

Imperialism, Intellectual Networks, and Environmental Change: Origins and Evolution of Global Environmental History, 1676-2000: Part I

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Imperialism, Intellectual Networks, and Environmental Change

Origins and Evolution of Global Environmental History, 1676-2000: Part I

The intellectual origins of environmental history as a self-conscious domain of enquiry can be traced to the encounter of 17th and 18th century western Europeans with the startlingly unfamiliar environments of the tropics and the damage inflicted on these environments in the course of resource extraction by European empires. For nearly a century from the mid-19th to the mid-20th century, the discipline developed primarily in the form of "historical geography". A new phase of global environment history began with European decolonisation from the 1950s onwards. The imminence of a nuclear catastrophe and pesticide pollution stimulated the rise of a worldwide and populist environmental movement that reached full fruition in the 1970s. This article in two parts traces the beginnings and the shifting discourse of environmental history. Part I looks at the origins till the period of the 1930s. It was a time when the colonial encounter was becoming increasingly frayed, but environmental history benefited from the innovative convergence of writings on the part of geographers, archaeologists and ecologists, several of whom took an increasingly anxious and prescriptive view of human-environment interactions. Part II will appear next week.

RICHARD GROVE, VINITA DAMODARAN

On August 28, 2005 Hurricane Katrina burst the levees of New Orleans.¹ The storm and resulting flood brought about one of the three most serious natural disasters in American history.² In comparison to other past natural disasters perhaps only the Lisbon earthquake of 1755 and the Asian tsunami of December 26, 2004 will have made such a decisive psychical impression on popular memory and attitudes. But the 2005 flood had two almost equally sizeable predecessors; the Mississippi floods of 1927 and 1937; events that certainly loomed large in American history and in landmark works in the written history of the global environment. In particular these floods prompted Gordon East to write *The Geography behind History*, published the year after the 1937 flood.³ In it East warned that:

If only by its more dramatic interventions, a relentless nature makes us painfully aware of the uneasy terms on which human groups occupy and utilise the earth. The common boast that man has become master of his world has a hollow ring to it when we recall the recurrent floods and famines which afflict the peasants of northern China, the devastating floods of the Mississippi in 1937, the more recent destruction by ice of View Falls bridge across the Niagara river, the assertion that in Central Africa "the desert is on the move", the widespread soil erosion in parts of Africa and the Middle West of the United States and finally the continual

threat of drought which hangs over the great grain lands of the world – alike in the United States, Canada and South Russia. These and similar happenings or forebodings serve to emphasise the fact that, even for peoples which have reached high levels of material culture, the physical environment remains a veritable Pandora's Box, ever ready to burst out and scatter its noxious contents.

Born, like East's book, out a fear of extreme natural events, environmental history is in fact now much more extensive than that.⁴ As we use the term today it is the historically documented and interdisciplinary part of the story of life and death not only of human individuals but of societies and of species, both others and our own, in terms of their relationships with the physical and biological world about them.⁵ Its intellectual origins as a self-conscious domain of enquiry can probably be traced to the encounter of 17th and 18th century western Europeans, especially naturalists, medical officers and administrators with the startlingly unfamiliar environments of the tropics and with the damage done to these environments in the course of resource extraction by European empires. From the mid-19th century until the mid-20th the discipline developed primarily in the form of "historical geography". This period culminated in the publication of a famous volume entitled *Man's Role in Changing the Face*

of the Earth published in 1956 under the editorship of W L Thomas.⁶ This landmark volume brought together papers from a meeting convened at the University of Chicago. From about 1956, the year of the Suez Crisis, a process began in which historical geography was eclipsed and partly displaced by a more consciously global environmental history.⁷ This was also a period in which European decolonisation began in earnest and in which writings about the possibility of global nuclear catastrophe and pesticide pollution (particularly by Rachel Carson in the US and Kenneth Mellanby in the UK) both helped to stimulate the early green shoots of a worldwide and populist environmental movement which finally came to full bloom in the early 1970s.⁸ While it would be invidious to point to one single event as changing public consciousness in the post-war period the wrecking of the oil supertanker Torrey Canyon on March 18, 1967 in the Scilly Isles, and the subsequent spilling of 31 million gallons of oil, would certainly be a good candidate.⁹ In the wake of the New Orleans events of 2005 it seems quite likely that this year may be a breakpoint in state perceptions of global warming, at least in the US, but no doubt, too in making global environmental history an acceptable paradigm amongst the mainstream historians. As we shall see, elements of such a publically responsive history been around for a long time.

Until about 1970 "environmental history" was a term used chiefly by Quaternary geologists and archaeologists. As such it rarely dealt with historic human interactions with the environment. The breakthrough came in 1969 when a American, Henry Bernstein, taught a course called "environmental history" at Strawberry Hill College in the University of London.¹⁰ This course, the first ever taught in the subject, was inspired largely by Bernstein's own fieldwork experiences in India while preparing a dissertation on the history of steam navigation and fuelwood consumption on Ganges.¹¹ In arrogating to themselves a term previously used by geologists, historians drew a veil over a period in which most of them had tended to view as exotic the environmental concerns of historical geographers and archaeologists, whom they had undoubtedly treated as second class academic citizens. After 1969, however, historians began to take historical geographers rather more seriously than heretofore and to start to borrow heavily for them, before actually invading their academic space.¹² Nevertheless, the term "environmental history" is somewhat misleading in understanding the largely borrowed historiography of the discipline, if such it is. Global environmental history is not new. In many aspects its development predates the term "environmental history" and, in a very real sense, was already being written by the mid-19th century. It is worth stating this since a deep misconception has emerged that historians and others only started to integrate narratives of human history into ecological contexts in the early 1990s.¹³

However, the circumstances of decolonisation, a growing angst about the global proliferation of nuclear weapons (and their global destructive capability) and a linked and growing series of perceptions about global environmental crisis all served to stimulate the development of an environmental history which was, from the start, global in its concerns. This is not surprising. Concerns that typified the environmental movement, such as population growth, habitat destruction, climatic change and atmospheric alteration were intrinsically planetary in scope so that the global dimension, if not explicit, was always high on the typically activist agenda of most environmental historians. Decolonisation and the defeat of France and the US in the Vietnam war seem

to have acted as extra stimulants to a tendency to look back and reflect on the experience of empire, not least in an environmental sense.¹⁴ Ultimately this led to some very fertile intellectual explorations since any reflection on global environmental change led quite quickly to the notion that the environmental impact and speed of environmental change in the imperial context had been some of the most significant in written history as well as often being very well documented. Even the early preoccupation with the "western frontier" in American environmental history can be seen as being integral to the expansion of the American land-based empire in the west, even if it was often not conceived as being imperialist as such.¹⁵ If the Vietnam defeat was seen as the first blow to a post-1945 and post-Hiroshima hegemony it could also be seen as a major stimulant to thinking about the enormous environmental impact in several ways of that hegemony. Nevertheless it is surprising how little the environmental impact of imperialism have touched the consciousness of such mainstream imperial historians as Linda Colley, Niall Ferguson or Christopher Bayly. Indeed, it was possible for Colley to deliver a major lecture at the Australian National University in August 2005 entitled 'Difficulties with Empire' without mentioning the words "environment" or "ecology" at all.

Environmentalism, Desiccationism and Environmental History

It is no accident that the earliest writers to comment specifically on rapid environmental change in the context of empires were scientists who were themselves often actors in the process of colonially stimulated environmental change. The early pioneers of an environmental critique of the European and American empires depended on having an historical perception of rapid rates of ecological change, and access to evidence for rapid change.¹⁶ As early as the mid-17th century we find that intellectuals and natural philosophers such as Richard Norwood and William Sayle in Bermuda,¹⁷ Thomas Tryon¹⁸ in Barbados and Edmond Halley and Isaac Pyke on St Helena¹⁹ were all already well aware of characteristically high rates of soil erosion and deforestation in the colonial tropics, and of the urgent need for conservationist intervention especially to protect forests and threatened species. Halley, for his part, made the first accurate estimates of the global volume of the oceans and the varying quantities of different elements in marine-land-atmosphere cycling over time.²⁰ On St Helena and Bermuda this early conservationism led, by 1715, to the gazetting of the first colonial forest reserves and forest protection laws.

On French colonial Mauritius (the Isle de France), Pierre Poivre and Philibert Commerson framed pioneering forest conservation legislation designed specifically to prevent rainfall decline in the 1760s.²¹ In India William Roxburgh, Edward Balfour, Alexander Gibson and Hugh Cleghorn (all Scottish medical scientists) wrote alarmist narratives relating deforestation to the danger of climate change.²² Their distinctively modern environmentalist views owed a great deal to the precocious commentaries of Alexander von Humboldt in his *Personal Narrative* and in the *Cosmos*.²³ East India Company scientists were also well aware of French experience in trying to prevent deforestation and rainfall change in Mauritius.²⁴ William Roxburgh, together with Alexander Beatson on St Helena, went on further to observe the incidence of global drought events which we know today were globally tele-connected El Nino events.²⁵ The rise of imperial networks of

information thus enabled the emergence of a new global environmental awareness as well as the first accurate accounts of global change.

The writings of Edward Balfour and Hugh Cleghorn in the late 1840s in particular illustrate the extent of the permeation of a global environmental consciousness and could be said to constitute some of the first writings in world environmental history.²⁶ In very similar fashion Baron Ferdinand Von Mueller in Australia, George Perkins Marsh and Franklin Benjamin Hough in the US and John Croumbie Brown in South Africa all wrote multiple and voluminous texts that display formidable textual knowledge of evidence of global environmental change through time, which was used by all these men as material to warn of the dangers of future environmental profligacy and global ruin. It is significant that most of these men published their most important texts during the 1860s, a period which we could appropriately name the "first environmental decade", and which embodies a convergence of thinking about ecological change on a world scale that may well have been permeated in part by ontological and existential concerns elicited by the publication of Charles Darwin's *The Origin of Species* in 1859.²⁷

It was in the particular circumstances of environmental change at the colonial periphery that what we would now term "environmentalism" first made itself felt and its colonial proponents were often in a position to make use of historical evidence for environmental change in government records and thus became de facto environmental historians. Victorian texts such as Strzelecki's *Physical Description of New South Wales*,²⁸ Berthold von Ribbentrop's *Forestry in the British Empire*,²⁹ Brown's *Hydrology of South Africa*, Cleghorn's *Forests and Gardens of South India* and Marsh's *Man and Nature* were not only vital to the onset of environmentalism; they were also meticulously documented works in environmental history. One preoccupation stands out in them above all. This was a growing interest in the potential human impact on climate change, in particular a fear that human activity, especially deforestation, might lead to global desiccation. This fear grew steadily in the wake of colonial expansion and fed into post-colonial fears about desertification articulated by international bodies and global NGOs. It also critically affected the early direction of environmental history. The preoccupation with climate probably owed much of its strength to notions linking climate, civilisational degeneration and racial types. Many of these notions had first been formally articulated by the Comte de Buffon.³⁰

Particularly after the 1860s, and even more after the great Indian famines of 1876 – and 1899-1902, these connections encouraged and stimulated the idea that human history and environmental change might be firmly linked. But until the second world war historians themselves played little or no part in this process of cultural evolution; instead they became the inheritors of a fully fledged idea developed, in the main, by historical geographers whose ideas were then picked up and developed by *annaliste* historians such as Fernand Braudel and W G Hoskins. Meanwhile, the mainstream of desiccationist thinking developed among foresters, geographers and natural scientists working mainly in the colonial tropics of Britain and France and to some extent in the USSR and the American west as well as the new Pacific and Caribbean empire of the US, where Franco-British environmental models were very fashionable and eventually fed into the post-world war semi-paranoid "dustbowl" mania of the 1920s and 1930s.

In the mid-19th century, when the Ice Age described by Agassiz

was beginning to gain acceptance, David Livingstone had recognised lake shoreline features in the Kalahari as signifying great rainfall episodes in the past and subsequent desiccation.³¹ In southern Africa John Croumbie Brown was inclined to think that human agency may have been involved in the deteriorating conditions.³² The discovery towards the end of the 19th century of moraines on Mt Kenya and Kilimanjaro, far below the tongues of present glaciers, made it plain that the climate of Africa had been cooler in the past. In West Africa, J D Falconer described in *The Geography and Geology of Northern Nigeria* (1911) extensive fields of linear dunes, now covered in vegetation and supporting a large population, stretching well into northern Nigeria, far to the south of the current limits of the Sahara.³³ About the same time Tilho (1911) brought back evidence of a great lake having existed in the Bodele depression, between Tibesti and Lake Chad.³⁴ The Sahara had evidently been much more extensive at some times in the past and at other times much less arid.

Thus the years immediately prior to 1900 saw a renewed interest developing in what were essentially millennial theories of global desiccation closely related to contemporary convictions about the "inevitable" extinctions of both indigenous people and large tropical mammals such as the African elephant. These theories were reinforced by climatic events. By the end of the 19th century it was evident that short-term vicissitudes of the African climate were of considerable economic importance. In East Africa the level of Lake Victoria rose suddenly in 1878 after unusually heavy rains. A few months later there was abundant rain over the Blue Nile's catchment area in Ethiopia and disastrous Nile floods followed in Egypt. In southern Africa in 1862 and between 1881 and 1885 there were severe droughts. Alexander Knox in *The Climate of the Continent of Africa*, (1911) pointed to what he saw as a decline in the rainfall of 19th century Senegal.³⁵ The mean at St Louis in the 1830s had been about 600 mm; over the years 1892 to 1905 it was about 400mm; in 1903 it was only 125mm. Over the next decade rainfall was greater in Senegal and the rest of the Sudano-Sahelian but in 1913 there came a drought disaster, the terrible results of famine in northern Nigeria that year being graphically described by Hastings in *Nigerian Days*.³⁶ In Egypt the flow of the Nile was phenomenally low, and in southern Africa there was widespread drought.³⁷

During the same period a number of American geographers started to pose a post-glacial desiccation of the environments of central Asia and China based on the twin tenets that wet conditions characterised the glacial phases of the Pleistocene Age and that aridity had increased since the warming of the Pleistocene icesheets in the Holocene Age. Travellers in central Asia pointed to the occurrence of dry water courses and lakes and abandoned settlements as evidence of this desiccation and suggested that deteriorating environmental conditions had spurred successive nomadic invasions of their more civilised neighbours during periods of increased aridity. A major early exemplar of this group of scholar-travellers was an American, Ellsworth Huntington, a geographer and environmental determinist whose views were formed by his travels and intelligence activities in central Asia.³⁸ His first major work, *The Pulse of Asia*, (1907) set an agenda for both desiccationism and environmental determinism.³⁹ Both Huntington and Kropotkin, (the latter in a landmark article published in *The Geographical Journal* in 1904)⁴⁰ were critically influenced by the rise of contemporary anxieties in the tropics and a growing interest in climatic interpretations of history, boosted by the great Indian famines of the late 19th century. While

at Harvard, Huntington had been a pupil of William Morris Davis at a time when the latter had been developing his theories of evolutionary landscape geomorphology.⁴¹ Huntington was, together with Andrew Douglass, one of the first practitioners of dendrochronology. They pioneered the use of this new dating technique on the Sequoia trees of California, whose immense age made a great impression on Huntington. But his formative experiences were in Turkey, where he taught at Euphrates College in 1897-1901 and in Turkestan. After Harvard, Huntington accompanied William Davis on the Pumpelly (1903) to Turkestan and then went with Barrett's (1905-06) expeditions to central Asia.

Meanwhile at the metropolitan centre a small group of geographers, increasingly influenced by their professional contacts with a globally distributed set of colonial scientists and geographers, began to think, in an imperialistic idiom, in terms of the global relations between environmental change, political power and societal change. The scene was set by Sir Halford Mackinder's *Britain and the British Seas* (1902), a highly selective historical interpretation of nature, geography and super-power political economy.⁴² It appeared only a year after a highly innovative text entitled *The Relations of Geography and History* by H B George, a book which reached its fifth edition by 1924⁴³ and was followed by *The Historical Geography of the British Empire*, a book with some claims to be considered a world environmental history. These works were followed by J L Myre's insightful work on *The Dawn of History*, an archaeologist's treatment of the geographical factor in the rise of ancient civilisations and states.⁴⁴ This was also a de facto global environmental history of the ancient world. However, after this initial group of publications in environmental history, a hiatus ensued which was only broken after the first world war, when a flurry of publications on themes linking climate and history appeared, starting with C E P Brooks, *The Evolution of Climate* (1922) and *Climate through the Ages* (1926).⁴⁵ As a colonial scientist, Brooks was able to draw conclusions about changes in world climate from territories (where he had been stationed) as far apart as the Falkland Islands and Uganda. By 1922 there was also a new Huntington contribution, entitled *Climatic Changes*.⁴⁶ All of these last works appear to have reflected a subconscious connection between notions of the environmental decline of ancient empires and contemporary fears about imperial disturbances and the emergence of anti-colonial nationalisms.

Similarly, some of the political and existential anxieties produced immediately prior to the first world war emerged in such doom-laden books as William Macdonald's widely read *Conquest of the Desert* which had appeared in 1913.⁴⁷ After the war a generalised revulsion at the enormity of the war mortality was reflected in a strengthened awareness of the potential for future human destructiveness on a world scale. This prompted major retrospective views on comparable past narratives of mass human disruptions of life and environment and helps to account for the flurry of colonial publications and commissions on the connections between drought and human activity that appeared in the early 1920s. In 1920 it was the turn of the French to voice their desiccation fears, above all in an influential article by H Hubert on 'le dessechement progressive en Afrique Occidentale'.⁴⁸ However it was in semi-arid South Africa that the gospel of desiccation found its most pronounced and didactic post-war expression. Here, in 1919, E H L Schwartz published on 'The Progressive Desiccation of Africa: The Cause and the Remedy'.⁴⁹ Even the wording of the title echoed that of J Spotswood Wilson's

seminal article of 1865 on 'The Progressive Desiccation of Inner Southern Africa', which had been based on an address to the Royal Geographical Society in that year. Schwartz followed his article with a book published in 1923 on *The Kalahari; or Thirstland Redemption*, a title which gives us a clue to an underlying crusading element of the desiccation discourse.⁵⁰ Schwartz's message was directly transmuted into government policies through the 1922 report of the South African Drought Commission, a highly alarmist document.⁵¹ This alarmism revealed, for the first time, the beginnings of a north American influence in British colonial soil and forest conservation, at least in South Africa. Two of the Afrikaner members of the commission had worked in the US as refugees after the South African war (1899-1902). H S D Du Toit, its chairman, trained in the US as an agronomist and later became the head of South Africa's agricultural extension service. R J Van Renen studied civil engineering and worked on irrigation projects in Nebraska before returning to the Transvaal Civil Service. T D Hall, one of the first South Africans to write systematic historical studies of pastures, studied agriculture in Illinois in 1910-13.

Throughout the 1920s and 1930s the experience of central Asia, which had exerted so much influence on Huntington, continued to exert an influence on the desiccationist school. The Chinese meteorologist Coching Chu, in 1935, summarised much of this in a paper on 'Climatic Pulsations during Historic Times in China'.⁵² Geographical periodicals and institutions were, as in the previous century, important as fora for the desiccation debate. In Africa this meant that the concerns of the 1920s now began to embrace some colonial territories that had not featured at all in the earlier environmental literature of the years before the first world war, but which were now the subject of considerable colonial interest and infrastructure investment. In the 1920s the colonial office was the main employer of British biologists, geologists and geographer. This was especially the case in Anglo-Egyptian Sudan, about which some of the first literature on desert-spreading or desertification now began to be written. A pioneer in this area was E W Bovill, who echoed Schwartz in South Africa in his 1921 paper on 'The Encroachment of the Sahara on the Sudan'. His arguments were further followed up in an article entitled 'Sahara' in 1929.⁵³ Bovill's articles were in turn taken much further by G T Renner in one of the first articles to paint Africa as a potentially famine-ridden continent, under the title 'A Famine Zone in Africa: The Sudan', published in 1926.⁵⁴ A widespread semi-arid region meant that a disproportionately large alarmist South African literature developed on environmental matters. Prominent among these was the 1926 work by J C Smuts on *Holism and Evolution*, a work heavily influenced by the ecological theories of Arthur Tansley.

The emergence of a period of environmental alarmism in North America consequent on the prolonged "dustbowl" droughts in the southern US in the early 1930s supplemented the existing colonial panic over increasing desertification.⁵⁵ This increased local anxieties and affected policy in some British and French colonies. Thus the New Deal conservationism of the US was emulated particularly in the east and central African colonies. Soil erosion had already become a prominent issue in India during the period 1890-1925 and huge investments to control it were made, for example, in the Etawah region of the United Provinces of northern India. These efforts, like similar measures in west and south Africa, long predated the American "dustbowl" alarmism. In 1934 E P Stebbing, a very prominent Indian forester, and

one-time professor of forestry at Edinburgh University, visited West Africa. Stebbing was the earliest historian of Indian forests and by the time of his visit has already published a three volume work on *The Forests of India*, much of which detailed the history of environmental concern and early conservationism among the first surgeon-foresters of the East India Company medical service.⁵⁶ His short visit to the French and British west African colonies, made significantly during the dry season, provoked him into writing a feverish warning on what he saw as the dangers of desert-spreading. The title of this essay 'The Encroaching Sahara: The Threat to the West African Colonies' indicates that he had almost certainly read Bovill's similarly titled 1921 article on 'The Encroachment of the Sahara'.⁵⁷

While Stebbing's somewhat hysterical warnings were downplayed by local colonial scientists, who had much greater experience of the causes, rates and seasonality of local desertification and erosion, his terminology was taken up with alacrity by governing circles in Paris and London.⁵⁸ Stebbing's writings led directly to the founding of the Anglo-French Boundary Forest Commission. This commission, started in 1934, soon found that Stebbing's warnings were largely unjustified, and his analysis was decisively dismissed by B Jones, a member of the commission, in an article published, as Stebbing's had been, in *The Geographical Journal*.⁵⁹ Notwithstanding, in 1937 Stebbing, later as professor of forestry in Edinburgh, pursued his concerns in *Forestry in West Africa and the Sahara: A Study of Modern Conditions* and in an inflammatory work called *The Creeping Desert in the Sudan and Elsewhere in Africa*.⁶⁰ He was not alone. In 1938 Francis Ratcliffe, fresh from his investigations of the causes of soil erosion in South Australia and Queensland, published *Flying Fox and Drifting Sand*, a savage indictment of the impact of extensive outback agriculture, and the first of a long line of apocalyptic books on the degradation of the Australian environment, many of which exercised a disproportionate influence on global environmental concerns far outside the antipodean context.⁶¹ Ratcliffe was familiar with the writings of Keith Hancock, later a prominent historian of the British empire and Commonwealth, who in 1931 had published a virulent attack on profligate deforestation and land-clearing by settlers.⁶² Hancock, a Quaker, was the biographer of Jan Smuts and was undoubtedly influenced by the "holistic" views of the latter, not least in his role as an early environmental campaigner and environmental historian. Both men were profoundly interested in the historical impact of white colonial settlement on indigenous peoples and their environments at an imperial and world scale.⁶³ Hancock ultimately writing on this theme in what was one of the earliest and most influential texts in Australian environmental history.⁶⁴ In Hancock's mind the two world wars, Nazi death camps and the ecological crisis were linked catastrophes in a personal existential crisis which was partially expressed in his writing of environmental history.⁶⁵

In 1938 Gordon East published the first of many editions of *The Geography behind History*, a wide-ranging work which echoed many of the contemporary colonial anxieties albeit in a rather more detached and academic mode.⁶⁶ Thus by 1938 the global environmentalist ball had truly started to roll, propelled largely by colonial exemplars and Stebbing's alarms, along with comparable simultaneous warnings from the US which were soon being echoed by a cacophony of popular writers and journalists and above all by Graham Jacks and R O Whyte in their inflammatory, semi-racist and highly coloured account book of 1939 entitled

The Rape of the Earth: A World Survey of Soil Erosion.⁶⁷ This book skilfully marshalled evidence for the kind of rapid environmental change which had been predicted by John Croumbie Brown and G P Marsh 70 years earlier, but referring to worldwide evidence of a detail which they had not been in a position to compile. The book set the scene for the post-war British (and French) colonial obsession with soil erosion and gullying in their post-war "second colonial occupations", as well as for the global desertification mania which developed in the 1970s in the wake of major droughts in West Africa. Conceivably, *The Rape of the Earth* owed some of its impact to underlying political anxieties in Britain, France and the US about the growing threat now posed by fascist regimes and above all by Nazi Germany both on the domestic and colonial front. Environmental fears were, conceivably, more palatable and thus easier to articulate and confront.

Global Environmental Thinking in the 1930s

While the agendas of colonial environmental thinking to some extent took over the academic debate in the 1930s, developments in historical geography proceeded with vigour, some related to the colonial context but by no means all. The strongest influence on Anglophone historical geography was exercised by the French, especially by Jean Brunhes (*Human Geography*, 1920), L Febvre (*A Geographical Introduction to History*) and Vidal de la Blache (*Principles of Human Geography*, 1926). However by the early 1930s a completely new colonial influence was making itself felt through the work of the Australian archaeologist, Vere Gordon Childe. His *Dawn of European Civilisation* (1925, echoing the title of J L Myres' 1911 work *The Dawn of History*) was soon followed by *More Light on the Most Ancient East* (1933) and *Man Makes Himself* (1936). Such French and Australian writers were very influential in the work of Henry Clifford Darby, the figure who was to emerge as the major historical influence on post-second world war historical geography along with Carl Sauer and Clarence Glacken.

By the 1930s, therefore, we can observe an innovative convergence of analytical and descriptive writings by geographers, anthropologists, archaeologists and ecologists, many of them taking a global, increasingly anxious and prescriptive view of human-environment interactions. The contributions made by archaeologists and anthropologists now started to become a useful one. As well as the ambitious surveys of Gordon Childe, Daryll Forde's major collection of writings published in 1934, and entitled *Habitat, Economy and Society*, now started to add a highly structured and global approach to environmental essays on history and human societies, drawing globally on case studies from Malaya, the Kalahari, Siberia, the Arctic, west Africa, the Pacific, many of them the work of a new breed of anthropologists and geographers in colonial employ.⁶⁸ Through Forde's work ran a strong streak of Boasian cultural relativism, an approach that placed far more stress on the cultural relationships of people with their environments than on their evolutionary stages of development. Moreover Forde's studies concentrated on economic interactions with the environment rather than on matters of ritual. This too was an important new direction. Although based in North America, at UC Berkeley, Forde's work ranged very widely geographically. His first book, a history of ancient shipping routes was followed by a treatise on Yucatan Indians. Later he specialised in explaining the relations between environment and the evolution of African societies.

Colonial environmental change agendas were decisive in defining the form of global environmental geography, history and anthropology in the 1930s. But they were also affecting historical understandings of the environment at the metropole. Henry Darby, for example, started writing on Rhodesia but then developed a specialist interest in Domesday colonisation, medieval landscape histories and Fenland drainage. But he also worked during the second world war in naval intelligence, collating strategically important geographical information worldwide. This was paralleled in his systematic examination of Domesday land utilisation and was based methodologically on research being carried out by colonial scholars, some of whom we might today classify as environmental historians, and many of whom were now concerned with both climate and land-use history.⁶⁹ Perhaps the most interesting of these was L Dudley Stamp, who was employed as an oil geologist in Burma before becoming the first professor of Geography at Rangoon University.⁷⁰ Like Jan Smuts, Stamp was an adherent of the theories of Arthur Tansley, the British ecologist, who published his first paper in the newly founded *Journal of Ecology* in 1923.⁷¹ In 1930 Stamp published *The Vegetation of Burma: From an Ecological Standpoint*.⁷² On the basis of this work he then started to take a more detailed interest in the evolution and climatic history of the Burma landscape. In so doing, Stamp followed in the footsteps of the climatic historian J C Mackenzie who had published an extraordinary pioneering paper in 1913 on 'Climate in Burmese History', relating Pagan societal collapse to prolonged episodes of drought.⁷³

Between 1923 and 1944 Stamp published a myriad of papers on the history of relations between Burmese hill tribes and land use, forests, shifting cultivation and climate.⁷⁴ However his main emphasis consisted in charting the shifting relations between people and land use through time. To this specialism Stamp added a very new technique impossible before 1914; the use of the air photography in surveying land-use change, a technique he reported in the *Journal of Ecology*.⁷⁵ This first world war-developed technology now found a peacetime use. Underlying Stamp's surveys in both Burma and Britain (where he developed the official land utilisation survey between 1930 and 1940), continued to be a Tansleyite preoccupation with evolutionary changes in the succession of vegetation types over time.⁷⁶ But Stamp's use of air photography in France and Burma clearly stimulated his extensive approach to land use change. This approach epitomised the repatriation of colonial innovations and academic methods to the metropolitan centre. For many years Stamp's approach also influenced the philosophy and methods of post-war colonial natural resource survey in other colonies. For example, in the Gold Coast Robert Wills carried out a decade-long study on agriculture and its evolution in the Gold Coast (Ghana), adopting the methods of both Stamp and Darby.⁷⁷ The Gold Coast Soil Survey then became effectively a global model as Gold Coast staff, mainly geographers were dispersed at decolonisation.⁷⁸ This was an important development since the globalisation of colonial soil and land use survey methods long after decolonisation encouraged efficient use of land.

Successionist ecology, by contrast, not only contributed to the emergence of writings in de facto environmental history by colonial researchers but it also led to a growing sense of environmental crisis and conscience among those confronted by systematically gathered evidence of environmental change. It was no accident that ecologists such as Arthur Tansley, Frank Fraser Darling, Alfred Steers and other specialists who had served in

the colonies, were instrumental in pioneering national parks and protected areas legislation in in immediate post-war Britain.⁷⁹ This is not to say that historians have been entirely absent from the process; Keith Hancock's Australian writings and G M Trevelyan's strident 1920s environmentalism are cases in point.⁸⁰ nevertheless, specialists who had been employed overseas in tropical colonies tended to be familiar with the evidence of rapid environmental change worldwide, and had a sense of the global context and speed of the process.

The rising utility of anthropologists, geographers and ecologists for colonial governments in the immediate pre- and post-second world war period made some of these specialists relatively assertive and prescriptive in their opinions about the connections between environments and historical change. A particularly didactic and environmentalist exemplar of this was Gordon East (1902-98), who (as noted at the beginning of the paper) published *The Geography behind History* in 1938. East, a lecturer at Birkbeck College London, introduced his book with a quote from Heylyn's *Cosmographica* of 1649; "if joined together [history and geography] crown our reading with delight and profit; if parted they threaten both with a certain shipwreck". East called the first chapter of his book 'Geography as an Historical Document'. The claim of "geography to be heard in the councils of history", he felt, "rests on the firm basis that it alone studies comprehensively and scientifically by its own methods and technique the setting of human activity and further that the particular characteristics of this setting serve not only to localise but also to influence part at least of the action". Once more quoting Heylyn, East noted that just as "geography without history seemeth a carcass without motion, so history without geography wandreth as a vagrant without a certain habitation". But East needed the confirmation of a last word upon the subject and a widely respected academic authority to clinch his arguments for a new kind of history. He found it in the work of J L Myres who had suggested that "it has been nature rather than man hitherto, in almost every scene, that has determined where the action shall lie. Only at a comparatively late phase of action does man in some measure shift the scenery for himself".

By the time East's book appeared, war clouds were gathering and man was about to do more than simply shift the scenery or act as a geographic agent. Within seven years a nuclear device would be exploded at Alamagordo in the desert lands of New Mexico, rapidly followed by its use at Hiroshima. East's narratives in *The Geography behind History* certainly reflected the great anxieties to which these kinds of events gave rise; indeed, in his co-opting of the authority of an historian of ancient history, East seems to have sounded out the deepest apprehensions of the ability of man not just to destroy nature but to destroy himself and society as well. As we have seen the historical analyses of contemporary man-nature interactions had been closely affected by responses to the cataclysm of the first world war. Such reactions were, if anything, even more pronounced after the second world war. In his book East used the frightening lessons of early civilisational collapse and crisis, just as G P Marsh had done, to cajole his colleagues into looking at history in a new way. For as the old imperial powers stumbled somewhat brazenly to gather up their reluctant colonies after 1945, a veritable avalanche of works appeared inventorying the natural world of the colonies and categorising and theorising man-environment relations, especially in the tropical world. Incidentally one may use the term "man and nature" quite advisedly since, despite the

pioneering efforts of such pioneer women historical geographers as Ellen Churchill Semple and Jean Mitchell, it was still a man's world in colonial environmental writing; or at least it was until the advent of two brilliant inter-disciplinary economic anthropologists;⁸¹ Audrey Richards in Central Africa and Polly Hill in West Africa.⁸²

The new environmental accounts frequently became confessional or at least apologies for imperial environmental misdeeds, particularly under the troubled aegis of a post-war British Labour government ideologically opposed to empire but fated to impose far more interventionist imperial "development" policies than any previous pre-war Tory government had dared to do. It was a similar story in the East Indies where the US contemplated its new colonial possessions and the Dutch sought, disastrously, to regain theirs. It was in this ambivalent post-war setting between 1945 and 1964 that a virtual Niagara of semi-official and academic literature on the human impact in the environment was produced, far outstripping anything prior to 1939. Colonial expertise, not least from Australia, played a major role in the new post-war debates about the global environment, especially in the tropics. Much of this took place in the guise of an emergent development ideology, sometimes under contract to the young United Nations agencies, where ex-colonial natural resource specialists easily found employ. One exemplar of this was Frank Debenham, the Australian geologist and a member of Scott's *Terra Nova* expedition as well as the one of the team that discovered Scott's dead polar team.

After this iconic imperial tragedy Debenham turned to academic geography and then in 1946 proceeded to write, under contract to the Colonial Office and the Commonwealth Development Corporation a series of reports on the natural resource potential of Bechuanaland and Nyasaland.⁸³ He did so in tandem with Laurens van der Post. Van der Post was himself, like Keith Hancock, a keen admirer of Jan Christian Smuts and reflected Smut's novel environmental thinking, which emphasised stewardship and, for van der Post at least, led to a particular interest in the environments and survival of Kalahari Bushmen. For his part Debenham commenced a series of studies of the career and travels of David Livingstone.⁸⁴ In this respect, Debenham in the 1950s was far from alone in his attempts to search for meanings in the writings of colonial explorers and scientists. For it was in the mid-1950s that the dictums of the forgotten environmentalists of a century earlier were once more exhumed and brought to the light of day by the generation of 1950s scholars who pioneered post-war environmental history.

Prominent among them was David Lowenthal, a polymathic geographer also interested in the problems of small West Indian islands, and early texts on the rise and fall of empires.⁸⁵ In his *Versatile Vermonter*, a 1958 biography of George Perkins Marsh, Lowenthal highlighted the way in which Marsh utilised accounts of environmental degradation in the Mediterranean world, the decline of Roman and other empires in the region, and the degradation of colonial island colonies, to colour our warnings about the contemporary unsustainable use of resources in the US, particularly on its colonial western frontier.⁸⁶ It was a global knowledge of the history of environmental change and an acquaintance with the colonial (especially French and British) literature on the imperial ecological impact, Lowenthal observed, that fired Marsh's environmentalist discourses. The theme of the western colonial frontier was continued by Samuel Hays in

his 1959 biographical treatment of Theodore Roosevelt's "Progressive" conservationism.⁸⁷ Roosevelt, his environmentalism apparently masquerading as a "gospel of efficiency", had soon created a veritable empire of public lands, national parks and national forests on a scale never equalled before or since in any non-communist state, with the notable exception of British India's Scottish-inspired forest reserve system, which was in practice Roosevelt's major conservation model.⁸⁸

While Lowenthal and Hays reflected on the origins of conservationism in the context of their own increasingly environmentally conscious post-war milieu, another pioneer of environmental history, Clarence Glacken, was, throughout the decade 1954 to 1965 struggling to produce his magisterial but confusingly named masterpiece, *Traces on the Rhodian Shore: Nature and Culture in Western Thought, from Ancient Times to the End of the Eighteenth Century*.⁸⁹ Glacken's first book, *The Great Loochoo*, based on his doctoral dissertation, was an historical geography of Okinawa.⁹⁰ For Glacken this work had served to emphasise the historical significance of insular environmental constraints, so that the intellectual jump from consideration of island to world probably seemed a logical one, as it had to Marsh in his writings a century earlier. It was no coincidence that Glacken was an academic on the Berkeley campus in the mid-1960s or that his work was published by the University Press of California, a state that nurtured the evolution of the Sierra Club, its activist breakaway group Friends of the Earth, hippies and the strongest elements of the anti-Vietnam war movement. Like them *Traces* represented an attitudinal step-change and an entirely new kind of internationalist retrospective on human perceptions and stewardship of the planet and its inhabitants.

As such Glacken's work would never have been completed had it not been for his intellectual protection from the critique of sceptical colleagues at Berkeley by Carl Sauer, the doyen of American cultural geography and human ecology. Sauer, with his interests in the globalising history of plant domestication and cultural landscape evolution, quickly saw the vital importance of Glacken's work in making the history of ideas about the environment a project on a global scale and on a canvas that, moving beyond European thought, encompassed imperial thinking about nature right through from the Akkadian to the European maritime empires. In particular he explored the emergence of ideas associated with man as a dominant environmental agent. Glacken's classical training as well as his army career in east Asia equipped him for the enormous task he set himself. Like Lowenthal, Glacken sought to exhume the work of previously largely ignored thinkers by drawing attention, for example, to the prodigious writings of John Croumbie Brown, Colonial Botanist of the Cape Colony and the influence of the flurry of French post-revolutionary writers on deforestation, flooding and "torrents", the backdrop to much 19th century French state conservationism.⁹¹

Although at first prevented by its over-erudite title from receiving an appropriate popular reception, Glacken's *Traces* almost immediately spun off a group of studies inspired and taking themes directly from different parts of his periodisation of global environmental ideas and environmentalism. For the classical period the work of Russell Meiggs on *Trees and Timber in the Ancient World* was notable, while Donald Hughes pursued further the ecological history, proto-environmentalism and the alleged ecologically-caused demise of classical Greece and Rome. A classicist like Glacken and Meiggs, Hughes was a scholar who

had taught for years at the University of Athens, a life experience comparable to G P Marsh's diplomatic career in Turkey, Greece and Italy, and Huntington's teaching career in Turkey. Perhaps predictably, Hughes went on to produce the first useful book-length essay on *The Environmental History of the World*.⁹² Having read Glacken, Keith Thomas, previously an English early modernist historian, interrupted his more mainstream interests and researched *Man and the Natural World* (1984), a work which usefully filled in some yawning gaps left by Glacken in his treatment of English environmental ideas.⁹³ But, like Glacken, Thomas also felt compelled to halt his essay at 1,800 leaving a lacuna in environmental history for the whole of the 19th century which has not been properly treated by any environmental historian either for Britain, America or the globe. Instead disciples of Glacken such as John McNeill have opted, at least for now, to jump to the territory of 20th century environmental history.⁹⁴ Their grounds for doing so are that the real step-change or turning point in modern environmental history occurred in the 20th rather than the 19th century, a view with which many may disagree, choosing instead to locate the most significant turning point in 19th century industrialisation.⁹⁵

Meanwhile historical geographers, who might have taken up the baton left by Glacken, became enmeshed in the fashion, born in the late 1960s, for the quantitative analytical geography developed by Peter Haggett and Richard Chorley. This fashion, seems to have come to an effective dead-end by the late 1990s, hurried on by the arguably shorter-lived rush to post-modernism among geographers. This left the field open for environmental historians from a quite different intellectual tradition, inspired mainly by extra-European history and influenced too by the French *Annales* school. Many of these were either French or Iberian, once more crediting Glacken as their inspiration. In 1987 Luis Urteaga published *La Tierra Esquilmada*, a history of Spanish environmental attitudes and policies during the 18th century.⁹⁶ Glacken is also prominent in the work of Brazilian Jose Padua on the proto-environmentalism of early 19th century South America.⁹⁷ Simon Schama, in his populist *Landscape and Memory*, similarly acknowledges Glacken, but confines himself almost entirely to an inward-looking Europeanism.⁹⁸ By contrast, Glacken's key contribution had been to recognise not only that European attitudes to nature could not be understood without reference to European expansion and colonial settlement but that they were essentially a part of a global intellectual evolution. [EJ]

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Notes

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- 78 For example, H Brammer and P M Ahn, both geographers, were other members of the G C Survey. The President's Gold Medal in 1978 and The B R Sen Award for 1981 were presented to Brammer for his work in promoting the optimum use of land, specifically for training and advising on soil survey and land use planning in Bangladesh bringing with him the experience gained as a member of the Soil and Land Use Survey Organisation in Ghana, which had gained international recognition as a pioneer in tropical soil surveys and land-use recommendations. Brammer established the Bangladesh National Soil Survey, completing reconnaissance soil survey of Bangladesh at high resolution in particular allowing the successful promotion of high yielding wheat and rice varieties at grassroot level.
- 79 Arthur Tansley (1871-1955) was profoundly affected by his experiences in Ceylon, Malaya and Egypt in 1900 and 1901. These undoubtedly encouraged him in developing a globally applicable system of ecological explanation. Immediately after his return to the UK he founded the *New Phytologist*. Frank Darling worked extensively in East Africa on ungulate conservation while Alfred Steers worked in the West Indies on coral reef geomorphology and conservation. Moreover all these men were affected

- by their experiences of tropical island colonies, island biogeography becoming a life-long obsession with Darling, who at one time retreated for some years to the uninhabited Scottish island of North Rona. Alfred Steers' colonial academic contributions include: Steers, J A (1940a), 'The Coral Cays of Jamaica', *Geographical Journal*, 95, pp 30-42; Steers, J A (1940b), 'The Cays and Palisadoes, Port Royal, Jamaica', *Geographical Journal*, 96: pp 305-28; J A Steers, V J Chapman, J Colman and J A Lofthouse (1940c), 'Sand Cays and Mangroves in Jamaica', *Geographical Journal*, 96, pp 305-28.
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