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Islands – Global Lessons from Micro-worlds

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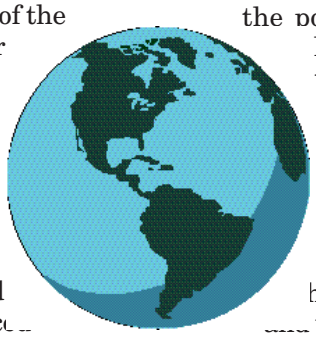
IN THE YEAR 1722 the Dutch admiral Roggeveen and his men arrived at an island in the South Pacific. It was on Easter Day, so the island was called Easter Island. It was then some 1200 years since the first Polynesians had arrived there from islands further west in the Pacific.

What the Dutch saw were a few thousand people who lived in a miserable state. They lived in caves and fought constant wars among themselves. When Captain James Cook anchored off Easter Island 50 years later, in 1774, the number of inhabitants had diminished even further and at the end of the nineteenth century lawless landowner from the South American mainland took away the few remaining. Just over a hundred elderly people and small children were left.



What all visitors to Easter Island were surprised to see were the gigantic stone sculptures, 600 of them, almost seven meters high on average. How could these wretched creatures have produced such marvels?

The first Polynesians on Easter Island were probably not more than 20 or 30 people. The original ecosystem on the island was uncomplicated with some 30 types of plant, a couple of kinds of lizard plus some fish in the surrounding sea. The humans brought a species of hen, the Polynesian rat and the sweet potato, that was grown for food. Their numbers grew and by the middle of the sixteenth century about 7,000 people lived on the island.

As the population grew, clans formed on different parts of the island. The clans competed. Growing sweet potatoes did not require much time and effort. Instead they spent their energy on arts and ceremonies, recitation and mnemotechnics, that is, training the memory. They had a cult of birds.

But most of all they worshipped their ancestors and their clan leaders on special cult sites, known under the name of ahu. Here the sculptures were raised, normally showing the stylized upper part of a man's body. It was a matter of making as many and as big and beautiful statues as possible.

The problem, however, was to transport the sculptures from the quarry to the cult site. They weighed tens of tons each. No animals were around for traction. Instead they cut down trees so they could pull, push and drag the sculptures on them. Such wooden roads were built all across the island.

The ceremonial competition finally made the inhabitants give up making their houses of wood, because they needed every tree for their roads. Instead they moved into caves or they built stone shelters or huts of straw. There were no trees for canoes and therefore no fishing. Without trees the soil eroded and harvests shrunk and with no sweet potatoes the hens were in such demand that they often were stolen and therefore the inhabitants started building special fortresses for them.

The society could no longer sustain itself and the population decreased by 50 per cent in hundred years. How sudden and total the catastrophe was is evident from the several hundred sculptures that are still lying around on the ground around near the Ranu Raraku quarry in different stages of completion.

Easter Island's population did not leave any texts. What we know about them we know from travelogues, objects and their own oral mythologies and stories as they have been passed down to us. But most of all we have our knowledge from a reading of nature's archives: pollen layers and biological fossils. The history of society and culture on Easter Island is only possible to understand as an environmental history which is an important history since it helps us understand that self-destructive behaviour is not unique to our own time and our part of the world.

It is an instructive story (Ponting 1991) because it demonstrates that science gives us new insights into nature, into history and into how the relationship between man and his environment has changed.

EASTER ISLAND IS an island and islands are limited. The water that surrounds them works as a barrier towards the rest of the world. Plants and animals do not easily find their ways to islands, especially if they are 1,500 kilometres away from the mainland.

The same is true for humans and our societies. A distant island can be quite unaffected by developments elsewhere and an island can, in turn, change quickly without any diffusion into the rest of the world.

Islands are isolated examples which make them interesting to study.

Islands can teach us something about change. Charles Darwin already understood more about how evolution worked after having visited the Galàpagos a few thousand kilometres north of Easter Island and Alfred Russell Wallace was led to think about his theory of natural selection in the Malay islands in south-east Asia.

IN 1778 JAMES COOK arrived in Hawaii. With the possible exception of the odd Spanish navigator, Cook and his men were in all probability the first to show up on these shores since the Polynesians, who had first come about one thousand years earlier and had established a flourishing community on the islands.

Hawaii is extremely isolated. Of the plants (fanerogams) on the islands 96 per cent live only there and in no other place in the world. The only generic mammal is a species of bat.

Hawaii, like Easter Island, also went through a disaster, but one of a different kind. Here the decisive factor was disease.

At the time of the arrival of the Europeans there were at least 250,000 people on Hawaii, maybe as many as 800,000. They were extremely healthy, as far as archaeological data can inform us about that. However, after less than 100 years of European presence their numbers were down to below 60,000. How can that be explained?

In other parts of the world Europeans have killed many people through warfare and manslaughter. The examples are numerous and should in fact merit their own detailed accounts. Suffice it to note here that manslaughter did not take place in Hawaii. True, there was some armed conflict, the worst case was when a British naval ship fired a series of shots in 1790 that killed about one hundred aboriginals. Groups of Hawaiians fought among themselves, but only for short periods and without great losses of men.

Sometimes the local population, living on taro, were forced by their local rulers to leave their taro fields and to cut sandal trees, well-scented trees that were used as currency by the rulers in their quest for western merchandise and weapons. Many Hawaiians died because of this but the trade ceased around 1830 and the population kept declining steadily even after then.

What was then the reason for a population decline in the order of 75 to 95 per cent?

It was probably something to do with Western vices: alcohol, drugs (opium) and nicotine. Another factor was the practice in many families of favourably supporting the boys and neglecting (if not deliberately killing) the girls. During the nineteenth century boys and men were in the majority in all cohorts.

The major reason, however, was epidemic disease (Crosby, 1994). A first epidemic, called the oku'u, hit in 1804. More would follow: measles, influenza and smallpox. Other diseases were constantly present: fevers, tuberculosis, diarrhoea, etc. There is no evidence of venereal diseases before the advent of the Europeans, but this happy state terminated almost immediately after their arrival. In less than ten years syphilis was rampant on the islands.

Europeans brought disease to virgin soils -- the result was virgin soil epidemics, a phenomenon that has been seen in all overseas colonial encounters.

Similar stories can be told about other island experiences: on New Zealand, the Canary Islands, Iceland, Greenland, the Cape Verde Islands, and so on. In all these cases the European presence had a start; a first moment of contact. In the North Atlantic islands this moment was in the Middle Ages; in the case of New Zealand it was in reality not until the nineteenth century (Crosby, 1986). The learning process from island experiences thus spans almost one thousand years.

The outcome of overseas encounters was not always disastrous. The aboriginals of North America, for example, managed to resist European colonization as long as the Norse sailors were scattered and could not rely on sustained back-up from their old homelands. Furthermore, the North American population inhabited a continent, not an island. The Inuit people on Greenland also managed to resist the Norsemen, although only after several centuries of colonization. The Inuit people were ultimately better suited to the climatic circumstances.

On Iceland, however, the European ecological overtaking was successful, despite severe climate decline from the late Middle Ages onwards, 'The Little Ice Age', that raised insurmountable obstacles to the colonizers on south Greenland. The decisive factor on Iceland was, however, the fact that there were no native people there. Despite their relative weakness and lack of local experience the Norsemen could indeed settle and, despite their ecologically disastrous lifestyle they could establish their colony. Today some 250,000 people live there, some of them with an ancestry that goes back to the first settlers.

Further south, in the Mid-Atlantic, the Spaniards and Portuguese did the same thing as their Scandinavian counterparts did in the North. The effects were disastrous, both on native populations – for example on the Canary Islands where the guanches experienced enormous setbacks – and on island ecological systems.

The Cape Verde islands is a case in point (Lindskog & Delaite, 1996). According to the Portuguese sea captain Cadamosto, who travelled there in 1456, these were green and luscious, with vast forests and many streams. Just like on Iceland, no humans hindered the Europeans. The Portuguese brought their domesticated animals, especially goats, which multiplied quickly. Goats eat almost everything, and they do it very uncompromisingly, so that the layer of vegetation rapidly went down to a minimum, disturbing the binding capacity of the vegetation and ultimately resulting in topsoil erosion.

The green islands – which is what their name means – were soon barren and stripped of much of their sheltering layer of vegetation and the droughts of 1770, 1830 and 1834 were so severe that between

Figure 1.1 This engraving by William Woolett (after William Hodges) is shown in James Cooks classical book from 1777, Voyages towards the South Pole, in which he describes his 1774 visit to Easter Island. The picture conveys a feeling of a doomed civilization. In fact a hundred years later the Easter Island civilization had ceased to exist.

one- and two-thirds of the population perished on each occasion.

The deeper paleoecological and epidemiological roots behind these ecological encounters between Europeans and the biota of ocean islands have been uncovered by recent work by environmental historians, most notably by Alfred Crosby in his pioneering work Ecological Imperialism (1986). But it should be stressed that none of this historiography would have been possible had it not been for advances in the earth sciences and in the life sciences. Crosby and his colleagues in the interdisciplinary field of global environmental history draw heavily on work in epidemiology, ecology and other disciplines.

These historians use the theory of continental drift and they speak of co-evolution. Both are concepts from the sciences which they use creatively to explain why it was that isolated island biota, as well as those on overseas continents, had not developed the same kind of sustainable and resilient man-nature relationships, with domesticated animals and cultivated plants, that Europeans had, and why it was that they spread so successfully.

These historians use epidemiology and historical demography to explain why Europeans, who had been living in fairly large population centres, had developed immunological protection to certain epidemic diseases that overseas populations had never experienced.

THIS SEEMS TO BE a truly dismal history: of biological determinism, of European survival, supremacy and expansion and of ecological and epidemiological disaster in the wake of first encounters and imperialism.

But there is another history connected to the one we have just heard about. This one also draws on island experiences.

Colonization, harsh and cruel as it often was, meant that the colonial powers built a comprehensive network of scientists, professionals and civil servants to work in the colonies and at home. These were engineers, agronomists, doctors, geologists, botanists, zoologists. In cities like London, Paris, Madrid and Amsterdam, botanical and zoological gardens were founded. Later on such gardens were also established in the colonies, alongside other institutions for scientific investigation.

Indeed, many colonial civil servants and scientists worked on islands. In the Caribbean they worked on Barbados and St Vincent, in the Atlantic they were active on St Helena and the Falklands and, in the Indian Ocean, Mauritius was of great importance, to mention just a few examples.

These islands were exploited through forestry and plantations, with grazing sheep, goats and cattle. One overriding goal was of course that the colonies were meant to be profitable. Some colonial civil servants, however, became concerned with what they saw. Forests did not grow up again after they had been cut down. Grazing animals turned the landscape into dry and barren steppes; soil deprivation came almost immediately. Aboriginal populations were forced to give up their livelihood and migrate or serve as cheap labour for the colonizers.

Some of these concerned professionals and scientists tried to find out what was going on. On the other hand their knowledge was limited. That is part of the reason why they undertook scientific research, either on their own or through contacts they established with scientists in botanical gardens

and scientific institutions in Europe.

One further argument, of a humanitarian character, was that the native inhabitants of these islands were severely affected by the disturbances in nature and, by definition, these people were now British, French or Dutch subordinates for whom the colonial powers had a responsibility.

Colonial officials with the most insight realized also that the native populations had important knowledge about their environments. Tropical peoples were no ecological saints -- which may be obvious from the dismal island experiences we have just heard about -- but they had the benefit of having adapted to the circumstances for a long time. In some cases they had even started on local and regional conservation programmes, like the one implemented by the kings in northern India to protect the forests and preserve the valuable elephants.

There were also efforts to make the colonial powers regulate use of natural resources and programmes for forest conservation were indeed put into practice on several islands.

The discovery of tropical island ecological disasters grew slowly from the seventeenth century and became more comprehensive in the eighteenth century and continued into the nineteenth. We may want to call this an early conservation movement, antedating by many decades, even centuries, the conservation movement that started in the mid- to late-nineteenth century in Europe and the United States.

Why was it that tropical islands came first? One important reason is that they were islands. The effects were clear and visible. On the continents you could always escape the problem by dragging on elsewhere with your axes or your cattle. The limited size of islands called for long-term responsibility.

On islands one did not only observe change; the speed of change could be observed as well and for scientists of the day measurements became all the more important, not only for understanding, but also to make their arguments more valid and trustworthy. If they wanted to bring change they had to convince the colonial power that political action was necessary and that such action was indeed in the long-term interest of the power itself. Otherwise they would be in the possession of colonies that were, ultimately, worthless.

Some colonial scientists even suggested a connection between environmental decay, especially deforestation, and climate change. A drought that affected large parts of the world in 1791-92 was interpreted by some natural historians as a sign that the human impact on tropical natural conditions had gone too far. The underlying assumption – although yet not proved by scientific methods of the day – was that the tropics carried a special role for the global natural balance.

Figure 1.2
One of the oldest myths of mankind, that of paradise, Man and nature in eternal harmony, is often portrayed as an island. The illustration is from the book of Genesis chpt 2 in an 19th century bible.

In the background one can also find an idea about the tropical island Eden. Visions of Paradise – an old genre – were characterized by plenitude and richness in variety and form, of flora and fauna, and of human virtue. Naked mountains, sore, eroded soil, or human greed and selfishness ran counter to this vision.

It has been shown recently by the Cambridge environmental historian Richard Grove (1995) that many colonial officials and scientists were inspired by romantic visions of tropical islands. Many held humanitarian ideals on the equal value and equal rights of all humans, also colonial subjects. They had been inspired by the cultures they had encountered and learnt to appreciate or by the critique of European culture that had been articulated by philosophers like Montaigne in the sixteenth century or Rousseau and Diderot in the eighteenth.

Tropical island Edens were, therefore, not only transformed into kinds of large-scale scientific laboratories, which in a sense they were. They were also the testing-ground of human virtues. Early conservationist ideas were tightly interwoven not just with science but also with ideas of social responsibility and Christian love, *caritas*.