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The relations of environmental history and historical geography

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This paper has three parts. The first examines the emergence of environmental history as a distinct subset of the history discipline. Its development is discussed, beginning with its roots in North American conservation and intellectual history, its evolving ethical and radical emphasis, and ultimately its more internationalist and interdisciplinary views of humans in nature. The various models (mainly anthropological) and agendas for the study of environmental history are examined. The second part considers the contribution of primarily historical and cultural geographers to the larger human/nature debate raised by environmental history. Attention is focused on four areas of study (1) the transformation and modification of earth, (2) global expansion and the capitalist economy, (3) the place of humans in nature and, (4) the interrelationships between habitat, economy and society. The third part surveys some of the implications, commonalities and challenges of the discourse for both disciplines. It is concluded that both disciplines have much to contribute and learn from each other in "the telling of place stories".

One of the most exciting things to happen in American history this century has been the emergence of environmental history as a recognizable sub-set of the larger discipline. In barely twenty-five years it has spawned an extensive new literature, posed many new questions, and re-opened debate on many old issues. It goes without saying that any branch of learning that combines in whatever permutation the elements of time and the environment must be of interest to historical and cultural geographers. And yet, with notable exceptions, there is no wide appreciation of the nature of the environmental history enterprise, and it is even clearer that many environmental historians are ignorant of what geographers can, and have, contributed to what Olwig has called the "society/nature problematic".[1] The difficulty of how to synthesize and integrate environmental phenomena with cultural and socio-economic change, especially technological change, is central to both environmental history and historicocultural geography.

What follows is not an attempt to summarize the whole field of environmental history; that is too vast. There are excellent reviews of recent publications and their significance in the *Environmental Review*, running since 1976, and the longer-running *Journal of Forest and Conservation History* (since 1957), although the shift to a concept of an environmental history wider than the forest alone did not truly emerge until the late 1980s.[2] There is also an excellent review article by Richard White, on which this article draws for useful insights.[3] Nor is this paper an attempt to summarize all that primarily cultural and historical geographers in the Anglo-American world, have contributed to the debate of the place of humans in nature through time. That would simply be impossible as it would encompass the development of geography itself. Rather, this

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paper falls into three parts in the hope that each part will inform the other. The first part is concerned with the development of environmental history as a coherent body of thought and charts its evolving interests. The second is concerned with the contributions of historical geography to the agenda as set out by environmental history. The third concludes with an assessment for both subjects of the challenges and implications of the discourse.

Environmental History

The American hearth.

Environmental history as a conscious subset of knowledge probably first took root in America. Americans have long had an intense interest in the relationship between people and their environment, between the unsettled and the settled, between pristine wilderness and humanly created scene. This interest has well-known antecedents starting in 1893 with Frederick Jackson Turner's "Significance of the Frontier in American History", through to Walter Prescott Webb's *The Great Plains* (1931) to James Malin's *The Grassland of North America* (1947), to name but a few major works.[4] Often accused of crude determinism (or in the case of Malin, ecological dabbling) these works came into disrepute, and studies of people/land relationships declined with the general decline of Western history.

Two books were seminal in the rise of a more focused environmental history during the later 1960s—Sam Hays's *Conservation and the gospel of efficiency* (1959) and Roderick Nash's *Wilderness and the American mind* (1967).[5] The first grew out of a rich tradition of political/conservation history, particularly forest and soil conservation history,[6] the second out of a scholarly tradition of intellectual history, particularly the works of Leo Marx, Henry Nash Smith and Charles Sandford.[7] Both Hays and Nash achieved a wider, and more generic and imaginative view of their topics than any had before. Hays was not interested in conservation for its own sake but saw it as part of the "larger political structure of the Progressive era". Nash's exploration was novel as it moved from the well-worn paths of the pastoral ideal to the wilderness ideal, which, he thought, provided the key to the American psyche and which others have certainly seen as "the mythic core of the American experience".[8] Both drew inspiration from, and gained prominence because of, the general ground-swell of interest in matters "environmental". Environmental history, said Worster, was "born out of moral purpose".[9]

It is difficult to know when the term environmental history was first used but Nash says he first listed a new course with the title "American Environmental History" in Santa Barbara in 1970 and in the same year used the words in a contribution to a compendium to *The state of American history*.[10] In outlining a general philosophy of what he was doing he suggested that environmental history was simply "the past contact of man with his total habitat", and involved "a continuum between past and present". In addition, environmental history was more than the sum of human events, it was holistic, and this demanded cooperation with other disciplines.

Running through his thinking were two important emphases. First, the environment was synthetic—human made—and therefore was "an historical document" revealing society's culture and traditions, and consequently all manner of human values, ideas, ambitions and fears. Secondly, environmental history was radical and fitted well into the framework of New Left history. It was, he said, history "from the bottom up", except, "that here the exploited element would be the biota and the land itself". Drawing

inspiration from Aldo Leopold's concept of "the land ethic" Nash saw environmental studies as the graduated expansion of ethics from humans to nature—from the individual, through the family and nation to mammals and all life, and eventually even inanimate objects such as rocks.[11] Later he paralleled this notion with that of the expansion of the concept of legal rights that came with the "rounding out of the American Revolution".[12] Also central to Nash's concept of environmental history were the intellectual traditions of America—the frontier experience, wilderness, paradise, transcendentalism, as well as pantheism and reincarnation. Transcendentalism, in particular, was particularly fruitful, he thought, as it got to the nub of the ecological perspective by seeing the world as two hemispheres—"fact" and "truth"—which corresponded to physical reality and spiritual meaning.

Nash's environmental history, then, was deeply rooted in the intellectual traditions, experience and case studies of America. It was aesthetic, ethical, and radical. Looking back in 1985, Richard White argued that this early flowering of the subject was not a major departure; it merely represented a continuation of the political and intellectual history of the conservation movement and its successor, the environmental movement. Environment was seen increasingly as wilderness (witness the spate of works on National Parks as demarcated wilderness), and consequently environmental history had "lost a certain breadth" of the Malin- and Webb-like concerns of social/environmental interaction. These became "the exclusive possession of historical geographers", such as Carl Sauer, Andrew Clark, and Donald Meinig.[13] Nature became a mere backdrop to human events, nowhere more so than in the work of Nash, for all his avowal of man's "past contact with his habitat".

A more serious criticism was that subsequent work on conservation and wilderness by other environmental historians became increasingly sterile and case-study oriented. With the notable exceptions of those studies which adopted a political economy approach, such as Robbins in his account of the U.S. lumber industry and Hoffman and Kahrl on the Los Angeles-Owens Valley water controversy, they assumed orderly economic development and lacked interpretative synthesis.[14] All studies tended to presumed an American mind and character that had both entity and uniformity. Many were also marred by either environmental partiality or transcendent mysticism, in which nature was regarded as an immanent, spiritual force, that verged on environmental determinism at times.[15] They ignored the cultural world of the society in which people were operating and living.

A broadening view

In 1980 Bilsky's *Historical ecology: essays on environment and social change* served as the next programmatic statement on the nature of environmental history. It broadened the field to emphasize the variety of institutional or structural responses in societies throughout history and the world, to resource scarcities and ecological crises. Bilsky was clear that human relationships with the natural world were not "unidirectional" but "mutual", but how, precisely, society and nature interrelated was yet to be understood. The eclectic nature of the contributions indicated to Bilsky the "diversity" of environmental history, its youth, and "the lack, at present, of precise disciplinary boundaries".[16]

The amorphous nature of the subject was something which troubled other practitioners. In the next year Thad Tate wrote a short but significant piece on the "Problems of definition in environmental history". He saw environmental history as part of the fragmentation of history into many new fields such as women's history, black history,

American Indian history, and historical demography, but he bemoaned the fact that each of these appeared to:

> . . . elicit more or less instant recognition of their approach and content. To say, however, that one teaches, or proposes to teach environmental history, is to invite the opposite reaction, to draw a quizzical look at best, if not an explicit request for explanation.

Some of the scepticism, he thought, could be attributed to the "innate traditionalism of historians", a distrust of the "trendy" and the suspicion that many environmental historians "operate in an excessive spirit of advocacy". Nonetheless, he was convinced that environmental concern represented a major shift in understanding and attitude that cut "deeply into existing culture" and which was symptomatic of "an even more pervasive social and cultural malaise". If issues such as resource and energy exhaustion, population expansion, the effects of toxic substances, the disappearance of habitats and species were that fundamental, vital and pervasive, then the whole question was worthy of historical investigation. But while breadth was important, the sheer abundance of literature necessitated the need for manageable limits because one ran the risk of "having to regard all human history as in some degree environmental in nature".[17]

Tate's view of the intellectual content of environmental history was broader than Nash's but, like the latter's it was fashioned to a large extent on how it could best be taught, reflecting personal interests and favourite reading.[18] It had a four-fold structure starting with human perceptions and attitudes of the natural world; then considering technological innovations, from stone axes to nuclear reactors and their effects on the environment; thirdly, an understanding of ecological processes; and it culminated in a consideration of the "public" response in the form of debate, legislation and political regulation, something which historians most readily understood, and on which a vast literature already existed in the "conservation history" of old.

Tate argued that the problem for environmental history was how to tie these themes together in order to achieve a balanced and comprehensive understanding of the relationships between culture and the environment that was intellectually satisfying; only cultural anthropologists had come near to that goal.[19]

All history as natural history

Dissatisfaction with the content of environmental history and a feeling that issues were wider than the American experience alone, produced new departures. The traditional concerns of conservation/preservation, seemed incapable of capturing the emerging environmental and more scientific ecological and ethical concerns associated with names like Rachel Carson, Aldo Leopold, Barry Commoner, Garrett Hardin, and William Leiss. Step by step, the debate on content became more internationalist and interdisciplinary. Tate had set the ball rolling and now it was put firmly into play by Donald Worster, whose empirical and theoretical writing on environmental history has been particularly stimulating and influential.[20] Worster had come to the study of environmental history with the impressive credential of his work on the history of ecological ideas, *Nature's economy*, published in 1977. In that seminal work he made a conscious attempt to "put science back into history—into the history of people, societies, cultures and economies". In this task he was influenced by the work of Horkheimer and Ardono who asserted that since the eighteenth-century western thought had divided into two contradictory stances—one dedicated to freeing the mind to search

for values, order and purpose in life (i.e. transcendence), and, on the opposite side of the dialectic, the other which urged the domination of nature and its reduction to a "mass of miscellaneous stuff". This dichotomy led to the spiritual alienation of people from nature, and from there to the commodification and industrialization of the living world. *Nature's economy* was a sustained examination of the way in which ecological discoveries reflected cultural values, and led to a deeper awareness of "the roots of our contemporary awareness of nature" (including popular environmentalism). Of one thing he was sure, nature was orderly, stable, and self-equilibrating, which set of ideas had practical and ethical implications.[21]

Building on this exploration of science and culture, Worster's 1984 paper on "History as natural history" set out to develop a new perspective on environmental history, which was "still struggling to be born". Evolution and history stubbornly remained separate realms of discourse. "There is little history in the study of nature", he wrote, "and there is little nature in the study of history." An ecological perspective was needed in the study of history.[22]

In his search for "models" which would integrate history and nature he turned to the work of the historians like Webb, Malin and Wittfogel, all of whom had attempted to break down the interdisciplinary fences, and who had incorporated an environmental *qua* ecological mode of analysis into their writing on culture. Wittfogel's work on hydraulic societies was particularly significant.[23]

For various reasons the influence of these writers was restricted; Webb and Malin suffered from the intellectual immaturity of their times, their remoteness from "a more demanding intellectual milieu", and were regarded by historians and geographers alike as determinist dabblers; Wittfogel fell foul of his own political shifts, first violently pro-marxist then violently anti-Communist. But if Wittfogel was largely ignored by historians he was taken up enthusiastically by ecological anthropologists (or cultural ecologists). His insistence on comparative analysis and the search for regularities in hydraulic societies was echoed particularly by Julian Steward, who thought that there were basic environmental and technological forces shaping individual cultural cores.[24] From the late 1950s onwards the ecological approach to anthropology produced a number of impressive monographs and theoretical statements, by Conklin on Phillipines agriculture, Sahlin on Fijian social systems, Lee on the !Kung bushmen economy, Geertz's analysis on two contrasting Indonesian agro-economic systems, and Rapapport on the energy flow in a New Guinean economy.[25] All these studies were firmly rooted in environment and technology, and erased the line between biology and culture. Phrases like energy flow, ecosystem, climax state, homeostasis, positive and negative feed-back mechanisms pervaded them.

But there were problems in extrapolating the society/environment relationships in these studies to modern industrial societies. Tate had already noted that most such studies were of socially-bounded communities and had a restricted time span. However, environmental historians often wanted to study groups as large as nations over a long time span. Worster also noted that cultural anthropologists had a tendency to oversimplify complex behaviour. For example, culture was viewed in either starkly cognitive or materialist terms. The cognitive approach largely ignored nature; on the other hand the cultural materialists, such as Marvin Harris, saw culture, at bottom, as a quest to get the most nutrition out of a situation at the least cost. Marxists criticized both because they ignored, for example, power relationships and the ability of certain groups to exploit the environment and other groups. Both sets of materialist interpretations, whether cultural or marxist, either ignored or could not evaluate, a whole range of human attributes such as "imagination, free-will and consciousness".[26] En-

vironmental historians, however, were well aware of the power of these non-material attributes.

Although these ecological anthropological models had limited applicability in the formulation of environmental history, they did pose questions and suggest approaches. But environmental history could not adopt any one model, nor, equally, could it add any new theory; to do so would imply that history was a self-contained discipline that had its own epistemology. Rather it was "more a clustering of interests than a discipline" and had never had a unique, self-contained paradigm in which to work. If historians had anything to add to ecological analysis it was an awareness that all generalizations "must be rooted in specific places and times".[27]

For Worster, then, the most fruitful developments would come in a quadruplicity of related research areas, which had some parallels with the programme suggested by Tate—the evolution of industrialism and capitalism, and the associated rise in population; hunger and food production and the latter's effect on the land; the frontier and the pioneering process; and lastly the regulation of exploitive behaviour through "negative feedback mechanisms". None of these themes would provide all the answers to the complexity of society's interaction with nature. However, the agenda had now been widened and defined more clearly, and an ecological viewpoint had opened the eyes and deepened the perspective, something which the volume by Bailes on *Environmental History* which appeared in the following year more than demonstrated.[28]

"The Ends of Earth"

By 1988 Worster had expanded and elaborated his ideas in "Doing environmental history" in his volume of edited essays *The ends of earth*. Environmental history was simply "about the role and place of nature in human life". While accepting the idea that "nature" could be a human artifact environmental history had to move beyond the "self-reflecting world of humankind" to include the non-human sphere. Thus there were three levels or clusters of issues on which the programme could proceed. First, there was the question of how nature is organized and functions. Secondly, how the socio-economic realm interacts with that nature, which concerns tools, work, social relations and modes of production. Thirdly, how humans have a dialogue with nature through myths, laws, ethics, perceptions, and other structures of meaning.[29]

These clusters of concern could then be converted into more discreet topics, some of which were had already been outlined in his 1984 paper. They were:

1. The reconstruction of past environments; "learning what they were and how they functioned before human societies entered and rearranged them". In this task an understanding of ecology was the key requirement.
2. The material culture of a society and its modes of production which would, of course, include the evolution of capitalism and the regulation of exploitive behaviour.
3. How whole cultures rather than individuals perceive and value and interact with nature through laws, perceptions, myths, and ethics, any of which may become ecological agents.[30]

Finally, in noting the need for environmental historians to reach beyond their disciplinary boundaries to other subjects, particularly ecology and anthropology, but also the nature sciences and theology, Worster admits that he has not mentioned geography. He pays handsome credit to the work of Sauer, Meinig, Darby, and others for their insights. One of their great contributions had been to show how "our situation is no

longer shaped by environment: rather it is increasingly we who are doing the shaping, and often disastrously so"[31], which seems an appropriate point to shift the focus from the development of environmental history to the contribution of geography.

Historical Geography

There is much in the concepts and phraseology of what environmental historians say which historical geographers will find familiar. It might even fill them with apprehension that many of the topics and emphases that are (were?) their prime concerns are presented "as themes for environmental history, but with much more assurance and certainty that they are the core of the new subject".[32] Simply, some environmental historians are doing excellent historical geography on topics that historical geographers have either not perceived or ignored. To take just one example, not since the largely pictorial geographical-historical work on Chicago of Mayer and Wade (a joint geographer/historian team) in 1969 has any historical geographer considered the striking and pivotal role of that great city on Midwest land and life, until William Cronon's recent dazzling analysis in *Nature's metropolis*.[33] In a spirited rally-cry Trimble has highlighted the irony that geography:

> . . . the social science with a long tradition of earth science—should relinquish ground to a field like history with no physical underpinnings[34].

Space and time, nature and culture, in various mixes, have been their stock-in-trade and a major strength of all geographers, and they have been trained to consider the totality of phenomena in place. Historical geographers in particular ought to be in the forefront of the enterprise and debate; their parentage is impeccable—Vidal de la Blache, Fleure, Sauer, Estyn Evans, Darby, and Lowenthal to name but a few, and their products, as instanced below, are exemplary. So what went wrong?

It could be argued that during the 1950s–1970s geography relegated the environment in the widest sense. Familiarity with the presence and workings of nature seemed to breed a contempt for it. Perhaps nature raised the spectre of the deterministic reasoning of Huntington and Semple, and the tradition of denying "environmental influences" froze the critical mind. Also, there can be no doubt that the epistemological ferment of recent decades and what seems to be geography's ever-pressing need to find new paradigms and overarching explanations has diverted energies and interests away from the basic question of humans in nature, which many would regard as the nub of the subject. For Turner, structuralist, marxist and realist perspectives may have "broadened the field with some success" but the danger was always that the social side of the relationship could become so dominant that it reduced the physical environment to "nothing more than a passive stage on which socioeconomic forces battle through a series of conflicts", in which culture, tradition and human agency were of little consequence.[35] Stoddart would even go so far as to say that many human geographers had persuaded themselves "that the physical world does not exist".[36] For Kates geography's search for monism either denied or relegated the ancient geographical tradition of examining "man-land" themes, or, as he would prefer to call them, "human-environment" themes. It was the "road not taken".[37] Consequently, the charge that Worster levels at history that hitherto it had been too "anthropocentric" and had separated the unity of humankind from the rest of nature on which it depended could also be levelled at geography.

Yet, despite these concerns and fears, if the dialogue is reversed and geographers were

to tell historians of some of their distinctive methodological and substantive contributions to the society/nature debate, there would be an impressive body of material to display that would vie with that of anthropologists. It would be possible to evoke, as Olwig did in 1980, the work of Joachim Schouw, George Perkins Marsh and Elisée Reclus, or even Vidal de la Blache. But there must be some limits. But what? One is reminded of Ronald Abler's presidential address to the Association of American Geographers; "What shall we say? To whom shall be speak?".[38] We know to whom we are speaking—environmental historians—but what shall we say to them? That all geography is relevant to their quest? Not quite. But some of it has much to offer. What follows is confined to the more recent past, and is presented as a few compressed sketches of the accomplishments and promise of work in those parts of historical geography in particular, and geography in general, that most directly address some of the issues raised in the debate on the nature and content of environmental history. The sketches are arranged under four headings (1) the transformation and modification of earth, (2) global expansion and the capitalist economy, (3) the place of humans in nature, and (4) the interrelationship between habitat, economy and society.

The transformation and modification of Earth

Geography, less than most disciplines, has not totally compartmentalized society and nature, if only because of the awareness that humans change and create geographies. Raymond Williams's dictum that "the idea of nature contains, though often unnoticed, an extraordinary amount of human history" has been fully espoused by them.[39] Without doubt, the transformation and modification of the earth has been the most important emphasis in historical-geographical writing, often through an elucidation and explanation of past landscapes. At this point it is worth noting that for the geographer the ambiguous and multi-faceted concept of landscape, with an emphasis on the visual, tends to substitute for the equally difficult to define concept of environment for the environmental historian.

A seminal and influential figure in this must be Carl Sauer, whose name is indissolubly linked with cultural/historical geography. The writings of, and interpretation of, Sauer are copious[40] but suffice it to say that Sauer was concerned with the fashioning and modification of natural landscapes by human culture to produce cultural landscapes.[41] He was also concerned that geographers should study "man as an agent of physical geography" who exerted direct effects on climates, soils, plants and animals.[42] These themes culminated in the opportunity to plan the *Man's role in changing the face of the Earth* symposium in 1956, which was followed by a number of substantiative exemplifications of the bigger theme.[43]

With few exceptions[44] geographers did not follow-up the "man as agent of physical geography" theme but concentrated instead on that of "cultures as agents of modification". In the latter the intellectual descendants of Sauer are many and the "Berkeley School", while a convenient label for an approach that is synonymous with human/environment relationships in a cultural/historical mode, mainly in Latin America, does scant justice to the variety of approaches and eclecticism that typified the output of that department.[45] For example, James Parsons, ("never an intellectual clone" of Sauer), has produced a striking array of studies of transformational processes and situations.[46] A more direct line of influence, perhaps, comes in the work of William Denevan on North American historical demography (supervised by Sauer), and Billie L. Turner on pre-Columban agriculture in central America (supervised by Denevan).[47] It was Turner who

organized the symposium that produced *The Earth transformed*, the direct successor to the *Man's role* volume, and latterly has been involved in studies of historical and contemporary global land-cover/-use change.[48]

If these studies, both historical and contemporary, have one thing in common, it is that nature/society relationships are rarely unilinear. While environments present choices, cultures re-fashion them, only to present new environments for cultural reproduction. These intricate, sensitive, even dialectic, interactions between people and place are classed by some of these practitioners as being cultural ecology rather than historical or cultural geography.

The dominance of West Coast American geographers in transformational and modification studies should not blind one to the contributions of others in other parts of America, or other parts of the world. For example, in Australia, the substantive work of geographers such as Heathcote, Meinig, Waterson and Williams, has produced a clutch of fascinating studies on initial settlement, environmental mis-perception, modification and painful adjustment to an often harsh environment.[49]

Different intellectual paradigms exert a strong influence on the understanding of transformational processes. In America the prevailing myth has been of a "New World", perceived primarily as a pristine wilderness nearly empty of people, a concept promoted by nineteenth-century primitivist and romantic writers, and even by contemporary condemners of Columbus and the European encounter. Hence transformation is perceived to start from some hypothetical virgin state. But the longevity and crucial nature of past human impacts on ecosystems has been more readily accepted in the longer-settled (and better documented) lands of Europe. There, few would suggest that virgin land exists any longer; the whole landscape has to be considered as "one great cultivation effect".[50] This has had two consequences; physical scientists, particularly palaeoecologists, have always contributed to the idea of a human foundation for what can be seen, often collaborating with archaeologists as well as geographers,[51] while human geographers have never been so directly concerned with either the intellectual implications of human-nature relationships, or with initial change in the way that North American cultural geographers have. In Europe, continuity has been the theme not impact; the metaphor of landscape as palimpsest replaces that of the landscape as a clean slate.[52]

The difference is exemplified in the work of Clifford Darby, a dominant figure in British historical geography. In seeking to define historical geography as a discipline during the 1940s and 1950s he explored various methods of coping with the abundance of human action through time. The humanized landscape provided an incontestable synthesizing focus for the incorporation of a time-element in geography (and thus distinguished it from history). In contrast to Sauer, for example, humans, their ideas, and relationships with the environment were relegated to the task of reconstructing past geographic (cross sections), and to understanding processes of change (vertical themes).[53] Yet, despite the criticism that Darby's landscapes lacked a human element and were "bloodless", a hallmark of his work was the painstaking historical research on the reconstruction of past geographies, as witnessed in the monumental *Domesday Geography of England*, and in the delineation of major transformational processes such as themes of draining, forest clearance, heathland reclamation.[54] In the larger picture of the human modification of earth these processes are fundamental, especially in the making of the European environment/landscape, and even have wider, global implications.[55] The attempt to reconstruct landscapes for various times past, and to calibrate the rate of change in its constituent elements is now at the forefront of the

endeavours of some environmental historians, and it is the first task in Worster's four-fold agenda of 1988.[56] In a slightly different form as the modification of vegetation, animals, soils, waters, landforms and climate, the same transformational theme is an underlying *motif* in Goudie's *The human impact*, one of the most successful texts on humanly-induced environmental change, now in its fourth edition.[57]

Global expansion and the capitalist economy

The transformation of the earth has occurred for many reasons, but two are paramount: the explosive increase of European population and its movement overseas, and the rise of the modern capitalist economy and its evolution into industrialism. Marsh identified the first and Marx the second. Since the 1950s geographers have contributed a vast amount to these themes, often under the heading of frontier studies, or comparative colonization. Yet, as early as 1938 Sauer produced two perceptive statements on the detrimental effects of human agency on earth. Drawing on Ernst Friedrich's concept of *Raubwirtschaft*—destructive exploitation—he wrote about the economic plunder of natural resources that came about with the diffusion of new and technologically superior societies.[58] Though no marxist Sauer noted the "dark obverse to the picture, which we have regarded scarcely at all" in the euphoria about colonial expansion and the romanticized frontier ethos. He identified the central role of destructive exploitation in the growth of "wealth" of the modern world, that was accepted commonly as a normal process, excused and even approved of as a "stage" of economic "development". Elsewhere he talks of the exploitation of environmental "surplus" and the precarious nature of the western capitalism which looked increasingly "like a house of cards". It was as if he was groping towards a some sort of world systems analysis; these papers were just a "few notes toward a history of the modern age. The modern world has been built on a progressive using up of its real capital."[59]

Perhaps the willingness of Huntington and Semple to take bold leaps where other geographers feared to treat stifled further geographical enquiry along these lines, but historians such as Wallerstein, McNeill, Wolf and Jones (originally a geographer) have not been so timid.[60] Since 1945 most geographical studies of expansion (and there have been many) have been written as regional or at least cultural regional studies, and while they are exemplifications of the bigger themes they say little about the macro-historical or macro-geographical perspective that one might have expected. Of all the historical/cultural geographers perhaps only Meinig, in his various explorations of the nature of imperialism and in *The shaping of America* has been able to command the Webb- or Malinlike sweep needed to chart these themes of global expansion, though admittedly with virtually no "environmental" commentary, except by implication.[61]

The concerns of Sauer over the geographical/environmental implications of "the industrial revolution . . . the expansion of colonization, the toll of raw materials funnelled through world commerce into consumer goods" and what was happening to "the individual, the non-conformist group, by more and more organization of industrial society"[62] have not been addressed by historical geographers but by economically or politically minded geographers conscious of the importance of an historical perspective, such as Agnew, Brookfield, Corbridge, Smith, and Taylor, some with an explicit marxist orientation.[63] The "intersection of macroscale theory and thick empirical description", displayed, for example, in Crosby's *Biological imperialism*[64] is something that historical geographers could well contribute to the larger debate about global expansion, industrial capitalism and the environment.

The place of humans in nature

The place of humans in nature has been a major preoccupation of geographers. In 1956 Clarence Glacken's essay on "Changing ideas of the habitable world' was like an *hors-d'oeuvre* for the feast that was to follow eleven years later with his *Traces on the Rhodian shore: nature and culture in western thought from ancient times to the end of the eighteenth century*. It must be, said David Hoosen "one of the most scholarly books written by a geographer, or by a historian of ideas in this century"; it shines like a beacon in the darkness of our knowledge of the place of humans in nature. The comprehensiveness and scope of the work is dazzling and the care and range of the references is unexcelled.[65]

Ill-health prevented Glacken from completing the companion volume on these themes for the nineteenth and twentieth centuries. However, three papers published between 1970 and 1973 give one a hint of what it might have been like, Glacken's rationale was disarmingly simple and straightforward and linked the history of ideas to contemporary environmental concerns by giving them historical and intellectual underpinnings. "If the history of thought teaches us anything about culture and environment", he wrote in "Man against nature", "it is the importance of the conceptions which people have of both—whether these conceptions are religious, philosophical, scientific or utilitarian."[66]

Few geographers have taken up the challenge of bringing the themes pursued by Glacken into the more recent past. Yi-Fu Tuan's *The hydrological cycle and the wisdom of God* related the history of the hydrological cycle to concepts of the harmony of nature and the dominance in Western thought of the idea of a divinely-ordained Providence. Much of Tuan's subsequent work has placed humans squarely in the environment and are cast largely in perceptual and existential terms, always reflecting sensitively and humanistically the world lived in by people, so that the "real" environment is stressed as much as abstract thought about it.[67] Interestingly, Olwig was a student of Tuan's, but his work has tended to focus more on the ideological underpinnings of human action in the landscape.[68]

Coming from another tradition, that of the scholarly eclecticism of J. K. Wright, has been the writing of David Lowenthal. Lowenthal's first major work was a biography of George Perkins Marsh (often called the font of American conservation: Lowenthal also edited a new edition of *Man and nature* in 1967), followed by an edited volume of essays which commemorated Wright's influence through studies which compared environmental "reality with the fantasy" in order to examine "the impact of environmental ideas on thought and action, and ultimately on the environment itself".[69] But Lowenthal's subsequent work has entailed deeper thinking about the imagined world of preservation, conservation and environmental action, as well as the actuality of these. In particular, *The past is a foreign country* is a *tour de force* in its breadth, eclecticism, and understanding of western society's problem of grappling with and understanding the accumulation of the past which we call variously, heritage or culture.[70]

Finally, consideration of the role of humans in nature must acknowledge another, more recent vein of geographical writing, that of the radical and marxist geographers. According to Smith nature separate from society had "no meaning for Marx; nature is always related to societal activity" both materially and ideally. Thus, nature cannot be known as an external reality but only as a social production. Central to this interpretation is the idea of a "first" and a "second nature", first nature being the use-value of the materials of the natural world, second nature being "those societal institutions which facilitate and regulate the exchange of commodities, both directly and indirectly" i.e. nature produced by human activity. Going further still in the marxist

critique of concepts of nature Fitzsimmons would argue that even first nature is a social construct; that it is a concomitant of urbanization in the political and ideological reworking of everyday life "towards the urbanization of consciousness which has disguised and excused the development of capitalism".[71]

In some ways the marxist viewpoint takes us full circle. In 1963 Glacken wrote about "This growing second world within the world of nature" which drew on Cicero's observations about human transformation of earth, which created "a second nature in the natural world". It was "a masterly exposition of the ancient and early modern background to modern ecological thought",[72] given the current debate on ecological analogies and thinking.

Interrelationships among habitat, economy and society

Early this century geographers at Chicago focused on the human economic adjustment to the environment,[73] which may have been the intellectual font of the spate of studies that followed in the 1950s onwards on the perception, adjustment and management response to natural hazards, typified in the work of White, Kates and Burton.[74] A parallel development in Chicago during the 1920s came from urban sociologists such as Burgess, Park and McKensie on the group adaptation to environment, population and societal organization.[75] Both these approaches were applied, somewhat acultural and technocratic, and definitely "western" in orientation.

A different tradition, was that emanating from Berkeley. Although this brand of cultural ecology drew on the concern for human impacts and modification, landscape history and cultural morphology, it was more to do with how culture and nature were linked by adaptive strategies, and how successful adaptions led to ecological success, usually in traditional societies.[76] It was eclectic and interdisciplinary, and drew additional inspiration from a number of sources. For example, there was the work of the British geographer Daryll Forde of the Department of Anthropology and Geography at Aberystwyth whose work, *Habitat, economy and society*, had a profound influence on many other historical and cultural geographers, and was continued by Fleure, Bowen, and Estyn Evans.[77] Other stimuli came from anthropologists such as Steward, Geertz, and Rappaport, among others, who emphasized the link of cultural adaption between society and nature, sometimes through the formative role of ritual,[78] and it was reinvigorated by the work of Australian geographers working with anthropologists in New Guinea, particularly Harold Brookfield.[79]

Thus, while stemming from the historical/cultural geographical tradition, cultural ecology differs from it in that it emphasizes cultural processes instead of analysing the impacts of humans on the environment or visible landscape. It focuses on small groups and singles out for consideration such topics as food production (e.g., early irrigation systems) demography (e.g., population cycles) and ecological sustainability (e.g., abandoned agricultural landforms). Understanding of such complex relationships is furthered by incorporating elements of the methodology of ecological theory (e.g., nutrient and energy flows, equilibrium states), systems thinking (e.g., feedback loops), cybernetics and information theory, and by adopting the analytical modes of anthropologists.[80]

It is easier to view society as an interlocking human ecosystem if the object of study is a relatively small and simple one. Thus, much cultural ecology has focused on traditional, peasant farming systems in New Guinea,[81] Africa,[82] and Latin America.[83] While intrinsically interesting, such studies also give a fresh view on third world

development and the modernization process by emphasizing what seems to be the intuitively good ecological reasoning behind traditional systems.

In recent years the utility of cultural ecology has been broadened by adopting a political economy approach, which shows how micro studies integrate into regional, national and even world economies, or can be elaborated at a higher order,[84] and how political institutions and structures affect resource use, such as in the work of Blaikie and Brookfield on land degradation and Watts on famine.[85]

Challenges and implications

Before achieving a satisfactory synthesis of nature and society both disciplines face challenges. Foremost is that of extrapolating the society–environment relationships from bounded traditional communities to modern industrial societies, and secondly, of extending restricted time spans to centuries of change, for neither of which a really satisfactory answer has been found. A third problem is the over-simplification of complex behaviour patterns and reductionism. Fourthly, teleology has been smuggled into ecology so that there is a widespread and popular idea that ecology will provide a moral standard for human action. But ecology is now suspect as ecologists themselves seem increasingly to question long-held ideas of ecosystem, equilibrium, steady-state, climax and community. Ideas about the disturbance dependence of species, chaos, dynamism and scale hold much more sway.[86] If the tenets of ecology are no longer a yardstick of how to treat nature and assess damage to it, then what measures are available to legitimate the condemnation of modern society, and also, what reliance can be placed on the work of cultural ecologists and cultural anthropologists?

Fifthly and finally, the objectivity of both natural science and history, the very "bread and butter" of both disciplines, has been challenged. In a post-Kuhnian intellectual milieu it would be a brave person who "claims to know the *truth* about nature. The most they can claim to know is the *relative* truth about nature, one whose meaning is governed by a particular scientific paradigm".[87] From this view point, not only ecology but all science is a social construct and there is no objective reality on which to draw. In the realm of history post-modernists and deconstructionalists would assert that language is paramount and meaning is not fixed; in other words, there are a plurality of histories.

In an attempt to grapple with these questions Cronon has analysed various accounts of the Great Plains. But he finds the result unsatisfactory because each version denies "the past (and nature) as real things to which our storytelling must somehow conform lest it cease being history altogether". In the midst of the uncertainty he draws consolation from the idea that historical narratives are bounded in three ways; they cannot "contravene known facts of the past", they must make "ecological sense" and, thirdly, admitting that each of us writes the way we do because of who we are, we do write as members of communities and "cannot help but take those communities into account as we do our work."[88] Nevertheless, despite these consoling ideas, the un-objective character of historical narrative remains.

So, in summary the foundational basis of many works on the society/nature debate are being questioned because the "facts" of history and nature are being questioned. Yet, whatever the outcome of these debates I am inclined to think that what we need is more curiosity and not sharper logic. Good environmental history and good historical geography could well be regarded as a series of place-stories, though we should remember that we do not just tell stories about nature, but "stories about stories about nature"[89] just as we tell stories about stories about people.

The implications of the dialogue here are that those historical geographers who wish

to embrace the people-nature perspective, can learn much from the debate and substantive examples of environmental historians about the problems of reintegrating humans with nature. Equally, environmental historians might well look beyond anthropology for inspirational leads and ponder what can be learnt from the rich and multiple traditions of historical geography. However, stressing the differences and putting academic labels on pieces of work is of less importance than highlighting the similarities and the knowledge of what each has to contribute to the central issues of how people interact with the natural world. The tension between the two disciplines can be a catalyst to new work; both wish to find intelligible connections between data on society and nature and to make those connections plausible through generic explanations.

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Notes

[1] K. R. Olwig, Historical geography and the society/nature "problematic": the perspective of J. F. Schouw, G. P. Marsh, and E. Reclus *Journal of Historical Geography* **6** (1980) 29–46

[2] *Environmental History Review* (1976–) American Society for Environmental History. *Forest and Conservation History* (1989–) was first published as the *Forest History Newsletter* (1957–58); as *Forest History* (1959–74); and as *Journal of Forest History* (1975–1989). Forest History Society, Durham, N.C

[3] R. White, American environmental history: the development of a new historical field *Pacific Historical Review* **54** (1985) 297–335

[4] F. J. Turner, The significance of the frontier in American history *Annual Report of the American Historical Association for 1893* (Washington, D.C. 1894); W. P. Webb, *The Great Plains*, (Boston 1931); J. C. Malin, *The grassland of North America: prolegomena to its history*, (Gloucester, Mass. 1947). For interesting commentaries on Turner and Webb, see F. C. Luebke, Introduction, in B. W. Blouet and F. C. Leubke (Eds) *The Great Plains: Environment and culture* (Lincoln, NA 1979) ix-xxviii; and on Malin see R. P. Swierenga, Introduction, to J. C. Malin, *History and ecology: studies of the grassland* (Lincolm, NA 1984) xiii–xxix

[5] S. P. Hays *Conservation and the gospel of efficiency: The Progressive conservation movement, 1890–1920* (New York 1959); R. Nash, *Wilderness and the American mind* (New Haven 1967). This point is made by White, *op. cit.*, 398

[6] The literature on conservation history is vast. L. Rakestraw, Conservation historiography: An assessment *Pacific Historical Review* **41** (1972) 271–88 has a good review up to 1972 and the comprehensive bibliography by R. J. Fahl, *North American forest and conservation history* (Santa Barbara, CA 1977) takes it a little further

[7] L. Marx, *The machine in the garden: technology and the pastoral ideal in America* (New York 1964); C. L. Sandford, *The quest for paradise; Europe and the American moral imagination* (Urbana, IL 1961): H. N. Smith *Virgin land: the American West as symbol and myth.* (Cambridge, MA 1950). Also significant are H. Huth, *Nature and the American: three centuries of changing attitudes* (Lincoln, NA 1957); and A. A. Ekirch, *Man and nature in America* (New York 1963)

[8] White, *op. cit.*, 304. Some of the many examples of the wilderness theme are P. N. Carroll,

Puritanism and the wilderness: the intellectual significance of the New England frontier, 1629–1700 (New York 1969); L. C. Mitchell, *Witness to a vanishing America: the nineteenth century response* (Princeton 1981); P. J. Schmitt, *Back to nature: the arcadian myth in urban America* (New York 1969); F. Turner, *Beyond geography: the Western spirit against the wilderness* (New York 1980)

[9] D. Worster, *The ends of earth: perspectives on modern environmental history* (New York 1988) 290

[10] R. Nash, American environmental history: a new teaching frontier. *Pacific Historical Review* **41** (1972) 362–72; R. Nash, The state of environmental history, in H. J. Bass (Ed), *The state of American history* (1970) 249–60

[11] All quotations from Nash, American environmental history. For the land ethic see A. Leopold, *A Sand county almanic, and sketches here and there* (New York 1949)

[12] R. Nash, Rounding out the American Revolution: ethical extension and the new environmentalism, in K. E. Bailes (Ed.) *environmental history: critical issues in comparative perspective* (Lanham, NY 1988) 242–58. See also R. Nash, *The rights of nature: a history of environmental ethics* (Madison 1989)

[13] White, *op. cit.*, 300, 308, and 321. For wilderness studies see Note 8, and for examples National Parks nationally see T. Cox, From hot springs to gateway: The evolving concept of public parks, 1832–1976, *Environmental Review* **5** (1981) 14–26; J. Ise, *Our National Park policy: a critical history*, (Baltimore 1961); and A. Runte, *National Parks: the American experience*. For examples of the many studies of National Parks in different settings see, R. Righter, *Crucible for conservation: the creation of Grand Teton National Park*, (Boulder, 1982); S. R. Schrepfer, *The fight to save the redwoods: a history of environmental reform, 1917–1978* (Madison 1983); and R. N. Searle, *Saving Quetico-Superior: a land set apart* (St Paul 1977)

[14] W. G. Robbins, *Lumberjacks and legislators: political economy of the U.S. lumber industry, 1890–1941* (College Station, TX 1982); A. Hoffman, *Vision or villany: origins of the Owens Valley–Los Angeles water controversy* (College Station, TX 1981); W. L. Kahrl, *Water and power: the conflict over Los Angeles' water supply in the Owens Valley* (Berkeley 1982)

[15] White, *op. cit.* 301–6

[16] L. J. Bilsky, (Ed.) *Historical ecology: essays on environment and social change* (Port Washington, NY 1980) 8, 4

[17] T. W. Tate, Problems of definition in environmental history *American Historical Association Newsletter* (1981) 8–10

[18] For outlines and reading in environmental history courses in a number of American universities see *Environmental Review* **16** 1992

[19] For an excellent review of ecological models see J. W. Bennett, *The ecological transition: cultural anthropology and human adaption* (Oxford 1976), and J. Clifton (Ed.) *Introduction to cultural anthropology* (New York 1968)

[20] D. Worster, *Dust Bowl: The southern plains in the 1930s* (New York 1979); D. Worster, *Rivers of Empire: water, aridity and the growth of the American West* (New York 1985); and *Under Western skies: nature and history in the American West* (New York 1992)

[21] D. Worster *Nature's economy: a history of ecological ideas.* (New York 1977), vii–xii, xvii. See also S. R. Schrepfer *op. cit.* which is more than a conservation history of a forest ecotone as it also examines the response of environmentalists to science

[22] D. Worster, History as natural history: An essay on theory and method *Pacific Historical Review*, **53** (1984) 16, 1. For another programmatic statement see J. Opie, Environmental History: pitfalls and opportunities *Environmental Review* **7** (1983) 8–16

[23] Wittfogel's initial statement was Die Theorie der orientalischen Gesellschaft *Zietschrift fur Sozial Forschungen* **7** (1938) 90–122, translated as The theory of oriental society, in M. Fried (Ed.), *Readings in anthropology* (New York 1968), 2nd Ed. Vol. II, 179–98. A more rounded and mature statement is in K. Wittfogel, The hydraulic civilizations, in W. L. Thomas (Ed.), *Man's role in changing the face of the Earth* (Chicago 1956) 152–64

[24] J. Steward, *Theory of cultural change: the methodology of multilinear evolution* (Urbana 1963)

[25] Harold C. Conklin, An ethnoecological approach to shifting agriculture *Transactions of New York Academy of Science*, 2nd Series, **17** (1954) 133–42; M. D. Sahlins, Land use and the extended family of Moala, Fiji *American Anthropologist* **59** (1957) 449–62; R. B. Lee, !Kung bushman subsistence: an input-output analysis, in D. Damas (Ed), *Ecological essays* (Ottawa 1962); C. Geertz, *Agricultural involution: the processes of ecological change in Indonesia* (Berkeley 1963); R. A. Rappaport, The flow of energy in an agricultural community *Scientific*

American **224**(3) (1971) 116–32. There is a good selection of these and similar studies in A. Vayda, (Ed.) *Environment and cultural behaviour: ecological studies in cultural anthropology* (Garden City, NY 1969)

[26] D. Worster, 1984, History as natural history, 15; M. Harris, *The rise of anthropological theory: a history of theories and culture* (New York 1968), especially 654–87.

[27] D. Worster, History as natural history, 16

[28] D. Worster, 1984, History as natural history, 17–19; K. E. Bailes (Ed.) *Environmental history: critical issues in comparative perspective* (Lanham 1985)

[29] D. Worster (Ed.), *The ends of earth: perspectives on modern environmental history* (New York 1988) 292–3

[30] D. Worster, 1988, *Ends of earth*, 298–305, *passim*. Modes of production, focusing on the primacy of the need to grow food, were subjected to detailed discussion and analysis later in D. Worster, Transformations of the earth: towards an agroecological perspectice of history *Journal of American History* **76** (1990) 1087–1106. See also the informative commentaries on Worster on 1107–1147 by A. Crosby, R. White, C. Merchant, and W. Cronon, which open up many new issues in the environmental historians' quest to undestand nature/society relationships

[31] D. Worster, 1988, *Ends of earth*, 306

[32] M. Williams, review of D. Worster, *The ends of earth*, in *Transaction of Institute of British Geographers* **NS 15** (1990) 250

[33] H. M. Mayer and R. C. Wade, *Chicago: growth of a metropolis* (Chicago 1969); W. Cronon, *Nature's metropolis: Chicago and the Great West* (New York 1991)

[34] S. W. Trimble, Preface in L. M. Disalver and C. E. Colton, (eds) *The American environment: interpretations of past geographies* xv–xxii (New York, 1992)

[35] B. L. Turner II, The specialist-synthesis approach to the revival of geography: the case of cultural ecology *Annals, Association of American Geographers* **79** (1989) 95

[36] D. Stoddart, To claim the high ground: geography for the end of the century *Transactions of the Institute of British Geographers* **NS 13** (1987) 336

[37] R. W. Kates, The human environment: the road not taken: the road still beckoning *Annals, Association of American Geographers* **77** (1987) 525–34

[38] R. F. Abler, What shall we say? To whom shall we speak? *Annals, Association of American Geographers* **77** (1987) 511–24

[39] R. Williams, The idea of nature, in *Problems of culture and materialism* (London 1980) 67; L. Grossman, Man-environment relationships in anthropology and geography, *Annals, Association of American Geographers* **67** (1977) 126–44

[40] For some of the most important of Sauer's papers see J. Leighly (Ed.), *Land and life: a selection from the writings of Carl Ortwin Sauer* (Berkeley 1963), and for assessments of Sauer's work, see M. Williams, "The apple of my eye": Carl Sauer and historical geography *Journal of Historical Geography* **9** (1983) 1–28, and M. Kenzer (Ed.), *Carl. O Sauer, a tribute* (Corvallis, OR 1987)

[41] C. Sauer, The morphology of landscape *Publications in Geography*, (Berkeley, University of California) **2**(2) (1925) 11–54

[42] C. O. Sauer, Foreword to historical geography *Annals, Association of American Geographers* **31** (1941) 1–24 (quote p. 18)

[43] W. L. Thomas, Jr. (Ed.) *op. cit.*, particularly the chapter by Sauer on The agency of man on the earth, 49–69. For Sauer's contribution to the symposium see M. Williams, Sauer and Man's role in changing the face of the Earth *Geographical Review*, **77** (1987) 218–31. For the substantive studies see C. O. Sauer, *The early Spanish Main* (Berkeley 1969) and C. O. Sauer, *Sixteenth century North America: the land and the people as seen by the Europeans* (Berkeley 1971)

[44] S. W. Trimble, *Man-induced soil erosion on the southern Piedmont*, 1700–1970 (Ames IA 1974); S. W. Trimble, Perspectives on the history of soil erosion control in the eastern United States *Agricultural History* 59 (1987) 162–80. For a political economy approach to this issue see C. Earle, The myth of the Southern soil miner: macrohistory, agricultural innovation and environmental change, in D. Worster (Ed.), *Ends of earth*, 175–210.

[45] M. Price and M. Lewis, The reinvention of cultural geography *Annals, Association of American Geographers*, **83** (1993) 1–17

[46] M. Price and M. Lewis, *op. cit.*, 7; W. M. Denevan (Ed.), *Hispanic lands and peoples: selected writings of James J. Parsons* (Boulder 1989)

[47] For example, W. M. Denevan (Ed.), *The native population of the Americas in 1492* (2nd edit.)

(Madison 1992); B. L. Turner II, *Once beneath the forest: prehistoric terracing in the Rio Bec region of the Maya lowlands* (Boulder 1983). For recent examples of their work and that of kindred souls see K. W. Butzer (Ed.), The Americas before and after 1492: current geographical research *Annals, Association of American Geographers* **82** (1992) 343–568

[48] B. L. Turner II, W. C. CLarke, R. W. Kates, J. F. Richards, J. T. Mathews, and W. B. Meyer (Eds), *The earth as transformed by human action: global and regional changes in the biosphere over the last 300 years* (New York 1990) W. B. Meyer and B. L. Turner II, Human population growth and global land-use/cover change *Annual Review of Ecological Systems* **23** (1992) 39–61

[49] *Inter alia*, R. L. Heathcote, *Back of Bourke: a study of land appraisal and settlement in semi-arid Australia* (Melbourne 1965); D. W. Meinig, *On the margins of the good earth: the South Australian wheat frontier, 1869–1884* (Chicago 1962); J. M. Powell, *The public lands of Australia Felix: settlement and land appraisal in Victoria, 1834–91, with special reference to the Western Plains* (Melbourne 1970); J. A. S. Waterson, *Squatter, selector and storekeeper: a history of the Darling Downs, 1859–1893* (Sydney 1968); M. Williams, *The making of the South Australian landscape: a study in the historical geography of Australia* (London 1974)

[50] W. M. Denevan, The pristine myth: the landscape of North America on the eve of contact *Annals, Association of American Geographers*, **82** (1992) 369–85; K. Faegri, Preface, in H. H. Birks, H. J. B. Birks, P. E. Kaland, and D. Moe, (Eds), *The cultural landscape--past, present and future* (Cambridge 1988) 2

[51] *Inter alia*, Birks, *et al.*, *op cit.*; H. Godwin, *Fenland: its ancient past and uncertain future* (Cambridge 1978); O. Rackham, *The history of the countryside* (London 1986); K-E. Behre, The role of man in European vegetation history, in B. Huntley and T. Webb III (Eds) *Vegetation History* (Dordrecht 1988) 633–672. For an example from America see P. Delcourt, H. R. Delcourt, P. A. Cridlebaugh, and J. Chapman, Holocene ethnobotanical and paleoecological record of human impact on vegetation in the Little Tennessee River valley, Tennessee *Quaternary Research*, **25** (1986) 330–49

[52] However, this simple dichotomy is disintegrating with a recent plethora of studies in North America on the human impact particularly on soils and vegetation. For example, *inter alia* John McAndrews, Human disturbance of North American forests and grassland: The fossil pollen record, in B. Huntley and T. Webb III (Eds) *Vegetation History* (Dordrecht 1988) 672–697; C. J. Bahre, *The legacy of change: historic human impact on the vegetation of the borderlands of Arizona* (Tuscon, 1991): M. Williams, *Americans and their forests: An historical geography* (New York, 1989) particularly 32–110

[53] H. C. Darby, The relations of history and geography *Transactions of the Institute of British Geographers* **19** (1953) 1–11; H. C. Darby, The changing English landscape *Geographical Journal* **116** (1951) 377–97. For a commentary on Darby's views on landscape see M. Williams, Historical geography and the concept of landscape *Journal of Historical Geography*, **15** (1989) 92–104

[54] H. C. Darby, *The Domesday Geography of England* (Cambridge 1977); Darby, The changing English landscape

[55] H. C. Darby, The clearing of the woodland in Europe, in W. L. Thomas (Ed.) *op. cit.*, 183–216; M. Williams, Global deforestation: past and present, *Progress in Human Geography* **13** (1989) 176–208; M. Williams, *Wetlands: a threatened landscape* (Oxford, 1991); B. L. Turner II (Ed.) *Global land-use/cover* (New York, forthcoming)

[56] J. F. Richards, E. S. Haynes, J. R. Hagen, E. P. Flint, J. Arlinghaus, J. B. Dillon, and A. L. Reber, Changing land use in Pakistan, northern India, Bangladesh, Burma, Malaysia and Brunei, 1880–1980. MS report to US Department of Energy (Durham, N.C. 1987)

[57] A. S. Goudie, *The human impact: man's role in environmental change* (Oxford, 4th ed., 1993). Other works on humanly induced change in the physical environment are K. J. Gregory and D. E. Walling (Eds), *Man and environmental processes* (London 1981); J. M. Hooke and R. J. P. Kain, *Historical change in the physical environment; a guide to sources and techniques* (London 1982). For a plea for a greater historical perspective in physical geography see W. L. Graf, S. W. Trimble, T. J. Toy, and J. E. Costa, Geographical geomorphology in the eighties *Professional Geographer* **32** (1980) 279–84

[58] E. Freidrich, Wesen und Geographische Verbreitung der 'Raubwirtschaft' *Petermanns Mitteilungen* **50** (1904) 68–79, 92–95; C. Sauer, Theme of plant and animal destruction in economic history *Journal of Farm Economics* **20** (1938) 765–75, reprinted in Leighly, *op. cit.*, 145–154; C. Sauer, Destructive exploitation in modern colonial expansion" *Comptes Rendus du Congrès International de Géographie, Amsterdam, 1938*, **2** (Sect. 3c) 494–99. For a

commentary on Sauer's views see W. Speth, Carl Ortwin Sauer on destructive exploitation *Biological Conservation* **11** (1977) 145–60. J. R. Whittaker's World view of destruction and conservation of natural resources *Annals, Association of American Geographers* **30** (1940) 143–62 also has some relevant remarks

[59] C. O. Sauer, Theme of plant and animal destruction, 147–149; C. O. Sauer, Destructive exploitation, 494–5

[60] I. Wallerstein, *The modern world system I: capitalist agriculture and the origins of the European world-economy in the sixteenth century* (London 1974); I. Wallerstein, *The modern world system II: mercantilism and the consolidation of the European world economy, 1600–1750*, (New York: 1980); I. Wallerstein, *The politics of the world-economy: the states, the movements and the civilizations* (Cambridge, 1984); W. H. McNeill, *The rise of the West*, (Chicago 1963); E. L. Jones, The European miracle: environments, economies and geopolitics in the history of Europe and Asia (Cambridge 1981); E. R. Wolfe, *Europe and the people without history* (Berkeley 1982)

[61] D. W. Meinig, A macrogeography of Western imperialism: Some morphologies of moving frontiers and political control, in F. Gale and G. H. Lawton (Eds), *Settlement and encounter: geographical essays presented to Sir Grenfell Price* (Melbourne 1969) 213–40; The continuous shaping of America: a prospectus for geographers and historians *American Historical Review* **83** (1978) 1186–1205; Geographical analysis of imperial expansion, in A. R. H. Baker and M. Billinge (Eds), *Period and place: Research methods in historical geography* (Cambridge 1982) 71–8; *Atlantic America, 1492–1800*, Vol. 1 of *The shaping of America: A geographical perspective on 500 years of history* (New Haven 1986)

[62] Bancroft Library, Berkely CA. Sauer Papers, Sauer to W. P. Webb, 8 Dec., 1952

[63] J. Agnew, *The United States in the world economy: A regional geography* (New York 1987); H. C. Brookfield, *Interdependent development* (London 1975); S. Corbridge, *Capitalist world development: a critique of radical development geography* (Towtowa, NJ 1986); N. Smith, *Uneven development* (Oxford 1984); P. Taylor, *Political geography: world-economy, nation-state and locality*. (New York 1985)

[64] C. Earle, *et al.*, Historical geography, in G. L. Gaile and C. J. Willmott (Eds.), *Geography in America* (Columbus 1989) 161; A. W. Crosby, *Biological imperialism: the biological expansion of Europe, 900–1900* (New York 1986)

[65] Clarence Glacken, Changing ideas of the habitable world, in W. L. Thomas Jr., *op. cit.*, 70–92; C. Glacken, *Traces on the Rhodian shore: nature and culture in Western thought from ancient times to the end of the eighteenth century* (Berkeley 1967); D. Hooson, Clarence Glacken, 1909–1989 *Annals, Association of American Geographers* **81** (1991) 155

[66] C. Glacken, Man against nature: an outmoded concept, in H. W. Helrich Jr. (Ed.), *The environmental crisis* (New Haven 1970) 141; Man and nature in recent western thought, in M. Hamilton (Ed.), *This little planet* 163–201 (New York 1970); and Environment and culture, in *Dictionary of the history of ideas* (New York, 1973) Vol. 2, 127–34

[67] Yi-Fu Tuan, *The hydrological cycle and the wisdom of God: a theme in geoteleology* (Toronto 1968). Important among his subsequent works are *Man and nature*, Association of American Geographers, Commission on College Geography, **10** (1971); *Topophilia: a study of environmental perceptions, attitudes and values* (Englewood Cliffs, NJ 1974), *Space and place: the perspective of experience* (London 1977)

[68] K. R. Olwig, *Nature's ideological landscape* (London 1984)

[69] D. Lowenthal, *George Perkins Marsh: versatile Vermonter* (New York 1958); G. P. Marsh, *Man and nature* edited with introduction by David Lowenthal (Cambridge, Mass. 1967); D. Lowenthal and M. Bowden, *Geographies of the mind: essays in historical geosophy in honour of John Kirtland Wright* (New York 1976) 3, 6

[70] *Inter alia*, D. Lowenthal, Environmental perception: preserving the past *Progress in Human Geography* **3** (1979) 549–59; D. Lowenthal, *The past is a foreign country* (Cambridge 1985); D. Lowenthal, Awareness of human impacts: changing attitudes and emphases, in B. L. Turner II, *et al.* 1990, 121–35

[71] N. Smith and P. O'Keefe, Geography, Marx, and the concept of Nature *Antipode* **10**, 2 (1979) 1–11 and reprinted with an addendum in *Antipode* **12**, 3 (1985) 80; N. Smith, *Uneven development (Oxford 1984) 32–65 on the "Production of nature"*, 45; and M. Fitzsimmons, The matter of nature *Antipode* **21** (1989) 115. For a more extended discussion on these and many related matters see D. Harvey, The nature of the environment: the dialectics of social and economic change *The Socialist Register* 1993, (forthcoming)

[72] C. Glacken, This growing second world within the world of nature, in F. R. Fosberg (Ed.)

Man's place in the island ecosystem 10th Pacific Science Congress (Honolulu 1961) 75–95; and D. Hoosen, Clarence Glacken, 1909–1989 *Annals, Association of American Geographers* **81** (1991) 155. For Cicero see Glacken, Creating a second nature, in Glacken *Traces on the Rhodian shore*, 117–149

[73] H. H. Barrows, Geography as human ecology *Annals, Association of American Geographers* **13** (1923) 1–14

[74] I. Burton, R. W. Kates, and G. F. White, *The environment as hazard* (New York 1978)

[75] For a review see A. Hawley, *Human ecology: a theoretical essay* (Chicago 1968) 1–9

[76] L. Grossman, *op. cit.*; K. W. Butzer, Cultural ecology, in G. L. Gaile and C. J. Willmott (Eds.) *Geography in America* (Columbus 1989) 192–208

[77] C. D. Forde, *Habitat, economy, and society* (New York 1934).

[78] Steward, *op. cit.*; Geertz, *op. cit.*; and R. Rappaport, *Pigs for the ancestors: ritual in the ecology of a New Guinea people* (New Haven 1968)

[79] For example, H. Brookfield and P. Brown, *Struggle for land: agriculture and group territories among the Chimbu of the New Guinea Highlands* (Cambridge 1963); H. Brookfield, Questions on the human frontier of geography *Economic Geography* **40** (1964) 283–303

[80] K. W. Butzer, Cultural ecology, in G. L. Gaile and C. J. Willmott (Eds) *Geography in America* (Columbus 1989) 195–8

[81] Brookfield and Brown, *op. cit.*; W. C. Clarke, *Place and people: an ecology of a New Guinean community* (Berkeley 1971); and L. Grossman, *Peasants, subsistence ecology and development in the highlands of Papua New Guinea* (Princeton 1984)

[82] C. G. Knight, *Ecology and change: rural modernization in an African community* (New York 1974); P. W. Porter, Geography as human ecology *American Behavioral Scientist* **22** (1978) 15–39; and P. W. Porter, *Food and development in the semi-arid zone of East Africa* Foreign and Comparative Studies: African Series, **32** (Syracuse 1979)

[83] For example, R. W. Bergman, *Amazon economics: the simplicity of the Shipiho wealth* (Dellplain Latin American Studies, **6**, Ann Arbor, MI; W. M. Denevan and C. Padoch (Eds), Swidden-fallow agroforestry in the Peruvian Amazon, *Advances in Economic Botany* **5**: 1–107; A. V. T. Kirby, *The use of land and water resources in the past and present valley of Oaxaca, Mexico*, Memoirs of the Museum of Anthropology, **6**, Ann Arbor; Museum of Anthropology, University of Michigan; B. Q. Nietschmann, *Between land and water: the subsistence ecology of the Miskitio Indians, eastern Nicaragua* (New York 1973); and B. L. Turner II and S. Brush (Eds) *Comparative farming techniques* (New York 1987)

[84] K. A. Butzer, The realm of cultural–human ecology: adaption and change in historical perspective, in B. L. Turner II, *et al.*, 1990, *op. cit.*, 685–701

[85] P. Blaikie and H. Brookfield, *Land degradation and society* (London, 1987); M. Watts, *Silent violence: food, famine and peasantry in Northern Nigeria* (Berkeley 1983)

[86] Scepticism about ecological analogies was expressed as early as the mid 1950s, see W. L. Thomas, Jr., (Ed.), *op. cit.*, 447. For modern examples see, J. A. Wiens, On understanding a non-equilibrium world: myth and reality in community patterns and processes, in D. R. Strong, *et al.*, (Eds) *Ecological communities: conceptual issues and the evidence* (Princeton 1984) 439–63; H. H. Shugart and D. L. Urban, Scale synthesis and ecosystem dynamics, in L. R. Pomeroy and J. L. Alberts (Eds), *Concepts of ecosystem ecology: a comparative view* (New York 1986) 279–90

[87] E. A. R. Bird, Social construction of nature: theoretical approaches to the history of environmental problems *Environmental Review* **11** (1987) 255–64

[88] W. Cronon, A place for stories; nature, history and narrative *Journal of American History* **78** (1992) 1342–3, 1375. For an early exploration of individual interpretation and values in historical writing see C. Harris, The historical mind and the practice of geography, in D. Ley and M. S. Samuels (Eds), *Humanistic geography: prospects and problems* (London 1978) 123–37

[89] Cronon, 1992, A place for stories, 1375