# A10. Environmental change and sustainability: Lessons from the past

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Since publication of the Brundtland report (WCED 1987), much of the academic and political discussion concerning sustainability has been focused on contemporary society and the future. Societies of the historic or prehistoric past have, with some notable exceptions (e.g. Bahn and Flenley 1992), received rather less attention within the sustainability debate. However, recently, Diamond (2005) compiled a series of examples of past societies' response to environmental crises, and by examining differences between those societies that appeared to have 'collapsed' and those that survived, he devised a five-point framework to account for the different outcomes.

A previous Level 2 undergraduate module had concentrated principally on human impacts on environment over time, rather than the effects of environmental changes on human societies. The new module described here examines the relationship between societies and resources in the face of major environmental change, focusing first on cases of claimed spectacular population collapse: for example, the claim that the 'collapse' of the Mayan civilisation in South America was caused by or strongly connected with regional climate change; the contention that the Palaeolithic cultures on Easter Island, responsible for the famous carved statues, collapsed as a result of destruction of the island's natural resources. The case study examples are considered in relation to climate change and resource depletion, and the inferential hypotheses are then applied and tested for cultures in Europe and elsewhere in both the past and the future, through investigating the impact of environmental (especially climatic) change on sustainability.

## Aims

This new Level 2 module is intended students of Geography, Environmental Management, Environmental Science, Heritage Management, Animal Biology and Biology who wish to integrate an understanding of past environmental changes and their impacts on human populations and societies, with the aim of deriving coherent lessons for future sustainability.

## Rationale

This module was originally validated some six years ago as *Early Human Landscapes* and was conceptualised very differently, consisting principally of a chronological account of human interaction with, and impact on, the landscape of north-west Europe from Late Palaeolithic times, through Mesolithic, Neolithic and subsequent cultural stages, to post-Roman times. Implicitly, examination of the demise of the Neanderthals invited contrast with early modern humans, while the transition from hunter-gatherers to early farming communities invited examination of human-resource interaction and human impact on the landscape. So there was a latent but undeveloped theme within the module concerned with the success or failure of human use and manipulation of the environment (c.f. Simmons 1996a, b). In more recent runs of the module, and partly introduced by way of contrast, some examples drawn from outside Europe also featured (including the classic case of Easter Island: Flenley and Bahn 2003). The module was taught largely by formal lectures, but with some use of video to show how the English landscape changed over time with the impact of successive cultures, and also to provide visual background material (in the case of Easter Island). The assessment consisted of a formal essay, and a case-study report.

In the academic year 2004–5, a new book by Diamond (2005) was published in the month preceding the run of the module, and so the opportunity was taken to refer students to this new perspective, such that all the non-European examples could be examined with reference to his 'collapse' thesis. The latter sessions were introduced by video examples, and followed by group discussion. It was these case study examples, placed in the context of the over-arching 'collapse' theory that attracted students' attention. Diamond's thesis, which argues that there are five contributing sets of factors to population collapse, of which four may or may not be significant but that one (that of society's response to its environmental problems) is *always* significant, provided a conceptual framework for examining the evidence for the factors influencing the population changes.

Shortly after the inauguration of the Centre for Active Learning at the University, a radical transformation to the module was planned, with a greater emphasis on active learning (especially involving group work, rather than solely independent learning). Changes to be made to the module were in direct response to student feedback, and to comments from the

Physical Geography External Examiner. The students who had studied the module in its previous incarnation advised bringing the latter part of the module to the fore, and to provide a sustainability focus for the module. The 'collapse' theory outlined by Diamond (2005) would now become the basis for the whole module. Case study examples would however be tested rigorously against Diamond's general thesis by examining multiple working hypotheses for societal collapse. For example, the classic case of inferred self-inflicted resource depletion, which has been claimed to explain the case of apparent societal collapse on Easter Island, and which is to an extent supported by palaeoecological evidence (Flenley *et al.* 1991), is nevertheless contested (see Nunn 2000), and so this example can be examined critically in the light of evidence also for climate change (Giralt *et al.* 2006), which might have adversely affected available resources on and around Easter Island.

One of the External Examiners had pressed for more modules within the Department's portfolio to be assessed at least in part by examination. Previously, the module had been assessed solely by individual coursework (essay; case-study report). As the coursework requirements were set and distributed at the start of the module, subsequent attendance by students was at times spasmodic. It was hoped that by changing the delivery mode and assessment pattern, this might have the desired effect of better student attendance and participation. The module is planned to be re-titled as *Population Collapse? Environmental Change and Sustainability*. Re-titling should ensure greater appeal and take-up by students across a range of degree programmes, wider than currently, as *Population Collapse* has relevance for Biology and Animal Biology students, Environmental Science and Management, and Human Geography students, in addition to Physical Geography and Geography students. The revised module retains much of the previous content but conceptualises the material differently, and with a different emphasis, which requires a new title. The learning outcomes now include the students having an awareness of the significance of the rise and fall of past civilisations for contemporary and future societies, and there is more emphasis on active learning as the process by which they are achieved.

## Implementation

A Research Assistant from the Centre for Active Learning has spent time finding electronic resource gateways (for example, Annenberg Media 2006) for students to access. The module changes will be submitted through the

University's quality assurance process, and for adoption onto the various degree programmes referred to above.

## Sustainability focus

The direct link between past examples of societal collapse or sustainability is made explicit by Diamond (2005). Students will, however, be directed to a paper that deals with some misconceptions over the concept of sustainability in a university context (Filho 2000), as this paper refers to some of the differences in meaning, perception, and context of 'sustainability'. It is anticipated that lessons learned in the module, especially concerning those factors that pre-dispose societies to collapse or survive, will be life-long.

## Feedback

The revised module is yet to run, so feedback is not yet available. However, the reconceptualisation and reformulation of the module was based on feedback from students who had studied the forerunner of the new module.

## Strengths and weaknesses

The previous module was principally a temporal account of (largely prehistoric) human impact on the landscape, with some case study examples integrated inductively to produce regional syntheses. The module lacked scientific rigour, and there was no sustainability theme or focus. The new module has a more coherent conceptual framework; it is more amenable to hypothesis testing and rigorous examination not just of the case study examples, but also of the overall 'collapse' thesis. This strength may be contrasted with the weaker mode of inductively derived narratives. It is a module that potentially has life-long resonance for students.

A possible weakness of the proposed new module is the reliance upon the student cohorts to engage with the module at equivalent academic level, yet having diverse backgrounds and exit degrees. This could, however, be regarded as a strength, in that students may bring markedly different perspectives to bear upon the evidence, and in their group work activity, students may learn more from each other than would be the case with single-discipline cohorts.

## Programmes

The module will be available for students taking single or joint Honours in Geography, Environmental Science and Environmental Management, Heritage Management, Biology, Animal Biology, Human Geography and Physical Geography. The original module title was *Early Human Landscapes*; the new proposed title is *Population Collapse? Environmental Change and Sustainability*.

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***Keywords:***
Collapse; environmental sustainability; environmental change

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