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Natural Resources, Sustainability and Humanity

A Comprehensive View

Springer

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Dedication

This book is dedicated to all anthropogenic climate changes casualties.

And to Prof Dr Hugh Freeman who died in May 2011. He was an internationally renowned psychiatrist whose major interest was unique and humane in concern with the effect of the environment on mental health. He presented a paper on this subject in Braga, Portugal, at the II International School Congress in May 2010. Prof Hugh Freeman was Editor of the British Journal of Psychiatry and published very many books including Psychiatric Cultures Compared, A Century of Psychiatry and The Impact of the Environment on Mental Disorder.

This is the abstract of the very last conference given by our dearest friend Hugh Freeman.

Mental Health Effects of the Environment
Professor Hugh Freeman
Green-Templeton College, Oxford 0X2 6HG, UK

At the same time as the recognised major changes in climate and the chemical composition of the atmosphere, there have also been upheavals in people's personal worlds. There have been large-scale movements of populations around the world. It is well known that changes in physical environments affect people's mental health and their behaviour. These might be factors such as overcrowding and facing novel interactions of different social and racial groups.

The biggest of these social changes is the drift to the cities, on a scale never known before in human history. For the first time, more people in the world now live in urban rather than rural settlements. Many cities, particularly in the Developing World, are of a far greater size than at any other time. This urbanisation has been completely unplanned and there is still not enough reliable understanding about its effects on people, notably any psychiatric changes caused by these movements. But there is some indication, for example, that the pressure of overcrowding could be a risk factor for the development of schizophrenia. It is time for concern about the effects of environmental changes on human health to include the psychiatric and wider emotional consequences.

This tree was planted in honour of Hugh Freeman at Peneda-Gêres Nacional Park, Portugal—In nature we trust.

Preface

Some books are meant to be read from the end to the beginning.

This is one of those "out of the box", you may choose wherever to start.

There will be no "how to read or how to go through". The chapters have been aligned as if visiting places and contemplating landscapes at ones pleasure.

That is one of the reasons this introduction is an attempt to answer Zenita Guenther's last chapter capital question: "Who ties the knot?"

This preface is no more than the way the book ends too. It raises questions and is supposed to let you unsettled, you have the best brain in the planet—use it, please.

The 2nd International School Congress: Natural Resources, Sustainability and Humanity took place in Braga, Portugal from the 5th to the 9th of May, 2010.

We have started working three years in advance, focusing in the articulation of the axis Environment, Humanity and School needs, and adaptation to a changing world.

The first two because from them emanate the largest human concerns, the other because it is a privileged locus of generational transformation and a tool to hinder, stop or find new solutions.

We have aimed to unite the educational communities of Portugal and worldwide education communities that wanted to join us, in an environment of formation and information, driven and challenged by the words of scientists, researchers, educators, politicians, entrepreneurs, artists and writers which have demonstrated more availability, enthusiasm, hence the most motivated and qualified ones to work at our assembly of speakers.

The event had three major meetings aiming different target audiences and outcomes:

From the 5th to the 6th, we had gathered in a Small Meeting, where solutions and mitigations proposals were discussed for social, cultural, environmental and educational issues.

Then, from the 6th to the 9th, we had gathered at a Large Meeting where we worked for the (in)formation and awareness of educators and the general public. We shall be facing different and diverse points of view, experiences and backgrounds,

but we shall be focused in the holistic construction of human beings, aware and capable of making the future a better place.

Amongst this dates we launched for the first time in Portugal the 1st International Workshop on the History of the Environment: *On the History of Environment and Global Climate Change—Water, Ecology, De-forestation, Agriculture, Politics, and the Management of Nature.*

This event's philosophy had as a starting point the I International School Congress: Environment, Health and Education (I ISC) that took place from the 8th to the 10th of May, 2008 in Braga. Although we may have considered the previous event a success in several aspects, we dared to expand the achieved objectives bringing more specific themes to the public discussion. We continued to base our work in the Millennium's Development Objectives (UN), in UNEP's mission, in the orientations of the European Community for the Environment and on the reports of the Environmental Panel on Climate Change. A reference to the work of the commissioner for the Environment, Stavros Dimas, whose words, ideas and actions have constituted a source of knowledge, inspiration and motivation.

Because we are teachers, we believe in the human capacity for adaptation, compromise and problem solving. Therefore, we think that only the informed and formed human beings, in a global sense, may be the vehicle for the resolution of the environmental, political, economic and humanitarian planetary problems.

We are conscientious that the targets of education have changed. However the Curricula and informal education has not yet catch up with the historic development of societies, economies and values. The set of principles, society, economic prosperity, environmental, political paradigms, are to be reformulated.

The basis of this congress is the *modus operandi* of Basic school teachers, in other words, we understand that knowledge is not compartmented, but transdisciplinary and therefore less reductive in its approaches. It is a paradox, but, the passage to college and specialisation shortens the "window to the world" and the possibility of a global and interdependent vision. We know for a fact that this narrowing is more than needed we just want all to contribute at the same level. No subject is deified nor consider of lesser importance. The Science of Collaboration has sprouted.

Therefore, we decided to unite in this congress, specialists in the areas of:

- Climate Change, or Climate Disaster as some begin to call it;
- Preservation of biodiversity;
- Changes in the Ocean's biodiversity;
- Carbon cycle and the role of Oceans;
- Use of fresh water and ocean's by mankind;
- Humanity's risk of survival;
- Mentality and behaviour changes;
- Violence in its juvenile, ethical, religious and geographical aspects;
- Extreme poverty;
- Environmental education at school, home and society;
- Ethics;
- Environmental History.

We think that by this approach we will contribute to the boosting of knowledge, skills and experience exchange platforms. The decisive change in attitudes, by means of real capture and retaining of ethical and scientific principles and of shared responsibility, seems to us a gateway towards a meaningful mind-set and well-being.

The events that triggered this book were a gathering of the greatest minds working on the subjects and themes from all over the world, and educators (teachers, parents, general public) that were willing to learn more, to share and enhance their work. We have done our very best so these meetings would allow them to pass this knowledge to a younger audience in a correct, factual way and help them design educational projects or change their everyday life behaviour in a skilled and efficient manner. It was also aimed at scholars, investigators, professionals and entrepreneurs who wished to deepen their knowledge of these subjects.

After the II ISC we maintained correspondence with many speakers who mentioned many times that we were world level pioneers in this type of actions.

Convinced that, independently of our 'smallness', our work had value, we were motivated to find simple and effective Environmental Education tools, without using scare-tactics.

For all that matters, teaching through example is action. Hence, being educators we hope to be the best example possible.

Therefore, the battle is for a secular humanistic education that can construct structured, loved and efficient citizens, armed with the ethical tools that will allow them to provide, to the coming generations they will educate, humanistic and holistic principles. Some of these principles are for them to figure out.

Our objectives were:

- Contribute to solving pressing social, cultural, environmental and educative matters;
- Inform about some realities that have planetary level impact;
- Contribute to the management of natural resources and the preservation of cultural heritage;
- Understand that there does not have to be a choice between a sustainable environment and a strong economy;
- To raise awareness of teachers in schools and universities, parents and general population to their responsibilities as active agents affecting the education of environment concerns in their communities, as well as agents of political change;
- Present, share and discuss adequate and innovative educational experiences;
- Modernising the educational intervention themes in accordance with the global reality;
- Adequate the educational practises, making them in line with the holistic education of people, emphasising high level mental operations;
- Promote humanistic values and scientific rigour when solving problems;
- Unite, in the same space, the central and local power, educators, entrepreneurs, artists, researchers and NGO's;
- Create work and cooperation platforms between schools, communities, and central and local power;

- Create work and cooperating platforms between schools and universities;
- Benefit from sharing geographical and culturally different pedagogical experiences;
- Contribute to the implementation of environmental themes in the Basic and in service training for teachers;
- Instigate creativity as a pedagogical tool;
- Promote the notion of community and community action;
- Promote self-agency and leadership strategies;
- Contribute to the development and interest of Science, Arts and new Professional options.

The II ISC aimed, therefore, to be an encounter of citizens of the world, focused in the cooperation and resolution of problems that affect us all, creatures of Nature.

This outcome, this book, its chapters were chosen in order to give an overview of what we are doing.

Educators, parents and students, are all invited to go through the chapters and let the sparkle of curiosity take them further.

All of us awake and aware that we are all needed, that LIFE depends on our common responsibility and capacity to create solutions.

We shall carry on 2012 in Beira/Gorongosa National Park, Mozambique. Our goals will be somehow different, our philosophy the same: to summon the best, to call upon all, regardless their age, their literacy level. We must see us as a learner's community, fearless to absorb all we are able to and ready to share what we "have got". This Congress should be an exploratory meeting of minds, situations, knowledge, cases and whatsoever you want to call it. "The making of...", this work in progress trade mark we have, should, as never, be our major goal as well as our tool.

Everyone is invited to replicate our work.

Tip: "Knit" for your life and for your Planet!
It does not have to be a green sweater, as in jade and trees, it may be orange, like dusk and dawn, blue, like sky and sea, grey like rocks and birds, yellow like sun and day, red like tongues and flowers, black, like oil and water snakes, purple like veins and hats, colourless like mind and pain.

P. S. This is from Michael Marzolla.
The moment Michael was arriving to Braga, he apologised.
As the first thing he saw was a huge, mega outdoor, from McDonald's.

Acknowledgements

This book was the natural follow up of the 2nd International School Congress: Natural Resources, Sustainability and Humanity, held in Braga, Portugal from 5 to 9 May 2010, and felt like a collaborative exercise.

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We also thank the directors of the three schools involved in the organization of the Congress, and appreciate the work done by their teachers and students.

Our special thanks to Stella Mendonca, soprano, accompanied by Paul Suits, piano. This gesture of solidarity has drawn attention to the children of Mozambique to our common project *Building a school, building a future.*

Last but not least, the president's special thanks to all volunteers. Maria José Marques and Nuno Castro and Marta Mendonca, words cannot describe your good will.

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Chapter 1
What Does Environmental History Teach?

J. Donald Hughes

Abstract Environmental history studies the mutual relationships of humans and nature through time. Historians and others are active in this field in many parts of the world, the literature is vast and growing, and the subject is taught in schools and universities. Its audiences include students, other scholars, policy makers, and a general public, all interested in environmental issues of great import in the modern world. But what does environmental history have to say to these audiences? What are its lessons?

First, it teaches that human history cannot be understood apart from nature. The environment is not just a backdrop for the stage of human politics, wars, and culture; it is a series of influences that interact with every human activity. Environmental processes are important in human history, and it is just as important to take account of human influences on ecosystems and natural areas.

Second, it teaches the importance of science to historians in tracing the interaction of humans and nature. Historians can only rarely be scientists, but they must be familiar with what science says about their fields of concern. Traditional historical sources must be supplemented by studies of changes in climate, ecosystems, and resources. Examples of the integration of scientific and historical evidence are adduced. The second lesson has to do with method, and lies along the continuum between history and science.

Third, it teaches that present-day environmental issues and concerns have their roots in the past, and that research to understand their precedents is valid and rewarding. The study of past effects of environmental forces on human societies, the impact of human activities on the environment, and the development of environmental attitudes and understanding, gives needed perspective to the dilemmas of the contemporary world. This dimension reveals continuity between the past and the present insofar as human-environmental relations are concerned.

Fourth, it teaches a perspective of scale. Local changes inevitably occur within the processes of the planetary environment. The oceans, the atmosphere, the magnetosphere, and cycles of elements are worldwide phenomena, and they affect events in every region and locality. Their effects may be shown most instructively in more

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limited case studies, but no case study, however small, may be considered in isolation. This dimension is one of scale and considers time and space not as opposites, but as coordinates of definition.

These are four lessons of environmental history; it is not suggested that they are the only ones. There are others equally far-reaching, as well as more specific lessons derived from particular studies. Most importantly, environmental history offers methods and perspectives that are crucial to the decisions now being made as human society faces choices about our response to global environmental crises. We must learn the lessons of environmental history in order to make wise decisions in the present.

1.1 Introduction

Environmental history studies the mutual relationships of humans and nature through time. One of its leading exponents, Donald Worster of the University of Kansas, described the field of environmental history as consisting of three levels. The first deals with nature itself as it affects human history. The second shows how the human socioeconomic organization interacts with the environment, causing reciprocal changes. The third is intellectual, showing how individuals and groups describe and regard nature in the realms of literature, philosophy, religion, and popular culture (Worster 1988a, pp. 289–307, discussion on p. 293).

Historians and others are active in this field in many parts of the world, the literature is vast and growing, and the subject is taught in schools and universities. Its audiences include students, other scholars, policy makers, and a general public, all interested in environmental issues of great import in the modern world. But what does environmental history have to say to these audiences? What are its lessons? William Cronon of the University of Wisconsin discussed these questions in an essay entitled "The Uses of Environmental History," In which he made offered four major answers. First, all human history has a natural context. Second, change is unavoidable, that is, neither nature nor culture is static. Third, all environmental knowledge, including our own, is culturally constructed and historically contingent. Fourth, environmental historians offer understanding of the past, not prescriptions for the future (Cronon 1993).

In my own attempt to answer the question, "What does environmental history teach?" I will borrow some ideas from both Worster and Cronon, but I will make a somewhat different emphasis, and will use visual images from different parts of the world to illustrate my points (Hughes 2008). What does environmental history teach? First, it teaches that human history cannot be understood apart from nature. Second, it teaches the importance of science to historians in tracing the interaction of humans and nature. Third, it reveals continuity between the past and the present insofar as human-environmental relations are concerned, so that the past provides perspective, and present issues find their roots in the past. Fourth, it teaches a balance of scale, because local changes inevitably occur within the processes of the

planetary environment. In other words, the local and global always affect one another.

1.2 History is not Apart from Nature

First, then, environmental history teaches that human history cannot be understood apart from nature. The environment is not just a backdrop for the stage of human politics, wars, and culture; it is a series of influences that interact with every human activity. Environmental processes are important in human history, and it is just as important to take account of human influences on ecosystems and natural areas.

Here is an image to illustrate that idea (Fig. 1.1). When, flying above the Great Plains of the United States, one has a window seat and looks down at the landscape, one sees a remarkably uniform pattern of squares, half squares and quarter squares formed by roads, fields, and subdivisions.[1] These represent the townships, 6 miles to a side, the ranges, the sections 1 mile^2, and the quarter sections each containing 160 acres, set out by the Federal Land Survey in what were then public lands, beginning in 1785. This was also the framework of the Homestead Act of 1862, which provided for the transfer of public land into the hands of citizens who settled on the land and cultivated it. The pattern displays the application of theory to the natural environment. The theory in this instance happened to be that the proper relationship of a citizen to the land was to own it and to cultivate it, and furthermore that since all citizens in the republic were equal, the land allotted to each was equal in size. I mention it because it is a spectacularly visible case of the effect of human policy on nature.

It is not the only such example. Parts of Italy bear to this day the pattern of Roman centuriation, begun by generals who rewarded their faithful surviving legionaries with gifts of land: a hundred *jugera* to each, a *jugerum* being the amount of land a farmer could plow in 1 day with a team of oxen. Ancient China had a traditional method of land distribution called the well-field system, which divided a square of land into nine smaller equal squares, each of the eight outer plots being assigned to one farm family, with the center plot being a public field cultivated by all eight families with the produce going for taxes.

Nature does not always cooperate with human policy, of course, nor does it always passively accept the organization that is forced upon it. Arbitrary squares take no account of such fundamental features as springs, streams, and variations in productivity and exposure. As the frontier moved west across the nineteenth-century territory of the United States, it gradually became apparent that 160 acres might be adequate for a farm in the tall-grass prairies with their relatively generous rainfall, but the same area could spell crop failure and starvation on the short-grass plains where, unfortunately, the proverb that rain follows the plow proved to be untrue. We must take account of the culture-nature continuum.

[1] See Hughes (2006, p. 43, illustration 7).

Fig. 1.1 Great Plains of North America

Environmental history includes nature and culture concurrently. In its simplest terms, it requires that a study can be useful only if it considers and correlates change both in human societies and in the aspects of the natural world with which they are in contact. The relationship between the two is in almost every case that of reciprocal influence. A change made by humans in the environment virtually always redounds and generates change in cultural conditions. A history that does not include both terms cannot be called environmental history in the sense intended here. This assertion may seem self-evident to many of those who work in environmental history as a subfield of the historical discipline, as well as to many historical geographers, although there are a few who contend otherwise.

In the late twentieth century certain historians turned to the hitherto obscured accounts of those who had seemingly lacked power: to women's history; the histories of racial, religious, and sexual minorities; even the history of childhood. It is an understandably tempting extrapolation to look at environmental history as part of this progression. In the pyramid of power, the beasts and trees, and Earth herself, occupy the lowest stone courses that support the structure. Historians can now demonstrate that these supposedly voiceless and largely defenseless entities were in fact authentic actors in the historical drama and include them, too, in the larger narrative. As ethical extension has granted roles to immigrants, women, and former slaves, and recently has considered whether trees should have rights, so a similar historical extension can now grant narrative attention to other living things and the elements[2].

[2] This idea is found in Nash (1985).

To see environmental history simply as part of a progression within the discipline of history would, however, be a serious mistake. Nature is not powerless; it is, properly considered, the source of all power. Environmental history is useful because it can add grounding and perspective to the more traditional concerns of historians: war, diplomacy, politics, law, economics, and technology. It is also useful because it can reveal relationships between these concerns and the underlying processes of the physical world. Nature does not meekly fit into the human economy; nature is the economy that envelops all human efforts and without which human efforts are impotent. History that fails to take the natural environment into account is partial and incomplete.

To illustrate the principle that history cannot be fully understood apart from nature, I would like to present an image of an Egyptian rural landscape at the margin where the cultivated land borders the desert. A section of the vast Sahara occupies the upper portion of the view, stretching into the distance. Just below it is a white-painted village recently built of clay bricks. On the near side of that are irrigated fields planted with cotton, wheat, and other crops, and toward the bottom of the scene, a widely spaced grove of date palms stands among the fields. What we see in this picture is the meeting place between what the ancient Egyptians called the "Red Land," the dry and interminable realm of Set, the god of windstorms, and the "Black Land," the fertile watered soil favored by Osiris, god of plants and cultivation. This is a landscape that can be explicated by environmental history, but only if both natural history and cultural history are included as terms in the definition.

I have colleagues who maintain that environmental history is simply the history of the environment. This is because they define the environment as including "climate, geology, and geomorphology, not living things" (Grove and Rackham 2001). A history that included living things, they insist, should be called ecological history. Even with the change in terminology, however, they would focus attention on changes in the landscape, not social, economic, or other cultural changes. In the Egyptian image before us, therefore, they would focus their investigation on the desert, noting the long geological and climatic record of a terrain that was formerly provided with plentiful rainfall and subjected to water erosion. Climatic transformations associated with the end of the most recent ice age shifted the wind patterns, and by the period around 5,000 years before the present achieved a physical regime not dissimilar to that of the present. There is no doubt that these observations are useful, nor any doubt that an environmental historian needs to know them to help in the reconstruction of the past, but the environmental historian must always keep human history and anthropogenic changes in the center of the narrative.

Let us look, however, at the other end of the spectrum for a moment. It would certainly be possible to see the scene before us as an illustration of modern Egyptian political-economic history, as part of the events following the Revolution of 1952. Gamal Abdel Nasser had become president of Egypt and had determined to make the new Arab Republic an industrialized, secular, self-sufficient society that could hold its own in the global market economy. To do this, he considered the construction of the high dam at Aswan one of the first priorities, in order to generate electricity for industrialization, prevent disastrous atypical periodic floods, and to provide