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Postprint

This is the accepted version of a paper published in *Environment and History*. This paper has been peer-reviewed but does not include the final publisher proof-corrections or journal pagination.

Citation for the original published paper (version of record):

Widgren, M. (2007)

Review of Sing C. Chew 'The Recurring Dark Ages: Ecological Stress, Climate Changes and Systems Transformation.

Environment and History, 13(4): 503-506

<http://dx.doi.org/10.3197/096734007X243186>

Access to the published version may require subscription.

N.B. When citing this work, cite the original published paper.

Permanent link to this version:

<http://urn.kb.se/resolve?urn=urn:nbn:se:su:diva-16716>

Book Reviews

The Recurring Dark Ages: Ecological Stress, Climate Changes and System Transformation

Sing C. Chew

Lanham, MD: AltaMira Press, 2006

ISBN 0-7591-0451-4 (HB) \$80.00; 0-7591-0452-2 (PB) \$34.95. 292 pp.

In this book, which is a follow up of the author's *World Ecological Degradation*, Sing Chew sets out to add an ecological dimension to previous studies of world systems and more specifically to study the role of ecology in explaining Dark Ages – periods of social, economic and demographic decline. The thesis is that 'Dark Ages occur as a consequence of ecological exhaustion and stress and exhibit losses in wealth, trade disruptions, and simplification of lifestyles and less hierarchization and more egalitarianism of the social structure' (p. 160). This argument, of a connection, or even a causative relation between over-utilisation of natural resources and social crisis is not new. New is perhaps the attempt to analyse Dark Ages through time, from the Bronze Age to the fall of the Roman Empire, and to put this in the context of the present global situation. Given the vast and fast growing body of literature on environmental history, based on scientific methods in archaeology, palaeoecology and palaeoclimatology, there is scope today for such a work aimed at a broad synthesis.

Chew's material for the analysis of the ecological component in world systems history is a rather small selection of secondary literature, together with data from 40 pollen diagrams. These cover an area from Greenland in the northwest to Turkey in the southeast and a number of European countries in between. It is an innovative approach to make use of such a data set in order to illuminate the relations between economic/social expansion and regression, and the use of natural resources. Pollen diagrams do give a comparatively standardised picture of changes in the composition of vegetation. Moreover, for the periods and for most of the areas that Chew focuses on, human influence plays a central role in these changes. That type of data therefore represents an interesting contrast to what can be gathered from scant historical and archaeological sources for the same periods. Berglund's synthesis 'Vegetation and human influence in South Scandinavia during prehistoric time' (*Oikos* 1969) showed the potential of this approach, and it has influenced research in the broad field of environmental history in Northern Europe and beyond. Periods of increased human influence on the vegetation, as indicated by a relative increase of pollen from herbs and grasses in relation to pollen from trees were shown to coincide with periods known from the archaeological record for settlement expansion and the occurrence of finds indicating wealth. Such syntheses always have to struggle with problems of chronology, but also with scale – generalising from a local or regional vegetation development to a broader pattern. New methods for dating, absolute

pollen count instead of relative, lots of new pollen data and the increased use of computerised databases have increased the possibilities for such syntheses, but have also complicated the picture and made generalisations more difficult.

Chew puts much emphasis on this material. Some 60 pages out of a total of 292 are devoted to diagrams showing pollen data, which are used as the main indicator of environmental change. In this review I will therefore focus on his treatment of the pollen counts. Scrutinising his treatment of the pollen data is, however, an arduous task. Chew gives us a total of 17 references for the 40 sites, without indicating which publication refers to which site. It thus requires a fair amount of detective work to move from Chew's very simplified diagrams and conclusions back to the original sources. Moreover, he does not argue for the selection of these diagrams, which to my knowledge must represent only a minority of potentially useful pollen sites for the area and period covered. The data is apparently based on what is made available at the NOAA's pollen database (Chew, *pers. comm.*) but that is not made clear in the book.

More problematic than that, however, is that Chew does not seem to be familiar with the methodological background of pollen analysis. Neither does he account for the methods by which the original pollen data were retrieved from the literature and transformed to trend analyses in his diagrams. This is a way of representing vegetational development over thousands of years as if they were half year trends of the stock market, a representation which hides more than it clarifies (how can numbers of pollen have a negative value?) Computational treatment of pollen data is well advanced within palaeoecological analysis and it would have been possible to consult this literature to find more relevant ways of comparing data rather than to invent this very crude measure.

In order not to be too technical about pollen analysis in this review, I will restrict my comments about Chew's many mistakes to one point. *Plantago lanceolata* (ribwort plantain) is in most ecological contexts considered to be clear indicator of human grassland management. However, the *Plantago* genus also encompasses a lot of other plants with other ecologies. Chew takes all data on *Plantago* species to be a measure of deforestation in all ecological contexts. Thus the occurrence of a few pollen grains of *Plantago maritima* (sea plantain) is taken as an indicator of human-influenced deforestation in Greenland during the first millennium B.C. If he had read the article he refers to, he would have been convinced that the driving force behind vegetation changes in Greenland in this period was climate rather than human influence.

Chew's first use of the pollen data is to establish periods of Dark Ages based on the pollen record and he contrasts this with the established view of historians and archaeologists. He writes: 'despite the fact that historians and archaeologists specializing in the Ancient World did not identify a Dark Age period in the fourth millennium B.C., it seems that twenty-nine of the pollen profiles indicate that there was a phase of deforestation during the fourth millennium B.C.' (p. 48). In this sentence Chew seems to assume that periods of deforestation coincide with

periods of Dark Ages. This is more directly expressed on page 55: 'The shift from predominantly forests to grasslands in terms of proportion occurred during periods of Dark Ages'. This is indeed an interesting statement, given that the established view, in most previous syntheses of human influence on vegetation, has been that increased human influence and deforestation is coupled with periods of economic and demographic expansion, while periods of socio-economic decline are generally recorded in the vegetation history as a succession of forest regrowth on formerly open lands. Chew here demonstrates a lack of basic understanding of vegetational dynamics and their connection to societal causes. This makes further reading of the book problematic. A major problem seems to be that he gives more weight to his own simplified, quantitative treatment of the pollen diagrams than to the attempts at syntheses that scholars familiar with the strengths and weaknesses of pollen analyses have in fact presented.

Based on his own crude trend analysis of some aspects of the pollen diagrams, he establishes a 'Periodization of Dark Ages' (p. 54), which is presented as an independent and complementary approach to the periodisation of Dark Ages as presented by historians and archaeologists. It is difficult to evaluate this table, given Chew's twisted argument on deforestation as indicative of Dark Ages. The two last phases of Dark Ages, according to this table, are A.D. 296 to A.D. 1171 and A.D. 1311 to A.D. 1733 respectively. Although the dates are given at the accuracy level of individual years, the calculation behind is not transparent. Are we assumed to interpret the period from 296 to 1171 as a period of open landscapes, with a strong human influence, and if so how does this interpretation compare with the established view of decreased human influence after the fall of the Roman Empire, at least in the outer peripheries? Similarly, how do we compare his delimitation of the long period from 1311 to 1733 with the historical record, when prices and other historical data indicate both a late medieval decline and an early modern recovery? With the weight Chew gives to his own treatment of the pollen record he confuses more than he clarifies concerning our historical and ecological understanding of the relations between societal and ecological crisis periods. A good rule for using data from other disciplines in a synthesis is to try to follow at least what was at the research frontier some 20 years ago. Chew is not yet familiar with achievements from the early twentieth century in the field of pollen analysis.

A basic tenet behind Chew's misreading of the palynological record seems to lie in his assumption that all human influence on the natural system is exploitative and ultimately leads to environmental degradation. This is a line of thought that is established in Chew's previous work. Recent research on degradation narratives has taught us to be wary of such conclusions. Societies, especially the kind of exploitative empires that are in focus in Chew's 'world ecological degradation', certainly change and influence the natural environment. It is, however, an open empirical question to investigate in which areas, social contexts and environments these changes lead to investments in land that lay the basis for coming sustainable

food production, and where, on the other hand, such influence is directly related to land degradation and erosion of a kind that reduces the productive capacity of the land for a longer period. Chew's schematic understanding of such relations is further underlined by the usage of the concepts of Nature and Culture (with capitalisation) as fixed entities, a gross simplification of the complex and dialectic relations between human use and changes in ecosystems. Researchers from both the natural sciences and social sciences have for decades now been working towards a rethinking of these problematic concepts. While ecologists are increasingly looking at integrated social-ecological systems, social theorists are deconstructing the modernist assumptions of a separation of nature from culture. Chew does not seem to be aware of this.

The book is badly edited. The list of references contains several bad mistakes, for example there is a reference to a non-existent journal supposed to be named *Geologis Frem*; Oliver Rackham and Jennifer Moody's book *The Making of the Cretan Landscape* is listed twice, under both Rackham and Rockham. The book also contains several horrors of language and thinking, such as the following sentence: 'This further suggests that the vulnerability of the landscape during certain periods, and in different geographical locations, could continue to sustain socio-economic reproduction, though perhaps at a lowered level than before the onset of the Dark Ages' (p. 147).

As Chew writes in the introductory chapter, there is indeed a great demand for bold syntheses on the relations between (social) world systems and ecological change. Perhaps a sociologist inspired by Ander Gunder Frank would be the right person to do this, rather than someone too narrowly entrenched in either history or palaeoecology? Such syntheses will inevitably have to navigate between the Scylla of the detailed historical and ecological evidence and the Charybdis of bold and simplifying models. With his strange and amateurish handling of the ecological evidence on the one hand, and his scant reading of the many new and different attempts at understanding the interrelations between societies and ecology on the other, Chew does not have the basic capacity to accomplish this difficult navigation.

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