

# Imperialism, Intellectual Networks, and Environmental Change

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

*The first part of this article traced the early beginnings of environmental history that was framed largely in the context of the colonial encounter. Part II begins by examining the developments in environmental history that in the 1950s had their roots in the nexus that had developed in the 1930s between world history, the 'Annales' school of history and aspects of local history as well. Scholars of environmental history in this period also came under the towering influence of the historian Arnold Toynbee, whose narratives and explanations of the global cyclical movements in world history stemmed from his understanding of the classical Greek and Roman periods of world history. Toynbee's later writings imparted a new ecological and internationalist direction to world history. The latter 1950s saw the spread of environmental history to scholars in other countries and an admixture of different disciplines and specialisations gave a new thrust to the subject. Earlier histories of imperialism and colonialism now began to be looked at a new from their impact on the environment and the ecology.*

**RICHARD GROVE, VINITA DAMODARAN**

### Environment in Toynbee's World History

The early developments in 1950s environmental history had at least some of their roots in a nexus that had developed 20 years earlier between world history, *Annales* history (especially in the form espoused by Fernand Braudel and LeRoy Ladurie) and a related school of predominantly British historical geography and local history dominated by Henry Clifford Darby, W G Hoskins and Herbert Finberg. All these scholars were influenced by and came under the giant intellectual shadow of Arnold Toynbee, although this influence was not always overt.<sup>99</sup> More recently, William McNeill, renowned world historian of disease and environment, was led, significantly, to write an important biography of Toynbee.<sup>100</sup> So in order to better understand the roots of environmental history we need to understand the antecedents of Toynbee, especially where imperial concerns are involved.

The origins of Toynbee's grand schema for his 1934 *A Study in History* were rooted in a preoccupation with comparisons between the Classical Greek and Roman and the British empires.<sup>101</sup> At Winchester School Toynbee was taught to read classical history in the light of contemporary events and this tendency was strengthened while a student at Oxford by the teachings of Alfred Zimmern, later the author of *The Greek Commonwealth*.<sup>102</sup> At an early stage, therefore, Toynbee's early training pushed him in the direction of analogical and global thinking and writing. While still in his 20s Toynbee saw his task as Herodotean in scope, attempting to explain conflicts between east and west and analysing the rise and fall of empires, on a global scale. The combination of classical training and imperial preoccupations was to prove a creative synthesis. The

semi-ecological rules that Toynbee saw as governing the rise and fall of civilisations represented a theoretical breakthrough but led to major difficulties when it came to assembling empirical evidence to substantiate his case. For example, he explained the rise of Dutch civilisation in terms of the challenge of the sea and the need to build dykes and control rivers; but this was an argument that was ridiculed by the historian Pieter Geyl for overlooking the dynamics of Dutch economic growth.<sup>103</sup> One should not forget that Toynbee's notions of cyclical rises and falls in successive civilisations were influenced, almost unavoidably by Oswald Spengler's *Decline of the West*, a work which, however one may dislike its apparent liking for fascist primitivism and the return of "instinct" in politics, was at least global and even vaguely ecologicistic in its propositions.<sup>104</sup>

In his later phase, Toynbee moved away from his earlier somewhat Gibbonesque emphasis upon the need for the revitalisation of an imperial high culture. Instead western cultural values, he thought, needed to acquire a global basis without at the same time encouraging nationalism. This might entail what he termed an 'ecumenopolis' in a single world society, an idea he seems to have borrowed from the Brazilian town planner Lucio Costa, possibly influenced too by the ideas of Gilberto Freyre.<sup>105</sup> In his final years Toynbee's extraordinary but somewhat wandering *Mankind and Mother Earth* suggested a major new ecological and internationalist direction to world history, one which he precociously argued should draw on Hinduism, Buddhism and Islam.<sup>106</sup> To that extent he provided a major intellectual challenge to scholars anxious to put the study of world history onto a more professional footing in the post-war years and to shift the focus once and for all away from the Eurocentric obsession with western technological and political superiority. In this sense Toynbee,

perhaps more than any other prefigured, in an overarching sense, the agendas of recent attempts at world environmental history. Nevertheless, his more insightful contemporaries criticised Toynbee's lack of detail on environmental factors. Aldous Huxley, for example, pointed out that anyone who went through the indexes of *A Study in History* looking for such items as soil, rainfall, cattle, fish, disease or extinction would be disappointed. Indeed Huxley went through the index to volume 6 of the *Study* and found five citations for "Popilius Laenas", two for "Porphyry of Batanea", "but the word you would expect to find between these names, population, is conspicuous by its absence".<sup>107</sup> Notwithstanding, Toynbee's *Mankind and Mother Earth* was perhaps the most formidable, although sadly posthumously published, early attempt to write a world environmental history.

Fernand Braudel, for his part, was also critical of Toynbee's lack of attention to detail and scathing of his theoretical approach, although in later years he found himself borrowing conspicuously from Toynbee's weltanschauung.<sup>108</sup> There is no question, however, that Braudel's long absence from Europe and then his long wartime imprisonment enabled him to break out of a Eurocentric mould and think in more global terms. So too his long residence in the semi-arid tropics made him sharply aware of the critical importance of climatic influences and climatic extreme events as major constraints in the explanation of human behaviour and history, particularly over the long economic cycles and fluctuations he was preoccupied with. Braudel was not entirely alone in this. For example, one would also want to mention the important work published by Labrousse on grain prices, climate and the French revolution in this connection.<sup>109</sup> But the extra-European and colonial experiences of Braudel's early life, like those of much earlier colonial scientists, were the important factor in branding the importance of climate on his mind. In this sense he shared a great deal with much earlier proponents of the significance of climatic influences on history, very much the key to the emergence of world environmental history, apart from the growing mental influence exercised by colonial expansion itself in promoting global thinking and comparisons.

### **Watershed Years: Glacken, Rackham and Hoskins**

1955 and 1956 emerge as a critical watershed years in the evolution of post-war environmental history, in particular with the holding of W L Thomas' landmark meeting at Chicago on 'Man's Role in Changing the Face of the Earth', the beginnings of Indian ecological history, the appearance of Glacken's first book, *The Great Loochoo* and the publication of W G Hoskins' *The Making of the English Landscape*, the latter being perhaps the first major environmental history to be written by a historian.<sup>110</sup> The Chicago meeting, which opened on June 16, 1955, was sponsored by the Wenner-Gren Foundation for Anthropological Research and had been planned for three years, and was encouraged particularly by Carl Sauer and Lewis Mumford. The Foundation's interest in calling the 1955 symposium was "to keep abreast of all the means at man's disposal to affect deliberately or unconsciously the course of his own evolution; in this case what man has done and is doing to change his physical-biological environment on the earth".<sup>111</sup>

The organisers highlighted as the dual inspirers for their project, (published as a single massive volume in 1956), G P Marsh and the Russian geographer Ivanovich Woeikof. The latter had,

like Marsh, made a series of clarion calls against thoughtless environmental degradation. The Chicago organisers were cognisant too of the significance of Nathaniel Shaler's essay entitled *Man and the Earth* (1905) and quoted other lesser-known authorities as a way of giving some credence to the undoubted timeliness of the conference.<sup>112</sup> It was opened, appropriately, with papers read by Carl Sauer and Clarence Glacken. For Sauer the meeting was to be a "Marsh festival", while Glacken opened his address, on 'Changing Ideas of the Habitable World', by referring to Plato's remarks on the ruination of Attica by soil erosion.<sup>113</sup> The latter essay was a dry run for the arguments produced in *Traces*, the book which would appear more than a decade later in 1967. It made great play in particular of the works and warnings of John Croumbie Brown, the colonial botanist from the Cape Colony over whose work Glacken repeatedly enthused, especially later in life.<sup>114</sup>

The papers presented to the Chicago meeting were largely written by white Anglo-Saxon men, but there was one very important exception, that given by E K Janaki Ammal, a distinguished woman geneticist and global plant geographer, a professor of botany at Madras and co-author of *The Chromosome Atlas of Cultivated Plants*.<sup>115</sup> The latter was already a famous work and one which qualified her uniquely to comment on the evolution of global plant distributions, and human impacts upon them. But her contribution to the Thomas volume was to essay an environmental history of subsistence agriculture in India. Paying particular attention to the sharp difference between patriarchal, matriarchal and tribal (indigenous Indian) agronomies, Ammal can be said to have pioneered both indigenous and gendered environmental approaches to land-use history.<sup>116</sup>

Parallel developments were taking place in India itself in 1955-1956, particularly under the aegis of the Ecole d'Extreme Orient. This institute, originally established in Phnom Penh and Saigon, was forced to move to Pondicherry in French India during the Vietnam War in early 1954. The first director of the institute in Pondicherry, Jean Filliozat, pioneered a major study of the forest and vegetation history of the whole of southern India. This was a project in the fashion of Dudley Stamp's surveys, planned on an unprecedented scale and which in 2005 is still far from complete. But, combined with his 'annaliste' training, the scope of the project led Filliozat to write some of the earliest "ecologies historiques" of India. His first paper, written in 1956, concerned the environmental history of the Kallar country of south India.<sup>117</sup> As such it was a forerunner of what was to be a burgeoning school of environmental history in south Asia. Like Janaki Ammal, it was Filliozat's interest in ethnobotany that led Filliozat to think in terms of environmental history on large-scale.

From hindsight what we can now see as the overwhelming influence of Glacken, a presence that was already disproportionate at Chicago, could not really have borne fruit without the development of strong national schools of environmental history. These developed first in Britain, America, Australia and in India, although we may note that some British and American scholars, for example, can be identified as scholars of regions far from home. As we have seen, the first attempts at supra-regional or global environmental history had developed first among classical scholars and archaeologists used to thinking at least in the dimensions of the known classical and Mediterranean world.

In Britain Hoskins wrote *The Making of the English Landscape* while at the department of English local history at Leicester

University. This school concentrated on making use of the minutiae of local sources on environment and material culture. It also owed intellectual debts to Henry Darby, (especially his 1936 work on *The Draining of the Fens*), the *annalistes* and to Fernand Braudel. Braudel, whose first major work on the Mediterranean appeared in 1949, shocked contemporaries with his holistic, globally referential and conspicuous attention to climate, environment, the sea and material culture.<sup>118</sup> However, like Glacken's work, the book was before its time and it was not for decades that comparable work would be done on the Mediterranean, by Claudio Vita-Finzi, John McNeill, Oliver Rackham, Peregrine Horden and A T Grove.<sup>119</sup> Instead Braudel was emulated elsewhere, due possibly to the scepticism of the French academic establishment towards his academic empiricism characterised as it was both by environmental determinism and its dismissal of grand theory.

This meant that the publication of the Braudelesque work of Hoskins acquired a still greater importance. Significantly Hoskins, although originally a medieval historian, collaborated closely with Dudley Stamp in producing *The Commons lands of England and Wales*, another book with antecedents in colonial survey methods.<sup>120</sup> Hoskins' work helped to stimulate the growth of a whole field of agricultural and local history after 1953 and nurtured a group of scholars, many of them women, who carried Hoskins' methods (summarised in *Fieldwork in Local History*, 1967)<sup>121</sup> to many parts of British provincial history, but with a Braudelian rigour. Joan Thirsk, Margaret Spufford, Harold Fox and John Patten, among others, all owed an intellectual debt to the Leicester/Hoskins school as well as the methods of Herbert Finberg. One might note that Finberg, himself a follower of Frederic Seebohm's village-level approach in local history, was the founder of the multi-volume *Agrarian history of England and Wales*, much of which was in essence local environmental history.<sup>122</sup> Women, arguably, were less hesitant about crossing disciplinary boundaries and concentrating on the detail of material culture. Indeed, to date the disproportionate presence of women as authors of environmental history, just as they are preponderant in the environmental movement, has been conspicuous. The Hoskins school also encouraged scholarship in English forest history and on hydraulic and water-management history. In the English Fenlands for example Jack Ravensdale wrote *Liable to Floods*, a highly creative Hoskinite development of the work of Henry Darby, examining the impact of 17th century drainage on a fen-edge village through many centuries.<sup>123</sup> Similarly, Victor Skipp, another Leicester product, published an innovative ecological history of the Forest of Arden.<sup>124</sup> There was an element of protest in the Leicester school approach, connecting both a rejection of the macroscopic concerns of metropolitan university history and the incorporation of a new landscape and environmental framework to history, that was implicitly local and global.

The Leicester school of local and regional history also gave inspiration to researchers entering the subject very much in the tradition of the geologist/ecologist Dudley Stamp, that is, directly from the natural sciences. Prominent among these was Oliver Rackham, a plant physiologist who happened to have received a Classical languages training at public school. Just as physiologist Joseph Needham became the foremost historian of Chinese science so Rackham became the leading exponent of English and European ecological and woodland history; what was originally his fungi and plant-collecting hobby became a profession

strengthened by the rare ability to read medieval court rolls as if they were a daily newspaper. Rackham's work was as painstaking as Glacken's and his first book in ecological history was succeeded by a series of books on ancient woodlands and the countryside, all written much in the mode of Hoskins, but displaying with finesse the advantages of both a classical and scientific training. Rackham seems at first to have been reluctant to admit to his intellectual heritage but he finally signposted it in his first major academic excursion outside Britain, in *The Making of the Cretan Landscape*, published in 1994.<sup>125</sup>

Other book titles also echoed Hoskins' work on the English landscape, notably Michael Williams 1974 *The Making of the South Australian Landscape*.<sup>126</sup> The development of a French school of environmental history has always been rather separate from the Anglo-American tradition in sources and inspiration. However, the work of Le Roy Ladurie, especially his *Times of Feast, Times of Famine* made a great impression outside France and has had a global relevance.<sup>127</sup> Ladurie took a particular interest in the historical impact of climate change and climatic extreme events on local communities, and had been much influenced by his reading of British climate historians. It is worth exploring the background to this kind of climatic history since it has become an increasingly important element in global environment history.

### Global Climate Anomalies and Environmental History

Since the early 1920s a number of historical geographers and Annaliste historians have actively propagandised the utility of climatic factors in historical analysis. Principal among them were Georges Lefebvre, C E Labrousse, and then Le Roy Ladurie himself.<sup>128</sup> One major result of this development was that the implications of a 'Little Ice Age' discovered by Quaternary climatologists, and now said to have lasted between about 1250 and 1900, started to permeate the research agendas of a very few economic historians and historical geographers in western Europe.<sup>129</sup> This was largely due to the urgings of Gustaf Utterstrom, a Swedish geographer. However, the implications of Little Ice Age changes were eventually taken seriously not by Europeanist historians but by Asianists and Africanists, some of whom began, although slowly, to see possible climatic connections with the severe impact of the so-called '17th century crisis' on the tropical economies.<sup>130</sup>

A developing pre-1939 school of French economic history, led by Labrousse, that devoted particular attention to the impact of climatic variability and variations in crop yields on social change and crises was initially dismissed by mainstream (and often Marxist) historians after the 1940s. To a great extent the denigration of theories that could be described as environmentally determinist was due to the unfortunate links which Ellsworth Huntington, otherwise a meticulous scholar, had made with the eugenics movement. The resulting tendency to entirely dismiss the importance of climate in historical explanation of social and environmental change developed into a pattern that only started to be broken in the discipline of history itself by Le Roy Ladurie, who had himself been influenced by the work of Gustaf Utterstrom and Gordon Manley and particularly by a key article published by Utterstrom in 1955 on climatic fluctuations and population problems in early modern history.<sup>131</sup> This article summarised much of the data that was available at the time on the influence

of Little Ice Age climate on social and economic history. It was concerned chiefly with the contribution made by periods of climatic deterioration to the onset of economic depressions in the western temperate world.

The historical impact of major climatic fluctuations outside the polar and temperate zones has continued to be largely ignored until recent years. Le Roy Ladurie, as we have seen, developed his own outlook in *Times of Feast, Times of Famine* in 1972. There is some irony about this date. It was also the year that saw the commencement of an El Niño event that we can now see from hindsight marked the beginnings of both a new scientific awareness of the globally occurring El Niño-Southern Oscillation (ENSO or El Niño) phenomenon as well as the glimmerings of a public awareness of the connection that the El Niño might have with what were being recognised as globally “tele-connected” extreme climatic events. This was largely a result of the permeation of television images of suffering caused by the 1972-74 droughts in West Africa and Ethiopia. Thirty years later, it is no longer possible for the historian to demonise “environmental determinists” or to claim that climatic data have little or no place in historical explanation. This is particularly so, now that increasingly high resolution historical and physical proxy data have become available about the chronology of extreme climate events, and rapid global warming is accepted as a fact by the international scientific community. Moreover, many physical scientists are now relying heavily on the specialist archival knowledge of historians to calibrate much of their often inadequate or broken data (for example from coral, varves, stalactites or tree-rings) on climatic events.<sup>132</sup> The breakthrough in this respect came about through the work of William Quinn, originally a fisheries scientist. Quinn realised that fishery yields the Indonesian seas matched fluctuations in the records of anomalous warm currents of the coast of Peru in El Niño years.<sup>133</sup> Quinn also pinpointed the utility of using the long-term records of the river Nile levels as a proxy indicator of El Niño records since at least 620 AD until about 1510 AD, after which a wide variety of historical records were available in Spanish and other records.<sup>134</sup> Subsequent studies of connections between El Niño events and historical records of extreme flood, droughts, disease and crop failure events prompted a flurry of often inaccurate and populist studies attempting to draw broad historical perspectives from the somewhat thin archival evidence available. These have covered periods from as far back as 3000 BC up to contemporary late 20th century events.<sup>135</sup> Almost all of the studies to date have attempted to draw general and often polemical conclusions from data that was far too thin, or too confined to the Spanish records used by Quinn, whose warnings on their limitations were often ignored, or were confined to using sources from the instrumental period after about 1870. Better historical analyses of the impacts of El Niño events will probably appear when the great bulk of records from pre-industrial south and south-east Asia and west Asia have been properly examined. It is already clear, however, and this represents a revolution in world environmental history, is that extreme climate events have regularly produced simultaneous crises the tropical and temperate worlds. The full implications of this remain to be absorbed by theorists, particularly those who have in even in the recent past been ready to make facile or polemical connections between environmental and economic crises and crises of capitalism, or who have ascribed third world economic crises solely to the policies of colonial powers. Thus Marxian economic historians

such as Immanuel Wallerstein who had constructed models of western-centred economic “systems” have started to appear woefully inadequate in explanatory terms, having neglected first the ecological aspects of “world systems” and secondly, for which they are certainly less to blame, having entirely neglected the enormous impacts of global climate events. To some extent we can see the full consequences of the discovery of El Niño chronologies in understanding world history as a result of what now seems a startling failure to examine the impact of sea and atmosphere on global environmental history. In other respects, too, marine environmental history, so intimately connected with inter-connected issues of maritime culture, climate change and sustainability has been an almost wholly neglected area for any but highly specialised historians.

### California and Environmental History

The shift towards integrating new climatic knowledge into understandings of the dynamics of social and economic change had been prefigured by Glacken in *Traces*, in underlining the long intellectual history of theories on anthropogenic causes of climate change. Throughout most of the period between 1955 and 1967, Glacken continued to work away at *Traces on the Rhodian Shore*. When the book finally appeared it coincided with the simultaneous and explosive growth of both the anti-Vietnam war movement and the nascent popular environmental movement, many of whose influential advocates were, like Glacken, faculty members on University of California campuses. Meanwhile Carl Sauer, Glacken’s patron, had published his own *The Early Spanish Main*, in 1966, with the University of California press.<sup>136</sup> The press had already been broken in to the task of publishing environmental history with the appearance in 1963 of Clifford Geertz’s *Agricultural Involvement: The Processes of Ecological Changes in Indonesia*. For both authors and publishers interdisciplinary research, as Geertz wrote, “is always a gamble”.<sup>137</sup> But Geertz also left a clue to the growing interest that some historians were taking in the work of their more interdisciplinary colleagues. Quoting Marc Bloch, Geertz noted that “just as the progress of a disease shows a doctor the secret life of the body, so to the historian the progress of a great calamity yields valuable information about the nature of a society so stricken”.<sup>138</sup> Undoubtedly, Geertz, Sauer and Glacken all wrote, at least in part, from the standpoint of the growing post-war American imperial interest in south-east Asia and south America and their personal experience of it coloured their writing. Their approach was intrinsically global. By contrast those earliest Americans actually to call themselves environmental historians, who were faculty at UC Santa Barbara, only had the barest acquaintance with non-American themes and indeed most California historians lived in ignorance of what their interdisciplinary colleagues a few miles away at Berkeley were actually up to. Even less were they aware of the activities of Henry Bernstein, their pioneer compatriot at London University.

In 1967 Roderick Nash published *Wilderness and the American Mind*.<sup>139</sup> The book was an immediate success with the California public but was a strikingly nationalistic and parochial product compared to the work of Glacken published in the same year. The book’s success encouraged Nash to take his research further and to list a new course at UC Santa Barbara entitled ‘Environmental History’. Nash seems himself to have coined the term while quite unaware of its long-standing use

by Quaternary geologists, or indeed by Bernstein in London. As Nash wrote revealingly in 1972:

I thought I was responding to the cries for environmental responsibility which reached a crescendo in the first months of that year. I also felt good about helping to make the university, and particularly the Department of History, more responsive to the problems of society. I was, at last, 'relevant'. Moreover, my previous work in American intellectual history, especially the research that led to *Wilderness and the American mind*, had familiarised me with broad patterns of interaction between Americans and their environment...but on the way back to my office, misgivings began. They grew into anxieties of major proportions during the next two weeks as 450 students enrolled in the inchoate course. What was I going to do with them? There were few places to turn for answers. To the best of my knowledge no similar course had ever been offered. Also lacking was the body of reading material.<sup>140</sup>

For a scholar teaching in California these remarks were startling. Nash clearly believed that it would be necessary to start from scratch, and appeared not to know of either Glacken or Sauer. "Environmental history", he wrote, as if discovering something quite new, would refer to the past contact of man with his *total* habitat. Casting around for an idiom or a comparison, Nash continued: "the environmental historian, like the ecologist, would think in terms of wholes, of communities, of inter-relationships, and of balances. He should take as his first axiom John Muir's statement that 'when we try to pick out anything by itself, we find it hitched to everything else in the universe.'" Finally, he concluded, without any real justification, (except perhaps in terms of a kind of proto-Deep Ecology) "in a very real sense environmental history fitted into the framework of New Left history. This would indeed be history 'from the bottom up', except that here the exploited element would be the biota and the land itself." These remarks really gave the game away. Clearly Nash conceived of himself as the inventor of "environmental history". Nash went on to describe the contents of his course as it later emerged. It was remarkable for having absolutely no reference to any extra-North American material, with the exception of a reference to G P Marsh's *Man and Nature*. In 1972 Nash contributed a chapter on 'The State of Environmental History' to a volume on *The State of American History* edited by Herbert Bass.<sup>141</sup> Here, as in later article in the *Pacific Historical Review*, Nash appears to have equated environmental history purely with American history. This inward-looking bias was important since Nash and his colleagues went on to found the American Society for Environmental History, as a breakaway from the American Historical Association. Unsurprisingly the house journal of the Society, *The Environmental Review*, now named *Environmental History*, confined itself until very recently almost entirely to American issues.

This isolationism may have reflected a wider tendency to introspection after the Vietnam War. Subsequent moves towards a more global treatment of environmental history had to come from elsewhere, above all from ecologists, geographers, archaeologists and colonial or Asianist historians. Just as in the previous century, discourses of global environmental history after 1967 (that is, after Glacken) developed in discreet and surprisingly identifiable areas of academe, above all in those concerned with a classical training, experience in the Mediterranean region (or both) and among academic south and central Asianists. After 1967 another group of specialists also became

particularly concerned with global change. These were historians of China and Japan, and historians of empire. In other words, they were scholars accustomed to think in the long time periods encompassing classical history, extensive geographical areas and those accustomed to making geographical and temporal comparisons of environmental and social change. But overarching these incentives to writing global environmental history were an increasing understanding of the intrinsically globalised dynamics of climate history and the growing interest, in the decolonisation period, in all aspects of imperialism. Thus after Glacken, we see both a range of world-wide environmental treatises being produced and an ambitious series of major regional environmental histories of a kind that had not been attempted previously.

### Africanists, Classicists and Global Environmental History

Perhaps perversely this pattern was initiated by Africanist and South Americanist archaeologists, in regions where documentary data was very scarce, above all in Sub-Saharan Africa and in the Amazon. Publications by Thurstan Shaw in 1975 on the origins of African crops and by Betsy Meggers on the drought and population history of the Amazon fall into this category.<sup>142</sup> Similarly Cambridge geographers A T Grove and A S Goudie, from an initial interest in the climatological and quaternary geological history of Africa branched out to develop a much wider interest in the regional environmental history of Africa, the Mediterranean and Southern Europe and (in the case of Goudie in 1981) to survey human impacts globally.<sup>143</sup> The research of Polly Hill, particularly in her 1963 book on the *Migrant Cocoa Farmers of Southern Ghana*, linked anthropology to detailed environmental history, thereby overturning (through detailed fieldwork knowledge) a welter of mistaken theories about west African plantation agriculture, an iconoclasm which she later extended in her controversial *Development Economics on Trial*.<sup>144</sup>

Meanwhile Claudio Vita-Finzi, like Goudie a student of A T Grove, had in 1969 published *The Mediterranean Valleys: Geological Changes in Historical Times*, a work based on north African experience.<sup>145</sup> This was a forerunner to two major works on the environmental history of the Mediterranean. The first was *The Mountains of the Mediterranean World*, by John McNeill, the junior scion of a remarkable father-and-son duo of world environmental historians. The success of this book emboldened to attempt *Something New under the Sun: An Environmental History of the Twentieth Century World*.<sup>146</sup> Similarly, William McNeill the elder, a classicist, had himself started out with an interest in the eastern Mediterranean, fostered in second world war during a long sojourn there during 1944-46 as an assistant military attaché and teacher at the same time as Clarence Glacken was carrying out an equivalent identical job with the US forces in Okinawa. The elder McNeill had similarly extended his reach to write a series of world histories with an increasingly ecological bias starting with *The Origins of Civilisation* in 1968 and moving on to interpret the global history of epidemics in *Plagues and Peoples* in 1976.<sup>147</sup>

But the most important book written by the McNeills was that written jointly as *The Human Web: A Bird's Eye View of World History* published in 2003.<sup>148</sup> This implicitly highlighted the fact that environmental history could not be understood properly

outside the context of the progressive globalisation of the history of ideas. It built on and extended the notions first developed by Janet Abu-Lughod in 1991 in her seminal *Before European Hegemony: The World System AD 1250-1350*.<sup>149</sup> In 2001 the publication of *The Nature of the Mediterranean* brought together the classical training and ecological history skills of Oliver Rackham and the colonially nurtured Africanist climatological interests of A T Grove. Both were much influenced by the 1988 publication of the monolithic *The Little Ice Age* by J M Grove, a book from which much of their climatic chronology was drawn.<sup>150</sup> Relying largely on historical archives, the latter book was a work in global climate history which attempted, for the first time, a world synthesis of glacial fluctuations and human responses during the period 1250-1900. Presentations of this book, together with Wally Broecker's work on millennial and anomalous fluctuations in deep ocean saline flows, helped to provoke the making of the Hollywood epic *The Day after Tomorrow*, a film which has undoubtedly helped to raise the issue of global warming in the popular mind. Moreover, in the now familiar pattern in which African scholarship appears to have pre-figured global studies, much of J M Grove's first published work had concerned the colonial environmental history of the Gold Coast and the Volta Delta.<sup>151</sup>

### Millennial and Socio-Ecological Environmental History

Meanwhile Donald Hughes (at one time a history lecturer in Athens) continued to link his classical eastern Mediterranean preoccupations with the first professional historian's stab at writing an avowedly global environmental history published in 2001. From being the fantastical projection of the celluloid Space Odyssey, 2001 now became a millennial milestone in global environmental history.<sup>152</sup> What some have considered to be the "closing" of the globalised world in terms of communication and the internet had by now become the academic occasion for a whole series of treatments that took a retrospective look at the contribution of European and Chinese imperialisms in globalising resource and territorial control and transforming the world environment. The increasing scholarly interest taken in these matters by Americans seems to have paralleled the rapid growth in US imperial interests and ambitions after 1945, despite the quite separate introspective nature of environmental history in the US itself. It may well have been this awareness of new superpower status, as well as the cold war itself, that encouraged two men, Paul Colinvaux and Jared Diamond, both tropical ecologists, to attempt socio-ecological explanations of world history, respectively in the *Fates of Nations* (1980) and in *Guns, Germs and Steel* (1997).<sup>153</sup>

These books, both best-sellers, attempted to explain western European "supremacy" in terms of such concepts as "the learned niche" (Colinvaux) and the rather less profound "differences in environmental real estate" put forward rather inconclusively by Diamond as the reason for the differential economic trajectories of Europeans versus African or aboriginal societies. Neither of these authors attached primacy to the coalescence of networks of ideas in explaining technological differentiation as the McNeills did so much more satisfactorily in their later *Human Web* of 2003. Differences in intellectual training clearly counted in this instance. A more recent book by Diamond, *Collapses*, published in 2004, represents a populist attempt to explain societal collapse

in terms of isolation, climatic anomalies and fossil fuel consumption was arguably somewhat hindered by its retreat into a heavily Americo-centric use of case-studies.<sup>154</sup> Nevertheless, the sub-conscious influence of notions of millennial collapse and Social Darwinist competitive superpower competition that underlies both of these socio-ecological global history writings, is quite transparent. This is characteristic, it must be said, of much socio-biological history written for the American market, where underlying, introspective and possibly Puritan apprehensions of divine justice represent as much a response to a marketing opportunity as a genuine reaction to global climate anomalies. But there is another underlying flavour to the kind of judgmental global history preached by Colinvaux and Diamond: that of cultural superiority.

Neither author appears to have been aware of highly relevant earlier writings, such as those by Jan Christian Smuts whose 1926 visionary book, *Holism and Evolution* was itself heavily affected by the new plant ecology of Arthur Tansley, himself the author of one of the earliest environmental histories of Britain. Smuts had been much concerned with the relations between climate and human evolution. One question the unquestionably (although mildly) racist Smuts raised in a lecture in 1932; "what has caused the immense difference between the European and the Bushman of today? We see the one the leading race of the world, while the other, though still living, has become a mere human fossil, verging to extinction" sounds eerily like many of the rhetorical questions underpinning the work of both Colinvaux and Diamond. Nor, it would seem, were they aware of that other Jungian disciple of Smuts, Laurens van der Post who, after much personal struggle, became a great early advocate of the natural sophistication of indigenous societies that had previously been scripted as "primitive". The root of the problem, it seems, is that ecological training could be used to argue for preferential race or caste classification or for quite the opposite, an egalitarian or cultural relativist view of human types and their varying ecological interactions and impacts. What purported to be "objective" scientific environmental history proved, inadvertently, to be quite the opposite.

### Asianists and Global Environmental History

In contrast to the global views of the socio-ecologists, a refreshing and less culturally triumphalist view of the environmental impact of apparently "successful" expansionist imperial societies has been taken by a distinctive group of historians of China, beginning with Lester Bilsky in 1980.<sup>155</sup> Bilsky, drawing mainly on the translated works of Mencius, Hsuntze and Chan-kuo Ts'e, pointed to the prolific evidence for local social collapse and famine caused wars in the first millennium. Much more detailed evidence was published in the ensuing 20 years for what Elvin first called 'Three Thousand Years of Unsustainable Growth', evidence that was expanded further in Elvin's *Retreat of the Elephants; An Environmental History of China*.<sup>156</sup> Peter Purdue and Robert Marks, like Elvin, drew attention to the massive ecological transformation brought by the westward expansion of successive Chinese empires, findings which helped to place European colonial expansion in perspective and re-emphasise their comparable ecological impacts.<sup>157</sup> These kind of findings arose as a logical development of empirical and yet questioning approaches to long-standing assumptions in agrarian and economic history, questionings which had already started in Elvin's

1973 *The Pattern of the Chinese Past*, a book which already represented a controversial watershed in Chinese economic history, a field which had, in fact, almost entirely ignored environmental factors.<sup>158</sup>

A comparable shift towards an ecological questioning of conventional agrarian history developed among historians of south Asia in the early 1980s, and particularly in the minds of Richard Tucker and John Richards, the latter being a specialist in the monetary and agrarian history of Mughal India. Both men were convinced that ecological changes accompanying economic transition in the 17th to 19th centuries, while clearly large-scale, had never been properly quantified. Almost immediately Richards and Tucker, working in tandem, realised that their questioning could not be confined to south Asia but was equally requiring of answers researched in terms of global economic history in general, particularly with the advent of an era in which the connections between deforestation, carbon dioxide production and global warming were becoming major popular anxieties in what Teresa Brennan was already calling the “Age of Paranoia”.<sup>159</sup> In two major edited works they therefore set out to review the global history of deforestation, especially in the tropics.<sup>160</sup> Stimulated by this gargantuan effort, the two scholars then set out in diverging directions. Richards decided on a project of Domesday Book proportions that aimed to chart the district-by-district ecological transformation of the whole of India and south-east Asia in 1880-1980. This took place over a 10-year period under the aegis of the Duke Ecological History project involving ecologist Betsy Flint, and historians James Hagen and Edward Haynes.<sup>161</sup>

Meanwhile Richard Tucker started to gather material not this time on the impact of the Raj but on the new global raj of the US for yet another appropriately millennial global history disturbingly named *Insatiable Appetite: The United States and the Ecological Degradation of the Tropical World*.<sup>162</sup> Like Tucker, Richards felt compelled to continue to investigate the ecological effects of globalisation, inspired partly by Abu-Lughod’s essay on “pre-colonial” globalisation. Taking up where Abu-Lughod had left off, Richards set out to survey the environmental history of the whole world between 1500 and 1800. But by ending his study at 1800, he joined scholars such as Glacken and Thomas who felt reluctant to consider the industrialising complexities of the 19th century, a century whose environmental history has, as yet, only been tackled in any effective way at all and then only regionally by Bonyhady and Raymond Williams, the latter as a study literary history. Nevertheless Richards *The Unending Frontier* (2003) stands to date as the only work of its kind yet to rival in scale or authority Glacken’s *Traces on the Rhodian Shore*.<sup>163</sup> It is true that attempts were made in 2001 and 2003 by Sing Chew and Michael Williams to essay world histories of degradation and deforestation over the last 5,000 years.<sup>164, 165</sup> However, these brave but unwieldy attempts are necessarily handicapped by large lacunae in understandings of the basic research on the environmental histories of large parts of the world, as well as major gaps in the history of ideas about the environment in the imperial context. By contrast, both Tucker and Richards had come to global environmental history as part of a realisation that the ecological impacts of empire, especially as forerunners of “modern” globalisation, had been startlingly neglected. Nevertheless, in making the quick and logical intellectual leap from south Asia to world history, Richards and Tucker had ironically left the


environmental history of south Asia itself largely undone with the exception of some very limited essays, regional studies and essay collections.<sup>166</sup>

### Imperial Historians, Historians of Science and Global Environmental History

The difficulty with writing a history of globalising colonial empires in terms of an expanding resource frontier was that Richards had necessarily to write snapshots of different parts of that frontier worldwide focusing on a smorgasbord of commodities and periods. This permitted a very effective broadbrush picture of what might have been happening in terms of actual material change and resource consumption in the early modern period. But Richards did not set out to explain the reasons, methods and motivation of the ecological transformation in terms of the history of science, history of ideas or imperial organisation. Some of these ways of understanding the “empires of nature”, to use<sup>167</sup> Mackenzie’s term, were already well developed. In particular, Roy Macleod, Deepak Kumar and Satpal Sangwan had, in their early excursions into the “science of the Raj”, started to unravel the complex matrix of British imperial science in India, all of them finding it was necessary to overturn Louis Pynson and George Basalla’s portrayals of colonial science as the handmaiden of metropolitan science. John Mackenzie in *The Empire of Nature* (1988) and Richard Grove in *Green Imperialism* (1995) found rich veins to follow in the history of imperial conservationism, some of them intersecting histories of hunting and natural history collecting.<sup>168</sup>

Henry Hobhouse in *Seeds of Change; Five Plants That Transformed the World* (1985) and Alfred Crosby’s 1986 *Ecological Imperialism* (an enlargement of his 1972 *The Columbian Exchange, the Biological Consequences of 1492*) focused on the effects of the introduction of crops and diseases by Europeans to the settler colonies and the West Indies.<sup>169</sup> Although illuminating, these books largely ignored the much longer pre-European histories of plant transfer and disease in Old World Africa, Asia and Oceania, many accounts of which had been written by scholars such as Thurstan Shaw, as well as many contributors to the journal *Economic Botany*. But Crosby and Hobhouse dramatised the issue. Lucille Brockway, in a precocious and pathbreaking book, *Science and Colonial Expansion*, explored the role of the Royal Botanic Gardens at Kew in promoting imperial botanic gardens and exchanges.<sup>170</sup> Then Ray Desmond, (like John Richards originally a south Asianist) using expertise gathered as an archivist of the India Office library, published *The European Discovery of the Indian Flora* in 1992 and both he (in 1997) and Richard Drayton (in 2000) developed this theme in further closely-related books on the history of Kew gardens and the impact of explorer-curators such as Joseph Hooker on imperial “improvement” schemes.<sup>171</sup> Donal McCracken usefully supplemented these works in a global guide to the history of colonial botanic gardens.<sup>172</sup> All these scholars had been foreshadowed to some extent by Ian Burkill’s 1965 treatise on *Chapters in the History of Indian Botany*.<sup>173</sup> Burkill, although unable to edit his manuscript properly through blindness, afforded remarkable insights into the significance of environmental thinking in British India. He pointed, for example, to the highly precocious advent of ecological thinking in botanical science before 1857, particularly by John Edgeworth and Ellerton Stocks, surgeon-botanists employed by the East India Company.

More modern themes in the history of ecological thinking in the imperial context were not taken up until Peder Anker did so in *Imperial Ecology* in 2001.<sup>174</sup> Anker argued that the structures of what appeared to be a globally referential “science” were at least in part composed of a medley of holistic notions of the kind pursued by Jan Smuts, laced with notions of Freudian psychology in the work of Arthur Tansley, but above all based on military, racial and social nationalism. He showed too that, like Smuts, Tansley and Charles Elton, (who, along with Frederic Clements, were the leaders of the new global and imperial ecology) all made connections between climate, ecology and “climax” individuals and communities. The controversial racial echoes of Huntington’s climatic social theories and his connections with eugenics were, once more, uncomfortably close. Deep and discriminatory fears about extreme climatic events, racial difference and identity run right through the histories of empires and formulations of global environmental and climate change.

An accumulation of knowledge about the chronology of extreme climate events and a more limited understanding of their dynamics might have been expected to reduce such fears by offering the prospect of a more predictable world. Indeed global climate histories are now the most rapidly developing aspect of global environmental history and, as we have seen, they have always formed a vital central aspect of the field. Instead, however, global climate history and its practitioners, on whom global climate modellers are entirely dependent, has in the last decade offered, in its presentation of global warming trends, a prospect almost as grim as that of the spread of modern epidemics of auto-immune disease, an aspect of global environmental history which we have touched on but little in this paper. A flurry of recent books on El Nino/southern oscillation (ENSO) events and their historical impacts has done little to lessen these anxieties, even though ENSO has no immediate connection to global warming but may instead be more directly connected to tectonic events and volcanism. Nevertheless, when social scientists’ irrational phobias about “environmental determinism” finally die down and the full history of the messy and complex interconnections between climate and human events becomes more sharply drawn, global environmental histories that are fully integrated with climatic chronologies will become a useful explanatory tool in alerting a global public to the vital task of stewardship of the atmospheric as well as earthly environment. Then perhaps situations of the kind that led to the New Orleans disaster may instead become problems of adaptation rather than international calamity. 

Email: richardgrove@hotmail.com  
v.damodaran@sussex.ac.uk

## Notes

[The authors would particularly like to thank an anonymous referee for his/her very stimulating and insightful comments from which we learnt a great deal. They would also like to acknowledge assistance given on matters concerning West African environmental science by A T Grove, professor at Downing College, Cambridge and assistance on Australian environmental history by Barry Smith, professor at the Australian National University.]

- 99 Arnold Toynbee, *A Study of History*, Oxford University Press, Oxford, 1934.  
100 William H McNeill, *Arnold Toynbee: A Life*, Oxford and New York, 1989.

- 101 Gordon Martel, ‘The Origins of World History: Arnold Toynbee before the First World War’, *Australian Journal of Politics and History*, 50, 2004, pp 343-56  
102 Alfred Zimmern, *The Greek Commonwealth*, Clarendon Press, Oxford, 1924.  
103 Pieter Geyl, ‘Toynbee’s System’ in Pieter Geyl, *Debates with Historians*, Fontana, London, 1970, p 122.  
104 Oswald Spengler, *The Decline of the West*, London 1918.  
105 See also Gilberto Freyre, *Nordeste: Aspectos de Influencia da Anna Sobre a Vide e a Paizageio de Nordeste do Brasil*, Olympio, Rio de Janeiro, 1937 in which Freyre discusses the overriding importance of the environmental history of the North-East of Brazil in its impoverishment.  
106 Arnold Toynbee, *Mankind and Mother Earth, A Narrative History of the World*, Oxford University Press, New York, 1976.  
107 Aldous Huxley, *Tomorrow and Tomorrow and Tomorrow and Other Essays*, New York, 1956, p 221.  
108 Paul Rich, ‘Civilisations in European and World History: A Reappraisal of the Ideas of Arnold Toynbee, Fernand Braudel and Marshall Hodgson’, *The European Legacy*, 5, 2000, pp 341-52.  
109 CE Labrousse, *Esquisse du mouvement des prix et des revenus en France au xviiiie siecle*, 2 vols, Paris, 1933.  
110 William L Thomas (ed), *Man’s Role in Changing the Face of the Earth*, University of Chicago Press, Chicago, Illinois, 1956.  
111 *ibid*, Introduction  
112 Nathaniel Shaler, *Man and the Earth*, Fox and Duffield, New York, 1905.  
113 *ibid*.  
114 E g, Glacken, lecture to the University of Virginia Summer School, Emmanuel College, Cambridge, July 18, 1981 entitled ‘Writing a successor to *Traces on the Rhodian Shore*’; and personal communication Glacken.  
115 C D Darlington and E K Janaki Ammal, *The Chromosome Atlas of Cultivated Plants*, London, 1945.  
116 Ammal was the Anglo-Indian grandchild of John Child Hannyngton ICS, British Resident at the courts of Travancore and Cochin, a Sanskritist and expert on Malayali culture. A relative, F Hannyngton, was a well known lepidopterist. Ammal was the first woman to gain a PhD in Botany in the US, in 1938 and later became Professor of History at Madras and the first Director of the Central Botanical Institute, Lucknow. She was also the founder of ethnobotany in India  
117 Jean Filliozat, ‘Ecologie historique en Inde du Sud; Le Pays des Kallars’, *Revue des Etudes d’Extreme Orient*, 2 (1980), pp 22-46.  
118 Fernand Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip the Second*, Paris, 1949 (trans in Fontana edition, London, 1973).  
119 P Horden and N Purcell, *The Corrupting Sea: A Study of Mediterranean History*, Blackwell, London, 2000; A T Grove and O Rackham, *The Nature of Mediterranean Europe: An Ecological History*, Yale University Press, London, 2001; C Vita-Finzi, *The Mediterranean Valleys: Geological Changes in Historic Times*, Cambridge, 1969.  
120 W G Hoskins and L Dudley Stamp, *The Common Lands of England and Wales*, London, 1963.  
121 W G Hoskins, *Fieldwork in Local History*, London, 1967.  
122 H Finberg (ed), *The Agrarian History of England and Wales*, Cambridge, 1967, 9 vols.  
123 Jack Ravensdale, *Liable to Floods*, Cambridge, 1977.  
124 Victor Skipp, *Crisis and Development: An Ecological Case Study of the Forest of Arden, 1570-1674*, London, 1978.  
125 O Rackham and J Moody, *The Making of the Cretan Landscape*, Manchester University Press, Manchester, 1994.  
126 M Williams, *The Making of the South Australian Landscape*, London, 1974.  
127 *op cit*.  
128 For an assessment of Lefebvre’s approach see Marcel Reinhard, *Revue Historique*, 223, 1960, pp 1-12.  
129 J M Grove, *The Little Ice Age*, Methuen, London, 1988.  
130 For details of this debate see Antony Reid, ‘Global and Local in South-East Asian History’, *International Journal of Asian Studies*, 1, 2004, 5-21; and G Parker (ed), *The General Crisis of the Seventeenth Century*, London, 1997.  
131 Gustaf Utterstrom, ‘Climatic Fluctuations and Population Problems in Early Modern History’, *Scandinavian Economic History Review*, 3, 1955, pp 1-47  
132 For details see R Grove and J Chappell (eds), *El Nino: History and Crisis; studies in the Asia-Pacific Region*, Cambridge, 2000, Chapter One.



- 133 William Quinn, 'Historical Trends and Statistics of the Southern Oscillation, El Niño and Indonesian Droughts', *Fisheries Bulletin*, 1970; W H Quinn, V T Neal and S de Mayolo, 'El Niño Occurrences Over the Past Four and a Half Centuries', *Journal of Geophysical Research*, 92 (1987), pp 14449-461
- 134 W H Quinn, 'A Study of Southern Oscillation-Related Climatic Activity for AD 622-1980 Incorporating Nile River Flood Data' in H F Diaz and V Markgraf (eds), *El Niño: Historical and Paleoclimatic Aspects of the Southern Oscillation*, Cambridge University Press, New York, 1992, pp 119-49.
- 135 B Fagan, *Floods, Famines and Emperors: El Niño and the Fate of Civilisations*, New York, 1999; C Caviedes, *El Niño in History: Storming Through the Ages*, University of Florida Press, Gainesville, 2001; Mike Davis, *Late Victorian Holocausts: El Niño Famines and the Making of the Third World*, Verso, New York, 2001. The last essay was an unfortunate attempt to conflate the impacts of one of the strongest El Niño events of the millennium with the impact of colonial policy on famine mortality. Davis neglected to assess the often staggering mortalities, especially in south Asia, of pre-colonial events.
- 136 Carl Sauer, *The Early Spanish Main*, University of California Press, Berkeley, 1966. Contemporary reviewers commented; "History, written by a geographer, especially one of Professor Sauer's learning, is an enriching experience." (Cover sheet quoting *The Professional Geographer*).
- 137 C Geertz, *Agricultural Involvement: The Processes of Ecological Changes in Indonesia*, Berkeley, 1963, p vii.
- 138 *ibid*, p vi
- 139 Roderick Nash, *Wilderness and the American Dream*, New York, 1967.
- 140 Roderick Nash, 'American Environmental History: A New Teaching Frontier', *Pacific Historical Review*, 41, 1972, pp 362-72.
- 141 Herbert Bass (ed), *The State of American History*, Chicago, 1970.
- 142 Thurstan Shaw (ed), *Discovering Nigeria's Past*, Oxford University Press, Ibadan, Nigeria, 1975. Betty J Meggers, *Amazonia: Man and Culture in a Counterfeit Paradise*, Chicago, 1971.
- 143 A S Goudie, *The Human Impact*, Blackwell, Oxford, 1984.
- 144 Polly Hill, *Migrant Cocoa Farmers of Southern Ghana*, Cambridge 1963; *Development Economics on Trial: The Anthropological Case for a Prosecution*, Cambridge, 1984.
- 145 *Op cit*.
- 146 J M McNeill, *Mountains of the Mediterranean World*, Cambridge, 1992; *Something New under the Sun: An Environmental History of the Twentieth Century World*, New York, 2000.
- 147 W McNeill, *The Origins of Civilisation*, New York 1968; *Plagues and Peoples*, New York, 1976.
- 148 William and John McNeill, *The Human Web: A Bird's Eye View of History*, Norton, New York, 2003.
- 149 Janet Abu-Lughod, *Before European Hegemony; the World System AD 1250-1350*, New York, 1989.
- 150 J M Grove, *The Little Ice Age*, London, 1988.
- 151 J M Grove and A M Johansen, 'The Historical Geography of the Volta Delta, Ghana, during the Period of Danish Influence', *Bulletin de l'Institut Fondamental d'Afrique Noire*, 30, 1968, pp 1374-1421.
- 152 J Donald Hughes, *An Environmental History of the World; Humankind's Changing Role in the Community of Life*, Routledge, London, 2001; see also Joachim Radkau, *Natur und Macht, Eine Weltgeschichte der Umwelt*, C H Beck Verlag, Munich, 2000 and Radkau, *Naturschutz und Nationalsozialismus*, Campus Verlag, Frankfurt, 2003; Sverker Sorlin and Anders Ockerman, *Jorden en o: En Global Miljöhistoria, Bokforlaget Natur och Kultur*, 1998, Stockholm. This last text refers explicitly to the onset of the millennium as a reason for being published. An excellent edited survey is B de Fries and J Goudsblom (eds), *Mappae Mundi; Humans and their Habitats in a Long-Term Socio-Ecological Perspective*, Amsterdam University Press, Amsterdam, 2002. This book usefully assesses the environmental footprint of the Roman Empire.
- 153 Paul Colinvaux, *The Fates of Nations: A Biological Theory of History*, Simon and Schuster, New York, 1980; Jared Diamond; *Guns, Germs and Steel: The Fates of Human Societies*, New York, 1987.
- 154 *Collapse; How Societies Choose to Fail or Succeed*, Viking, New York, 2005. The subtitle of this book is worthy of particular attention and, were Gunder Frank still alive, would no doubt have attracted an incisive response. However one will not find Frank listed amongst the Diamond bibliographies.
- 155 Lester Bilsky (ed), *Historical Ecology; Essays on Ecology and Social Change*, Kennikat Press, Port Washington, 1980.
- 156 Mark Elvin, 'Three Thousand Years of Unsustainable Growth; China's Environment from Archaic Times to the Present', *East Asian History*, 6, 1993; *The Retreat of the Elephants; An Environmental History of China*, Yale University Press, New Haven, 2004.
- 157 Robert B Marks, *Tigers, Rice, Silk and Silt: Environment and Economy in Late Imperial South China*, New York, 1997; Peter Purdue, *Exhausting the Earth; State and Peasant in Hunan, 1500-1850*, Cambridge, Massachusetts, 1987.
- 158 Mark Elvin, *The Pattern of the Chinese Past*, London, 1973.
- 159 Teresa Brennan, *Globalisation and Its Terrors*, London, 2003.
- 160 Richard P Tucker and John F Richards (eds), *Global Deforestation in the Nineteenth Century World Economy*, Durham, 1983; *World Deforestation in the Twentieth Century*, Durham, 1988.
- 161 J F Richards, J R Hagen and E S Haynes, 'Changing Land Use in Bihar, Punjab and Haryana, 1850-1980', *Modern Asian Studies*, 19, 1988, pp 679-732.
- 162 Richard Tucker, *Insatiable Appetite: The United States and the Ecological Degradation of the Tropical World*, Berkeley, 2000.
- 163 John F Richards, *The Unending Frontier: An Environmental History of the Early Modern World*, University of California, Berkeley, 2003
- 164 Michael Williams, *Deforesting the Earth*, Chicago, 2003; Sing Chew, *World Ecological Degradation, Accumulation, Urbanisation and Deforestation, 3000 BC- 2000 AD*, Chicago, 2001.
- 165 Richard P Tucker and John F Richards (eds), *Global Deforestation in the Nineteenth Century World Economy*, Durham, 1983; and *World Deforestation in the Twentieth Century*, Durham, 1988.
- 166 R Guha and M Gadgil, *This Fissured Earth; Towards an Ecological History of India*, Oxford, India, 1992. This book and the article which prefigured it in the Mumbai journal *Economic and Political Weekly* were handicapped by their articulation of a highly controversial notion that the Indian caste system had a practical and evolutionary ecological basis. The caste system is without doubt one of the central reasons for structured inequality in the subcontinent and the authors' work, otherwise interesting and novel, was justly criticised over the apparent apologetics for the caste system; For a review of other work in the field see introduction, R Grove, V Damodaran and S Sangwan, *Nature and the Orient: The Environmental History of South and South-east Asia*, Oxford 1998.
- 167 Deepak Kumar, *Science and the Raj, 1857-1905*, Oxford, 1995.
- 168 John Mackenzie, *The Empire of Nature, Hunting, Conservation and British Imperialism*, Manchester, 1988; Grove, *op cit*.
- 169 Henry Hobbhouse, *Seeds of Change: Five Plants That Transformed the World*, London, 1985; *Ecological Imperialism: The Biological Expansion of Europe 900-1900*, New York, 1986; *The Columbian Exchange: The Biological and Cultural Consequences of 1492*, Westport, Conn, 1972.
- 170 Lucille Brockway, *Science and Colonial Expansion*, New York, 1979.
- 171 Ray Desmond, *The European Discovery of the Indian Flora*, Oxford, 1992; Kew, *The History of the Royal Botanic Gardens*, Kew, 1997; Richard Drayton, *Nature's Government: Science, Imperial Britain and the 'Improvement' of the World*, New Haven, 2000.
- 172 Donal McCracken, *Gardens of Empire: Botanical Institutions of the Victorian British Empire*, Leicester, 1997.
- 173 I Burkill, *Chapters in the History of Indian Botany*, Calcutta, 1965.
- 174 Peder Anker, *Imperial Ecology*, Cambridge, Massachusetts, 2001.

### Economic and Political Weekly

available from:

**Churchgate Book Stall**

Churchgate Station

Opp Indian Merchants Chamber

Churchgate

Mumbai - 400 020