CHINESE ENVIRONMENTAL HISTORY NEWSLETTER

Issue 1, Part 1: April 1994

From the Editor

The purpose of the *Chinese Environmental History Newsletter* is to facilitate the exchange of news, views, ideas, and information among historians, ecologists, and others with an interest in Chinese environmental history. Its success will depend very largely on the vitality of this expanding field, on the number of subscribers, and on the cooperation of subscribers in submitting material for publication.

The newsletter will be bi-lingual. The Chinese-language version, available in either full or simplified characters, has been prepared by Mr Samson Rivers, of the Research School of Pacific Studies at the Australian National University. We hope that the circulation of the Chinese-language version will help promote genuine partnership and cooperation between Chinese and Western scholars. We depend very much on our existing subscribers to suggest names of others who might be interested in the newsletter, or to spread the word among their colleagues, associates, graduate students, and so on. Since our initial circulation list includes historians, ecologists, anthropologists, economists and others in the People's Republic of China, Taiwan, Hong Kong, five European countries, Japan, Australia, New Zealand, and the United States of America, we have the makings of a communication network which will be both interdisciplinary and international.

Scope; and guidelines for submission

The newsletter will publish both "notice-board" items and brief scholarly communications. The former category includes news of forthcoming and recent conferences, panels, publications, and materials in electronic or other machine-readable form, as well as reports on on-going research activities, etc. The latter category includes mini-articles, queries, reflections, research notes, etc. The absolute maximum length for a mini-article is 2,000 words (in the English-language version). Contributions may be submitted in English, Chinese, or French; *pinyin* romanization is preferred. Translations of scientific technical terms should be provided if possible. We would encourage you to send an electronic version, if possible, of any English-language contribution exceeding 750 words in length, or containing many numbers. The preferred formats are ASCII or WordPerfect 5.0, 5.1 or 6.0 on a 3.5" diskette; or an ASCII text file via e-mail. Hard copy should be provided as well.

Please send all contributions to Helen Dunstan, Department of History, Indiana State University, Terre Haute IN 47809, U.S.A. (e-mail HIDunsta@Ruby.indstate.edu).

Arrangements for distribution, and subscription rates

E-mail subscriptions will be free; the e-mail version will be sent out as an ASCII text file.

The hard-copy versions will be available for an annual subscription of U.S. $10 ($12 for international airmail); however, subscriptions in the People's Republic of China will be free for the time being.

For the time being, subscriptions, in U.S. currency, should be sent to Helen Dunstan at the above address. Cheques, drafts and money orders should be made payable to Chinese Environmental History Newsletter. However, experience in international initiatives of this sort suggests that the newsletter will reach the largest number of people if there are separate distribution centres in each country or region. The national coordinator receives the subscriptions in the national currency, and takes responsibility for photocopying the newsletter, and mailing it out to the subscribers. The national coordinator may also serve as news-hound, collecting relevant news from the region, and forwarding it to the newsletter editor;

alternatively, the functions of news-hound and distribution coordinator can be split.

If there are any generous and altruistic souls who are willing to volunteer for either of these functions for their country or region, will they please fill in the relevant part of the form appended to the newsletter. Also attached is a checklist requesting items of news in various categories. All readers are invited to return the checklist if they have news to report; the checklist will also serve to illustrate the kinds of information a news-hound would gather.

Directory and network

The second issue of the newsletter (to appear in October) will contain a directory of subscribers and other interested persons, with a summary of their research interests. Readers who have not already sent me a brief but precise statement of their research interests are invited to do so on the appended subscription form. The directory should make it possible to create a communication network through which news and ideas can be shared at any time. Subscribers with e-mail will, of course, be able to reach the other e-mail subscribers directly; those without e-mail will be able to request the newsletter editor to send out an e-mail message for them. Conventional mail can, of course, be used to reach those readers who lack access to e-mail.

Help wanted!

Regrettably, it seems unlikely that Mr Rivers will be able to continue translating the newsletter after March, 1995. We shall therefore need a volunteer to replace him. It might also be useful to have a panel of persons willing to be consulted, as need arises, on questions of translating technical vocabulary. Finally, a service which this newsletter should probably aim to provide would be an annual survey or review of recent literature. Anyone willing to undertake at least a share of this task, please let me know.

CONTENTS OF THIS ISSUE

MONGOLIAN GRASSLANDS PROJECT TO PUBLISH RESULTS

James Reardon-Anderson
Georgetown University

Participants in the Grassland Ecosystem of the Mongolian Steppe (GEMS) Project have agreed to produce a joint manuscript for submission to publishers by the end of 1994.

The GEMS Project, which is co-sponsored by the Academies of Science of the United States, China and Mongolia, brings together natural and social scientists from China, Mongolia, Europe and the United States to study the human and natural impacts on the grassland ecosystem of Mongolia and Inner Mongolia. During the past two years, thirty to forty scholars have been working individually or in small groups to study discrete aspects of this problem. After presenting the results of their work to the GEMS Research Conference at the Wingspread Conference in November, 1993, the project participants agreed to revise and integrate their work for publication.

The immediate goal of the GEMS project is to demonstrate the interaction of human and natural factors in the dynamics of the steppe region. GEMS participants are dedicated to the goal of reaching beyond their separate disciplines and especially across the line that divides the natural and social sciences. Research for this project and the planned joint publication will focus on a defined region of eastern Inner Mongolia and the adjacent area of Mongolia. The larger purpose of GEMS is to establish a model for the interdisciplinary study of environmental problems.

The joint volume, entitled "Continuity and Change on the Mongolian Steppe: The Implications for Land Use," will include individual papers in five units: terrestrial systems (soil, flora and fauna), climate-ecosystem interactions, data collection and analysis, history, and human factors at both micro (household and community) and macro (region and nation) levels. A five-member editorial team will oversee the integration of papers within each unit and write introductory essays that identify unifying themes and issues for future research.

A list of draft papers to be included in the forthcoming volume is attached.

Continuity and Change on the Mongolian Steppe: Implications for Land Use

Introduction
James Reardon-Anderson

Unit I. History
Introduction: James Reardon-Anderson

Robert Bettinger, David D. Madsen, Robert G. Elston, "Behavioral Change at the Pleistocene/Holocene Boundary in North China and Mongolia: Planning Ahead in the Past"

Chen Zuozhong and Xiao Xiangming, "Historical Retrospect"

Kou Zhenwu et al., "Impacts of Human Activities on the Grassland Ecosystem in Wulan'aodu Region, Inner Mongolia, China"

James Reardon-Anderson, "Man and Nature in the West Liao River Basin During the Past 10,000 Years"

David Sneath, “Continuity and Change in the Administration of the Mongolian Steppe: Implications for Land-Use”

Eduard Vermeer (forthcoming)

Unit II. Climate and Ecosystem

Introduction: James Ellis

James Ellis and Chuluun Togtohyn, “Cross-Country Survey of Climate, Ecology and Land Use among Mongolian Pastoralists”

Eric Smith et al., “Climatic Implications of the Meteorological Organization of Summer Rainfall Systems over the Upland Grassland Region within Central Inner Mongolia”

Compton Tucker et al., “Variation in Extent of the Gobi Desert from 1982-1992”

Xiao Xiangming, “Regional Climate-Vegetation-Soil Patterns of Inner Mongolia, China”

Unit III. Terrestrial Systems

Introduction: Stephen Williams

Ravjaagiin Baatar and Stephen Williams, “Properties of Dark Chestnut Soils (Ustic Mollisols) of the Mongolian Steppe”

Chen Zuozhong and Xiao Xiangming, “Degradation and Restoration of Natural Grassland Ecosystems in Inner Mongolia, China”

Jerrold Dodd, (forthcoming)

James Harris, “Conservation of Wetland-Grassland Ecosystems in the Border Region of China, Mongolia and Russia”

Dennis Sheehy, “Response of Meadow Steppe (Aneurolepidium chinense) and Shrub Steppe (Atraphaxis manchuricus) Communities in East Central Inner Mongolia to High Intensity Grazing by Livestock”

Stephen Williams et al., “A Comparison of the Soils of the Northern Mixed Prairie (North America) and Grasslands of the Mongolian Plateau (Asia)”

Xu Lan et al., “Reclamation of Degraded Grassland and Forest-Steppe Area in Wulan’aodu”

Unit IV. Data Collection and Analysis

Introduction: Dennis Ojima, "Model and Information Synthesis for Nomadic Pastoral Systems in the Mongolian Plateau"

Chuluun Togtohyn et al., "Simulation Studies of Grazing in Mongolian Grassland Ecosystems"

Zhonghou Li and Jianguo Wu, "Monitoring and Analyzing Natural Resource Utilization Pattern in Xilingol Region of Inner Mongolia Using GIS"

Dennis Ojima et al., "Regional Assessment and Comparison of Grassland Sensitivity to Climate and Land Use Changes"

Song Bo et al., "Model Analysis of Grassland Dynamics to Different Management Measures in Wulan'aodu"

Unit V. Human Factors

Introduction: Jeremy Swift

B. Batbuyan et al., "Natural and Human Factors in the Management of Mongolian Pastoral Ecosystems under Contemporary Economic Transition: An Overview"

James Feinerman (forthcoming)

Maria Fernandez-Gimenez, "'Fences don't make grass grow': Herder Perceptions of Pasture Resources and Ecological Processes in the Mongolian Forest-Steppe"

Li Jiandong, "The Deterioration of Grassland and the Adaptations Taken by the Pastoral Community"

Ma Guoqing, "On the Social and Cultural Factors Affecting the Deterioration of Grassland: Research on Baiyinxile Pasture Farm in Xilinguole League, Inner Mongolia Autonomous Region"

Ma Rong and Li Ou, "The Impact of the System Reform on Pasture Use and Environment in Inner Mongolia: A Case Study"

S. Tserendash and B. Erdenebaatar, "Performance and Management of Natural Pasture in Mongolia"

Dee Williams, "Enclosures on Disclosures: A Perspective on the Human Dimension of Land Degradation in the Grasslands of Northern China"

Xu Bainian, "On the Managerial System and the Degeneration of Grassland"

CONFERENCE ANNOUNCEMENT
ENVIRONMENT AND DEVELOPMENT IN SOUTH-EAST ASIA

A conference on "Environment and Development in South-east Asia" will be held at the University of Wisconsin, Madison (U.S.A.) on July 9-10, 1994, in conjunction with the Southeast Asian Studies Summer Institute (SEASSI). Fifteen or so experts from South-east Asia, Europe, and the United States will present papers on policy and human welfare issues in natural resource management, agricultural development, deforestation, soil and water conservation, and related areas. For registration information, please contact the Center for Southeast Asian Studies, University of Wisconsin, 4115 Helen C. White Bldg., 600 N. Park St., Madison, WI 53706; telephone (608) 263-1755; e-mail seasian@macc.wisc.edu.

THE CONFERENCE ON THE HISTORY OF THE ENVIRONMENT IN CHINA, HONG KONG, 1993

An Introductory Report

Mark Elvin
Australian National University

The Conference on the History of the Environment in China met during December 13th-18th, 1993, at the Silvermine Beach Hotel on Lantau Island, Hong Kong. Twenty-seven papers were delivered; ten or so different academic cultures were represented. The main funding was provided by the Chiang Ching-kuo Foundation, with help from the Research School of Pacific Studies of the Australian National University, where the project originated. The convenors were Liu Ts'ui-jung of the Academia Sinica, Taipei, and Mark Elvin of the Australian National University. The revised papers will be published both in a longer Chinese version, sponsored by the Academia Sinica, and in a somewhat shorter English version, probably by Cambridge University Press, New York.

While a number of scholars, both within and outside China, have been pioneering the "environmental history" of China for some years, the holding of the conference may be said to symbolize the crystallization of a new domain of study. It reflects what may justifiably be called a turning-point in the study of Chinese history. Historians of China have begun to come to terms with the fact that our understanding of long-term technological, economic, social, and even political and intellectual trends is incomplete unless placed in the context of the interaction of human and non-human systems. Climate, soils, vegetation, water, plants, animals, and micro-organisms, as well as the built environment, are interwoven with the patterns of social activity. Integrating the study of these fields with the conventional historical domain, with conventional materials and conventional methods, is not easy. It often requires collaboration with scientists who have, from their side, come to perceive the relevance of their own expertise to historians' problems, and of historians' expertise to their problems.

Thus at the conference, the botanist Wolfgang Holzner initiated his historian colleagues into the art of reading landscapes transformed by human activities, using the loss of forest cover, and the emergence of sub-forest cover like rhododendrons, in the Himalayas for his examples. The hydrologist Su Ninghu, working with Mark Elvin, showed how paleohydrological evidence can be meshed with historical documents on hydraulic systems, making a case that late sixteenth-century hydraulic engineering on the mouth of the south-course Yellow River caused such an extensive southward coastal transport of suspended sediments as to alter the geometry of Hangzhou Bay. And the archaeologist

Janice Stargardt, in a comparative exercise, showed how pollen analysis opens up and helps to define the stages of economic development in a small and now defunct Southeast Asian civilization (on the Malay peninsula) that was based on irrigated rice-cultivation. Environmental history is thus becoming the natural meeting-place for many of the sciences and the humanities.

A new field often requires new methods, or familiar methods from other fields transferred to the new context. Nicholas Menzies, a sinologically expert adviser on forestry working with the Ford Foundation in China, showed how vegetation maps for some generations back can be created for particular small areas by geographically structured field-interviews drawing on the collective memories of the older inhabitants. The application of econometric methods to environmental history problems was demonstrated by Liu Jin-tan and Lu Yun with regard to climate and artificial fertilizers respectively. Janice Stargardt showed the usefulness of what may be called "experimental history" in the construction of working models of small sections of long-abandoned irrigation systems, in order to study their functioning. Antonia Finnane, from the perspective of women's studies, suggested how varying patterns of gender relations in the Jiangbei area may have co-varied with the pattern of micro-environmental variation.

In a more familiar but still innovative mode, several contributors showed the importance in China during historical times of collective representations of aspects of what we would today call "the environment", but for which there were no exactly equivalent pre-modern Chinese terms. Christian Lamouroux analyzed the complex fashion in which strategic military conceptions of the Yellow River during the Northern Song (960-1127) interacted with hydraulic conceptions focussed on flood control and water transport. Helen Dunstan presented a nuanced assessment of eighteenth century official thought and action on environmental issues, focusing on schemes for what she calls "defensive expansion" to tap resources judged underutilized as population growth imposed ever greater pressures during this period. Paolo Santangelo surveyed the conceptions of nature found in Ming and Qing novels, especially the disciplined and domesticated nature of the garden that to all intents and purposes seems to have become "nature" for many literati in the late-imperial age.

The power of diseases to shape human life, and the converse capacity of human society to shape, facilitate, and inhibit particular patterns of disease, were illustrated by three papers. Zhang Yixia, a microbiologist, demonstrated how during the first half of the twentieth century, the probability of contracting tuberculosis in urban China was closely related to the particular profession or employment in which a person was engaged, rather than his or her general economic or social status. Kerrie MacPherson, an expert on the history of Chinese urban health and city planning, tracked the introduction of cholera into China around 1820, probably as a by-product of improved communications with India, and the subsequent series of outbreaks in the century and a half that followed, broadly linked with the global pandemics. Carney Fisher presented some preliminary findings on plague in late-imperial China, including the point that the extraordinarily high residential densities in trappers' and coolies' dwellings in Manchuria in 1910 enabled the disease to spread directly in its pneumonic form between human beings, without any need for intermediate animal or insect vectors.

Zhang Peiyuan presented the findings of his team at the Institute of Geography of the Chinese Academy of Sciences in Beijing, based on the analysis of over 0.8 million items of data in historical sources, that the last two thousand years of Chinese history have seen both a long-term process of desiccation, and a transformation of the climatic patterns relating northern and southern China. Robert Marks, in contrast, gave us a detailed micro-study of the links between the price of rice and the weather in eighteenth-century Guangdong, based on official reports of prices and of harvest yields estimated as percentages of assumed maxima.

The integration of the somewhat independent domain of the history of water control in China, and its organization, into environmental history proper was represented by papers from Shiba Yoshinobu and Pierre-Étienne Will. Professor Shiba showed the way in which hydraulic works — sea-wall defences,

irrigation, and transport systems — along the southern shore of Hangzhou Bay, from late Han to mid-Ming times, created what was for a time a regional core, before the core shifted towards the Yangzi delta, an area developed later. His work suggested that regions are not necessarily physiographically "given", but should perhaps also be seen as entities shaped by social and technological processes. Professor Will showed how, over two millennia, the once highly productive early-imperial Zheng-Bai irrigation system in Shaanxi was gradually undermined by the instability of the Jing River that fed it, primarily because the current scoured the bed down to an ever lower level compared with that of the distribution network, thereby creating worsening problems of maintenance. Attempts to restore the system to effective functioning met with diminishing returns, until finally in mid-Qing times a new cautiousness on the part of officials towards trying to force the environment to be productive, and an increasing inability to mobilize *corvée* labor on a large scale, led to the effort's abandonment.

The papers by Anne Osborne and Eduard Vermeer analyzed with precision the nature of the accelerating environmental crisis in marginal areas that affected late-imperial China. In the highlands between Zhejiang, Jiangxi, and southern Anhui studied by Professor Osborne, there was a battle between the pressures of immediate economic survival for an expanding population, and the requirements of environmental conservation and stability. The issues were usually well-understood by the officials, who were nonetheless mostly powerless to intervene with long-term effect. Professor Osborne's verdict is that the short-term benefits from a largely non-renewable style of exploitation of mountain products and mountain soils in the century before c.1850 may (just) have offset the short-term losses, but the often irreversible damage done to the vegetation cover, soils, water-systems, and resources such as wood for fuel and building, caused a multitude of local crises, and in the longer run seriously undermined the resilience of the overall agricultural environment. Professor Vermeer focussed partly on the frontier regions of the north and west of China during the Qing dynasty. He argued that during this period China entered "a new phase of definite and irreversible change", during which the border regions were integrated into the general Chinese economy, and a long-term process of environmental degradation developed. He was, however, analytically extremely cautious about the interpretation of data in the historical sources, and his observations are often useful correctives to too-easy apparent certainties. Li Bozhong's study of rice-cultivation in Jiangnan during the Ming and Qing, meanwhile, suggested a rather more optimistic picture for this region, one in which yields per hectare were still rising due mainly to better varieties of seed, wider use of top-dressing fertilizer, and a generalization of best practice.

Documentation on Taiwan in the late-imperial and modern periods is unusually detailed. Since the island was not settled by Han Chinese until the later sixteenth century, its environmental history is unique in the Chinese world in that it can be followed from a nearly "natural" state all the way to Taiwan's present condition as a developed modern society. Liu Ts'ui-jung gave us a vivid, multi-faceted description of the early days of Han settlement, and the effects of the consequent loss of direct and indirect aboriginal environmental controls, such as those on the exploitation of deer, under the pressures of widening trade and accelerating population growth. Ch'en Kuo-tung's paper on Taiwan's timber resources showed that pressure on forests was fairly light in the early period, as the result of aboriginal hostility, government prohibitions and monopolies, and imports from the mainland. Under the Japanese, there was a state-run lumbering industry on a limited scale, but what the author calls "hyper-deforestation" only began after the coming of Nationalist rule, and lasted until the mid-1970s, after which it was brought under control. Tung An-chi's study of hydro-electricity showed how it played a leading role in Taiwan's early industrialization, but declined in relative importance after the 1950s owing to the limited life-span of reservoirs and dams, the difficulty of finding new suitable sites for hydro-electric generation, and the rise of alternative technologies. Wang Hurng-jyuhn brought the story up to date with a broad-ranging survey of the state of the present-day environment in Taiwan.

Finally, three further papers contributed comparative perspectives. Rhoads Murphey gave us a multi-millennial survey of China, India, Japan, and Southeast Asia, concluding that "the Chinese have

altered their environment on a massive scale, more even than Westerners have altered theirs." Tessa Morris-Suzuki showed, in her paper on the early environmental protest movements in pre-war Japan, how the participants conceptualized environmental problems in a way different from their Western counterparts, emphasizing primarily not conservation as such, but the need to avoid "public harm" in the pursuit of a "balanced development" in which industry also had its place. William Coaldrake outlined the project that he is pursuing with Susan Tyler on the built environment of Matsushiro, the capital of a fief in Edo-period Japan, with especial emphasis on the relationship of social status both to architecture and to important environmental variables such as access to good-quality water.

Looking back over the conference, one is conscious of a long journey already travelled, and of the need to prepare ourselves for an even longer one ahead. One of the possible eventual general benefits of environmental history may be that it gradually becomes possible, through its pursuit, to create a new form of discourse in which the economic and the environmental are both incorporated, and which may serve public policy debate better than the present conceptually eroded language. And in this pursuit the millennial and well-documented Chinese case, in many ways very different from that of Europe and America, has now begun to take its proper place.

List of Papers Presented at the Conference

Ch'en Kuo-tung (Institute of Economics, Academia Sinica), "Non-Reclamation Deforestation in Taiwan, *circa* 1600-1976"

William Coaldrake (University of Melbourne), "Recreating the Built Environment: The Environmental History of the Castletown of Matsushiro"

Helen Dunstan (Indiana State University), "Official Thinking on Environmental Issues and the State's Environmental Roles in Late Imperial China"

Mark Elvin and Su Ninghu (Australian National University), "Action at a Distance: The Influence of the Yellow River on Harngzhou Bay since A.D. 1000"

Antonia Finnane (University of Melbourne), "Water, Love and Labour: Readings of the Jiangbei Environment"

Carney Fisher (University of Adelaide), "The Bubonic Plague in Chinese History"

Wolfgang Holzner and Monika Kriechbaum (Universität für Bodenkultur, Vienna), "Man's Impact on Vegetation and Landscape of the Inner Himalaya and Tibet"

Christian Lamouroux (École Française d'Extrême-Orient), "From the Yellow River to the Huai: New Representations of a River Network and the Hydraulic Crisis of 1228"

Li Bozhong (Chinese Academy of Social Sciences), "Changes in 'Heaven', 'Earth', and 'Humankind', and Wet Rice Production in Ming and Qing Jiangnan"

Liu Jin-tan (National Taiwan University), "Climate and Agricultural Development in Taiwan"

Liu Ts'ui-jung (Institute of Economics, Academia Sinica), "The Han Immigrants and Formation of

Settlements: A Preliminary Study on Environmental Change in Taiwan"

Lu Yun (Alan) (National Taiwan University), "Chemical Fertilizer Consumption in Taiwan: A Retrospect of the Influential Policies and Factors, 1953-1992"

Kerrie MacPherson (University of Hong Kong) "Cholera in its Home? The Great Epidemics in China, 1820-1930"

Robert Marks (Whittier College), "'It Never Used to Snow': Climatic Change and Agricultural Productivity in Late Imperial South China, 1650-1850"

Nicholas Menzies (Ford Foundation), "The Villagers' View of Environmental History in Yunnan Province"

Tessa Morris-Suzuki (Australian National University), "Environmental Problems and Perceptions in Early Industrial Japan"

Rhoads Murphey (University of Michigan), "Chinese Environmental History in Comparative Perspective"

Anne Osborne (Rider College), "Highlands and Lowlands: Economic and Ecological Interactions in the Lower Yangzi Region under the Qing"

Paolo Santangelo (Instituto Universitario Orientale), "Ecologism Versus Morality: Conceptions of Nature in Ming-Qing Fiction"

Shiba Yoshinobu (International Christian University), "Environment Versus Water-Control: The Case of the Southern Hang-chou Bay Area since the Mid-T'ang through the Qing"

Janice Stargardt (University of Cambridge), "Earth, Air, Rice, Water: The Elements of Early Environmental and Agricultural Change in Peninsular Thailand"

Tung An-chi (Academia Sinica), "Taiwan's Hydro-Electricity and Industrialization in the Twentieth Century"

Eduard Vermeer (University of Leiden), "Population and Ecology along the Frontier in Qing China"

Wang Hurng-jyuhn (University of Michigan), "State of the Environment in Taiwan: 1970-1990"

Pierre-Étienne Will (Collège de France), "Attempts at Reviving the Zhengbai Irrigation System in the Wei River Valley of Shaanxi in the Late Imperial Period"

Zhang Peiyuan et al. (Chinese Academy of Sciences), "Climate Change and its Impact on Capital Shift during the Last 2000 Years in China"

Zhang Yixia and Mark Elvin (Australian National University), "Environment and Tuberculosis in Modern China"

THOUGHTS ON CHINESE PROPERTY RIGHTS IN LAND AND GLOBAL ENVIRONMENTAL CHANGE

Peter C. Perdue
Massachusetts Institute of Technology

For the last two years, a group of scholars has been meeting to discuss the connection between landed property rights and global environmental change. We have posed ourselves two central questions:

1) Have there been converging trends in land rights during recent world history?; and

2) do certain property regimes invariably lead to land degradation?

Support has come from the National Science and Ford Foundations, and the SSRC Committee for Research on the Human Dimensions of Global Environmental Change. Professor John Richards (History, India, Duke University) is the principal investigator. Other participants besides myself include David Feeny (Economics, McMaster University); Elizabeth Flint (Ecology, History, Duke); Eric T. Freyfogle (Law, U.S., University of Illinois); James Giblin (History, Africa, University of Iowa); Stephen F. Gudeman (Anthropology, Latin America, University of Minnesota); Ronald J. Herring (Government, India, Cornell); Margaret McKean (Political Science, Japan, Duke); David Major (Hydrology, SSRC); John McNeill (World History, Georgetown); Gerardo Otero (Latin American Studies, Simon Fraser University); Karen Polenske (Urban Studies, MIT); Alberto Rivera (Ecology, Guatemala); Steven Sanderson (Political Science, Latin America, University of Florida, Gainesville); Anna L. Tsing (Anthropology, Southeast Asia, University of California, Santa Cruz); James Wescoat (Geography, University of Colorado); and Karen Wigen (Geography, Japan, Duke).

As the above list indicates, we are a large group with diverse disciplinary and area interests. As the sole China representative in the group, I ask myself: what can the study of China's environmental history contribute to this discussion? The overall goal is to develop insights about the human impact of environmental change, based on the recognition that the degradation of land quality, a global process, strongly affects the lives of rural producers and urban consumers, and that the way in which property rights are defined in different societies may well have a significant influence on how land degradation occurs.

An interesting division of perspectives has appeared in the group, which could be crudely characterized as that between anthropology and economics. The economic perspective begins with questions of individual incentives and their outcome in collective behavior. The *locus classicus* of this viewpoint is Garrett Hardin's article "The Tragedy of the Commons." According to this argument, individual incentives for maximum gain, say, grazing sheep on a common field, will inevitably lead to destruction of common property through overgrazing, if there are no restraints imposed by political and social institutions. In fact, some economists do admit that common property regimes survive and flourish in a variety of places around the world. The task of those concerned with the health of the environment is to figure out how to design policies so that individual incentives are directed toward the common good. (See, for example, the newsletter of the International Association for the Study of Common Property).

From the anthropological perspective, this focus on *homo economicus* reflects a narrow view of human potential derived solely from the domination of the world by Western market-oriented reasoning. Other societies, historical and contemporary, preserve cultural mechanisms that are not governed by market reasoning. The *locus classicus* of this perspective is the work of Karl Polanyi. Efforts to

preserve environmental health should not work through market incentives, but against them. Cultural factors, beliefs about meaning, concepts of honor, status, and ritual, work against the drive for material gain.

Where does an environmental historian of China stand in this debate? Somewhere in the middle, or outside the terms of reference of both parties. Both parties make normative and empirical claims about how humans do behave and how they ought to behave. Both sides appeal to historical and contemporary cases. An unfortunate polarization often occurs in these debates: economists are accused of believing only in greed, unconcerned with the environmental costs; anthropologists are accused of *naiveté* or nostalgia for simple pre-industrial worlds. As historians, we are uncomfortable with all schematic models and simple dichotomies. We are more concerned with capturing the complex qualities of our particular case than in creating consistent abstractions. The sheer cussedness of human behavior resists encapsulation in Procrustean beds.

As a historian of China, however, I must reluctantly conclude that the force of material gain has been persistent, pervasive, and pernicious in its effects on the Chinese environment for many centuries. Chinese peasants have long sought to improve their livelihoods by clearing the next wetland, cutting down the neighboring forest for fuel and arable fields, or tearing up the grasslands for wheat and millet. Noble cultural ideals of Daoism or *fengshui* have had little restraining effect, especially since the population boom of the eighteenth century. Imperial state policies sometimes tried to restrain this behavior, as for example in the prohibition of clearance around Lake Dongting or Xiang Lake in the eighteenth century, or the effort to preserve imperial forests (Menzies, Perdue, Schoppa), but often in vain. In other ways, imperial promotion of rural migration and frontier settlement actively encouraged the destruction of non-Han agrarian ecosystems in the Southwest or Northwest. Rights to land played a key role in these policy decisions: the state could claim control over public lands, which included sandbars, coastlines, uncultivated forests and mountains, and grasslands; it recognized *de facto*, however, private property rights in cultivated fields.

There are, however, successful cases of large-scale management of collective goods in China, such as the Sangyuanwei polder organization studied by Morita Akira. What determines effective control of collective goods? Customary law along with local ecology, social organization, and the local implementation of imperial policy, all play a role.

My own work focuses on the expansion of the Qing empire into Northwest China and Central Eurasia in the seventeenth and eighteenth centuries. The military campaigns of the Kangxi, Yongzheng, and Qianlong emperors, from 1697 through 1760, crushed the rival state of the Zungar Mongols in what is now Xinjiang and western Mongolia. After the conquest, depopulated Zungaria was settled by new waves of Han immigrants encouraged by state travel grants and agricultural supplies. This Han settlement process dramatically transformed land use in the region from pastoral nomadism to settled agriculture. The intensity of land use increased along with growing population and increased integration of the economy with interior Chinese markets. China's expansion of its landed frontier was one part of a global process of extension of landed settlement in the eighteenth century (Richards); in North and South America, Russia, India, Japan, Eastern Europe, and the Ottoman empire, agrarian peoples pushed the settlement boundary outward. The main driving forces were increasing populations and closer ties to agrarian markets.

How were property rights redefined in this process? Here we know little. It is insufficient to attribute frontier settlement simply to demographic and market forces. Settlers on agrarian frontiers, contrary to imperialist mythology, never moved into completely empty spaces. Everywhere, they fought against resistance from indigenous peoples with rival claims to the forests, marshlands, and grasslands that were their home. Rights to this land were always contested. The settlers, backed by powerful agrarian states, won their battles with indigenous peoples, but during the course of these battles, they modified, clarified, or created new concepts of property. In turn, the way they defined property rights

affected how they used the land, and what the environmental effects of settlement turned out to be.

China is one excellent place to test hypotheses about the importance of property rights. Imperial China has a long- standing corpus of legal and institutional literature related to landed property. Rights over land varied greatly by region. Only a few recent studies have begun to look at the complex relationships between Han settlers and indigenous peoples on the agrarian frontier. The best recent published work is John Shepherd's *Statecraft and Political Economy on the Taiwan Frontier, 1600-1800* (Stanford, 1993), which demonstrates that the Qing state propped up a special form of the two-lords:one-field system, or large-rent/small-rent system, in an attempt to defend the property rights of the aboriginal peoples of the island against waves of Han immigration. By contrast, in the Northwest, I have found that the Qing rulers during the same period first exterminated those Zungars who resisted conquest, then promoted actively the conversion of the region to settled agriculture. They placed surrendered Mongol pastoralists in tightly circumscribed pasturelands under imperial control. Today the grasslands of the Northwest suffer severely from overgrazing, and the settled fields from lack of water (National Research Council, 1992). But the long-term process that underlies this degradation began with the Qing conquest of the eighteenth century.

I want to show that contemporary environmental crises have their roots in long-term processes, both human and natural. Is China under the reforms now approaching a major environmental crisis, as Vaclav Smil argues? Much depends on the ability of the state to exert authority over the use of common resources, and on the ability of communities to organize for the collective good. William Hinton and others have argued that the reforms have severely damaged China's environment by undermining collective property. Lester Ross, by contrast, argues that only in the reform period have laws been passed that provide incentives for preservation of these resources. Secure property rights for individuals can lead them to take a longer-term view. Chinese peasants understandably cut down a forest if they have little confidence that they will enjoy its fruits twenty years hence. Which approach better addresses China's environmental problems: socialist culture or market entitlements? The jury is still out.

REFERENCES

Garrett Hardin, "The Tragedy of the Commons", in *Science* 162 (1968), pp. 1243-1248.

International Association for the Study of Common Property, *The Common Property Resource Digest*.

Nicholas K. Menzies, "Trees, Fields, and People: The Forests of China from the Seventeenth to the Nineteenth Centuries", Ph.D. dissertation, University of California, Berkeley, 1988.

Morita Akira, "Kantō-shō Nankaiken Sōgengi no jisui" (Water Management in the Sangyuanwei Polder of Nanhai Xian, Guangdong Province)", Tōyō Gakuhō, 47/2 (1964), pp. 65-88.

National Research Council, *Grasslands and Grassland Sciences in Northern China*, Washington D.C., 1992.

Peter C. Perdue, *Exhausting the Earth: State and Peasant in Hunan, 1500-1850*, Harvard University Press, 1987.

Karl Polanyi, *The Great Transformation*, Beacon Press, Boston, 1957.

John Richards, "Land Transformation", in B.L. Turner, ed., *The Earth as Transformed by Human Action*, Cambridge University Press, 1990.

Lester Ross, *Environmental Policy in China*, Indiana University Press, 1988.

Keith Schoppa, *Xiang Lake: Nine Centuries of Chinese Life*, Yale University Press, 1989.

John Shepherd, *Statecraft and Political Economy on the Taiwan Frontier, 1600-1800*, Stanford University Press, 1993.

Vaclav Smil, *China's Environmental Crisis*, M.E. Sharpe, 1993.

ANNOUNCEMENT OF THE CITAS PROJECT:
CHINA IN TIME AND SPACE

China in Time and Space (CITAS) was founded in order to inventory, acquire, develop and disseminate electronic databases on China. CITAS is a partnership between China specialists, initially sponsored by the Joint Committee on Chinese Studies (JCCS) under the American Council of Learned Societies/Social Science Research Council, and the Consortium for International Earth Science Information Network (CIESIN).

CITAS is envisaged as a permanent organization charged with providing access to contemporary and historical data on China at minimal cost to the global environmental change research community, social scientists, policy-makers, China scholars and the general public. Current CITAS projects include:

* Utilization of state-of-the-art geographic information system (GIS) technology to integrate tabular and spatial data with a temporal dimension;
* Identification, documentation, archiving and dissemination of data sets of utility in both the natural and social sciences from a diverse set of sources;
* Creation of institutional and cooperative ties with Chinese organizations;
* Provision of training for potential users of the database;
* Supporting applications of the data among all user groups.

Operating under the general oversight of a board of distinguished social and environmental scientists, the heart of CITAS is a multi-disciplinary management and research team, consisting of a Policy & Planning Committee (P&P) and associated specialist consultants and researchers. The Director, William Lavely (Sociology/Demography) is a China specialist on the faculty of the University of Washington, where the central facility of CITAS has been established. Other China specialists on P&P are Kam Wing Chan (Geography, University of Washington), Lawrence W. Crissman (Anthropology, Griffith University), Robert Dernberger (Economics, University of Michigan), Robert M. Hartwell (Social & Economic History, University of Pennsylvania), and G. William Skinner (Anthropology, University of California, Davis). Dr. Qin Tang is the CITAS GIS analyst and database manager, Nicholas Chrisman (Geography, University of Washington) serves as chief GIS consultant, and an environmental change specialist as well as other experts will be added in the future. Collaboration with CIESIN provides CITAS with full access to a staff experienced in metadocumentation, networking, and software development as well as high-capacity computer hardware and basic customer service infrastructure.

CITAS is a response to a widely perceived need for the creation of a central repository for spatially and temporally referenced data on China, and will provide a focus for ongoing efforts to expand both the information base and access to it, and a nucleus for expert guidance on its organization and use. No other country provides the possibility of such an abundance of information, with such historical depth and consistency, for such a large portion of the earth's population.

China is probably the best documented low income country in the contemporary world. In the past five years, there has been a tremendous growth of published data at the county level. Chinese data extending back in time exceed, in both temporal and topical coverage, those that exist for any other region of the globe. Thousands of local histories contain sections on markets, roads and canals, irrigation projects, political and religious institutions, finance, population and many additional topics, and provide, along with other varied and voluminous texts, a basis for comprehensive coverage of social, cultural and economic change. These same sources provide abundant data which can be used to reconstruct the local

and regional histories of climate change, existence and disappearance of flora and fauna, alternations in hydrology, occurrence and scale of earthquakes, epidemics, floods, insect infestations and other catastrophes and phenomena. These socio-cultural-economic and physical variables can be related so as to trace the interrelationships between the natural and human dimensions of environmental change in China. The geo-referenced historical and contemporary data can also be linked, which will facilitate longitudinal, cross-sectional, and interdisciplinary analyses that span more than a millennium.

Economic change makes China a particularly important case for study. By virtue of its enormous population, China already possesses one the of world's largest economies, its global economic importance will certainly continue to increase, and it represents what may be the world's largest experiment in contrasting development strategies. It is likely to become the largest single national contributor of greenhouse gases on the globe. Problems of air and water pollution, acid rain, and desertification also have reached very serious proportions. China is thus a major testing ground for improving our understanding of the complex interactions between population growth, economic development, and resource and environmental management. In order to achieve this goal, CITAS will develop a schedule for the acquisition, evaluation and dissemination, directly or through the CITAS/CIESIN data-sharing cooperative, of a wide range of social science data as soon as it becomes available. Current priorities are datasets that tabulate demographic, health, industrial, energy, social survey, agricultural and commercial variables.

China also provides a unique case for examining the processes and consequences of the contrasting nature of regional economies and differentials in their rates of development. CITAS has established as one of its priorities the incorporation of data-driven models of regional systems and research into their dynamics over time. With this goal in mind, CITAS has given high priority to the acquisition of county-level and urban data. Development of innovative coding schemes, which target specific variables, is intended to assist researchers and policy makers in both the analysis and understanding of the varied histories and current ethnic, linguistic, religious, economic, cultural and social configurations of the disparate regions and sub regions that constitute the internally differentiated geography of China. CITAS also plans to incorporate a flexibility into its GIS and tabular database designs that will enable the aggregation of regional system variables and GIS data into comprehensive profiles of higher-level administrative and political units such as provinces.

In sum, China is a unique "laboratory." It has a long history of human manipulation of the environment, is undergoing rapid economic development, and brings together a rich mixture of ecological, ethnic, economic, cultural and other factors. Its size permits great economies of scale, while its disaggregated data resources in both historical depth and geographical coverage present unique opportunities for studying the interaction of humans and their environments. Variations over time in regional and national political systems provide other opportunities for comparative analysis.

An integrated spatio-temporal database will expedite research on this unique "laboratory." A CITAS project will identify extant computerized data sources on China and develop a directory of these sources. Input from researchers working with spatially referenced data on China, regardless of chronological period, are of special interest. Where possible, CITAS, in collaboration with CIESIN, will archive these data in their original form to make them available to users even before they are integrated into a database.

Initial research projects include:

1) Documentation and incorporation of 1980s data on cities/towns and county-level units, coded to facilitate the analysis of regional systems;
2) Coding, evaluation and incorporation of new county-level data extracted from provincial statistical yearbooks compiled between 1950 and 1992;
3) Creation of a historical GIS for China covering changes over the past 1,250 years in spatial

variables; e.g., the boundaries of administrative units, configurations of the hydrological system, location of central places and networks of transportation for the analysis of attribute data such as population (including ethnic, cultural, linguistic and religious composition), finance, migration, land cover and land use.

Finally, a key element of the CITAS effort is to form partnerships with Chinese organizations and scholars in the development of the database(s), associated applications, and training programs. In all instances, CITAS will develop and make available computerized documentation for each of its data components.

By the end of 1994 CITAS plans to have established:

1) Vectorized 1980s map data covering the entire PRC at 1:1,000,000 scale for hydrology, transport, cities and some towns, land use, and some spot elevations and terrain features, as well as other themes such as language and dialect;
2) A substantial base of tabular county-level demographic, social and economic data with graphic representations of county boundaries for several dates from 1949 through 1992;
3) A limited datafile of demographic and economic data on Chinese cities and towns in 1984, also keyed to mapped locations;
4) A substantial fund of historical data including:
   a) co-locations of county boundaries and their position in higher level administrative units for selected years in the period 741 to 1949;
   b) on-line access to a dynamic biographical/genealogical dataset containing historical demographic, migration and political variables;
5) Documentation of the above data.

A continuing activity of CITAS will be to document and evaluate the provenance, collection methods, and reliability of all data it acquires or that it targets for inventory and/or acquisition. Future plans include acquisition of 1990 census and related data, incorporation of remote sensing data, development of user interface, users training, and development of applications of the CITAS database.

Further information and bulletins on progress can be obtained by subscription to the CITAS listserver at listserv@uwavm.u.washington.edu. CITAS background and technical documents may be accessed via the China In Time And Space gopher at CITAS.CSDE.WASHINGTON.EDU. Inquiries and suggestions may be made by sending e-mail to citas@u.washington.edu.

DEPARTMENT OF SOCIOLOGY, DK-40
SEATTLE, WA 98195 U.S.A.
(206) 685-2967
FAX: (206) 543-2516
E-MAIL: CITAS@U.WASHINGTON.EDU

SUBSCRIPTION FORM

(E-mail subscribers please feel free to respond electronically to HIDunsta@Ruby.indstate.edu)

Name:

Address:

E-mail address, if any:

Telephone and fax numbers:

Brief statement of research interests:

Type of subscription; please tick (✓) as appropriate:

E-mail ( ) English hard-copy ( )
Chinese hard-copy, simplified characters ( )
Chinese hard-copy, full characters ( )
Chinese e-mail if feasible ( )
International airmail, US$12 ( )

Help offered (if any); please tick as appropriate:

Serve as regional distribution coordinator ( )*
Serve as regional news-hound ( )
Translate newsletter after March, 1995 ( )
Help with scientific/technical translation questions ( )
Contribute to bibliographical review ( ). Please specify language(s)/subject(s) here:

* Additional questions for distribution coordinator volunteers:
Proposed subscription rate in your national currency (equivalent to US$10 or less):

Name of account to which cheques etc. should be payable:

Any other necessary information:

CHECKLIST FOR REPORTING NEWS ITEMS

News of forthcoming conferences/workshops/seminars:

Title:

Dates:

Place:

Deadline and format for paper proposals:

Contact:

General information:

News of publications/electronic & other machine-readable materials, etc.:

Reports on research work in progress (please attach):

Reports on recent conferences/workshops/seminars/panels (please attach):

New teaching materials (including videos):

Other news/comments/suggestions:

The *Chinese Environmental History Newsletter* is edited by Helen Dunstan; the English-language version has been produced with the help of the Publications Office of Indiana State University. The views expressed in the newsletter do not necessarily reflect those of the editor. Subscriptions (US$10 or $12 *per annum*) should be sent to Helen Dunstan, Dept. of History, Indiana State University, Terre Haute IN 47809; please make cheques etc. payable to Chinese Environmental History Newsletter.

Any contributions for the autumn and spring editions of the newsletter will be gratefully received.

GOOD NEWS FOR SUBSCRIBERS WITHIN FRANCE

Subscriptions within France may be sent in French currency to Frédéric Obringer, Route de Laval, 77120 Mauperthuis (tel. 64 03 07 20). The rate is 50.00 FF. Please return your completed subscription form and news reporting checklist to M. Obringer; he will forward them to me after entering the subscription information in his records.

Please note that my e-mail address was given incorrectly in the *Etudes Chinoises* newsletter. The correct address is HIDunsta@Ruby.indstate.edu.

GOOD NEWS FOR SUBSCRIBERS WITHIN JAPAN

Subscriptions within Japan may be sent in Japanese currency to Professor Seo Tatsuhiko, Institute of History and Anthropology, University of Tsukuba, Tsukuba, Ibaraki-ken (postcode 305). The subscription is 1,000 *yen* per year. Please return your completed subscription form and news reporting checklist to Prof. Seo; he will forward them to me after entering the subscription information in his records. For the directory of subscribers, please give your name and address in both *kanji* and *rōmaji*.