hitherto insignificant species in terms of cattle mortality claimed the lives of thousands of bovines. DDT was no longer an acceptable solution, giving rise to new concerns and debates about disease control over the longer term.

O147

Filariasis: The unexpected enemy in the South Pacific theatre, 1941-1945

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A 1945 article published by two United States Naval officers described the epidemiological and entomological problems encountered in early 1942 by American military forces in the South Pacific Theatre during World War II. Although the islands had been perceived for centuries as hyper-endemic foci of disease, the lack of adequate preparation in the form of environmental intelligence and adequate medical knowledge regarding tropical diseases resulted in the neutralization of troops in these areas. The authors asserted that of all the diseases encountered that epidemic filariasis excited the most interest. It was the first epidemic of the disease in the history of American military forces. The Naval officers estimated that the overall incidence of filariasis in the South Pacific Command exceeded 30 percent among the exposed troops; on several islands the levels reached as high as 70 percent. The rates increased with the addition of separate categories of 'retrograde' lymphangitis of the extremities and scrotum.

In spite of the supposed interest mentioned by the authors, the response to filariasis remained tepid through the next three years of war and military doctors neglected filariasis despite the statistics indicating its importance to the overall success of the war. Even with the success of the recently developed DDT as a method of mosquito control, the elaborate pre-invasion strategies for Okinawa focused on malaria, schistosmiasis, scrub typhus, and even snake bites, yet neglected filariasis. Filariasis was common on the island of Okinawa and it was only due to an overestimation of the 'malaria menace' that the military had enough equipment and supplies to attack the mosquito vectors of both malaria and filariasis. The efficacy of medical measures in relation to tactical movements demonstrated how filarial elephantiasis continued to be disregarded and as a result, impeded military endeavors and negatively affected the lives of American troops.

O149

Searching for exemplary environments from history – commissions of forest restoration

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Our country is one of the most forested countries in Europe. Forests cover approximately 66% of its land area. Because the management of forests is primarily dedicated to produce timber for wood-processing industries, in the southern half of the country, less than two per cent of forests is conserved. The public opinion, however, presumes that even ten per cent of our forests are old-growth forests and expects a further expansion of forest conservation. The European Commission has set similar goals urging conservation.

The problem is how to restore old growth forest, which were cut decades ago. One idea is to transform a part of modern economic forests into old-growth forests. This scheme sounds simple: leave the forest chosen for conservation to manage on its own and let time take care of restoration. However, forest is not a pendulum that simply slides back to its starting point. Moreover, is the “starting point,” primeval forest, the only value of forested nature for conservation?

In my presentation, I claim that forest – even modern economic forest – is an environment with several historical layers and some of them are certainly widely discussed as parts of national heritage. Historical marks of swidden cultivation, tar production, timber cutting and grazing are still preserved in modern forests, which form a great deal of our cultural landscapes. Are these valuable enough to conserve? If the reply is positive, conservationists have to make choices at what historical environment they are aiming. Then foresters and various other specialists, including historians of technology and the environment, are needed to identify cultural and ecological layers in the history of forests, find methods for their restoration and achieve the chosen goal of conservation.

Focusing on issues, how to identify historical layers in actual forested landscapes and simulate natural processes, and what are chances to success in this kind of task, will form the central part of my presentation.

Heritage of environmental practices in landscape: A case study of the Baltic Sea coast, Latvia

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The paper deals with the case of specific cultural landscape situated on the coast of Baltic Sea near the Jurmalciems village south from Liepaja city in Latvia. This area with nature conditions and landforms characteristic for coast (poor sandy soils, wind, variable moisture, constant intensive coastal erosion, etc.) was inhabited and actively manipulated for centuries. The very feature there are remains of small hand-made fields dated back to the 19th century, after the massive reforestation was realized in order to stabilize moving dunes. Morphologically these fields are various in shape and size, but most of them do not exceed 0, 3 ha. Sand walls surround fields. Specific historical social and political circumstances are reflected in this landscape as well. This area was parcelled in small plots by state for the poorest part of society – retired soldiers of the army and landless peasants. Creation of these fields required extreme efforts from them and was the only possibility to survive in so unfavourable natural environment. The present landscape of the study area is the result of ceaseless interfaces between nature and human activity. It shows historical trends of human / nature relationships – from consonant with time approaches to land use and local resources, efficiency of reducing of unfavourable natural conditions to extensive recreational use today.

Such traditional landscapes are usually treated as models of sustainable use of land and resources that offer important lessons for sustainable development in future. Only partly we can accept this statement in the case of Jurmalciems: in relation to efficiency of specific practices of local resource management including drainage and irrigation, fertilization, coping with windblown sand. But landscape is also a clear reflection of social inequality and poverty that is beyond the concept of sustainability.

O153

Afro-European trader-kings, Creole entrepreneurs and Mende warriors: Local agency and environmental deterioration in Sierra Leone's 19th century timber trade

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Significant quantities of timber and other forest resources such as gum copal and dye-woods were extracted and shipped legally and illegally from the Colony of Sierra Leone and its hinterlands in the 19th century. All produce was destined for European and American markets with minimal benefits to Sierra Leone. The primary contractor for timber was the British Navy Admiralty that used Sierra Leone teak in the ship-building industry up to 1861. Extraction regions were characterized by a complex political ecology with profound changes to the traditional social hierarchy and the natural environment. Local political structures transformed to take advantage of the newfound wealth and power that the new colonial economic system propagated. In south-western Sierra Leone, for example, power figures were Afro-European kings descended from British slave traders and in-migrant or "stranger" Creole merchants, descendants of freed slaves resettled in the Colony of Sierra Leone between 1787 and 1840. Mercenary-warriors protecting or acquiring trade and territory for kings in the violent, volatile and diffuse environment of 19th century Sierra Leone were also of the elite class. These influential groups were frequently agents of European timber traders and transnational corporations and had the means of production to expand their land use practices using various forms of labor. Environmental deterioration therefore, was a result of both direct unsustainable extractive methods and local human agency. The timber export trade was the catalyst for the development of a local market in timber that thrived well after global trade ceased, and also export cash crop cultivation in cleared forest areas. These dynamics continued to increase pressure and put stress on land. As such human agency within Sierra Leone played a major role in perpetuating colonial resource policies that affected land use and caused environmental and social change.

O154

Municipal and metropolitan park system planning as an international phenomenon: National traditions and transnational exchange in the United States and Europe

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Influenced by tree-lined boulevards, ring roads and parks along former fortifications in Europe, park systems consisting of different sized parks and gardens connected by tree-lined avenues and parkways were pioneered in the United States after the Civil War.

In the early 1900s municipal and metropolitan park system planning as a component of city planning became increasingly relevant on both sides of the Atlantic to alleviate social ills, enhance the wellbeing of citizens, promote the increase in land prices in certain areas and act as a means of municipal and national representation. As outstanding features and instruments in the new comprehensive city plans for North American cities in the first decades of the twentieth century, park systems attracted European planners' attention. In turn, American planners and landscape architects travelled and looked to Europe. Besides importing European zoning methods, they appropriated design strategies, which in many cases determined the park systems' internal design.

This paper will outline the evolution of the park movement in the United States and the role it played in sparking an international interest in park system planning. Using the examples of Chicago, Berlin and Rome, the paper will discuss how ideas concerning park system planning were adapted in their respective countries. It investigates the role park systems played in the international town planning movement at the beginning of the twentieth century, if and how planners understood themselves as a transnational elite, and it will discuss how park systems were used as a means to foster local and national identities. The paper will show in how far park systems shaped the natural and built urban environment and initiated environmental planning on larger scales.

O155

Good times, bad times: Britain, Burma, India and the teak tree, 1700s-present

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The Burmese and Indian teak was one of the first trees to be used on a truly global scale. The teak tree contributed to globalism by not only being a desired product which was traded, it was a product that propelled globalism, literally—the British created ocean faring ships with teak when the oak forests of Britain slowly dwindled towards exhaustion. Later, after the British began making ships out of metal, the teak tree found favor as an industrial lumber and also for furniture, among other things. Today, teak is still in high demand throughout Britain, Europe and the world. Unfortunately, the desire for teak throughout Britain, in the past and today, has taken an immense environmental and economic impact upon South Asia. Yet this British-South Asian environmental and economic interaction is not without its silver lining. Some scholars, such as Gregory Barton in his book *Empire Forestry and the Origins of Environmentalism*, perceive some benefit from the process of degradation. Barton argues that the British degradation of teak in the 18th and 19th century spurred on large scale Indian forestry which eventually led to the larger world-wide environmental movement. This paper examines the environmental, economic and cultural relationship of the teak trade between Britain, India, and Burma from the late 1700s until today. By examining the various forms of exchange (e.g. environmental, economic, intellectual, legal) between these countries, this paper will attempt not to castigate Britain, but to understand how environmental exploitation of imperial and post-colonial countries can leave negative and positive legacies and realities for each country.

O157

The environment as risk: River floods and flood control in Germany and the United States

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River floods provide an excellent field of analysis for transnational aspects of environmental history. Physically, they represent the most common global hazard. Furthermore, natural forces in general, and rivers in particular, know no boundaries. Although rivers are often used to demarcate different political entities they easily cross statelines and constantly ignore non-natural divisions. At the same time floods are most often a local or regional phenomenon. If more than one region is affected, however, the problem quickly becomes a matter for international rather than national action. But floods are often turned into a question of national concern because the nation state, with its vast coping capabilities, is generally viewed as the most appropriate “container” to deal with problems of flood control and flood relief. Furthermore, the nation state has played a vital role in how natural catastrophes have been perceived and represented.

Focusing on the Rhineland and the Ohio Valley in the 19th and 20th centuries, my paper will look at the different strategies of risk management in these regions. Furthermore, it will analyze the relationship between local actors and the Federal governments, and it will also explore trans-Atlantic connections, transfers and entanglements in the history of river floods like the exchange of flood control knowledge, the dissemination of flood control discourses or the flow of relief money.

O158

Canned pigs and delirious cows on the move: Transnational livestock diseases as an (inter)national problem in Europe and the United States in the late 19th century

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Livestock diseases and their transferability to humans have a long history reaching from ancient times to the present as recent crises with BSE and avian flu indicate. Historians are beginning to pay closer attention to these phenomena particularly within the field of environmental history.

In the wake of colonial expansion, European settlers had brought livestock to the New World, but in the nineteenth century animals and their products, most notably meat, were also brought back across the Atlantic to Europe. One unintended consequence of these animal transfers was the spread of epizootics, particularly as new modes of transportation like steamships and railroads led to the shipment of ever growing quantities of livestock and meat across the Atlantic.

My paper will briefly chart the problematic of livestock diseases in the nineteenth century paying particular attention to the environmental circumstances that led to distinct disease patterns in Europe and the United States. Secondly, the paper will discuss some of the political implications focusing especially on the late nineteenth-century diplomatic crisis that ensued following the detection of contaminated meat shipments from the Chicago stockyards to numerous European markets (e.g. Denmark, France, Germany, Great Britain, and Holland). The paper will show how transnational livestock diseases caused national problems, which could lead to international conflicts and legislation about veterinary and meat inspections. On a more theoretical level, the paper seeks to discuss the issue of transnationalism and how it fits into historical investigations vis-à-vis national histories and international debates. How can environmental history deal with topics that require all three of these approaches?

Early birds and latecomers: Foreign trade, industrialization and the environment in the United Kingdom and Austria 1800-2000

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In our paper we present a dataset on physical and monetary imports and exports for the United Kingdom and Austria in the time period of 1800-2000. We will discuss the development of qualitative and quantitative trade patterns of the two economies during industrialization and highlight environmental and economic impacts of foreign trade in the importing and exporting countries. Issues to be addressed are changes in land use, agriculture and raw material production related to imports and exports. We will tackle these questions by applying indicators such as foreign land demand and trade footprint.

In the United Kingdom foreign trade played a crucial role since the beginnings of its early industrialization. The production of key raw materials such as food, textile raw materials or iron was externalised to foreign countries already in the 18th and 19th century, occupying huge areas in the New World, Russia and other countries. Not only did this externalisation have a significant impact on land use and raw material production in the exporting countries – it can also be related to domestic land use change within the United Kingdom. The Austrian empire followed as a late comer in industrialisation. With an economic emphasis on agriculture, it followed an autarky policy long into the 19th century, relying mainly on domestically produced raw materials. Bulk materials were imported only marginally in the 19th century, imports consisting mostly of colonial and other special goods. In the late 19th century, when industrialisation took off in Austria, foreign trade of coal, wood and other products such as sugar and fertiliser became increasingly important. This process sped up after the collapse of the Monarchy and currently Austrian biomass imports occupy a global land area almost the size of Austria's domestic territory.

O161

The development of the Viennese Lobau since the 18th century: The historical basis for an urban alluvial floodplain national park

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The Lobau is a floodplain area along the Danube River at the eastern border of the city of Vienna (Austria). Due to its high biodiversity it became a national park in 1996. Several factors saved the region from intensive agricultural use and from the expansion of the built-up area. The Lobau was the property of the royal family, which designated it as a hunting area in the vicinity of their main residence. When the Austrian-Hungarian monarchy collapsed in 1918, the new Austrian republic and the city of Vienna, respectively, became the owners. At that time, parts of the Lobau were already integrated into the so-called "Wald- und Wiesengürtel" of Vienna – a nature reserve around the city dedicated to recreational purposes. Despite these early limitations of intensive human interventions, the Lobau has historically been subjected to manifold uses ranging from hunting, forestry, agriculture, recreation and fisheries, including a role in the drinking water supply. Fundamental changes – both in ecological but also socio-economic terms - were caused by the channelization of the Danube in the late 19th century.

This paper documents the development of human uses in the Lobau over the last 250 years; special emphasis is given to land use change based on the GIS-analysis of historical maps and aerial photographs. The main driving forces for establishing different socio-economic functions of the Lobau are examined. Finally, embedding the history of the Lobau in the general urban development of Vienna helps highlight the particular circumstances leading to the high ecological importance of this site.

Fertilization techniques and plant production in montane environments of France and French speaking Switzerland during the 18th and 19th centuries

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During the 18th and 19th centuries hay production increased hugely over much of France and parts of Switzerland including the French speaking pre-Alp, Alps, Vosges and Massif Central . The goal of the intensive fodder cultivation was to favour cattle breeding and consequently to produce large volumes of fertilizers (manure) in order to increase cereal and vegetable yields. Among the techniques that were developed by the physiocrats and agronomists, were those using water that were adapted to various local and regional agro-pastoral systems incorporating vertical patterns of land use. In addition to 'waters' role as a resource for plant growing it was also an efficient thermo-regulator allowing for lengthening of the duration of the vegetative period of grasses and other species important to the pasture. Furthermore, water flows also conveyed sediment and nutrient, from production areas (hill slopes, urban areas) to intensively farmed zones (floodplains). This paper uses several case studies to illustrate the economic and technological (e.g. terracing/irrigation) context of this water use and asks what implications these findings have for our current understanding of mountain development in these areas.

Connecting metaphors: The “spaceship Earth”-metaphor and the international environmental movement (1963-1973)

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Since the 1960s some outstanding scientists and politicians have been using metaphors reflecting the limited resources and interconnectedness of the life-supporting systems of planet earth. One of these widespread metaphors is “Spaceship Earth” created by Buckminster Fuller in his “Operating manual” for the Earth in 1963. Subsequently, the American UN-Ambassador Adlai E. Stevenson reminded the UN-economic and social council of the idea that we are all travelling together as passengers in a little spaceship dependent on its supply of air and soil. In the decade of the Apollo-program e.g. the well known US-American Economist Kenneth Boulding took over the metaphor. In contrast to the “cowboy economy” he called the closed economy of the future “‘spaceman’ economy, in which the earth has become a single spaceship, without unlimited resources of anything, either for extraction or for pollution.” Within a few years this metaphor was translated into many languages and made a career in international politics. - Reconstructing the history of “spaceship earth” the paper wants to answer the question how the new way of speaking triggered environmental thinking in and outside governmental politics. For example, the first UN-Conference on Human Environment was held under the slogan “only one Earth”. A lot of speakers stressed the planetary view to put out the common structure of the environmental crisis in East and West. The growing international environmental movement translated the notion of interconnectedness into the slogan “think globally, act locally”. The process of diffusion will be analysed in detail on the basis of American and European newspaper articles, governmental records and scientific literature.

O165

Pre-Hispanic terraced farming in the Central Andes and climate change: Past lessons and future responses

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In the Central Andes following the development of the autochthonous ecological system, stone-walled agricultural terraces were developed from c. 3000 BP in response to precipitous terrain and extreme climatic conditions. Climatic changes underpinned their further development as irrigated bench terraces, first in the Huarpa Culture in arid terrain, early in the first millennium, and subsequently widely by the Huari and then the Inca whose highland empires were founded on maize grown on the terraces for food security. Traditional economic strategies were still widely in evidence in the late 1970s and early 1980s, for example in the Cusichaca Valley (Department of Cusco) and Chicha-Soras Valley (dividing the Apurímac and Ayacucho Departments). Today traditional rural systems are breaking down in the face of the current reduction of precipitation and recent social unrest, as well as the introduction of conventional agricultural practices from outside the area. These factors also impact on exchange and commercial systems between areas, which traditionally maintained the quality and use of appropriate seeds as well as providing a surplus complement to subsistence agriculture. Farming is therefore becoming an increasingly high risk activity, which is also under threat from the TLC (trade agreements with the United States). Extensive pre-Hispanic terraced farming systems, which have suffered since the Spanish conquest from abandonment due to political and social forces but not from climatic changes, can be recuperated, most effectively at the centre of rural development projects with complementary activities and a focus on Andean Culture.

Observations on the Late-Ming-Dynasty hydraulic organization of the Puyang River in the mountains of Southern Zhejiang Province, China

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The Puyang, or Wan, River runs roughly north, then — in recent centuries — northwest, through the mountains south of Hangzhou Bay, to empty into the Qiantang River in southern Zhejiang province, China. The hydrology has varied considerably since the 15th century CE, in large part due to human intervention. The late-imperial hydraulic system on the Puyang (roughly from the 15th to the 19th centuries) is described in great detail in a compendium of documents first compiled in 1603, partially lost, then reassembled in 1727 and reprinted several times, the last edition being printed in 1865. This is the *Jingye guilüe quanshu* [Complete documents relating to the "Summary of Regulations for Managing the Countryside"]. In this paper these *Complete Documents* are revisited, together with related Chinese historical materials, as a source that reveals how the environmental interlinkages of the subsystems of this river along most of its course created unavoidable economic interlinkages of considerable complexity, sometimes positive but mostly negative, between the various groups who used the river, and how this led the local county authorities to pursue two goals. The first of these was to try to stabilize the hydrology because its changes — and human meddling with it — could (and did) disrupt harmonious social relations; and the second was to cover the entire system with a detailed web of obligations and prohibitions, again designed to minimize conflicts. Though telling the story properly is complicated by the need to fit the Chinese state's responses to environmental and economic problems into the larger story of the long-term changes in Chinese society, political intervention in water-control systems of this middle level scale and aleatoric character was in large measure about stabilizing people's livelihoods and, above all, keeping the peace.

O167

Homeland or wilderness? Danish conceptions of Greenland and its inhabitants, 1721-1925

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When the Lutheran pastor Hans Egede established a colony in Greenland with the support of the Danish crown in the early eighteenth century, he took the medieval Norse settlement of Greenland from Iceland by Eirik the Red and Leif Eiriksson as his model. He not only used this settlement as evidence that Europeans could survive in an Arctic environment, he also believed that he would discover the descendants of the Norse settlers still living there. After Egede and his sons established their mission, many other Danish officials and explorers visited Greenland and discussed how Europeans could acclimate themselves to this environment, and what was the relationship was between European visitors and the Inuit natives, the so-called "northernmost Danes." Many found the environment completely inhospitable and unfamiliar, and doubted that it could be considered part of Europe. In the early twentieth century, the Inuit-Danish explorer Knud Rasmussen tried to bridge this gap, showing how Europeans could live in Greenland by adopting Inuit tools and techniques of survival. This paper looks the cultural understanding of the polar environment from the eighteenth through the twentieth century and analyses how one European nation tried to deal with an environment that was within the boundaries of the state, but at the same time presented distinct problems that demanded different responses and adaptations from officials. From a methodological standpoint, the paper asks how thinking of certain regions as "wildernesses" or "homelands" influences human interaction with these places. How were these opposing images of Greenland brought together? What parallels does this case show with other examples, especially Alaska and the American Western frontiers?

Terra Incognita - investigating the unknown southern environment during the first German Antarctic expedition (1901-1903)

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When the international geographical community recommended the exploration of the Antarctic regions at the close of the 19th century, geographer Erich von Drygalski (1865-1949) became leader of the first German south polar expedition (1901-1903), one of four co-operation Antarctic expeditions. His programme followed Alexander von Humboldt's (1769-1859) ideas of comprehensive investigation of a "terra incognita" concerning the three elements earth, water, air, and the living world. Due to this scientists representing geology, geography and oceanography, earth-magnetism and meteorology, as well as biology played major roles. Drygalski's methodical approach said: "What will actually be done must naturally be determined on the spot. The members of the expedition must be prepared so that they can distinguish the important from the unimportant, the necessary from the merely desirable; in a word, the pure Antarctic." This would result in a complete view of an unknown hostile polar environment. Unfortunately, the German ship was beset by ice close to the Antarctic Circle at 66° 2' S and 89° 38' E, some 80 km off the Antarctic coast on 22 February 1902. Here, they discovered the ice-covered coast of Kaiser Wilhelm II Land and the ice-free extinct volcano, which they named "Gaussberg". They were lucky that they could establish a fixed winter station on sea ice 385 m above sea-bottom. After 50 weeks of captivity and continuous investigation of the environment the ship finally came free. All scientific data, as well as geological and biological collections were analysed and published over decades (Drygalski 1905-1931). Joint geographical investigations indicated that Antarctica was a big continent covered by ice and it was assumed that no nation would incur great expense for determining the extent of the hostile inland-ice.

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Shirase's Antarctic laboratory: The Japanese Expedition of 1910-1912 and the Testing of a Nation

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In chronicling Robert Scott and Roald Amundson's race for the South Pole, historians have largely forgotten the presence of the third contender: Shirase Nobu and the Japanese expedition of 1910-1912. Shirase's failure to reach the South Pole, combined with the limited scientific contribution of his endeavor, are undoubtedly the primary culprits of the expedition's neglected status. Compared to his Western contemporaries, Shirase Nobu's expedition was indeed lacking in scientific refinement. Although a scientific arm was present, and meteorological, biological, and geological observations were conducted,

Shirase's interests lay more in human performance than in the hard sciences. Confirmed by his own writing, Shirase used Antarctica as a racial laboratory to prove the Japanese capacity for funding, organizing, and conducting polar exploration.

Shirase's performance-driven ambitions dictated his expedition leadership. He initially conceived Japan's polar foray as an expedition intent on reaching the North Pole. Constantly aware of the endeavors of his Western contemporaries, and looking to optimize Japan's hope for polar glory, Shirase continually redefined his objectives. Following Robert Peary's successes in 1909, Shirase shifted his attention from the North Pole to the South Pole. Again, mid-expedition, he altered his objectives based on the movements of Scott and Amundson. With changing goals, Western interest in the Japanese contingent diminished in proportion to the expedition's aims. Yet, in spite of the expedition's ambiguous goals and accomplishments, Shirase's return to Japan brought the desired domestic effect of heightened national and racial pride.

O170

World wide (pulp)wood. Business, science and forests in the globalisation of modern paper production

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Timber has always been an important economic resource. When some usages decreased, new ones emerged like the use of pulpwood for paper production since the 1850s. Within a few decades timber became the major raw material for paper fostering rapidly increasing paper consumption worldwide. This did not only lead to a restructuring of the paper industry, but also enforced the exploitation of the new raw material on a global scale. Although the establishing of this new utilization regime between the end of the 19th century and World War II contributed to a remarkable restructuring of global forests and remains formative until today it has seldom been the object of historical analysis.

Taking German paper industry and forestry as an example the proposed paper tracks this trend towards globalisation. The development was characterized by the co-evolution of trade networks and environmental knowledge. This led to new supply strategies including intercontinental biota exchange, foreign direct investment and systematic research for substitutes. Here professional journals of both paper manufacturing and scientific forestry represent a significant source to analyse strategic change, its economic and cultural background and its ecological consequences. While timber trade had played a decisive role in international economy before, the interaction of trade, science and politics during World War I and in the interwar years tended to produce a more resource-oriented economic globalisation. How did this development shape the spatial and ecological impact of the paper industry? The paper tries to answer this question by focusing on a new international division of labour and an increasingly scientific approach in the timber relations between Europe and the wider world.

O172

Reconstructing the forest, reconstructing the nation: Restoring the environment in post-1945 France

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As France was progressively liberated during summer 1944, the French took stock of the damage that five years of war and occupation had wrought on their natural environment. Over 13 million landmines lay on French soil, over five billion francs worth of damage was caused to farmland, and the nation's forests emerged greatly depleted from the "dark years." Removing the traces of war and materially reconstructing the countryside were integral parts of national reconstruction. Although historians have researched rural reconstruction after World War One and traced the post-1945 history of rebuilding France's cities, research into post-World War Two environmental reconstruction has barely begun. Focussing on the reconstruction of France's forests and drawing on extensive archival research, this paper aims to provide a first step towards such a history.

Between 1940 and 1944, French forests were heavily over-exploited, ravaged by fire, and damaged by armed conflict. Foresters were horrified at this destruction; some even feared that the *midi* would become a rocky, desert-like landscape. In addition, pressures remained on the forest, particularly as urban reconstruction required vast quantities of timber. In the short term, France obtained wood from occupied Germany, but in the long term the government launched the *Fonds Forestier National* (FFN), which aimed to reforest over two million hectares. This paper argues that reforestation became a 'national duty'; as Charles de Gaulle argued, it simply wasn't dignified for a country like France to possess forests in such a sorry state. Restoring the forest was also a way for France to ensure its independence and address longstanding anxieties concerning mountain erosion and rural depopulation, which supposedly threatened the health of the countryside and the nation itself. The FFN is also indicative of increased postwar state control over natural resources, highlighting the ways in which warfare transforms national environmental policies.

O173

From animal sanctuary to primeval forest. Changes in the function of national parks and the perceptions of an 'ideal' nature in Germany during the 1960s and 1970s

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While the first national parks were established as early as 1872 (Yellowstone, USA), it was not before the late 1960s that the idea of an 'own' national park became popular in Germany as well. From the first endeavours towards a national park in the Bavarian Forest in 1966 (to be inaugurated in 1970) to the foundation of the second German national park 'Berchtesgaden' in 1978, the notion of what exactly constituted a national park changed considerably. Initially, the image of a 'proper' national park was heavily influenced by the African Serengeti national park and its big game population which Bernhard Grzimek, Germany's most influential nature conservationist had popularised in his films and books. As a result, the original concept for the national park 'Bavarian Forest' centred on the idea of an animal sanctuary which could be perfected for human's recreational needs. This anthropocentric vision, however, was soon challenged by the belief that within a national park, nature ought to be left to its own dynamics.

The proposed paper aims to analyse changes in the alleged function of national parks and, closely connected to this, notions of an 'ideal' nature, taking into consideration the discussions on the foundation of the first German national parks 'Bavarian Forest' and 'Berchtesgaden' in the 1960s and 1970s. In this time period, a shift from aesthetical to ecological criteria can be observed. It is being shown that this process was on the one hand influenced by international developments like the definition of binding criteria for national parks by the 'International Union for Conservation of Nature and Natural Resources' in 1969. On the other hand, it was linked to contemporary changes in aesthetical preferences and the perception of nature. Furthermore, it reflects the replacement of landscape architecture as nature conservation's leading science ('*Leitwissenschaft*') by ecology in Germany.

O176

The eruption of Krakatau in the Netherlands East Indies: Local and global interpretations

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The explosive 1883 Krakatau eruption in the Netherlands East Indies had local and global consequences, both environmental and social. On a local level, animals and plants disappeared from the volcanic island, and tsunami destroyed many villages along the coastlines of Java and Sumatra. On a global level, atmospheric pressure waves circulated the earth, and the dust in the upper atmosphere caused spectacularly colourful sunsets. Dutch and British volcanologists and meteorologists were successful in explaining these global effects in detailed reports during the 1880s. Krakatau provided a unique experiment: to observe for the first time the global effects of a local event--something that today is taken for granted in ecology. This scientific understanding provided the foil against which the European colonializers judged reactions and interpretations of the native population on a local level. Natives were not regarded as reliable observers of the event itself, and were only referred to when no other observer was in place. However, the event caused various disturbances on social, religious and political levels, laying bare tensions between the native population and the colonial power. This paper will look at Dutch representations of the native population's reactions to the eruption, regarded as a punishment by Allah for misdeeds and abandonment of the Koran. In this context, there were also references to the ongoing military conflict in Aceh in northern Sumatra, which reignited in late 1883. Though, in the end, the environmental consequences of the Krakatau eruption were minor in comparison to the similar 1815 eruption of Tambora (which had led to widespread destruction and famines), Krakatau stands as a reminder that the colonial enterprise in potential disaster areas encountered difficulties not only through immediate environmental effects, but also through the secondary effects of natural catastrophes on social and political order.

O177

Paths not taken: Engineering and wastewater treatment in Germany and the USA, 1900-1939

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In the early twentieth century German sanitary engineers looked to the United States for guidance on methods of wastewater treatment. While German engineers rightfully saw Great Britain as a pioneer in the treatment of wastewater (both industrial and domestic), they perceived that the United States was a wealthy nation where municipal experts had the luxury to experiment with a variety of treatment technologies. Nevertheless, by the early 1900s, German methods of treating wastewater began to diverge from that of the USA.

The question posed here—and presented in this paper—is how influential German sanitary experts like Karl Imhoff (1876-1965) interpreted what they learned from American engineers during the period from 1900 to 1939, and how they translated those lessons into the German context. In particular, what questions did German engineers ask of their American counterparts, what cities did they visit, and what biases did they have when they attempted to implement those lessons in Germany? Did they have a particular conception of the city or of pollution that caused them to recommend different methods of domestic and industrial wastewater treatment over time? The answers to these questions shed further light on the way that professional experts in different nations exchanged information and applied that information in their own urban environment.

To explore these issues, various primary and secondary sources will be examined. These will include not only correspondence from Imhoff to municipal experts in Frankfurt, Cologne, and the United States, but also articles and conference reports from publications like *Water and Sewer Works*, *Gesundheitsingenieur*, and the periodical of the German City Days Conference.

O178

Towards an environmental history of modernization in the Soviet North

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This paper will present initial findings of the larger project that aims to re-interpret questions of economic development, the experience of modernity, and visions of progress in late imperial Russia and the first few decades of the Soviet Union through a focus on the natural environment. The project seeks to make sense of the cultural and material aspects of environmental history by analyzing alterations to physical environment, changes in the ways people interact with the natural world, and shifts in conceptions of nature. In order to grasp such cumbersome problems in vast and diverse country, the larger project will focus on three regions distinct in terms of ecology and pattern of economy development: the steppe grasslands of the Orenburg Region, the forest heartland of Russia in the areas surrounding Moscow, and the taiga and tundra of the far north on the Kola Peninsula (the Murmansk Region). Flows of produced, extracted, and modified natural elements into and out of these regions will serve as one primary methodological technique for assessing environmental change as well as dissemination of geographic knowledge. In addition to the material dimensions of environment change, networks of scientific knowledge and natural commodities can be used to reveal many of the cultural assumptions about nature imbedded in these efforts to remake the world. This paper will offer hypotheses and potential conclusions specifically pertaining the Kola Peninsula in the Soviet era supported with evidence attained from archival and library research in Russia conducted in the summer 2006, summer 2005, and academic year 2003-2004 and additional research in the University of Illinois Slavic Library. During the academic year 2007-2008, I will continue research on this project in central and regional Russian archives and libraries.

O180

Droughts and flooding rains: 19th century El Ninos in Australia and New Zealand 1864-66, 1876-78 & 1895-1902

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This paper reflects increasing interest in climate history and the historical role of El Nino episodes across a wide band around the globe. In Australia and New Zealand El Nino events are now associated with major droughts or dry periods in the colonies in the 19th century.

At the time of writing this synopsis, much research has been undertaken for a study of three severe El Ninos, 1864-66, 1876-78 and 1895-1902, and their impacts in Australia and New Zealand. Most of the data has not been processed (it will be done prior to the conference), but already the study is presenting a much more complex picture than expected or previously recorded.

In Australia, El Ninos are popularly associated with parched landscapes, dying animals, personal hardship and bushfires. However, the study is showing the El Nino droughts to be much more patchy than expected. In even the most severe of droughts, which were devastating in their environmental, economic and human effects, there were some places that received rain and survived reasonably well. So far, there has been no apparent pattern to this – it was the product of little understood climatic vagaries.

In New Zealand, the emerging picture is even more complex and contradictory. New Zealand is a generally moist country, but changes in wind direction during El Ninos cast rain shadows over some western and north-western regions. By Australian standards, these are not profound droughts, but nevertheless cause local hardships. A new element emerging from this study, is evidence that in some places the opposite occurs and, because of climatic and geographical circumstances, there is a greater likelihood of floods. New Zealand, it appears, is also a land of droughts and flooding rains.

O181

The internationalization of domestic swine: Big pig breeding in the nineteenth-century Atlantic world

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While separated geographically by thousands of miles of ocean, farmers in the United States and Western Europe were intimately intertwined during the early nineteenth-century in more ways than one might expect. Through farmer's manuals, almanacs, and magazines, the trans-continental circulation of information about agriculture was indeed remarkable. More interestingly, however, was the trans-Atlantic transfer of animals for use in experimental breeding. When agriculturalists perfected some aspect of a domestic animal in Europe, a representative of that breed would often be shipped to America to have its genes further honed by those wishing to highlight other traits in a particular animal, and vice versa.

No domestic animal in the nineteenth-century farmer's repertoire underwent more changes through international anthropogenic selection than did the lard hog. Through the cross-breeding of Poland-Chinas, Irish Grazers, Berkshires, Bedfords, Chinas, and countless others, farmers in Europe and North America hoped to perfect a pig whose sole purpose was to produce lard for personal and industrial uses. Far from being a simple case study in agricultural history, these experiments in international anthropogenic selection not only shed light on the environmental sensibilities of the time but also provide an intimate glimpse into how trans-Atlantic cultures envisioned themselves in regards to those on the opposite side of the ocean.

O182

Europeans on the American great plains: Mormons, nature, and the overland trail

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Nineteenth-century Mormon emigrants found themselves in a precarious position on the Great Plains' Overland Trail. For food and transportation, they were in the hands (or hooves) of animals. They relied upon chance encounters with wild animals for meat and also needed domestic animals for transporting possessions. At times, deer and antelope were scarce, as was grass for oxen and mules. Emigrant journals reveal that a successful journey over the plains was, in large part, a successful interaction with animals. How did Mormon settlers view these animals? And how did prior experiences shape their expectations?

Many Mormons came from England, where the Church published its Journal of Discourses. The Church's settlement in the American West was an international process, and not simply the product of a steadily moving westward frontier. But this international history has been obscured by countless stories of frontier hardship (especially the persecution of the Church in the American Midwest). European Mormons on the Overland Trail entered the American West not with memories of Midwestern farms, but of European cities, such as Liverpool. For these Overland travellers, the plains landscape—including its animals—could only be compared to Europe. Old World deer, for instance, were their sole example to compare with the mule deer of the American West. This paper seeks to understand how European and American emigrants forged a common memory, and then a common origin story, within the ecological context of needing animals to serve them.

O183

Wolves and whiskey: Economy, ecology and predation in the whoop-up country

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In the late-nineteenth century, native and white predatory economies participated in a voracious exchange of human and animal resources in the Whoop-Up Country, a high plains region along the north eastern edge of the North American Rocky Mountains. The area's primary human occupations—wolfing, bison hunting, horse raiding and whiskey trading—relied on ample populations of animal and human prey. Intensified by local demand for whiskey and international demand for bison and wolf products, these economies interacted with the Whoop-Up Country's animal ecologies to generate unintended environmental consequences.

Drawing on transnational histories that have considered the flexibility of Whoop-Up's political borders, this project investigates the permeability of boundaries between humans and nature. Extinction and depopulation struck unevenly. In struggles over dwindling resources, native and white hunters clashed over bison, and whiskey traders and wolfers competed over trade with natives. Meanwhile, thousands of bison carcasses shot dead and skinned during late winters surged wolf numbers; bison hunting inadvertently aided wolf pelting. The Spitzee Revolt, Cypress Hills and Marias Massacres, along with other episodes of violence, erupted from underlying tensions between these interrelated and conflicting modes of predation — arrangements of ecology and social labor that framed the forceful expropriation of value from one living organism to another. This look at living resources and ecological change in an international market context reveals a hidden history of environmental conflict that exacerbated the Whoop-Up Country's social struggles.

O186

Nature protection and conservation in former Belgian Congo: From idea to colonial practices (1885-1960).

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This presentation is to introduce the Belgian Movement of Nature Protection and Conservation in Colonial Congo, 75 years of white presence and imposition of new concepts and practices in the exploitation of natural resources, land division and organization. Congo indeed, was not only considered as a vast savage land with abundance in natural resources and “unlimited fertility” (image mainly created by discovery literatures), but also a terrain where capitalism could put full use of its technical and scientific know-how in utilization of natural resources. Pressure from scientific research findings on the ground, the development of market demand that brought drastic reduction of certain species of wild animals e.g. Elephants, Rhinoceros and Antelopes for commerce, food or trophy hunting, combined with national and international movements for nature protection, especially African wild fauna, influenced colonial politics to understand the risk of depletion of animal and vegetal resources and take measure in conservation and preservation. Rational management demanded a systematic inventory and knowledge of Congolese species and establishment of distinct areas with hunting regulations and protection laws to allow reconstitution of the flora and fauna. The creation of Natural Reserves (for animals, vegetal and forest) and National Parks are the result of the new policy.

National Parks especially, become a fabulous “Natural Museum” linked to the growing importance of conservation theory. The Albert National Park created in 1925, was the first national park in Africa in the sense of “Integral Natural Reserve” where human population was evacuated thus freed from agricultural and industrial exploits. However, exclusive scientists observed the ecological developments in virgin or reconstructed environments. In reality, the parks are progressively confronted with constant demographic and economic pressure from all corners thus becomes vulnerable areas where we clearly see the confrontation between human demands for short term economic well being and lasting ecological equilibrium.

O188

Selecting the best for Germany's forests. Scientific forestry and the transfer of foreign tree species in Germany in the 18th century

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In the second half of the 18th century scientific forestry developed in Germany. Sustained yield forestry was seen as a new and scientific solution for many problems concerning the supply of wood for the needs of the population and the economy. The aim of scientific forestry was not only to produce a greater amount of wood but also to improve and professionalize artificial forestry as a whole. One possible field of work in this process was the experimentation with foreign trees species. Already in the 16th century foreign species of plants and trees were brought to Europe from overseas. Two centuries later forest botanists worked intensively on the improvement of (German) forests with foreign tree species.

Important aspects of this paper are concerned with two scientific foresters (J.F. Stahl and A.F. von Burgsdorf) who were among the first to experiment with foreign species of trees (mainly from North America) in southwest Germany and Prussia in the late 18th century. Both men founded experimental gardens for foreign trees and wrote articles and manuals about this subject. Stahl edited the first scientific forest journal in Germany. Von Burgsdorf earned a living from exchanging seeds on the international stage and became well known in many European countries as a result of this. He sent his employees to North America to collect scions and seeds.

This paper will focus from a point of view of history of science both on the development of forest botany with foreign species of trees in Germany and its importance for scientific forestry as well as on the collection of plants overseas.

O189

Reserving the world's forests. Domestic peculiarities and intercultural experience of German foresters in the 19th and 20th century

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German scientific forestry was established as a scientific system with distinct approaches and characteristics at the end of the 18th Century. Its specific outlook was shaped by the natural but also political and cultural situation of Central Europe at the end of the Ancien Régime. Closely attached to the political and bureaucratic leadership of the German territories scientific forestry developed a veritable tool box for dealing with cultural, economic, social and ecological impediments on the way to efficient centralised resource management. These tools were the outcome of an almost one century long process of negotiation with local forest users, liberal economists and fiscally minded politicians. However, in the second half of the 19th century Germany not only became the centre of education for forest managers working in Africa, Asia and Northern America. German foresters also became instrumental in establishing a system of reserved forests in these continents and erecting educational institutions for scientific forest management in several countries. The proposed paper will look at their experiences from the viewpoint of cultural history. It tries to employ the concept of 'intercultural experience' adopting ideas from intercultural psychology. Newspaper articles, autobiographical sketches but also scientific evaluations on the "country of destination" can provide valuable insights in the conflicts, the experiences and the defending tactics the foresters encountered in their quest to reserve the world's forests.

Taking a close look on the previous history of ecological and cultural understanding and misunderstanding can be of central importance for efficient intercultural exchange in environmental matters between Europe and the wider world.

O190

Modes of conservationist knowledge transfer in Southern Africa 1900-50

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Conservationist ideas in Southern Africa spread through various inter-state institutions and departments, officials and private individuals. South African trained foresters and soil conservators transferred conservation policy and practice to colonial Zimbabwe and other parts of Southern Africa. Mounting concerns about deforestation and soil erosion from the 1920s in Zimbabwe were often based, as elsewhere in Southern Africa, on misinterpretations of ecological conditions and on a failure to connect the latter with political and economic relations but, they provided a basis for slow state intervention. The two key pillars of the settler cash economy, mining and agriculture depended exclusively on timber and wood fuel given the absence of viable energy alternatives such as coal and hydroelectric power. Despite the open criticism in Zimbabwe of the 'mining of forests' by settler enterprise, colonial views over time stressed the purportedly 'wasteful' use of resources by Africans as the prime cause of environmental destruction. State intervention in terms of conservation policy remained essentially cosmetic. Soil management in the entire country was the responsibility of one irrigation official; W. M. Watt 1910-20, A. Jennings 1921-24, P. H. Haviland 1925-30 and D. Aylen 1931-42. In 1910, J. Sim, a District Forest Officer from King William's Town assessed indigenous forests in Zimbabwe for purposes of commercial exploitation and conservation. A Forestry Branch recommended by Sim came into effect in 1920 under Forest Officer James Henkel, a former conservator of forests in Natal. Soil and forest 'scientists' received support from a few conservation minded miners and farmers in their preoccupation to explain the natural but especially biotic factors causing damage to natural environments and the essential remedies; contouring, 'kraaling' and conserving farm woodlots. Henkel's successor Kelly-Edwards was amazed how conservative attitudes towards resource utilisation changed very slowly over a long period both among the Africans and white settlers.

O191

The diffusion of an environmental model. French wetlands and Netherlanders in the 17th century.

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Since the beginning of the middle Ages a specific landscape had been built in the Netherlands. Societies needed to gain new arable lands and to protect themselves from sea floods. The scale of these works was enlarged in the 15th and the 16th centuries. During this period, Netherlanders acquired an expertise in hydraulics that was coveted in all Europe. The *Tractaet van Dyckagie*, wrote by A. Vierlingh between 1560 and 1580 can be read as the a sign of a technological advance. Indeed, he contributed to build an environmental model.

At the end of the 16th century, Henri IV, king of France, launched a great works project policy in order to develop the French economy. One of the means used was to grant a privilege to Humphrey Bradley, from Berg op Zoom, so that he could drain all the wetlands of the country. Thanks to the royal support, Humphrey Bradley and his company took possession of many wetlands in France as well in Auvergne, Picardie, Provence, Languedoc, Aunis, Poitou and Normandy. They systematically drained them to convert marsh into pasture or arable land. So, thus they contributed to diffuse the environmental technology elaborated in the Netherlands.

It seems relevant to study the works of this company in the perspective of the environmental history. Indeed, this case permits us to understand how and why the Dutch environmental model has been diffused in the 17th century Europe. What has been actually transferred in France? Who were these Netherlanders and why did they come? This way, we will be able to enlighten the social basis of environmental technologies diffusion. On the other hand, this history cannot ignore the impact on the environment implied by this works. Indeed, they still influence the biodiversity and the relations between human societies and the environment. It is all the more interesting to study this impact that nowadays the European Commission try to protect the areas drained in the 17th century by bringing them back to water.

O192

New Zealand: Trade and environment of an antipodean settler's colony

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This paper explores the development of physical exchange between New Zealand and the wider world and its effects on land use and environment in New Zealand. The islands of New Zealand, characterized by their remote location, narrow economic base and lack of mineral resources were caught in world trade since their colonisation by British settlers. After initially strong connections with Australia, New Zealand became for a long time dependant on the British market for the sale of frozen meat, dairy products and wool and trade flows had a significant impact on the agriculture of New Zealand. The fast development of the colony under British sovereignty reshaped the landscape of the islands, and led to one of the most intensely modified environments in the world. This process included the replacement of primary forests with grassland, drainage of wetlands and the plantation of forests. Foreign plant and animal species were introduced and native species extinct. European cultivation methods and animal husbandry were adopted on a large scale and allowed agricultural production to play a major role in New Zealand's economy. The changing quality and quantity of physical imports and export during New Zealand's transition and its consequences for growth and the environment will be discussed over a 160 years period from 1840-2000 on a national level based on statistical data.

O193

Human history of biotic invasions: The introduction of carp from Austria and Yugoslavia to Israel as a study case

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Biotic invasions pose a serious threat to global biodiversity, second only to habitat destruction in bringing species to their extinction and rapidly changing whole ecosystems. Modern human activities have increased such invasions immensely.

The research presented in this paper will focus on one case study: the introduction of Carp [*Cyprinus carpio*] from Austria and Yugoslavia to Israel during the 1920's and 1930's. Carp was introduced for the purposes of aquatic farming, but such introductions had unforeseen side-effects.

Based on published material (such as professional fisheries periodicals from the 1940's onwards) and archival material (from archives in London, Tel Aviv and Jerusalem) as well as on personal testimonies of people who took part in the introduction process, the paper will explore its connections with other social, political and economic processes which occurred at the same time and places, such as immigration, industrialization, and urbanization.

Analyzing the background of Carp's introduction to Israel might have double significance. First, it should help us in understanding the relations between Europe and Western Asia in modern times from an environmental perspective. Second, it should provide us with better understanding of the factors and processes driving introduction of species invasions in general, helping to shed light on similar processes in other places in the world and facilitate the search for viable solutions to the worldwide crisis in alien invasions.

O195

Land use and animal husbandry in the Roman period in the eastern Dutch river area

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Studies of medieval and post medieval environmental history can use written sources or even visible features in the modern landscape. To know more about land use during the Roman period in the Netherlands, archaeology provides the best results. Recent research on the animal bones from an archaeological excavation of a small rural settlement in the Eastern Dutch River Area has resulted in new information on land use and animal husbandry in this area during the Roman period. The relative contributions of animal husbandry and arable agriculture to the local economy are difficult to establish. Only by combining results from archaeozoology and archaeobotany can a complete picture be created.

In the Roman period, the Eastern Dutch River Area was characterised by a dynamic landscape. Rivers regularly flooded the surrounding low-lying land. Only the higher stream ridges provided suitable places for habitation and arable agriculture. The limitations of the landscape dictated to a large extent both the types and quantities of crops and animals that could be produced. The presence of the Roman army, from the late first century BC onwards, created a new demand for surplus products. The way in which the rural settlements in the Eastern Dutch River Area reacted to this demand and changed their methods of production forms the topic of this paper.

Analysis of animal bones shows evidence for specialised production, focusing on different products in the 1st and 2nd centuries AD. It is suspected that the surplus of horses bred in the Eastern Dutch River Area during the 2nd century AD was not just destined for local markets and army camps, but that they were traded over larger distances. New archaeobotanical evidence shows that the production of cereals was more important than was previously realised.

O196

Fire in cities in the medieval and Early Modern Islamic world

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Throughout medieval and early modern times cities in the Islamic world suffered destructions caused by fires, some of them caused by natural disasters (earthquakes), others by accidents (for example in markets), others deliberately by humans in times of war or for political motives. This paper is an attempt to launch a tentative general assessment of the ways fires affected medieval and early modern cities with a predominantly Muslim population – an aspect of Islamic history which has enjoyed little attention in contemporary research. The paper will consist of three parts:

- Sources: Our main source for reconstructing events around fires in medieval and early modern cities in the Islamic world are historiographical works. This section examines how fires figure in these sources and what kind of information can be gleaned from them. I will also address other sources which are relevant for theological, ethical or juridical implications of fires.
- General observations: How and where do fires start and how do they develop? Which parts of cities are usually affected and why (building materials, structures of buildings)? How do people and authorities react: who is responsible? Are there any preventive measures? How are people expected to react and how are they reported to have reacted?
- Reconstruction: how do fires influence the developments of cities? Are there any technical improvements – do people “learn” from previous experiences with fire? Are fires politically exploited?

Throughout my paper I will raise the question whether there was any specific manner in which cities in the Islamic world were affected by fires and whether there was any specific manner in which Muslims dealt with fires, be it in their immediate reactions, be it in the way they recorded events connected with fires.

O200

Mapping floral flows: The search for medicinal plants in the Philippines, c.1680s- 1890s

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The medical and therapeutic properties of plants, combined with the demand for medicinal drugs, have long been at the root of local and foreign interest in the Philippine natural environment. From the 1560s onward, large parts of what is today the Philippines was colonised by Spain whose conquistadors, civil servants and clerics struggled to resist, treat and overcome illness in the strange and debilitating climate of the new colony. Foreigners in a strange land, Europeans, often with a medical and clerical background, explored the plant world of the country, particularly the large island of Luzon, describing and drawing plants, as well as endeavouring to understand their pharmaceutical value. This paper will map the floral flows within the Philippine Islands, as stimulated by the search for and documentation of plants with medical properties. It will focus particularly on the pioneering work of the Moravian Jesuit pharmacist Georg Joseph Camel and his 'Historia Stirpium Ins. Luzonis et reliquarum Philippinarum' (published as an appendix in John Ray's *Historia Plantarum* (1704)), medical manuals by the Jesuit Father Pablo Clain, the *Remedios faciles para diferentes enfermedades* (1712), the Dominican Father Fernando Santa Maria and his *Manual de medicinas casera para consuelo de los pobres indios* (1768), and the Filipino physician Trinidad Pardo de Tavera and his *Plantas Medicinales de Filipinas* (1892). The paper will trace the arrival and spread of alien species and discusses the journey of plant material to and from Europe. In this respect, the paper will also explore the role of the Manila botanical garden in the introduction and cultivation of new medicinal plants. Finally, the paper will also attempt to address the question of how newly introduced plants influenced local medical practices.

O201

Assembling a knowledge of regional flora and fauna in the 17th Century: The case of Ceylon v. Malabar

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In the 16th and 17th centuries, exotic botany became a common interest among many kinds of Europeans. The medical community took the lead, as new discoveries of medically useful plants, from cinchona to ipecacuhana and ginseng caused the European pharmacopoeia to grow rapidly. But useful knowledge was not the only motivation, for pleasure gardeners and garden-fanciers also took a keen interest in exotics, from the tulip to orchids and pineapples. During the 1660s, stimulated by directives issued from their headquarters in Batavia (now Jakarta), many of the factories of the Dutch East India Company (VOC) were committed to the study of local botany for the interests of both medicine and pleasure-gardening. In searching out local information and specimens, some of the VOC regions began to pit themselves against one another. This was particularly evident in the rivalry between Ceylon (Sri Lanka) and Malabar (in India), embodied in the growing enmity of two former trusted associates, the governor of Ceylon, Rycklof van Goens, and the governor of Malabar, Hendrik van Reede. The former employed eminent botanists such as Paulus Hermann to study the flora and fauna of Ceylon; the latter employed a variety of local experts to produce one of the great botanical atlases of the epoch, the multi-volumed Hortus Malabaricus. In the comparisons and contrasts between the natural resources of their respective domains, these political rivals helped to encourage both intensive investigation and close attention to the kinds of relationships that we would today call "ecological."

The origins of commercial sea fishing in the 1st and 2nd millennia AD: Archaeological approaches

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This paper will introduce a new research project that aims to explore the chronology, causes and implications of the rise of commercial sea fishing in the North Sea, Baltic Sea and North Atlantic from AD 600 to 1600. The project will combine existing surveys of the European fish bone record with detailed studies of time-series from long-lived towns (such as York, Southampton, Gent and Ribe) and key collections likely to represent traded material (from Germany, Poland, Sweden and Estonia for example). Collections from major 'stockfish' producing regions such as Norway and the Northern Isles of Scotland will also be considered.

The methods will include traditional zooarchaeology (e.g. element distributions, cut marks and size distributions) and new biomolecular techniques for detecting the broad origin of traded fish. The initial focus of the research will be on cod, with herring to be considered in due course. Together, the extraction, processing and trade of these two species had major impacts on European social organisation and political-economy. The history of their exploitation also acts as a 'barometer' of social and economic change. Finally, it must be asked if the intensive exploitation of cod and herring resulted from, and in turn caused, early human impact on aquatic ecosystems.

The research is funded by the Leverhulme Trust and forms a project of HMAP, the historical branch of the Census of Marine Life.

O203

A hub of plant exchange: Batavia (Java), the Dutch East India Company, and the networks of European botanists, 1620s to 1800

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In 1619, the Verenigde Oostindische Compagnie (Dutch East India Company; VOC for short), established its headquarters in the place that is now called Jakarta, on Java, then called Batavia. In the 1620s, employees of the VOC, mainly medical doctors, started to collect, identify and name, describe and depict the flora (and fauna) of Java, with the aim to examine the medical applications of these biota. The people involved in this endeavour – men such as Bontius (Java), Rumphius (Ambon, Moluccas), Van Reede tot Drakesteijn (Malabar, India), and Hermann (Sri Lanka) -have been well studied generally. This paper examines the exchange of plant material between VOC physician/ botanists (and others with an interest in botany), and also their connections with several botanical gardens outside Asia. The main botanical gardens to be discussed in this study are the Hortus Botanicus in Leiden, and the Hortus Medicus, later also called Hortus Botanicus, in Amsterdam. I will also look at individuals in Europe to whom plants were sent from Asia, often rich members of the supreme VOC governing body in the Republic, the so-called Gentlemen XVII, as well as other influential people who were trendsetters in botanical fashion, planting seeds, bulbs and cuttings in their private green houses, hence spreading the specimens that are the familiar European garden plants of today.

The paper will discuss the implications and consequences arising from the creation of new plant communities, a development that can be viewed positively in terms of increased biodiversity, or negatively as early examples of bio-invasions.

How to use historical data for the assessment of ecosystems in Europe? The case of fish in Alpine rivers.

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Due to the introduction of species and the huge modifications of river ecosystems by man, animal and plant communities in European rivers have changed fundamentally on a long term perspective. In the last few decades, serious problems have arisen from the degradation of riverine landscapes (e.g. drinking water supply, flood protection, loss of species diversity). Hence, there is now great need for ecological restoration of rivers. A common agreement in Europe is to base the assessment of river ecological status on the identification of reference conditions (Water Framework Directive). The latter are e.g. for fish defined as conditions, where species composition, abundance and age structure of populations correspond totally or nearly totally to undisturbed conditions. Besides modelling and expert judgment, the use of historical data is considered as a possibility to define reference conditions.

The aim of this presentation is to evaluate the possibilities of describing the distribution of fish species of the French and Austrian alpine rivers before the major direct, systematic impacts (civil engineering works) were built. In countries, historical maps and written documents from the 19th and beginning of the 20th century were compiled and implemented in GIS. Based on particular examples, the authors will examine how main characteristics of fish assemblages can be evaluated along the river networks by using historical data: regional species distribution and local species richness, upstream limits of species migration, and definition of species habitat requirements by integrating (historical) abiotic data. Nevertheless, important features such as species abundance and age structure cannot be assessed. The value of historical data for current ecological questions will be also evaluated in relation to different types of data sources. Finally, the link between historical situations and the concept of reference conditions will be discussed.

O205

Environmentalism and the common good. Conflicting interests in the controversy over Frankfurt Airport (1960-1984)

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The upswing of civil aviation since the 1950s gave rise to demands for airport extensions throughout the industrialised world, and protests against the provision of new facilities were equally ubiquitous. Taking the conflicts over a third runway at Frankfurt Main Airport as a case study, the paper explores the connection between environmental awareness and the overall ideas of public welfare.

When plans to enlarge the airport were made public in the early sixties, the underlying concept of enhancing the common good was deeply challenged: First, by a movement against the detrimental regional impacts of the new runway (land use, deforestation and noise); second, because the regional concerns were eventually linked to a global ecological consciousness; and third, because the character of the airport as an infrastructure itself became equivocal: When the perpetuation of economic growth became doubtful during the seventies, the expansion of the airport no longer appeared as a public scheme beneficial to the whole society, but rather as a strategy of the airport company to maximise its private profit. As the state fostered the airport company's building ambitions, its role became likewise oblique: From the environmental movement's point of view, the administration was supporting an illegitimate claim on the natural surroundings of thousands of people in the region and had no right to dispose of the environment other than conserve it as a space for recreation. When the first trees on the building site fell in late 1981, peaceful demonstrations gave way to violent encounters between activists and the police.

The paper regards the controversy over aviation infrastructure as a means to establish an analytic link between local and global, public and private concerns and the more general questions of social development and public objectives. It will be argued that the conflict can be understood as a struggle between antagonistic interests over access on the region's limited spatial resources, and that the resulting environment can be seen as a materialisation of their relative position of power.

O206

The long term industrial transformation study for the area of the Czechoslovak Republic

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The work looks at the development of main material and energy flows of the Czech economy during the time period from 1918 till the present. The study is based on the concept of social metabolism and the methods of material and energy flow analyses (Ayres and Simonis 1994; Fischer-Kowalski and Haberl 1997). Czechoslovak Republic (now Czech and Slovak Republic) has been formed in 1918 as one of the successor's countries of the Austrian - Hungarian Monarchy including also present Austria, Czechia, Slovenia, Hungary and Croatia since 1867 to 1918. The Czechoslovak Republic as the most industrialized part of the Empire had a prerequisite to be a country with a high volume of flows of materials since its very beginning. Moreover the post-war period (Second World War) was strongly characterized by further development of heavy industry, coal extraction and massive agricultural intensification. This was projecting into volumes of material flows of both the biomass and fossils on which is our work mainly focused.

Due to a tradition of a data collection in the old monarchy, for the so called First Republic period (1918 - 1938) many reports and statistical yearbooks periodically published by The Statistical Office of the Czechoslovak Republic are available. The most of the data lacking are for the war and post-war period. The Statistical Yearbook in more or less present image and volume has been issued since 1957 as well as more detailed statistical reports.

The time series of data on biomass and fossils, land use, population, energy flows – will be presented, discussed and results will be compared with work of IFF Social Ecology team in Vienna as this work is a part of a comparative study of the “long-term industrial transformation” of Austria and Czechoslovak Republic.

“The forgotten fish”: A reconnaissance of the eel in the cultural and ecological history of the North Atlantic basin

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As terrestrial creatures, historians of the environment have generally remained fixated upon their natural milieu, but even those who have been drawn to cast their gaze upon our cultural relationships with aquatic species, whether inhabiting the rivers, the lakes, or the open seas, have generally done so from much the same perspective as their historical subjects; historicizing relationships developed by the wealthy who valued commercial fish species such as the Atlantic herring, cod, and the “mysterious” salmon.

As the sixteenth century English historian, William Camden, noted however, “the sea hath fish for every man,” and among these was the equally enigmatic, if less aesthetically appreciated, serpentine eel (*anguilla anguilla* and *anguilla rosta*). Ironically, among the most “esteemed” of fishes during the ancient and medieval period, by the nineteenth-century the eel had become a staple of the coastal and riverine working class in both Europe and North America.

This paper will examine the ecological, historical, and cultural place of the eel among the peoples of the North Atlantic basin, from Amerindian tribes to Europeans (both continental and colonial) who exploited it for subsistence. Particular emphasis will be placed on cultural representations, social uses, and popular comprehension of the species in England, France, and the St. Lawrence estuary.

Finally, attention will be paid to the importance of this species as a case study revealing the paradox of “conservation.” Elite conservation rhetoric and actions, and their subsequent historical study, gave enormous value to migratory salmon through the employ of laws, systems of protection, promotion of fish ladders, and the use of pisciculture. At the same time the conservation agenda completely ignored the eel, a fish that shared similar migration and habitat deterioration patterns, but was neither endowed with the biological ability to leap over ladders, nor any longer in possession of cultural import for anyone but the socially marginalized.

The energy transition in Southern Europe: Italy and Spain (1861-2000)

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The energy transition, that is the passage from traditional to modern energy carriers, marked a dramatic change in the economy, culture and environment. It is indisputable that the past two centuries have been a period of unprecedented economic growth in Europe and the wider world. Both the size of the economy and the level of energy consumption have expanded at a far faster rate than the world's population. As a consequence, modern economies are able to produce goods and services on a scale that was scarcely conceivable in the pre-industrial world, and do so by utilising a vastly increased *per capita* supply of energy.

Yet our knowledge of the energy transition is far from clear. The available statistical information in European historical accounting only concerns modern sources. The lack in it of the traditional energy carriers biases our perception of recent economic transformations. If we include traditional sources in our investigations, the interplay between energy, economy and environment becomes much more complex and interesting.

Our main purposes are a closer examination of the process of the energy transition in Italy and Spain over 200 years and its impact on the environment. The paper is based on totally new series of energy consumption including traditional carriers along with modern sources.

Anthropogenic emissions of carbon dioxide (CO₂) represents the largest part of the emissions of greenhouse gases. Of these CO₂ emissions, those that are produced from fossil fuels combustion make up the great majority. Interrelation between economic growth, energy consumption and CO₂ emissions in Italy and Spain will be also investigated in the present work.

O210

Seeding the shores: The reciprocal influences in the development of marine aquaculture in the 19th century

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Modern marine aquaculture was developed during the 19th century, and would come to be practiced in every part of the world. Its development, which depended greatly on a global intellectual exchange, did not take place in an isolated manner, region by region, nation by nation. Neither was it an *ex nihilo* creation, but rather an inspiration of various and varied sources—a result of an intense exchange of ideas (much of it in translation), diverse observations made through voyages of study abroad and state-sponsored commissions of inquiry.

The study of France permits a better understanding of the interactions between the different nations and their divergent forms of development. The French scientist, Victor Coste's, voyage of study undertaken in 1852 along the coast of Italy would permit him to report and adapt many techniques which, underwritten by the Imperial government, would lay the groundwork for the emergence of a marine aquaculture enterprise in the decades to follow. The French model would be attentively observed by the rest of Europe (the Netherlands, Belgium, Germany) and most notably in the English-speaking world (the United Kingdom, Canada, the United States and even Australia). At the same time, the French would also interest themselves in the experiments conducted by foreigners and their accounts of these experiments are numerous.

This paper will present and examine the relationships between different actors in the global exchange of ideas. Certainly, important individuals emerged, such as Coste, Möbius, Frank Buckland, Seth Green, and Bashford Dean. Yet, it is equally important to underline the role of groups such as the Society d'Acclimation, and large scientific institutions (the Académie des Sciences, the Muséum National d'Histoire Naturelle, the US Fish Commission, and various research laboratories). By examining all of these actors, and their interconnections, one can not only show the development of marine aquaculture, but also present a geography of intellectual exchange in the nineteenth century.

One definitive conclusion imposes itself: even if bitter nationalism often broke these connections, the development of marine aquaculture continued to progress throughout the 19th century and diffuse throughout the world, often following new models, but always through global reciprocal relationships.

O211

Reconstructing reforestation: Changing land use pattern along the Saint-François river in the eastern township of Quebec

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In the Eastern Townships of Quebec, the St François River has been periodically the theatre of severe floods since the end of the 19th century. Floods in 1942 and 1943 have especially enticed public mobilisation to prevent the future occurrence of floods or attenuate their consequences. Owners of paper mills and hydropower plants along the river, local chambers of commerce, and other economic actors embarked upon a reforestation programme to regulate the flow of the St François River. While the goal of the reforestation programme was to prevent flood, its promoters also emphasized the need to embellish the river banks. Reforestation and beautification went hand in hand to stimulate the tourist industry and to appeal to the regional political and economic elite. As a result of these activities, the forest cover of the river banks has increased over the last half century and now represents an important feature of the Eastern Townships landscape. This paper describes and explains the reforestation process in an area undergoing recurrent flooding events. Using aerial photographs for 1945, 1970 and 1980 that are geo-referred, as well as orthophotos for 2000, we will first examine the changing land use pattern. We first provide a geographical interpretation of the loss and gain of wooded. We then proceed to sketch the gain and loss in order to localise the role and motivation of social actors in transforming the landscape.

O212

Reforestation in an urban landscape: Changes in Canopy Cover in Ottawa (Canada) 1927-1967

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The landscape of Ottawa (Canada) was transformed at the turn of the nineteenth century by extensive street tree planting. City residents planted shade trees such as American elm and sugar maple and created a deciduous urban forest where a pine forest had once stood. These trees grew quickly and came into conflict with the expanding built environment of sidewalks, asphalt paving, and utility wires. In the 1920s the municipal government imposed a professional management regime. Between 1921 and 1945 over 4,000 trees were removed; many more thousands were radically trimmed. In 1962, the city reversed policy again and announced a policy of reforestation and conservation.

This paper correlates changing municipal policies toward city trees with changes in canopy cover measured in aerial photographs. Aerial photographs for Ottawa are available from as early as 1927 through to the 1960s and tree canopy is measured using techniques developed by forest science.

The measure of canopy cover provides an empirical base against which social, cultural and political change can be studied. Did the policy shift in the 1960s reflect decline in canopy cover? Were changes to the canopy cover localised? Can they be correlated with social class? Or related to the appearance of Dutch Elm Disease? Finally, can changes in tree canopy cover, a visible and dramatic change to nature in the city, be related to the rise in the environmental movement in the late 1960s and early 1970s?

The history and the current status of integrated water resources management

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As a conceptual solution to the complex problems of water management the concept of Integrated Water Resources Management (IWRM) has been increasingly promoted by the international community. Though institutional transfer of IWRM from international to domestic arena has been widespread, this process is arguably undermined by a lack of clarity and agreement about the IWRM concept, that has come in for a good deal of criticism. This paper attempts to address this problem by looking at the hitherto under-researched area of the history and theory of IWRM, in particular focusing on how deeper analysis of the conceptual framework of IWRM can enhance the current understanding of the institutional transfer of IWRM. The paper consists of three parts. The first part deals with the history of the IWRM concept, and its relations to other theories (e.g. integrated resource management, multiple-purpose water development, strategic planning etc.); the second part is devoted to the history of the institutionalization of IWRM at the international level; and the third part analyzes the on-going processes of institutional transfer of IWRM practices from the international arena to individual countries. A theoretical framework for analysis of the institutional transfer of IWRM is developed and tailored for application to three case studies: River Basin Management in the South Caucasus, Private Sector Participation in water supply in Azerbaijan, and Water User Associations in South Kazakhstan. The main method used in the research is an instrumental case study accompanied by grounded theory generation. The main outcome of the study is identification of the striking similarities between IWRM and Strategic Planning and the processes of institutional transfer. It is also worth stressing that this research has pioneered the study of the institutional transfer of a concept (IWRM) as opposed to transfer of techniques.

The “Dog-in-the-Manger”: Forests and forestry and in the Ottoman Empire, 1850-1910

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The second half of the nineteenth century marked an critical watershed in the history of world forestry. Almost all major states in the world initiated new policies similar to the German 'scientific forestry' developed in the late 18th century. The Ottomans made an early effort to establish a rational forest management in the line of Continental forestry, especially after the Crimean War. To this aim, the government invited European specialists. The forest specialists were Frenchmen, who advised the government on constructing roads, waterways, and railways; cleaning rivers, lakes, and ports; drying up swamps; building industrial enterprises and irrigation systems; improving agricultural productivity; and managing forests. They argued for the 'good protection' of forests from degradation to maintain their benefits for the local populations and the central treasury. To them, the main culprits of destruction were the traditional destructive mentality of local populations and the inefficiency of commercial organizations and trade networks within the Empire. The Ottoman attitude to its natural resources in general has not been the central aspect of any individual study in the forestry historiography. Thus, the practices of scientific forestry in the Ottoman Empire raises important questions about forest management in a wider comparative perspective. The Ottoman experience can be summed up as a failure to record, manage and financially exploit the forest resources. This was a process through which the Ottoman state gradually lost its capacity to control its natural resources while trying to have firmer grip on them. I will illustrate some of the problems that the Ottoman modern state faced during its endeavor to establish a 'rational' forest administration, in the beginning through European modes and methods. Subsequent problems were much related with the codification of rules and regulations, the lack of a professional cadre, and of an effective infrastructural system.

O220

People who managed water. A comparative study into conflict analysis about water management practices in Holland and Flanders in the Middle Ages and the 16th century

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The main question of this paper is in what way landowners and land users influenced the water management practices on local and regional level in a part of the Dutch province Holland in the 16th century. The study shows the interactions between participators in water management and the results of those interactions. The findings of this study were compared with those of the situation in Flanders. Tim Soens explained that in Flanders increasing administrative centralization, social differences and agricultural commercialisation leads to neglected dike maintenance. The increasing concentration of landed property in Flanders in the 16th century reinforced already existent oligarchic tendencies in the organisation of water management, which influenced investments in water infrastructure. The results were catastrophic. The studied part of Holland shows no sign of oligarchic tendency in the middle Ages. In the 16th century more people owned more land and therefore more people became participated in the organisation of local water management. Some of the local administrators opposed against the participation of the large number of people, but the administration remains much the same. This comparison reveals the importance of socio-economic factors in water management practices and gives us a better understanding of the relations, troubles and results in water management of the 16th century.

O222

Bridging the arts/science divide in history teaching: Enabling learning in environmental history

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Over the past few decades, teaching in history has expanded in range, including not only the traditional disciplines of languages, anthropology, sociology and economics, but also media and film studies, heritage studies, computing and IT, and more recently, environmental history. Environmental history is now a significant chorus on the history stage, because nature sets limits on how history unfolds. Unlike most other fields of historical enquiry, environmental history can be less accessible to both students and academics because a substantial component of the background for the subject involves scientific evidence, and is based on collaborative research from scholars in physical geography, biology, and ecology. Despite that history as a subject is now typically grouped with the more traditional humanities subjects and at best archaeology and only a minority of history students are comfortable with the preoccupations and methods of the sciences.

This paper will seek to identify in more detail the problems facing history students learning in science-based courses. The paper will also explore some of the common misperceptions about the nature of science-based approaches, and emphasise the philosophical similarities between the traditional and the scientific approaches in history. Finally the paper will suggest some strategies how to overcome some of the difficulties related to teaching sciences in a humanities context, particularly in environmental history.

O223

Fashioning a regional natural history: The fauna of British India series

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From its inception in 1888, the Fauna of British India series became the keynote of faunistic taxonomic classification in British India (including Ceylon and Burma) for the next 60 years until independence was secured from the Crown. I argue that The Fauna of British India was at once an imperial project of classification (*sensu* Said) in the 90 years of Crown Raj as well as a continuance of long-standing individual efforts to secure natural history on a firm footing in the public consciousness by such stalwarts as Brian Houghton Hodgson, Thomas Claverhill Jerdon, William Sykes and Edward Blyth in the Indian subcontinent, attended by concomitant interest and patronage by such institutions in the United Kingdom as the Royal Society and individuals as Charles Darwin and Joseph Hooker. My focus will be on early natural histories of particular faunistic groups, and their eventual treatment as part of a larger series, involving transoceanic relay of information, publication and dissemination of print and illustration to capture and portray as systematically as possible the wild heritage of a subject colony through the efforts of a network of ethnologists, political administrators, soldiers, clergymen and natural historians.

O224

Monitoring mining resources: Antipollution politics during the interwar years

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Since the end of the 19th c., the mining sector has pioneered in putting in practice legal measures against pollution. Impelled by those laws and judicial sentences, some of the big companies adopted a series of technical innovations in order to reduce spills and gas discharges. The negative consequences of economic growth and the technical revolution explain the change in the public opinion. However, during the 20s and the 30s, in a context of social and economic crisis, the public interest in pollution problem did not decrease. This essay outlines some serious mining conflicts, the attitude of the companies and diverse legal dispositions in this period.

The attitude of big companies and its relation to the antipollution measures is particularly interesting in North America. The American and Canadian firms are at the forefront of “clean technologies” and “ecoeficiency strategies”. The case of Trail Smelter, the most important copper smelters in the world, is stressed.

Mining antipollution laws issued in Europe are very heterogeneous but show some concerns that modern environmental policies will adopt during the second half of the 20th c. Thus, there are minor interventions only modifying or expanding prior dispositions, such as the English law of 1 July 1927, or the Belgian laws of 10 and 14 October 1933, which draw on the Napoleonic Code. But there were also some audacious proposals, such as that defended by the Berryer Commission after the river Meuse catastrophe (although it was finally rejected) or the controversial Morizet Act in France. For all of this and in spite of the claims by some researchers, the interwar years are an interesting transition between the first wave of antipollution laws at the end of the 19th c and the *Ecological Era*.

O226

Immigrant oysters in San Francisco Bay, 1860s-1920s: How they got there, and why they disappeared

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Historians and popular writers have shown great interest recently in the history of such formerly abundant European and North American near shore fisheries as cod, lobsters, salmon, and shellfish. The history of oysters in North America is particularly promising for the insights it offers into the past ecological productivity of coastal ecosystems and the social benefits those fisheries provided. Oyster fisheries were located in estuaries immediately adjacent to some of North America's largest cities. Oysters provided cheap, locally produced protein to working people on both sides of the Atlantic. Scholars have focused on the sites of greatest nineteenth century production and consumption of oysters in North America--Chesapeake Bay and the estuaries around New York City. Almost forgotten are the tremendous urban oyster fisheries of Pacific Coast of North America. San Francisco Bay had a particularly vibrant and valuable oyster industry that in dollar value sometimes surpassed all other Western fisheries. We know this fishery relied on transcontinental shipment of seed oysters from eastern estuaries. But how was this fishery created? Who shipped these animals? How was the industry organized? Did San Francisco Bay oyster production ultimately decline due to pollution, as has been assumed, or did more complex social and environmental factors cause the loss of this remarkable resource? The answers promise to inform our understanding of the complex process by which industrialization simultaneously created new ways to make nature productive while destroying other kinds of natural productivity. In the process, some people gained access to resources and others lost.

O230

Linking natural resources and environmental technologies: International timber and Dutch local-scale water management (1650-1800)

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The importance of natural resources in early modern Europe has fostered extended debates. Although discussions have not ended, it is clear that the international distribution of greatly demanded resources is a complicated matter and that there is a significant interconnectedness between all regions involved. Yet, historians' attention to the actual consequences tends to focus on the effects on energy supplies or consumption while impact on other fields remains mostly terra incognita. The same is true for technology-related issues where research on natural resources has been equally one-dimensional. This paper focuses on direct links between natural resources and technological developments. Therefore, it deals with the question if and how shortages of natural resources, caused by distributional fluctuations, provoked changes in the very design and construction of technology.

The case study concentrates on Dutch local-scale water management in the seventeenth and eighteenth century, precisely because wood consumption in the Republic depended on shifting international trade and because well-spread Dutch water infrastructures (polder mills, sluices) consisted almost entirely of wood. The paper, based on recent research, uses both qualitative and quantitative data, and offers new insights in local-scale technological implications of international developments.

The paper starts with an overview of the Dutch position on international timber markets and its long run development. The second section focuses on the impact of fluctuations in timber supply for local water management. After considering the actual use and importance of timber, it deals with financial consequences of changes in supply. The results suggest that high prices became a major problem for local water boards. The third part discusses reactions to these challenges. To what extent did rises in price trigger technical innovation? What reactions and innovations emerged from the worsening situation and were they successful as cost-cutting alternatives?

Turning rivers to the south: Debates on the river diversion projects in USSR

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An authoritarian state possesses power to realize almost any scenario for development of its peripheral territories. Usually, these scenarios take form of large-scale projects, focused on extraction of natural resources. Still not always the development of the area can be ultimately ruled from the center. The aim of the paper is to analyze the development of critical components in the discussions, which accompanied the realization of large-scale engineering projects in the USSR during the 1960-1980s. Why has the possibility emerged to criticise the state programmes on natural resource management?

Empirically, this research is based on an analysis of the discussion around the project to rebuild the system of the Kama-Vycheгда-Pechera rivers. One part of this plan was so called "Northern-European Rivers Diversion Project". This project was aimed to create water transportation routes, new water basins and hydroelectric power stations. In spite of the fact that the given project has been supported by the state, it was not realised in practice.

Contradictions have arisen between the Ministry of Water Management, on the one hand, and the Ministries of Geology and the Ministry of Forestry, on the other. The latter were concerned that, as a result of flooding the northern territories, the extraction of minerals would be complicated and the forest areas would be considerably reduced. Further, other conflicts have arisen since the interests of regional authorities contradicted the interests of the Center, as there were concerns about material losses to the regions.

The reconstruction of the debates about this project leads to the following conclusions: 1) Even under conditions of the centralized management and command system, debates about natural resources use are possible; 2) Theories of institutional pluralism and corporativism may be useful for explanations of the state policy formation.

This research contributes to scholarly debates on the environmental history of countries under authoritarian regimes.

O234

Getting minerals from the Soviet North: Changes in regimes of natural resource use in the USSR

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Industrial development of the Russian North went with incredible speed in Soviet times, driven by the goal to get quickly rich natural resources from the area. Extensive exploitation of mineral resources was among central priorities for the Soviet authorities in northern regions. In this paper I consider transformation of the politics and practice of mineral resources explorations and management in the USSR between 1925 and 1970s. I analyse transformations in regimes of natural resource management, focusing attention on: changing priorities of the state in the development of the North, style of decision-making, the main working force, strategic minerals, etc. The main questions of this research are following: What kinds of strategies were used by Soviet authorities for managing natural resources in the area and for establishing a new type of control over the northern territories? How were northern mineral resources developed in different time periods? How transformation of politics on natural resources is connected with major political, social and economic changes in the USSR?

Based on empirical evidences I trace transformations inside the Soviet system and show, how and why was a more pluralistic style of decision-making about the development of northern territories arising. I emphasise difference between centralised/ multicentric regimes of natural resource use at the Russian North. The Soviet centralised regime is characterised by utopian vision of the regional development, creation of large resource-demanding programs, ambitions for implementation of large-scale projects, usage of the north as a resource appendix of the centre. The multicentric regime is more pluralistic, different interest groups can participate in decision-making, including the local authorities.

O237

Landslides as a natural risk in history. A case study of the Swabian Alb in Germany

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The escarpment of the Swabian Jura in South-western Germany is one of the regions in Germany which was and still is seriously affected by landslides. Unlike floods and earthquakes the history of landslides with their biggest events and their regional distribution is widely unknown. The paper gives an overview about current results of a recent research project. Based upon an intense analysis of a wide range of archival sources the project seeks a better understanding of how earlier societies have dealt with such a dispersed risk in a more concrete and a more cultural way.

Two concepts of understanding natural risks should be proved in this paper.

With the concept of landscapes of risk as a tool, the spatial distribution of single events during the last 400 years can be distinguished in this area.

A second question is, how the perception shaped a special "culture of risk" in the region. The paper will discuss the historical development and specific elements of a culture of risk which includes local knowledge, influence of science and state administrations, mitigation and prevention. A final conclusion will discuss the question, whether it is useful to learn from the history for the future.

O240

The bridge master accounts of Wels (Upper Austria) as a source for the reconstruction of floods (1441-1599)

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There are hardly any studies on the history of climate and weather extremes in nowadays Austria earlier than the 17th century. Charters and chronicles provide only a poor source of information about weather extremes.

The city archives of Wels (Upper Austria), keep a long time series of accounts, written by the bridge master of Wels. This municipal official was responsible for carrying out repairs of the bridge across the Traun River, one of the major affluents of the Danube River in Austria. The accounts contain detailed information about the expenses for the craftsmen doing the repairs after the floods. These expenses serve as an important parameter for the impact of floods on the bridge. In most cases it is possible to reconstruct the frequency (every second or third year, in some years two or three times), duration (one day to more than a week), and intensity (from slight damage up to the complete destruction of the bridge) of floods and to date them. Nevertheless the inhomogeneous character of the accounts also causes methodological problems. The accounts on the "disastrous floods" of 1501, 1567, 1572 and 1598 provide a vivid impression of the management of these floods. Comparing the intensity of these floods with data from Western Europe and central Germany it becomes clear that most of the major floods in nowadays Austria have been regional hazards and seem to have been rather caused by "Genoa Lows" than by strong rain from the Atlantic Ocean.

O241

Ships' logbooks as a source of historical climatic data (1650 - 1850)

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Climatic reconstructions based on documentary evidence have traditionally drawn upon the evidence offered by land-based resources. Whilst of unquestionable value, such data suffer from the well-known limitations imposed by boundary layer conditions and by inherent inhomogeneity of the disparate source material. Meanwhile the oceanic and off-shore areas have remained until recently *mare incognita* as far as fine scale resolution historical data are concerned. This needs no longer be the case and a group of climatologists have been studying the possibilities offered by the legacy of ships' logbooks from as early as the mid-seventeenth century and which provide a continuous and remarkably homogenous series to the present day covering large areas of the world's oceans. The more recent logbook instrumental data are well-known and this presentation will concentrate on the equally valuable non-instrumental data that embrace the period 1650 to 1850. For too long overlooked, this source can be shown to provide unrivalled daily coverage of weather at sea for the past three centuries. Attention will be drawn to projects in hand, to the vast archival resources of Europe, to the methods and means by which the data can be treated and prepared for scientific analysis and a case study will be offered to convince the sceptical of the true potential of this largely unexplored resource.

From visual daily weather records to early instrumental meteorological observations: Tools for the study of past climates in the Czech Lands

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Visual daily weather records together with early instrumental meteorological observations are important sources of knowledge about temporal and spatial climate patterns before the coming about of national meteorological networks. The oldest known weather records in the Czech Lands were kept by the Moravian nobleman Jan of Kunovice between 1533 and 1545. Later on, further visual daily records were made continuing up to the instrumental period where they overlap with instrumental measurements. It is important for their cross-checking as well as calibration of mainly qualitative visual observations. The motivation of authors for their keeping was very different – records were often kept by physicians, parsons, teachers or officers. Observations mentioned have usually duration of a few years being [strongly determined by the number of years corresponding observers lived. The oldest instrumental meteorological observations in the Czech Lands come from Carl Johann Rost, a physician at Zákupy (NW Bohemia), from 21 December 1719 to 31 March 1720 as a part of Kanold's Breslau network. In 1752 observations in Prague-Klementinum began, but in systematic way they are preserved from 1775 onwards. Methodological problems related to visual daily weather records are discussed (e.g. terminology, quantification). The early instrumental records provide information about the place of measurements and the instruments used, about different hours of observations, a description of weather phenomena, their length, completeness and homogeneity. To use visual daily weather observations for climate reconstruction in the pre-instrumental period a database of weather information is created.

In order to analyse and interpret the data this paper presents a set of tools. Examples of spatial and temporal representation of data using GIS are shown as well. The potential of both types of sources mainly for monthly temperature and precipitation reconstructions is shown with respect to recent standards of measurements.

O244

Weather anomalies and extremes in late-medieval Hungary: The role of written evidence

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In late medieval Hungary, due to the relative scarcity of contemporary narratives, legal sources and economic evidence play a special role in detecting any information on weather. Throughout the fourteenth and fifteenth centuries, charters comprise the largest and most accurately dated group of evidence, providing direct or indirect information, predominantly referring to events unexpected enough to obstruct legal processes (e.g. perambulations). Additionally, systematic town account books, private correspondence and narrative sources contain an increasing number of references on weather extremes, especially from the mid-fifteenth century. Compared to narratives, great advantage of any legal (e.g. charters, protocols) as well as economic (e.g. account books) evidence is the (obligatory) high accuracy in dating, whereas narratives provide more information on the magnitude and duration of the event which is usually not included in, for example, charters.

Based on the available written evidence, two types of analyses can be presented:

- flood occurrences referring to the fourteenth and fifteenth centuries, mainly concentrated on periods of higher flood-frequencies, with special emphasis on the Danube
- Some precipitation and temperature anomalies, especially in the fifteenth century.

Thus, an important aim of this presentation is to provide an overview of the most important source types together with their advantages and disadvantages – with special emphasis on the greatest and probably most unique group of charter evidence. Another aim is to show the main results of the analysis carried out on the basis of the above-mentioned evidence.

History of droughts in the Czech Republic from documentary sources

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Drought can be defined as a relatively short period with a significant deficit of precipitation. Its impact can be intensified by other meteorological elements such as high air temperature, low relative humidity or weak wind. Usually four types of droughts are distinguished according to dominant impacts: meteorological, hydrological, agricultural and socio-economic. Knowledge of drought in the pre-instrumental period (i.e. before regular meteorological observations) can be significantly extended by using of documentary evidence. Basic documentary sources containing information about droughts in the Czech Lands are described. Fundamental indices and consequences of droughts are evaluated. Overview of the most severe drought episodes from the 12th century onward is given with special attention to Central European context and to selected exceptional cases such as in the years of 1540, 1616, 1717–1718 etc. Obtained results about frequency and severity of droughts are compared with analysis of temporal fluctuations in different drought indices series calculated from data of secular meteorological stations Prague-Klementinum and Brno (1805–2005).

O246

From a scourge of God to an insurable risk: The background of German hail storm insurance

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This paper looks into the background of the creation of German hail storm insurance during the 18th century. It will be shown that these insurances can be understood as a result of a fundamentally new perception of hail storms.

In agriculture, hail storms are one of the most dangerously occurring natural hazards. They can destroy annual crops in minutes. During the 16th and the early 17th century hail storms were mostly perceived as a scourge of God. Then the first steps towards understanding hail storms in a more rational way were taken by the so called "physico-theologists". This process continued in the late 18th century and was responsible for a change of the socio-economic and cultural background. In this context the foundation of hail insurance companies around 1800 was a natural result.

Despite its importance there is still little research into the establishment of this innovation. This paper discusses the economic and social impact of hail storms and considers the reactions and attitudes of contemporaries towards disasters and adapted strategies. Using a historical-anthropological approach, written sources like diaries, theological tractates and contemporary journal articles have been examined. Unlike other natural disasters, hailstorms were always part of the peasant's everyday life. The paper will focus on such weather extremes, which were mentioned in supraregional sources (records for whole duchies, counties, and states). With a focus upon these hazards, the changing of perception of hail storms and the background of the founding of an innovation in the agricultural sector can be analysed.

Italian documentary sources for past climate reconstruction: Winters in the Po Valley during the last millennium

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Climate reconstruction of the past is of major relevance in order to draw possible future scenarios to be compared with the results of climate models. The study of proxy data recorded in historic documents is one of the most valuable tools to help us reach this goal. In regions where documentary evidence had an early start and became widespread, such as Northern Italy and Flanders, it provides precious and long time series of information, that is particularly useful for periods prior to the 18th century, when instrumental weather records were not yet available. The data sources are different in time and space, therefore all of them need to be carefully and critically analyzed from a historical point of view in order to obtain both high qualitative and quantitative results.

Potentials and problems concerning the use of documentary and iconographical data in Italy will be discussed in this paper. The evolution of the winter climate in the Po Valley during the last millennium will serve as an example. The first results of this study at Kleiò Professional Studio (Padua) regard the North-Eastern area of the region will be here presented.

O250

Sustainability and cultural critique in the intentional communities movement

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This paper examines the ways in which the environmental dimensions of sustainability have manifested themselves, either implicitly or explicitly, in the 2,000 year old phenomenon of intentional community building. We will see how the act of living together in small scale cooperative or communal societies inherently manifests a greater degree of sustainability relative to predominant cultural patterns. We will also see how sustainability has become a central focus of the contemporary intentional communities movement and a motivator for the increasing numbers of people who have joined intentional communities over the last decade. This will be particularly evident as we discuss the emergence of the Global Ecovillage Network and the interconnections between the intentional communities movement and other movements for sustainability such as bioregionalism and permaculture. This general overview will be global in scope and will be complemented by a discussion of the author's ethnographic dissertation field research in two contemporary intentional communities in Western North Carolina: 70 year old Celo Community and 12 year old Earthaven Ecovillage. A comparative analysis of these two communities will demonstrate the increasingly explicit emphasis on sustainability within many intentional communities today. It will also show how a compulsion to seek greater sustainability on an individual level is motivating people to join intentional communities and to become involved in other sustainability related movements. Deriving from the perspective of U.S.-based cultural and environmental anthropology, the paper will utilize the concept of cultural critique to emphasize that sustainability and community building are cultural processes that depend upon the active engagement and identity formation of human agents for their realization.

O251

English climate from the 13th to the 15th centuries

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Late Medieval England from the 13th to the 15th centuries represents a gold mine for the historical climatology. Though this is an outstanding period, since it is a time of climatic change and sees the beginning of the Little Ice Age, neither the weather itself nor its impacts on society have been thoroughly studied. (Pierre Alexandre did not include English sources in his compilation „Le climat en Europe au Moyen Âge“.) Nevertheless Late Medieval England is rich in documentary sources which comprise not just narrative sources but also economic written sources like manorial accounts that include information on weather, for example the Winchester Yields.

The use of our compilation of the description of weather events and their impacts stemming from about 80 chronicles and the Winchester Yields allows a seasonal reconstruction of climate. For extreme weather events there are even daily observations available.

One advantage of written sources is their reference to impacts of weather events on society. For example entries for 1315 do not just mention the unusual high amount of rain and the total absence of typical dry and hot summer weather but also the direct and indirect consequences. The harvest failure led to rising grain prices, the dismissal of estate labourers, widespread famine; the lack of hay and bad weather resulted in sheep and cattle murrain; finally the death toll among humans and animals was high.

The reputation of perennial ryegrass in New Zealand pastures: Responses to the 'ryegrass controversy'

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In the nineteenth century the New Zealand landscape was transformed by the sowing of introduced grasses. By 1900, the area in sown pasture had reached almost 5m ha (20% of its land area). While in theory, farmers could have employed a wide variety of grass species in making this transformation, in practice many opted to sow pastures with little else than perennial ryegrass plus white and/or red clover. In the early 1880s, however, the suitability of using perennial ryegrass for permanent pasture mixtures began to be seriously questioned in the UK, on the basis that much of the seed sold commercially gave rise to plants that died out in a few years. Given that New Zealand's perennial ryegrass seed stock was drawn from the same sources, the same problems were experienced here, and with most farmers wishing to establish permanent pasture, the 'ryegrass controversy' quickly spread to New Zealand. As this paper demonstrates, the 'ryegrass controversy', while itself inconclusive, had a considerable effect in New Zealand, by fostering the production of seed of alternative grass species, and by encouraging farmers to use a wider range of species in their pasture seed mixtures.

O253

The Stockholm temperature series reconstructed back half a millennium by use of Proxy Data

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The sailing season can be used as a proxy for winter temperature. The start of the sailing season is a proxy of ice break-up, which in turn is a very good proxy for mean winter air temperature. (Tarand A & Nordli P.O, 2001) Custom books from the Stockholm harbour exist from 1533 onwards.

Do the preserved custom books reflect the length of the sailing season? Or rather, can we assume that the sailing season reflect ice-coverage of the western Baltic region? E.g. during the sixteenth century, the tradition of celebrating Christmas seems to have been deeply rooted. The sailing season practically always ended well before Christmas, which may reflect the "little ice age", but probably more reflects a traditional society.

Another, general, problem with the chosen sources is that the larger the shipping traffic was, the better the sources reflect ice coverage.

The requirements on "open water" may also differ between a large vessel, to one that is smaller. E.g. in late winter/early spring there is a time when the sea is a mixture of ice-floes, thin ice, open water, as well as more solid ice. In such conditions it might be possible to force passage through slush and ice-floes, which might not be dared in a smaller boat. On the other hand, this problem of the development of vessel-sizes might be superfluous, since the smaller boats might never have occurred in any sources ever, since such boats never paid anything.

Preliminary result of spring arrivals and departures at Stockholm harbour 1533-1800. Correlation between arrival/departure dates and winter-temperature (for the period 1722-1800, using the Uppsala temperature by Moberg) is c. $r^2 = 0.8$.

O254

The natural and artificial seasons in late medieval law

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Nature is often depicted from a temporal perspective. The trees and plants bare fruit in their seasons and the inhabitants of the earth grow and change in patterns that unfold in time. These descriptions of the rhythms of the natural world are culturally derived. This is clear in examining Western European legal ideas about nature's temporal order that were discussed in the 13th and 14th centuries. In this period there was a gradual shift from a predominantly liturgical and agricultural appreciation of time to a more commercial interpretation of its character. The mechanical clock was perfected and introduced across the West in this age as well, and the university jurists were intimately engaged in efforts to understand this new technology and articulate the changing mercantile sensibilities of their contemporaries.

My essay focuses on the language that the lawyers developed to reconcile the varied ways that the times of nature were depicted in this period. For example, city statutes often punished crimes that occurred at night more severely than the same acts committed in the daytime. But this begged the question, when exactly was it night time? And if rules were set down to fix a certain hour to be marked by bells, how should a miscreant be punished if he could not hear them, or the light lingered in the summertime and the days were longer? Other cases turned on the difficulties of determining the value of a harvest before it was naturally ripe. In their discussions the lawyers created distinctions between the different ways that they saw their contemporaries using time to describe the natural world. They would understand the seasons as divided by natural or artificial time, or by civic time.

O257

Milton, Humboldt and the American environmental movement

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In 1867, John Muir set out on a walk through the wilds of America. With a Bible in one hand and Milton's *Paradise Lost* in the other, he was intent on sailing to South America to become another Humboldt. Beset by illness, he changed course for Yosemite Valley in California, to become a founder of the American National Park idea and the pioneering environmental organization, the Sierra Club.

Leading landscape painter Frederic Church painted landscapes with religious and Miltonic themes until reading Humboldt, who inspired him in the mid-1850s to travel to South America to paint scenes Humboldt described: huge, dramatic landscapes that combined themes of Eden and science and that made Church internationally famous.

British poet John Milton and German scientist Alexander von Humboldt exercised great power over the nineteenth century American imagination. Hugely popular in the United States, *Paradise Lost* presented a vision of harmony between God, man, and nature that influenced environmental thinkers from Emerson to Muir. Humboldt's vision of the unity in diversity of the natural world, a creation of the divine mind, and his understanding of the relationship of environment to man, gave impetus to early ecological thinking, influencing natural scientists from Thoreau to Charles Elton. This paper explores the underappreciated roles these two towering figures played in shaping early American environmental thought.

O262

Woodlands, miracles and monastic identity

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Christian monasticism is often associated with the idea of the “desert.” It has long been recognized that medieval monks translated the idea (based in the actual deserts of Palestine) to northern Europe, thereby redefining the desert as empty wasteland. Medieval monks sought out environments that, while not geographically deserts, were perceived as less populated and harsher than their surroundings. In particular, Christian monks associated forests and woodlands with the ancient deserts, thus viewing the geography and topography of forests as part of their religious identity. This paper will revise these general conclusions by showing that, monks saw the forests as more than just recreations of the Biblical desert. Recognition of the multiple monastic perceptions of the environment allows us to develop a more complex picture of the role of nature in the shaping of monastic identity.

This paper will explore the ways that the Benedictine monks of Stavelot and Malmedy interacted closely with a specific environment--the forests of the Ardennes--to create a group identity. This paper argues that monks used religious sources to construct images of nature that not only defined themselves as monks, but also shaped their relationships with other medieval people. Through stories that reprimanded agricultural dependents for their abuse of monastic woodland resources, they shaped their identity as landlords. They also told religious stories that showed how different monastic and royal attitudes towards woodlands were. Woodlands were more than wastelands or deserts; they were resources, property, and a background for social ritual. The monks clearly used the idea of forest as desert to forge a self-identity, but at the same time they used their woodland environment to identify themselves in opposition to both the agricultural communities they controlled and also secular rulers.

International transfers of technology in urban sanitation: A perspective from backward Europe (Lisbon, 1850-1910)

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International transfers of technology on sanitary engineering are an important topic for understanding the constitution of a network of practices and of practitioners in the second half of the nineteenth century. Their impact on improving urban environment was particularly important in poor countries, which lacked modern engineering schools as it was the case of Portugal for some time during the period covered here. This paper deals with the period of time in which modern sewers and water systems were established in Lisbon. Several years of epidemics (1856-1858) urged local and national authorities to take care on the urban environment of the Portuguese capital city. At that time there was no civil engineering school, but the influence of the miasmatic theory constituted water contamination and absence of sewers as the main causes of epidemics.

Five channels allowed this transfer of technology: visits of study to European cities, participation in international conferences, foreign engineers working for the municipality or for foreign companies, Portuguese graduates from École des Ponts et Chaussées in Paris, donation of books coming from European municipalities.

The technologies used in sanitary engineering have a high level of site-specificity. Therefore, the constitution of a pool of national capabilities on this technical field was particularly important. The former means used for transferring technology performed a critical contribution for the creation of a group of civil engineers in Portugal.

The most important sources used in this paper are the following ones: nineteenth century archives of the City Council; documentation from the water company; reports from foreign tours and voyages to international conferences

O265

Prayers in the new lands: The construction of religion in the coastal wetlands of Flanders, 10th - 13th century

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Traditionally, scholars have viewed the coastal landscape of medieval Flanders as shaped and “reclaimed” primarily by religious groups. This positivist approach of medieval sources concerning the use space and landscape in traditional historical-geography overemphasized the role of monasticism in the embankment and waterhousehold of the coastal wetlands of Flanders. This construction went hand in hand with the (often modern) narrative in which these so called marginal lands were regarded as solitary wastelands to be transformed in spiritual landscapes by the labour of the monks. A careful reading of the medieval landscape of coastal Flanders shows however that monasticism did not play any role in the actual embankment of this maritime area. Instead, this embankment was actually the result of the agency of the counts of Flanders. During the 10th and 11th century, the church attempted the construction of a religious environment in the maritime area, often in conflict with the count's interests, as is shown by the dispute on the 12 altars of the mother parishes in the coastal area. Also the remarkable act of several ‘miracle-visits’ in the coastal plain was part of the attempt to bring more ‘space’ for prayers and religion to the new coastal landscape. Only at the end of the 12th century, the church managed to construct a certain religious position in the landscape, as can be seen in some place names, and above all in the role of ecclesiastical estates in the management of the landscape. This had nothing to do with pious motifs of constructing a spiritual landscape in this ‘new world’, but everything with committal politics.

Liberalisation or governmental control – An institutional perspective on the resource exploitation in Danish fisheries 1849-73

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This paper discusses the interplay of politics and natural resource exploitation through an analysis of government interest in, control over and encouragement of the Danish fishing industry from 1849 to 1873. Danish fisheries are commonly seen to have a late outburst in comparison to many European countries due to poorly developed market conditions and infrastructure. This paper however, argues that the influence of early environmental concerns played a substantial role in the fisheries legislation, which trapped the government in a dilemma between economic growth and sustainability. The government had great concern and interest in the fisheries and the sector received substantial subsidies, compared to the relative contribution of the fishing sector to society. Most importantly a bill was passed on the control system for the Limfjord fisheries. This was soon after followed by legislations attempting to weaken the state control and liberalise the fisheries, which in turn was followed by making new restrictions on fishing gear and seasonal restrictions.

The government in general believed that the development of the fisheries had limited capacity due to what was seen as a severe depletion of the coastal fish stocks during the first half of the 19th century. This concern originated from the downfall of the Limfjord fisheries.

The most important factor was the governmental concern for the depletion of the fish stocks. Legislation was introduced to protect the fry. Fry was mainly protected through closed areas, closed periods of fishing and restrictions in the allowed fishing gear. These measures often collided with the concerns over the importance of coastal fishing as poverty protection. It was commonly agreed that most of these rules were not obeyed by the fishers, which justified the highly debated governmental control, which led to a path dependency in view of the possibilities for developing a modern fishing industry.

O270

The human factor in fisheries. Measuring the 'skipper effect' in a long term perspective

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Some fishers are more successful than others, but is this all because of differences in technology and chance or do differences in the skill of the fishers play a role? The so-called 'Skipper Effect' is the idea that a fishing skipper's skill in locating and catching fish is a determinant for the size of the catch. From the 1960s onwards this has been a globally debated issue within fisheries science, anthropology and human ecology. In some fishing communities (Iceland, New England) it has been traditional knowledge that some skippers have special skills compared with others. This is in the skipper's own interest, when attracting crew. In other communities (Alaska, Philippines) this ideology is absent, but in Alaska as well as New England studies has found that the skipper effect has played a statistically significant role.

The debate however, remains inconclusive with regards to the extent of the impact of the skipper effect as a proportion of the total catching power in a fishing operation. One reason for this is a lack of sufficient data. In most modern fisheries the technological factor is difficult to separate, since it changes virtually from season to season.

Trying to overcome this problem, this paper discusses, for the first time, the concept of 'Skipper Effect' in a long term historical context, where the boats, fishing nets and regulations on fishing time, did not change over a period of c. 250 years. Hereby, data for individual skippers' catch and effort in the Dutch herring fisheries, c. 1600-1850 offer a chance to follow the career long performance of different skippers against the average fleet performance. The paper put forward the idea that the skipper effect is measurable as a learning curve spanning a skipper's career.

O273

Seeing like a land surveyor: Quebec's nomadic bureaucrats write about the land, 1800-1820

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Land surveying was a tool of empire worldwide in the nineteenth century, and the texts written by government surveyors are a unique, and so far underutilized, primary source for environmental historians. My paper, based on my research on Quebec, specifies some of the ways these writings can be used by environmental historians. Following the 1759 victory of the British in Quebec the new rulers faced very real challenges governing a French Catholic population, one of the most important difficulties being the traditional seigneurial system of land tenure, which the British disliked but were forced to keep. By the early nineteenth century Quebec had a dualistic system in place: areas colonized under the French regime continued under seigneurial custom whereas more recently settled areas were surveyed according to British rules and were owned by free-hold tenure. Surveyors had to negotiate this tangle of rules and customs while they created new townships and re-measured old property-lines. My paper draws on archival literature composed of surveyor notebooks, reports, and maps to explore the unique, often ecologically astute way land surveyors perceived the land. The paper describes surveyors' social background, education, ecological knowledge, and the nature of their work in order to shed light on their texts. It was a common 19th century practice to use forest composition to judge the agricultural potential of an area: for this reason, surveyors systematically described tree species and soil composition for given areas. Surveyors also described the human occupants of the land and passed judgement on them. The paper discusses what distinguished a squatter from a legitimate landowner, and how surveyors could feel confident in knowing the difference. The paper discusses the potential uses for this type of literature, including their usefulness for constructing historical landscape models and maps. I conclude by arguing that surveyor texts are a treasure of detailed ecological and cultural information which can systematically lead the environmental historian through a historical countryside.

O275

Monastic exploitation of nature in the early Middle Ages

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Romantic, nationalist, and environmentalist historiography has recast early monasticism – especially early Celtic monasticism – as almost modern in its sensibilities toward the environment. “The original desert solitaire” proclaims one of the more recent studies in “ecotheology.” While Irish monks and their spiritual descendents, the peregrini, did seek isolation in the European wilderness, they did not do so to live in an ecological balance with the world around them. Though not on the scale that later landowning monasteries would do, the hermit monks of Ireland and the Continent cut down trees, diverted streams, and otherwise altered their natural surroundings to suit their needs. This paper explores the impact of that alteration, and further, it reminds its audience that the religious belief that drove these early monks into the wilderness was a belief profoundly at odds with the modern concept of “wilderness.” Far from being early medieval Edward Abbeys, these Irish monks and peregrini might perhaps be better thought of as early Puritans in a New World, Christians for whom untamed nature was a Satanic place, a testing ground for their faith and their endurance. For these early medieval monks, nature was demonic, a force that only supernatural faith could withstand.

O277

A comparison of water management schemes in pre-20th century American and Chinese societies

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China and the United States share many resemblances in regard to their vast territorial extent, varied topography, and waterway patterns; at the same time, there were also significant differences between them, for example, different political systems, different attitudes towards natural environment, and different historical contexts. This paper will compare the characteristics of waterways, and water management schemes at the local, regional and national level in pre-20th century Chinese and American societies. In so doing, it hopes to investigate environmental ideas stemmed from culturally different historical and social contexts. It will argue, water management in these two societies would end up with similar disastrous results even when they are derived from different cultural contexts. The reasons for that lie in two problems: the combination of the idea of utilizing nature and the tremendous belief on unlimited human power; the conflicts between centralism and localism. When assessing environmental schemes, we should not only look at the short-term effects, but also the long-term environmental changes. In terms of ecologically sustainable development in the long duree, patterns of human interaction with nature are almost similar, no matter in western or eastern societies. In the case of water management schemes, this theme is especially prominent.

This paper will start with the comments on the different models of water control used by environmental historians in their analysis of the Chinese and American societies. Then it will proceed to compare the waterways, attitudes towards water, methods of managing waters, and institutional water management at different spatial scopes. It will conclude with a discussion on the correlation between cultural/ideological factors and the environmental practices.

Tigers vs. tribals? The historical precedents of a contemporary conservation debate in India

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In a few words, the so-called 'tigers vs. tribals' debate (nomenclature not my own) breaks down something like this: some conservationists worry that the tiger cannot be kept from extinction, and point to peoples living in and around tiger sanctuaries as a major threat to the species' survival. Opposing this position, are many populists, humanitarians, and swayed conservationists, not to mention the forest communities themselves, who argue that a system that excludes and dispossesses local people is neither necessary for conservation, nor politically feasible.

At the present juncture, the co-existence camp has the upper hand, and is making policy that will determine the future of both wildlife and forest peoples. In India, in 2005, the Scheduled Tribes (Recognition of Forest Rights) Bill was passed. Significantly, for my study in environmental history, the bill was written with the premise of addressing the "*historical injustice* to these forest dwelling Scheduled Tribes who are integral to the very survival and sustainability of the forest ecosystem." [1]

This all raises some very interesting questions regarding the past of the tribal communities and their relationships with wildlife; first being, to what degree was the historical decline of India's wildlife into endangerment and extinction the responsibility of hunting as livelihood, in contrast to elite sport? Today, views of the tribal-environmental relationship have come a long way from the romanticist anthropology of yesteryear, which saw the tribes as living purely in harmony with nature. But is this 21st century 'realist' view leading back in the direction of the British colonist-sportsmen who harshly criticized the 'native *shikaris*' for causing the diminution of game? If so, it is curious to see how some of the writers who have been most influential in de-romanticizing our conception of tribals have also been passionate defenders of peoples' rights in and around tiger sanctuaries...

¹ No. 17014/4/2005-S7M (Pt.), Government of India, Ministry of Tribal Affairs, New Delhi, 03.06.2005, p.3 (my emphasis)

O280

Differential land rent and its geographic/environmental impacts on land use changes: Case study Czechia 1845–2005

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The land rent is a basic economic category which expresses and influences land use changes as a forcing function of environmental change, valid for both capitalist and communists systems. The short characteristic of land rent theory development from A. Smith, D. Ricardo to C. Marx, and forming and characteristics of forms of differential rent will be briefly discussed. DR has basic impact on geographical differentiation and environmental quality of rural landscapes. The extensive differential rent I represents an extra profit which arises because all plots of land have equal amounts of capital investment but are different in terms of natural fertility and in their market position. It relates to the extensive growth of agriculture based on the extension of especially arable land. DR I impact prevailed in the era of “classical” agricultural revolution, i.e. until the end of 19th century. Then so-called technological-scientific revolution in agriculture with its intensification character caused by industrialization and urbanization created new locations, including growing demand for food. The leading rule in the LU changes took over at the dawn of 20th century the intensive differential rent II. It represents an extra profit which is created by unequal capital investments into plots of land with same level of natural fertility. DR II relates to the intensification of land use (e.g. by decrease of arable land area by plots with less fertile soils) i.e., more effective use of capital (artificial fertilizers, mechanization) increasing economic/man-made fertility of soils, but also land abandonment. These impacts, mainly their environmental consequences, will be documented by graphs and maps of land use changes as on territory of Czechia as in some small model areas with different historic-geographical, natural, economic etc. conditions having impact on land use changes from 1845 until 2005.

The rise of the nature conservation movement and national styles, the case of the Netherlands

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In most western countries, a nature conservation movement arose at the end of the 19th century. Although the founding and development show many similarities from country to country, several national characteristics can be identified. In this paper, I will show the development of the Dutch nature conservationist movement and compare it to several surrounding countries.

In the early Dutch nature conservation movement amateur naturalists, foresters and animal protectionists were influential. After an action of amateur naturalists to save the bird paradise Lake Naardermeer, the Society for Preservation of Nature in the Netherlands was founded in 1905 to purchase this lake as the first nature reserve. Biologists and merchants played a main role on the board of this society.

From 1920 onwards, the character of nature conservation changed, with respect to goals, activities, institutions and social composition. New groups entered the scene, such as landscape planners and culture experts. Newly founded organizations paid much attention to landscape protection and physical planning, partly caused by the rapid changes in agriculture. Conservationists now focused more on heath and grasslands, and in the 1950s the rural areas as a whole became matters of interest. The relation between the nature conservation movement and the State became closer and several new governmental institutions were involved in nature protection. This change was reflected in new legislation, country planning in an increasing budget for the purchase of nature reserves. A second change was the growing role of biologists.

In the first decades, foreign examples strongly influenced Dutch nature conservation. However, romantic and nationalistic sentiments, and ethical arguments were less important than in other countries. Later on, compared to Germany, conservationists paid little attention to natural elements in agricultural landscapes. Furthermore, because of the private financing of the majority of nature reserves, no wilderness areas existed in the 1950s. The minor role of the State, compared to Germany, resulted in the absence of official National Parks. But in the mid-1950s, the legal situation in the Netherlands, hardly differed from those in the UK and Germany. After the implementation of EU-legislation in the 1990s, this egalitarian tendency was reinforced. Still in this stage, a certain Dutch approach in nature conservation can be recognized with a strong focus on consensual planning and on efforts to create nature and even wilderness.

Development of the water supply system and its environmental impacts in North-Central Namibia

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One basic requirement for settlement in North-Central Namibia, is a reliable water supply. In pre-colonial time the special water conditions also reflected to the status of the ruler that was exceptionally strong. Since water supply was based on surface water, administration and leadership had to be concentrated for implementation of vital water procurement projects.

However, during severe droughts the "indigenous" system could not secure sufficient water supply and "killing famines" occurred occasionally. In the early 1930s when a "killing" famine was threatening North-Central Namibia due to long drought the colonial administration became first time involved with water supply. The South African administration implemented an emergency programme in North-Central Namibia to improve the water supply by the construction of dozens of dams to store floodwater from the wet season for use during the drier parts of the year. By the 1950s the water supply system based on dams proved inadequate for the whole area.

In order to improve the water supplies further, a new programme was started for the building of open canals in North-Central Namibia. At the first stage of the programme, floodwater from reservoirs in the north was supplied to the densely populated areas of the region via two canals. In the second stage, undertaken in the early 1970s, one canal was extended to the perennial Kunene River. The construction of a pumping station and reservoir on this river in the Angolan side guaranteed a steady supply of water to the study area throughout the year.

The objective of the proposed paper is to examine the environmental and socio-economic impacts of the development of the water supply system by the South African administration in North-Central Namibia. Furthermore the paper discusses why South Africa was willing to invest to the development of the water supply in a "black native reserve".

O285

An American view of Czech national parks and history

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This paper focuses on the proximity and integration of people in Czech national places: whether they are called parks, protected landscapes or nature reserves. It looks at how history and culture enliven these places in sometimes striking contrast to naturally awesome but often culturally inert landscapes frequently enshrined in America. The paper explores very different realities that shape what Europeans and Americans seem to consider worthy of celebrating in their national spaces, drawing comparisons and contrasts along several lines of analysis. Emerging in the landscape of Europe, these kinds of *national places* face issues different in some important ways from those faced in the United States. But some important similarities exist in future management decisions and in the need to define relationships of park landscapes with their surroundings.

Encounters with Czech National Parks and the entire Czech landscape suggest that national parks are important, yes, but Czechs have a sense of *national places* that encompass more than our U.S. sense of national parks. Such places typically encompass towns and villages, extractive industries, and commercial enterprises in, say, the Bohemian Paradise as it is called or the Broumovska protected landscape. The parks, such as Krkonošský Narodní Park or Podíjí Narodní Park, are important but they too include much private land and activities such as at Horní Albeřice just inside the border with Poland.

Asking the question, what sanctifies a national place?, the paper will draw on examples where the deep history of human use interacts with the deep ecological respect with which Czechs embrace their landscape. The paper will necessarily touch on the emerging reality of post communist economical and social evolution and implications of change for the management decisions ahead.

O289

Urban agriculture in Europe and the wider world

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Environmental history is the study of the ways in which humans have shaped and have been shaped by our environments through time. As population and abundance of the built landscape grows, so too does the importance of understanding natural history in urban areas. For the Fourth Conference of the European Society for Environmental History, I propose to present a paper considering the historical development of urban gardens in Europe, focusing on those in Germany in particular, and the transmission of the garden design technology to cities in two very different countries, the United States and Tanzania.

Germany has maintained urban gardens for over a century; it is an ideal location for this research project. Two urban gardening systems were established in the nineteenth century in Germany. The first system originated along railroad lines and in abandoned lots in industrial areas. The second, known as Schrebergärten, began on school grounds. These gardens were established for the purpose of promoting outdoor activity and for science education for the children of the recently urbanized. Over the last century, many of these gardens have remained and new ones have been created. The urban garden has become a fixture in the lives of many city residents in Germany. The garden plots are often passed down through generations, accompanied by traditions, stories and recipes. The gardens have influenced development in surrounding lands, affecting land value and focusing the social and political structure of some neighbourhoods, while demonstrating individuality and personal space.

Similar situations are observable in other places. In the United States, an equally developed nation with different spatial and cultural variables, urban gardens are influenced by the European example but molding it to their own settings. Similarly, many cities in rapidly urbanizing countries in Africa are now developing urban gardening systems today.

Land use/land cover change within Czech-Austrian and Czech-Polish border area (1845–2006)

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There has been a long tradition of Land Use/Land Cover (LUCC) studies in the Czech Republic. However, most of these studies are focused on regions within the Czech Republic and wider cross border study is missing. Presented research took in account different socio-economic and agricultural policy in three different countries: Poland, Czechoslovakia (the Czech Republic) and Austria in last circa 150 years and tried to answer the question: What patterns have these circumstances left in countryside?

With a view to study Land Use Change along both sides of the Czech – Austrian frontier, old judicial counties (from the era of Austrian-Hungarian monarchy) were selected and within these counties Land Use Changes were investigated. Judicial counties were picked because these units are comparable in size for both sides of the border and they are large enough to melt marginal changes in cadastral areas of particular municipalities. Land Use research was based on Austrian and Czech statistical data.

For a detailed Land Cover study were selected three border areas. Each of them is formed of six cadastral areas with three of them in one country and with three in another. The areas are: Vitorazsko and Valticko on the Czech-Austrian border and Petrovicko on the Czech-Polish border. Valticko and Vitorazsko have in common the fact that they had been entirely within Austrian part of the Austrian-Hungarian monarchy until 1920 when they were divided between Czechoslovakia and Austria as the result of the post World War I order among new European countries. Likewise Petrovicko used to be entire part of Czech lands until 1920 again when the region was split between Poland and Czechoslovakia. The border is a new element in these regions and its effect together with different agricultural policy, socio-economic conditions on the Land Cover was researched.

Attila of the Ganges, Criollo cattle and European breeds in the history of cattle genetic composition and transformation, Colombia XX c.

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Along with other more world-wide known South American meat-exporting regions, such as Argentina, Colombia has been a cattle ranching country for centuries. Overwhelmed by the historic importance of other export resources, coffee in particular, cattle ranching received little attention by historians compared to its dramatic impact in transforming either ecosystems, regional cultures, or political relations.

This paper addresses the genetic change of the cattle herds in Colombia. The first cows of the continent came with the Spanish conquistadores after 1493 and were Iberian breeds. After 3 centuries of adaptation to whatever environments they were trailed, in the XIX c. they were known indistinctively as the Criollo (cattle of the country). Although not a new breed, the Criollos cattle has been considered different from its Spanish ancestors. Since mid XIX c. Northern European breeds, especially English, Scottish and French ones, were introduced to improve the Criollo productivity. A third input to the genetic composition of Colombian cattle population came from the Zebu cattle (*Bos indicus*). Originally imported in few numbers, Zebues expanded until they accomplished a truly genetic revolution. According to the Colombian Zebu Cattle ranching association, by 1976 Zebu blood flowed in the 95% of cattle veins. Still, Colombia (and Cuba) has the largest number of Criollo cattle left in the Americas. This is an intriguing evidence of biodiversity conservation which requires more wide and deep analysis.

This paper is an attempt to ward this direction. It explores the logic and discourses that were instrumental for spinning up the genetic change of the Colombian cattle ranching throughout the first three decades of the Twentieth century. It focuses on ideas expressed by experts (veterinaries mainly) around the relationship between breeds and the environment, and the debate about the defence of American, European and Zebú breeds.

These research results are part of a larger project pursued by an interdisciplinary group of scholars about meat consumption and production in Colombia in the first half of the Twentieth Century.

O300

Submerging our past: 'Salvage archaeology' behind the Aswan and the Glen Canyon dams

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Two of the world's largest mega-dams, the Aswan Dam on the Nile, and the Glen Canyon Dam on the Colorado, were constructed during the early 1960s to begin inundating hundreds of kilometres of river channels that sheltered irreplaceable natural and cultural treasures. In both canyons, emergency programs of "salvage archaeology" were carried out in the years immediately preceding dam construction to record and save the most precious monuments before they were covered by rising flood waters. UNESCO sponsored salvage efforts along the Nile, and the U.S. Park Service sponsored similar efforts along the Colorado, with a handful of leading archaeologists cataloguing their findings, and where possible, removing or rescuing key artefacts. What these archaeologists chose to rescue or discard in those last years provides a kind of snapshot of the natural and cultural histories held dearest.

Using memoirs and diaries of leading French, Finnish, Italian, British, and American archaeologists working along these rivers, this paper explores why certain human and natural monuments were saved while others were left behind. I will focus on comparing the controversies over saving the Temple of Abu Simbel (in Egypt) and Rainbow Bridge (in Utah), both located underneath the high water mark, and both representing spiritual monuments for the Nubian and Navaho peoples, respectively, who lived along these rivers. My questions focus on whether archaeologists were concerned with natural features; whether environmentalists were concerned with archaeological remains; and how assumptions about the past influenced the kinds of heritage that they sought to rescue. The geologic age of Native American shrines may have provided a measure of compensation for the fact that the Colorado River's prehistoric artefacts were some two thousand years younger than those of the Nile.

O301

Introductions and extinctions - the impact of human settlement on North Atlantic island insects

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Norse expansion in the North Atlantic was characterised by introductions of new biota, either as deliberate or accidental introductions. Insect faunas from occupation layers on Norse sites in the area, provide images of a very particular cultural milieu, largely pastoral farming practices in what are essentially marginal environments, evidence for the import of cereals and for everyday activities from wool processing to delousing. Dung beetles, hay related beetles, ectoparasites, and a manure loving fly were some of the companions of the Norse. From Greenland we have introductions of synanthropic flies and an insect fauna that disappears after the demise of the Norse. In Iceland storage pests, flies and beetles, were imported together with cereals, and there is a clear hierarchy of importation related to the status of farms. The historical record and fossil insect faunas from the Faroes imply settlement before the arrival of Norse settlers, although the latter remain contentious.

Is state-firm co-operation instrumental for reducing pollution? Environmental performance in the Swedish metal smelting industry in comparison with Canadian cases 1960-2005

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In this article we explore the dynamic historical relation between environmental management systems at national and company levels by comparing a metal smelter in Sweden with Canadian cases and relating their performance to national policies. We believe that this is an apt approach for research given that governmental and firm policies play an important role for successfully addressing environmental problems. The findings suggest that the Swedish system in excluding stakeholders, focusing plant emissions - not air quality- and by stipulating pollution reduction at economically feasible costs mitigated risk which resulted in long-term contracts in a cooperative framework in which engineers were given a high degree of discretion. This enabled an "expansion-for-emission-reduction" strategy which is consistent with the Porter hypothesis.

This article also relates to the concept of the environmental Kuznets curve (EKC) which since the early 1990s has gained substantial attention in the literature. While studies have usually drawn on econometric modelling based on cross-section and panel data, we notice that few studies have addressed the EKC as a historical process even though this has been asked for (Stern 1996, Lekakis 2000). The advantage by doing so is that the EKC can be studied as a sequence of events, which may contribute to a better understanding of the EKC as a dynamic process, involving changing sets of ultimate and proximate factors during different sub-periods. While few studies have taken such historical approaches, even fewer studies have focused modes of national environmental management and its interaction and co-evolution with environmental strategies of polluting firms. This article is a contribution to the EKC literature as we seek to identify historical processes that may explain different outcomes of corporate environmental performance in different national contexts.

Autarchy, wood and wood science. The economic importance of wood within the autarchy politics of the National Socialists and the upswing of academic wood science in Germany

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Germany hardly possesses other natural raw materials in greater quantities than coal, ore, salt and wood. Therefore, within the autarchy politics of the National Socialists, which they pursued from 1933 onwards for preparing the German economy to a new war, the economic importance of these resources increased. Especially wood was an important raw material, because it has, compared with the other ones, the advantages that it grows again and that it can be used as fuel, as building-material and as raw material for the chemical industry.

On the field of wood utilization two major and partly contrary trends characterize the period. On the one hand, it can be marked a strong increase of the total amount of consumed wood, an upswing of wood and cellulose processing industry branches and efforts to replace other raw materials by wood. On the other hand, it was tried to minimize the volume of used wood per product unit of the single utilization forms and to replace wood by other resources. Both developments can be explained with the autarchy politics.

The increasing demand for wood and the efforts to minimize the amount of imported wood strengthened the pressure on the German forests. In 1934 the felling budget was raised to 150% of the sustainable calculated cut for the state-owned forests and in 1936 for all forests. These politics were contrary to the ideological aim of some National Socialists and many foresters to introduce methods of an ecologically adapted silviculture. To prevent the destruction of the German forests within few years, forests in occupied states were exploited during the World War and it was tried to increase the wood production in long-term perspective, especially in the not state-owned forests. For the latter purpose stately control should be extended on the private-owned forests and promotion of forestry sciences was strengthened.

To find new utilization forms for wood, to improve the existing ones and to reduce the necessary amount of wood for single utilization forms the relatively young wood science was strongly promoted. New research institutes were founded and already existing ones were extended. Young scientists got best opportunities to work on the new issues. National and inter-national research organizations as well as international edited magazines were called into being, especially from 1937 onwards. Like the developments in the field of wood utilization the upswing of wood science in Germany during the 1930s and 1940s can clearly be explained with the autarchy politics.

Moreover, at the examples of forestry and wood processing industry one can show forced modernization trends during the National Socialist period and at the example of wood sciences the thesis of an alleged "science-hostility" of the National Socialist regime can be disproved.

O305

Footprints of War: Military Impacts on the Borderland between France and Germany

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Military tends to use all technological potential for combat and thus maximises the ecological consequences many times over. But the relation of military and nature is not limited to the wartimes. In times of peace, military also uses natural resources and occupies entire landscapes for its purposes like camps, training areas or airbases. So we have to extend the question: What impacts did military and wars have on the natural environment? And how did environmental factors influence military strategy and the conduct of war? In this paper, I will study the interconnections between military and forest in the borderland region between France and Germany from the 17th century on.

First of all, it is important to examine how the strategic importance of the forests developed during war. There can be no doubt that forests delivered very important resources to equip the army and fleet. So I will then pursue the question of their economic importance for the military in general. In a third section, I will confine myself to describe and differentiate some military impacts on forests. Finally, I will outline some perspectives of "war and nature" for environmental history.

O306

History of fishponds in central Bohemia and their environmental relations

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Fishponds figure as a distinctive feature of the Czech rural landscape. Nowhere in the world fishponds played such a great role in the economy of the country and in the life of the society like in Bohemia in the past. The golden age and the period of the maximum prosperity of the Czech pond culture was in the 16th century. Fish breeding represented very effective branch of the feudal economy that time and Czech carp was in large quantities exported especially to Germany. Most Czech fishponds were constructed in the second half of the 15th century and in the 16th century. Ponds were usually combined into integral pond systems connected both natural and artificial water courses. The total area of fishponds was about 180 000 ha that time while at the present it is only about 50 000 ha in Bohemia.

Present geographical distribution of the pond systems is featured by their concentration in basins of the South and South-West Bohemia in the altitudes between 400-600 m a.s.l. however their original distribution in the 16th century was much more balanced in the country. The largest ponds and complex pond systems supplied by artificial channels were built on fertile soils in lowlands of the Central Bohemia along the main Czech river Labe. The largest single ponds occupied the area about 1000 ha. These ponds and the whole pond systems had been massively abandoned during few decades in the break of the 18/19 centuries. Their area had been changed into agricultural, especially arable lands used to grow cereals and sugar beet under favourable climatic and soil conditions. The minimum area of the ponds of about 35 000 ha was achieved in the mid of the 19th century.

Today only remnants of old dams with old trees or other permanent greenery remark somewhere the existence of former fishponds. As ecologically stabilizing segments of the agricultural landscape they are integrated into ecological networks on the local level now. With help of detailed historical military and cadastral maps the map reconstruction of vanished pond systems is possible. The issue is very topical now related to catastrophic floods occurring frequently in the country during last 10 years. Water bodies can help to balance water regime and contribute to water retention in the agricultural landscape.

O307

Respected institutions or wracks? Dutch water boards in the early 19th century

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In 1794/5, the Austrian Netherlands and the Dutch Republic were invaded by French revolutionary troops. This event marked the beginning of a new era of political modernization and centralization. In both countries national water management organization were established: *Rijkswaterstaat* in The Netherlands (1798) and the local office of the French *Corps des Ponts et Chaussées* (in Dutch: *Dienst van Bruggen en Wegen*) in the southern Netherlands. Water management was now organized on three levels: the national, provincial and local level. Intense debate ensued about the role of the water boards in the new political framework.

On the whole, the water boards in both countries retained more or less their traditional position as managers of the local water affairs. Their legitimacy was hardly seriously questioned. There were at least two reasons for this. First, due to the financial governmental crisis in the French era, the national state was simply unable to take over the management of the water boards. Second, the new national state was in constant turmoil and it had to rely on a number of *ancien régime* institutions with knowledge and experience. A certain degree of control seemed sufficient to fit the waterboards into the new nation state that was being developed. Nevertheless, their position was weakened. Especially in the period 1795-1804, attempts were made at democratization of the election procedures. In Holland, after some attempts at centralization in the period 1798-1815, their role was recognized in the 1815 Constitution, but they were put under control of the provinces. In Flanders, the polders had to concede the design role of sea dykes to the *Dienst van Bruggen en Wegen* (1811). Besides, a uniform juridical regime was imposed.

In practice, the encroachment of the water boards' autonomy was a very tedious process. In Holland, the 1848 Constitution and the Provincial Act of 1851 marked a new delineation of the water boards' tasks and role. In Flanders, the Belgian government built upon the French juridical framework.

Explaining varieties. Autonomy of water boards in Holland (1300-1800)

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In large parts of Holland, in the Middle Ages already natural drainage of agrarian soils did not suffice any more. The peaty soils subsided due to agricultural use and this was an irreversible process. One of the most striking measures to regulate water levels was the building of dams in the mouths of rivers, which was done in many places in Holland in the 13th century. Villages communities were the driving force behind these and other kinds of collective action in water management. Remarkably, although drainage problems in different parts of Holland were more or less comparable, the specific organization of water management began to differ at an early stage of history. In the northern part of Holland water management remained often in the hands of village communities while in the southern part separate institutions, specifically designed for water management, were created. From very early on, they were financially autonomous thanks to their right to levy duties from landowners. Also, in the south of Holland regional water boards made their appearance, coordinating local and regional water management: the so-called *hoogheemraadschappen*. They were hierarchical institutions in the sense that they supervised local water boards. The powerful *hoogheemraadschappen* were not found in the north of the province. In historiography the varieties within Holland are often recognized, but not explained. This paper aims at clarifying the differences between the southern and northern part of Holland and suggesting explanations for these differences. Traditionally, landscape changes are considered as vital elements in the development of the water boards, but in this paper we will include other elements as well, such as the degree of urbanisation and the pace of state formation in the different parts of Holland.

Peasants versus elites. On the medieval origins of water boards in Flanders

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One of the most striking features of the rural water control system in Flanders as well as in the Low Countries, is the long tradition of well-developed water management organisations, the so-called '*wateringen*' (water boards), clearly separated from ordinary local government, and characterized by a certain level of autonomy and participation from below, at least from the 13th century on. However, the origins and the early institutional development of these water boards remain largely open to interpretation. For instance, it can be questioned whether the water boards as we know them in the late medieval period, resulted from the 'bottom-up' collaboration of local inhabitants, or the 'top-down' initiative of counts and princes; to what extent these initiatives dated back to the high Middle Ages (10th-12th centuries); and how they were embedded in existing administrative units. Confusion also exists between two levels of water management: the collective *monitoring* of 'customary' maintenance duties on the one hand and the *performance* of maintenance and repair works on the other. Finally, the development of *formal* juridical autonomy does not imply that water boards were no longer influenced by prevailing political and economical power relations, directly or indirectly restricting the water boards' freedom of action. Trying to understand institutional change by looking at evolutions in rural society, we will argue that the early introduction of water boards with mainly executive tasks in the Flemish coastal plain, resulted from an equally early transformation of a peasant society towards a commercial economy in this area. When in the course of the 13th century, absentee-landownership and short-term lease holding began to replace peasant free holding, the water management system responded to these changes by replacing labour services with monetary taxes; by centralising maintenance and repair works and by delegating them to executive boards controlled by rural and urban elites.

O310

Climate change and the safety of The Netherlands

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Extreme weather events, such as storms and floods can lead to many deaths, injuries and large economic losses in coastal and delta areas. Ongoing and future climate change may lead to increases in the frequency and severity of such extreme events, which pose a serious threat to these low-lying areas. Smaller scale events, such as hailstorms, local flooding due to heavy precipitation and droughts and heat waves can also lead to substantial impacts. Historically, safety from flooding in The Netherlands has been provided by the creation of dikes along rivers and coasts. A number of national research projects are currently investigating the possible impacts of climate change on the long-term flood risks in The Netherlands. Furthermore, alternative solutions for dealing with floods are being developed within projects that aim at strategic policy development. These solutions include new combinations of protection from floods by dikes and mitigation of flood waves, as well as the development of plans for a more rigorous reconfiguration of coastal and river alignment. The timeframes for these strategies are medium (year of 2040) to long-term (2100). Since strategies to deal with increasing flood risks often involve changes in land use, the interplay between spatial planning and water management is crucial. Therefore, new scientific methods and information and tools are targeted at integrating these two policy fields. A number of these projects will be highlighted, and some results will be presented.

O311

Genetically modified potatoes

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After the introduction of potato into Europe, it has been domesticated as a staple food crop. For this domestication process plant breeding, using genetic variation, was of outmost importance. The potato crop till the late 18th century can be described as the cultivation of landraces originating from tubers or botanical seed. Therefore, a collection of often very distinct genotypes was grown as one crop. At the end of the 18th century one became aware that by careful selection one might obtain individual genotypes which yielded far more than most other genotypes in cultivation. These selected genotypes were vegetatively multiplied by tubers and individually or mixed, cultivated as improved varieties. In the early 19th century the first cross breeding attempts were made. The failure of all existing varieties to exhibit any kind of resistance towards late blight disease was a strong impulse for this new type of potato breeding. In these early days 100-200 seedlings were sufficient to select a new variety.

Today, breeders carry out cross breeding programs, raising 30-100.000 seedlings a year. Within 10 years of selection the number of seedlings is reduced to 1-2 which are finally released as new varieties.

Due to the demand for more resistance genes and higher quality traits, the number of seedlings needed to select improved varieties is increasing. Therefore, new techniques connected with genomics and biotechnology are essential to improve selection procedures for new varieties or to add new traits to existing varieties by genetic modification. These added traits can be transgenic (from another organism) or cisgenic (from potato itself). On these two types of genetic modification a public debate is ongoing.

O312

Adapting pigs to mass production: Development of intensive pig breeding in the 20th century

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The physical characteristics of pigs have been changed dramatically since the domestication of this animal. Traditionally, home-slaughtered pigs were fattened for long periods. During the 18th and 19th centuries, pigs became smaller, grew faster and were slaughtered at an earlier age. As a result of the increasing demand for meat in the Western World, innovations in meat production took place while a large-scale international meat industry developed. Rapid developments in meat science and technology led to an efficient system of converting animal feed, via uniform slaughter animals, into meat with a standardised quality (corn-hog cycle). Pork production was further increased by selection, inspection and cross-breeding, pedigree pigs, higher quality feed and artificial insemination. Pigs had to be uniform in size and weight to fit into the conveyor belt system of continuous slaughter-lines. Due to modern animal husbandry systems, pigs became more sensitive to stress. Tests were developed to eliminate the gene responsible for stress. By 2000, the genetic modification resulted in more piglets per sow, which ate less feed, produced less manure, but more pork.

O313

Food and fraud in Brussels, 19th century

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In 1856 the chemical laboratory of the city of Brussels was founded. Its aim was to analyse food and drink in order to combat food fraud. This laboratory, presumably the first of its kind in Europe, became ever more important in terms of finances, number of staff and controls exerted. It functioned up to the present day. This paper discusses the motives of its founding, the aims, the character of the analysed products and the 'clientele' asking for analysis. Such elements changed over time and demand an explanation, taking into account the role of pressure groups, the role of the central government, the beginning of consumer awareness, the construction of quality, fair trade, food fraud and food safety.

O314

Production and consumption of vegetables in Belgium, 1850-1910

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For a long time, vegetables were unimportant in the daily menu in Belgium. After the middle of the 19th century this changed and the offer of vegetables increased slowly. Endives, cauliflower, Brussels sprouts, tomatoes and asparagus appeared at the menu of the well-top-do. The common people ate the more coarse vegetables like cabbage and carrots.

Agriculture and horticulture in Flanders and Wallonia reacted to the new demand. In particular around the main demographic centres, new centres of production rose, rising in importance again after the agrarian crisis of the 1880's. Cultivating vegetables turned out to be an ideal alternative for the less profitable grain growing. Growth of the new sector was stimulated not only by new demand, but also by new scientific results and available technology, such as the improvement of seeds, and the introduction of fertiliser and insecticides.

This contribution discusses the modern intensive vegetable growing in Belgium from the perspective of the chain, including production, distribution, and consumption. Crucial is the focus on new cultivation technologies and the extent to which this spread among cultivators.

A millennium of weather, winds and water in the Low Countries, a reconstruction on a seasonal base and based on high resolution records.

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In 1995 under the auspices of KNMI the first volume of a series of 7 books was published, where in some 4000 pages the weather in the Low Countries (present-day Benelux) for the period 1000 to present is depicted and classified. In the books *1), the course of the weather during both the winter and summer season as well is followed from year to year and placed in a historical context. In spring 2006, Vol. V, covering the era 1675-1750 appeared, which with the oldest part of the instrumental period is covered.

The reconstruction of the weather in the Low Countries is based on sources that are related to the area geographically covered by the present Netherlands and neighbouring areas of the southern part of the North Sea; Gt. Britain, Northern districts of France, the downstream basin of the Rhine, Westphalia and Northwest Germany. If relevant, remarkable or extreme weather in Middle Europe or even Northern Italy is also considered.

The major part of the text is devoted to detailed, well-documented, annotated descriptions and analyses of the weather in the past. Numerous compilations and classifications however offer a structured base for further interpretations. Without being complete the following are mentioned: sources per era and per area, climatology per 25 year period, harvest data, ice on major rivers, tree-ring data, classifications of winter and summer temperature, wet and dry seasons, storms and storm surges.

The books are written in the Dutch language and therefore not easily accessible to the international research world. It is for this reason that we contributed to international publications *2,3) and intend to highlight some of the issues: the historical sources used and the way the historical evidence could be classified into instrumental winter and summer indices/temperatures as well.

For the classification high resolution (i.e. daily) instrumental records were used. With the EUMETNET project ECA&D (<http://eca.knmi.nl>), a dense network of long daily instrumental records of air temperature, precipitation and air pressure, covering Europe, is available for the research community. These daily records are recognised as promising for developing climate indices to be applied in the reconstruction of long climatic time series based on non instrumental documentary proxy evidence.

In the second part of the presentation I will outline the contribution of the ECA&D dataset to the EU-Millennium Project which has as a major aim "to determine with quantifiable precision whether the magnitude and rate of the 20th Century climate exceeds the natural variability of the European climate over the last millennium" (<http://geography.swan.ac.uk/millennium/index.htm>) and in which researchers in historical climatology co-operate in making a reconstruction of the European climate on the basis of historical documentary sources.

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O321

Stormy weather in the Low Countries: Results and Perspectives

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Because depressions and heavy gales damage coastal area's around the North Sea, in particular the low lying Low Countries, but accordingly storm tracks also very strongly determine heavy precipitation in Central Europe, understanding of storminess of the past is relevant. This paper presents the results of storm research in the Low Countries between 1400 and 1800, focusing on two key questions. One being how information of high tides, storms and storm surges of the pre-instrumental period can be measured. Because of its strong diversity, only high quality information of documentary sources is taken into consideration. By applying a number of criterions, a method has been developed to measure the impact of high tides, storms and storm surges. This method does not only enable us to have long temporal reconstructions for one region, but is also useful to have a picture of storminess in a wider spatial framework. This touches upon the second key question of how to connect this reconstruction of storminess to both the information from ship log books and from the instrumental time series of the mid-18th and 19th centuries? This can be done by using the overlap period of pre-instrumental observations and early instrumental wind measurements with information derived from both documentary and instrumental observations from the same area. Whereas thus far mainly documentary sources from dike maintenance and dunes have been studies for the Belgian and SW coast of the Netherlands, this paper finally looks into the possibilities of broadening the geographical framework to the central and northern part of the Low Countries, including all wind directions.

POSTERS

In case of multiple authors, the presenting author's name is underlined

P044

Bone remains of horses in the culinary residues found in the excavations of medieval towns of Belarus

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People in the Middle Ages ranked everything according to importance, even food. An item's importance was measured by its closeness to heaven (Lynne Elliot, 2004).

During our long work at the archaeological excavations the osteological analysis of culinary residues bones of domestic and wild animals from the medieval (the 10th-17th centuries) towns of Belarus was conducted. The archaeological excavations took place in Grodno, Losk, Navahrudak, Vitsyebsk (Upper and Down towns), Zaslavye, Minsk, Klyetsk, Krychaw, Slutsk, Turow. Among the culinary residues bones of domestic animals (sample consists of about 30.000 bone remains) quite a large number of bone remains of horses were found. Almost all these bone remains of horses had signs of cooking (Bubenko Tatiana, 1991; Koledinskij Leonid, 2002).

On the one hand, it is not a surprise that in the archaeological materials dating as the beginning of 16th century bone remains of horses were found. At that period the Crimean tartars besieged many of medieval towns (Slutsk, Klyetsk, Turow), and for the tartars' soldiers dried horsemeat was usual food during anabases. They cut horsemeat in strips and kept their proviant under the saddles, where meat had chopped and salted with horse's sweat.

On the other hand, our findings show an unusual fact. In the 10th-15th centuries and later 16th-17th centuries Catholic and Orthodox churches vetoed the horsemeat, as meat of unclean animal. But our findings allow us to say, that for the population of medieval towns of Belarus horsemeat was quite usual dish, and not only in the case of acute distress.

P104

Urban sanitation services in the late medieval Europe

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The words “sanitation” and “medieval” in the same title may appear contradictory to many readers who are accustomed to think that urban centers of medieval Europe must have been dirty, filthy places. The addition of the word “services” may appear even stranger, implying an active role in sanitation by town governments. But contrary to popular belief and scholarship, late medieval town governments frequently provided far-reaching sanitation services.

In order to reveal the type and extent of such activities, this poster will examine the provision of sanitation services related to street cleaning, river dredging, waste removal, and drinking water supply in several towns of the British Isles, including Aberdeen, Coventry, Norwich, and York. The primary written sources are town council records which recorded issues brought before the council and actions taken by it. The records show that town elites in these locales instituted municipal sanitation services during the fourteenth through early sixteenth century not unlike those that developed in much later eras. Towns financed and maintained sanitation infrastructure such as weekly waste collection and drinking water conduits through tax revenues as well as appointed town government officials to oversee services. Town governments took responsibility for ensuring an orderly, clean urban environment.

P110

Railway revival as the most ecological mode of transport

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The appearance of the road transport as a main competitor for the railways after the First World War influenced unfavorably on their position on the transport market, both passenger and freight. The 1960s witnessed the beginning of the railways decay, which at first seemed to be unstoppable. However, the attitude to their future was changed due to threat of ecological disaster. The environmental conditions in Europe and in the world during the last two decades have made the developed countries face the necessity to decrease pollution caused by the increasing number of road vehicles. Taking into consideration the environmental impact of different transport means, the experts have proved the advantages of railways as the most ecological mode of transport.

The new policy towards the railway transport can be estimated as its revival in the transport sector. The development of modern high-speed railways has become a priority of the European Union. Its project on the 10 pan-European corridors intended to achieve the integration of the railway network requires to improve the railway systems of the accession countries and some other regions including the Balkans due to their crossroad location on the continent.

The paper presents chronologically how the consideration of the environmental factors has changed the position of railways in national transport policies and in Europe as a whole. Tracing the most important decisions in the EU based on the environment-friendly nature of railways, a special accent will be put on the history of railways in Bulgaria in connection with the ecological issues. It should be mentioned that the historical review of the railways revival related to the necessity of environmental improvement is necessary to further motivate the new policy to that economic sector in the country and the region.

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The evidence of climate change in bogs and other palaeo-environmental records: A comparison

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This paper compares the results of a peat study on climate change in a sub-continental Estonian bog, to palaeo-ecological information available in other types of sources, for example tree rings, lake sediments, palaeo-zoological and archaeological material. It observes changes in environmental records occurring during last c. 4000 years, in the general trend of cooling and in two periods - the Late Bronze Age and the Roman Iron Age in particular. The bog data refer to climate deteriorations towards cooler/wetter conditions during these latter periods. At the same time the evidence of harbour seal, for example, appears in archaeological bone assemblages, and traces of more intensive agricultural activities and human impact can be seen in the regional pollen data. Temperature reconstructions based on pollen indicate climatic fluctuations (within error margins) of higher amplitude during these two periods, which consequences the natural changes may be and which may have influenced cultural developments.

Integrating geology, culture and historical environment or how to reevaluate the Dutch colonial fortress Nieuw Amsterdam within its physical and historical context

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The fortress *Nieuw Amsterdam*, now a museum, is a major example of 18th century Dutch colonial heritage in Latin America. It is also a perfect example of how geological, cultural and environmental processes have affected the location through time. The paper not only analyses the close relationship between geology, culture and nature, it also shows how this relationship should be displayed in the museum and its surroundings to give the area a higher informative value and an economic impulse.

Although the museum was doing well in the '60 and '70 of the 20th century, today it is totally neglected. Future revaluation of this historic site became important, when in 2005 the Surinamese Government urged the need of the revitalisation of the museum. In order to achieve this goal, it is recommended to show the relationship between culture (already on display) and the historical environment. The fortress is built on a clayey peninsula formed by a unique process: huge westward driven mudbanks derived from the Amazon River build out the coastline rapidly (near the fortress 30.000 m in 6.000 years). The mixed influence of the Atlantic Ocean and the rivers Suriname and Commewijne made the location suitable for mangrove forests, which grew there until humans arrived. At that time Dutch engineers utterly overestimated the suitability of the location, but unfortunately there is still little attention paid to its historical authenticity.

Integration of the exceptional environmental history with culture provides a broader and more inclusive view of the history. This can be done by recovery of mangrove. The mangrove will certainly show both the beauty and the roughness of the peninsula and will also deal with today's coast erosion and flooding problems.

The economic impact of tourism can be used for maintenance (and future adjustments) of the environmental and cultural richness. Next to that this will be a perfect example of how geology, culture and nature merge for similar sites in Latin America.

P150

Reconstruction of climate base on historical data of growing grapevine in Czech Republic

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Reconstruction of climate in period before early instrumental measurements be based on indirect (proxy) data. One kind of this data associated with production of grapevine. In relation to long tradition of her growing in Czech Republic it's possible to get long-time series relevant beginning of vintage, qualities and quantity wines, which are on the basis of calibration with measured meteorological data available for their reconstruction backward. Obtained information of production of grapevine from archives recourses allow reconstruction temperature conditions of part vegetation season and occurrence of selection meteorological extremes with negative impact on viniculture (For example frost, rainstorm, hailstorm).

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Reconstructing disappeared landscapes of wet areas. Problems and new possibilities applied to a test area in western sealand Flanders in the Flemish coastal plain.

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This poster deals with the problems as well as with the possibilities of reconstructing submerged landscapes in the coastal area of the Low Countries. The test area is situated in the former county of Flanders on the border area of Belgium and the Netherlands. Here, during the later Middle Ages and the 16th century, marine influence had greatly ravaged the old medieval landscape. The 16th-century flooding in particular, carried out for military reasons, had wreaked havoc and covered large parts with sediments. An interdisciplinary and international collaboration project was set up by the Universities of Ghent (Belgium) and Wageningen (the Netherlands), with the aim of reconstructing the medieval landscape; this poster will present a short survey of the research results

Unusual migration patterns of Arctic marine mammals in the coastal waters of the North Atlantic from the early 19th century

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A notice of the unusual migrations of marine organisms could serve as an important indicator of changes in marine ecosystem, including climate change. The collecting of data on unusual migration patterns of seals and small whales in coastal waters of the East Northern Atlantic has been done in the framework of the interdisciplinary project in marine environmental history "History of Marine Animal Populations". A dataset of unusual migrations was created on the base of historical and local scientific sources of several North European countries: Norway, Russia, UK, Germany and others. It includes information about the occasions when arctic species such as harp seal (*Pagophilus groenlandicus*), hooded seal (*Cystophora cristata*), white whale (*Delphinapterus leucas*), narwhal (*Monodon monoceros*) visited unusual for them southern areas: coastal waters of Norway, Denmark, Britain and Germany. For example 3 narwhals and 1 white whale were noticed in the British waters in 1800-1815. In the same period large herds of harp seals and white whales were observed near the Murman coast of the Barents Sea in Russia. Much more records occur for the period 1881-1905 when the Arctic marine mammals have been recorded in British, German, and Dutch waters. The largest invasions of harp seals (1890 – 1903) and white whales (1902 – 1904) were observed along the coasts of East and West Norway and the Murman coast in winter and summer. According to modern data, last decades the similar unusual migration patterns of the Arctic marine mammals were often observed. The historical and modern data allow concluding that the changes in the way of arctic marine mammals migrations occurred during several periods: 1800-1815, 1880-1905, 1970s-1990s. These periods coincided with the decreasing of water temperature in the North Atlantic.

Modernisation of agriculture and its consequences for the landscape in the canton of Berne (1750-1880)

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The ecological consequences of agrarian change have recently become a research topic. The early modernisation of agriculture in Western Europe included an “organic” phase, during which the agricultural productivity was mainly raised through a successful management of the nitrogen cycle. This project looks into the aesthetic and ecological changes, which occurred as a consequence of agricultural innovations made in the Swiss canton of Bern between 1750 and 1880 such as leguminous fodder plants, basins for storing liquid manure, the extension of potato cultivation and the increase of dairy farming. The innovations chiefly regarded the “lowland zone” where the three field –system was dominant, whereas the transitional zone and the Alpine zone were less affected. How far these modifications contributed to the modification of the landscape, is determined from elements such as marsh lands, pasture, and hedges etc.). Their frequency and distribution over the study period is assessed from various sources, such as documentary data, statistical data, topographical maps and landscape paintings – there are excellent local sources and valuable scientific work to base on it, e.g. an extensive socioeconomic database (www.bernhist.ch). This spatial and temporal analysis of the selected landscape elements is preceded by an interpretation of their agrarian, ecological and aesthetic dimension. In order to do this, approaches of Historical Ecology, Historical Geography, Agrarian and Environmental History are combined, underlining the interdisciplinary character of the project. The poster illustrates the method of applied multi-source landscape reconstruction and provides an interpretation of the aesthetic and ecological changes detected. Such analyses provide a background for the assessment of long-term sustainability of human activities.

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Environmental factors in the process of land and water management in coastal plains

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The poster presentation shows the structure of an ongoing research on the environmental factors in the process of land and water management in the coastal plains along the North Sea.

The one millennium history of land protection and reclamation in the international Meuse-Schelde-delta has resulted in drastic ecological transformations. The dynamic nature of the coastal zone and estuaries has strongly been influenced and many intertidal areas, salt marshes and estuarine gradients have disappeared.

This specific estuarine landscape has been and still is an important node of many international economic and ecological relationships. Worldwide, coastal zones belong to the most densely populated areas, supporting huge economies, putting heavy pressures on the natural resources.

Climate change, sea level rise and land subsidence, as well as the unsustainability of many economic activities, lead to reconsiderations about the future relationships between man and the ecosystem of the coastal plains. Recently political decisions have been made to 'give land back to nature' in the Schelde estuary. This current discontinuity in the process of land reclamation may however have a different character compared to historic discontinuities.

The research focuses on questions about the awareness and development of knowledge and practices around ecological factors in land and water management. Humans have created different and unique landscapes at great costs and benefits. Comparisons will be made between cases of Flemish and Dutch landscapes, in different ecological circumstances and different historic periods between the 16th and 20th century. Special attention will be paid to questions about how people conceived uncertainties and risks and how they coped with environmental change.

In designing the research recent literature is used of A.M.J. de Kraker, P.J.E.M. van Dam, K.E. Behre, T. Kjaergaard and many others.

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Linking the local to the global: Scientific networks in the global sugar economy, 1920-1940

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Sugar production has been a classic example of how the western world exhausted ecosystems in the tropical world. When European sugar beets became increasingly important as raw material for the sugar industry, this could be seen as a change from a global production system to a local/national production system.

But for companies such as SSA (The Swedish Sugar Factory Corporation) it was a global operation. To secure access to coal, they invested in coal mines at the arctic island of Svalbard and engineers and managers travelled to sugar factories in Java, Cuba and the US to increase efficiency for their own factories.

What I am interested in chiefly, however, is the scientific department of SSA. Though they only had sugar factories in Sweden, they also worked together with experimental stations and laboratories in Java, and the scientists employed by SSA travelled there frequently.

The history of remnant woods in south-western Slovakia in re to plant species diversity

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Within the evaluative criteria of forest fragments in cultural landscape could be integrated origin and presence of woods and management in the past and nowadays. The other criterion is species composition. The study area of Trnava upland (the part of Podunajská lowland located in the south-western part of the Slovak Republic) is dominated by intensively used agricultural landscape with expansion of roads and built-up areas. The massive deforestation of Trnava upland started in the 13th century, when intensive settlement of this area began. The remnant woods were analysed according to historical data about their occurrence and management, steadiness at site, fragmentation, maintenance, protection and plant species composition. The data were obtained from the reports of historical review of the woods, from the analyses of historical and actual maps, published sources and manuscripts (from 1918 to 1999) and field data.

During the field research in the two selected remnant woods (Martinský les and Šenkvický háj) were determined 443 plant species, together with literature sources in around 535 plant species have been recorded. The results of comparative analysis indicated particular trends. The occurrence of 16 protected and endangered plant species and 4 true forest species was not confirmed at last period. The growing trend of synanthropisation was indicated by increasing number of weedy and invasive species.

The existence and localisation of the selected woods was possible to document from 14th century. Historical documents showed that some woods in the study area were protected already from 16th century as a source of high quality oak timber for the building and reparation of castles and bridges. The remnants of woods represent in the long term cultivated woods with species composition in major near to natural. The woods were classified as ancient semi-natural woods, historical structures in agricultural landscape with landscape-ecological and culture-historical value.

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Landscape heterogeneity through dimensions and arising of self-similar fractals in land-use pattern

P. Mares

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There is no totally homogenous landscape around us, some measure of spatial heterogeneity we can observe on every hierarchical level. Also Land-use, as a resultant of long-term co- evolutionary process between mankind and its environment, shows territorial differences. But how do these differences look if observed from different spatial levels and how has the pattern of their distribution been developing during time?

At the beginning of colonization of the landscape by first agriculturists, human society worked at low local level. The basic economical and social unit was of an extent of village and most relationships took place within that. Also distribution of all Land-use categories followed the framework of that size.

As time went on, human relations began to be more and more linked on higher and higher dimensions. Regions, states, EU and recently even whole World have gradually been gaining functions that former village used to fill. From decision making to circulation of commodities, World began to be a "global village" operating at several spatial levels. Can we observe this phenomenon from the point of view of Land-use categories?

Thanks to our unique database about Land-use development in Czechia we can demonstrate a similarity between former self-sufficient village and present entities of higher dimensions: regions and whole Czech Republic. These three spatial levels are, indeed, also three dimensions of self-similar fractals of Land-use structure that probably could be found at even higher scales, such as EU or the World.

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Preindustrial cultural landscape of Czechia shown on the examples of three cadastres – Horní Stakory, Bystřice and Živohošť

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The poster is focused on the cultural landscape of Czechia before beginning of the Industrial Revolution. The data sources from the preindustrial cultural landscape were used - the manor maps from the first half of the 18th century and about one-hundred-year younger cadastral maps. Three cadastres are presented as the model areas with different socioeconomic factors.

Horní Stakory cadastre is an example of traditional rural landscape influenced by man from the Neolithic time. The main change in land use and landscape structure, that occurred at the end of the 18th century and beginning of the 19th century, is destruction of two big ponds and foundation of the new settlement Dolní Stakory village that replaced bigger pond.

Bystřice cadastre represents intensively exploited agricultural area with highly fertile soil. Cadastral border and land use structure in this territory is stable within the centuries and landscape changes are minor. Also settlement structure in typical central Bohemian style is preserved.

Živohošť area around the Vltava river is predominantly forested with small share of agricultural land. The territory is an example of historical landscape that disappeared under water of Slapy dam and its function was totally transformed from agricultural and forestry landscape to the landscape exploited by tourism and recreation.

Regional differentiation of land use changes in Czechia 1845–2000 and its environmental consequences: Case study peripheral regions

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The paper analyses land use changes during long time period in some model peripheral regions of Czechia differing in physical-geographical, environmental and development conditions (geo-economic, geo-politic conditions etc.). These are for example the territories with typical agricultural landscapes, in border areas; landscape protected areas etc. Regional differentiation and the ever-deepening space polarization as part of the core-periphery dichotomy as an integral part of the on-going globalisation process has been an important phenomenon also during the transformation period in Czechia (after 1989). I do not see the problem of peripheral regions as an isolated issue, but we see it in the context of the overall space development on different hierarchic levels and on different environmental conditions.

Landscape changes belong to a considerable factor of the society development. Above all in industrial period (within last about 200 years), interventions of man to the nature have been often very radical. The landscape has been changing its functions. These functional changes are reflected in land use environmental changes. Application of historical and environmental approach in geography, brought about by an increasing need to understand the past state and evolution of functional and social space structures to forecast their future development, is a challenge mainly for historical geographers. Especially the historic geographical research aimed at studying the geographical and environmental image of a territory, either during a given period of the past or in its long-term development, tends to explain the historical roots of the present state and character of the given territory landscape, as well as the genesis of formation of mutual relations and processes in nature – society interactions.

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The river Vltava in changes of time

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The river Vltava is a phenomenon in Czech and Central European context, attention to which has been paid from different science disciplines or art forms points of view so far however always from only views narrowly aimed. Geographical approaches of the research enable complex study of society/man–nature/landscape interactions. The issue of land use changes of the Vltava river banks from its sources in the Bohemian-Bavarian mountain range Šumava, through Český Krumlov (the UNESCO cultural heritage locality), South Bohemia metropolis (České Budějovice), tourist and recreational areas of the river Vltava reservoirs, Czech metropolis (Prague) up to its confluence with the river Labe, is the main theme of the presented poster. The river Vltava is presented here from two basic perspectives, which have been acquiring different meanings over time – river as a “connecting line” and river as a “barrier”.

The research is carried on two levels from methodological point of view. Extensive research – evaluation of long-term land use changes on the basis of secondary data (quantitative research, statistical evaluations) represents the first level, the second one is represented then by intensive research – evaluation of quantitative changes in particular model areas lying by the river Vltava.

The model areas were chosen at the banks of Lipno dam called “the Šumava Sea” with important recreational function (besides of energetic and retention ones) and at the Vltava embankment in Prague with residential, production, service and of course recreational functions.

Aesthetic functions of the river Vltava and the landscape in its surroundings can't be neglected. Attention is paid also to sought-after views (panoramas) at various parts of the flow from tourist, recreational and generally identity of the place points of view.