Chapter 2

Interacting with Nature:
Creating Landscapes

The emerging cultural landscape

Landscape of any sort only exists where people create it in their minds or with their senses, and when they imagine and perceive it. 'Cultural' landscapes only exist where people in the past have changed their environment and where the evidence or effect of that change survives as physical remains or as memory. In northern Europe, human impact upon the environment was still negligible only ten thousand years ago, when the current warm period between ice ages had begun to end. Available technology and small population sizes had ensured that Palaeolithic and Mesolithic peoples left limited marks on the landscape, and today these are barely perceptible in our mental landscapes. In the early 21st century, in contrast, it is pretty well impossible to point to a tract of land or countryside in Europe that has not been influenced in some way, shape or form by humankind. This chapter illustrates this massive change.

Europe's environment as it emerged from the ice, and as plants and animals began to re-colonise the area, provided a blank canvas for the first humans to work on. In the process they started upon the pathway to the rich and varied landscapes that we enjoy today. They cleared woodland for hunting and later for farming, and much later they learnt to drain wetlands. Gradually over the centuries, though sometimes in rapid leaps forward, the balance between nature and culture changed. It is no coincidence that the words 'culture', 'cultivation' and of course 'agriculture' all share common roots.

This interaction of humans and nature – specifically the ways in which people have changed their world – is at the heart of the concept of the cultural landscape, and at the heart of this chapter. How has the natural world shaped human actions? What has been our response to natural change? How have we used and shaped variously abundant and limited natural resources through time? How have we overcome natural constraints, thereby changing nature itself? To what extent did the idea of 'nature' exist before people invented it as a way to define its opposite, culture?

Our stories in this chapter take us through a range of aspects of the Human-Nature interaction. As with all the chapters in this book, there are connections and overlaps with other chapters, reflecting the ultimately single and indivisible character of the whole landscape. But sometimes we have to simplify and subdivide before we can begin to understand, and so this chapter brings together specific examples of just one theme. We look again, but from a different perspective, at some of the places we told stories about in the first chapter – at Kaali, Dithmarschen and Prácheňsko. But we also visit new areas in this chapter. We travel to Bowland, to tell how medieval people used land and animals to produce our landscape. From Dowris we hear a story about people drawing riches from the ground itself, in this case peat, and thereby creating very new habitats, while in Vakka-Suomi we see people using new lands offered up by the retreating seas. In Halland we find an example of the turning of the wheel through history as fields created in prehistoric times return to woodland in more recent times. Finally we venture to our southernmost project, in Paneveggio, to see nature re-impose itself despite past human mistakes, thereby demonstrating the resilience of natural forces and the potential advantages for the future landscape if management and conservation can blend historic interest with those of the natural.

Natural forces and landscape character

Climate, wildlife and plants, geology, soils, hydrology, topography… the list of potential factors that influence human behaviour is long and the number of their combinations infinite. Human responses to the natural

Boora Bog, Dowris

environment range from modifying ways of living in order to survive to wholesale destruction of the environment in order to exploit its inherent resources. At one extreme, people adapt to nature, at the other, natural landscapes are altered by people. Of course the relationship between natural and cultural is seldom one-way or simple. Simultaneously, peoples of the past therefore modified their own behaviour in order to sustain a way of living and exploit the natural environment, and nature has always itself adapted to human change. Nor is the relationship static, as the group of short examples on this page demonstrates.

One of our projects, Dowris, is centred on the peat bogs of the Irish midlands. Here, in the Bronze Age, an environment of lake and bog was used to collect food (fish, game), to obtain raw materials (reeds and rushes for thatch and basket-making) and fuel (peat) and to be a place of ritual and celebration. Over the next three millennia the lake turned to peat, in turn sustaining a different range of biodiversity and offering different resources. By the 19th century, the peat was being removed for fuel and the land drained for agricultural improvement. Peat cutting continues today and the burning of peat in electricity power stations will contribute to future climatic change, continuing the process of interaction.

Summer pasture in the Dolomites, Paneveggio

An extreme example of a natural phenomenon and its impact upon society is the Kaali meteorite that has already been described in the previous chapter. This unexpected event made its impact upon an inhabited and farmed landscape, a landscape that was already 'ancient', where people lived and worked, traded and worshipped, and made tools and goods. It had a great effect not only on the physical shape of the landscape, where large impact craters are still to be seen, but also on the mental perceptions of those who witnessed the crash of the meteor. Successive generations were told stories about the great fireball that one day fell from the sky and re-shaped their world. The story illustrates two human responses to an unusual, and very localised but dramatic event – a desire to use the landscape and a need to explain it. For the first, as we have already seen, the main Kaali crater with its mysterious lake became a focal point of ritual for pagan beliefs; for the second, those beliefs surely must have been radically reshaped by the fall from the sky of the 'sun'. It may not be too fanciful to say that the meteorite at Kaali gave birth to new religions. It certainly inspired myths and stories as well, and some of these will be related in our final chapter.

The Kaali meteorite is an exceptional example, but the human response is rather more typical – to adapt, utilise and explain. Anywhere you look, you can see the combination of natural characteristics (such as climate) that may influence or determine human activity. Topography, for example, plays a significant role in the siting of nearly all of the thirty known early Iron Age hillforts in South Bohemia. These are based on rocky spurs, hills or extended ridges, with the necessary extensive views across surrounding territories. The nature of the terrain affected the choice of their location, their small size and the materials used in their construction. Similarly, the constraints imposed on the growing season by topography have led to historical patterns of seasonal transhumance in the Dolomites. Here, livestock would be moved to summer pastures to take advantage of the plentiful but seasonal supply of new grass. That very action has contributed to patterns and boundaries of

ownership, to building types and locations and to systems of communication and supply – all of which can be expressed in the cultural landscape.

Climate, hydrology and soils will limit what types of crops may be grown and where, whilst the idiosyncrasies of geology will determine the exploitation of mineral resources. Here again, the relationship is not quite so simple – advances in technology (irrigation, greenhouses or plant modification) may override natural patterns in the landscape, and by turn may be influenced by the market, politics and social structures that have much less to do with the natural world.

Adapting nature

A constant theme running through the relationship between humans and the natural world has been the adaptation of people to the conditions of the environment. The limits imposed by climate, topography and soils upon what can be grown or reared in a region, and the location of mineral resources, have had a significant effect on the ways in which the landscape has been utilised in the past. In many cases the relevant way of working the land no longer continues, yet the landscape retains the connection and the story. For example, until the last century some areas of upland England practised systems of animal husbandry where hay for overwintering was cut from upland meadows and stored locally. The resulting landscape is a very distinctive one in which many scattered field barns nestle in a network of small fields. Today mechanisation, farm amalgamation and the industrial production of animal feed mean that large numbers of these barns are no longer needed.

Consequently pressure for change ensures that some can only be conserved through agri-environment schemes and finding new uses (for example, as commercial or industrial premises or as camping barns) or, alternatively, they become derelict. Whatever the outcome, it is still largely the landscape that tells the story of past human adaptation to the natural environment.

The island of Hallands Väderö, off the coast of northern Scania, described in our first chapter, shows us the special relationship between people and nature. In this case it tells of specialisation, of adaptation and of the impact of different patterns of ownership upon the survival of natural resources. Embedded in the landscape we can see the human succession: early prehistoric fishing and shell-food gathering, limited Bronze Age farming, reservation as a medieval royal forest, and later simultaneous uses as anchorage, for wood-fuel production and for cattle and horse grazing. Now it is largely a nature reserve, as people wish to preserve it and carefully visit it for its sense of tranquillity, valuing it as a landscape made jointly by people and nature.

Horses grazing in the Dolomites, Paneveggio

There is evidence for cultural management, adaptation or interference behind most landscapes that are perceived as being largely natural. The apparently natural appearance of woodland may result from interplay between human control and exploitation and natural processes. For example, without stock grazing controls, thinning or management of woodland can take on an entirely different form. Grassland, moorland and wetland environments similarly benefit from intervention as at least partially managed landscapes.

A story concerning the upland moor of the Forest of Bowland in northwest England continues along similar themes: it tells of places that are apparently empty and natural places but that have a strong cultural dimension. The sometimes bleak and blasted moor here is often perceived to be a wild, natural landscape. In fact, it is initially the result of woodland clearance by earlier prehistoric and Bronze Age farmers and subsequent climatic deterioration. Most recently, it has been maintained by carefully managed modern grazing regimes for cattle and grouse shooting, and this still mainly prevents the return of scrubland and trees. In between, in the medieval period, the characteristics of this landscape proved to be particularly suited to a system of medieval

A meadow on Hallands Väderö, Bjäre

cattle ranching, which provides another example of how humans have adapted their surroundings and left a story in the landscape.

Cowboys riding the range with their cattle are an enduring image now thanks to Hollywood, and indeed remain a reality in parts of southern America and Iberia. Perhaps unexpectedly, cattle ranching was also a feature of medieval Lancashire, particularly within the Forest of Bowland. The pastoral economy had been important in this area for some time, as shown by the place names, such as 'Bowland' itself, 'cattle-land', derived from 'Bu', the Old Norwegian word for cattle, but it is the medieval 'vaccaries' (from the medieval latin 'vacca', meaning cow) that we know most about.

Vaccaries were large, open tracts of land created by major feudal landowners to graze livestock. They were farmed directly by their owners, not let out to tenants (farmed as 'demesne') a sure sign of their high economic and socially symbolic value. The lord owned the cattle as well, which were looked after on his behalf by a vaccary keeper, who in turn employed a number of boothmen to undertake the day-to-day duties. The rules and regulations were strict – if a cow fell to a wolf, it was not enough to report it to the Instaurator, the higher official with the job of overseeing all of the lord's vaccaries and the cattle; the carcass also had to be produced as evidence or the beast had to be replaced. There is no reference to either the keepers or the boothmen being paid for their work; instead it would seem that they were able to use milk products as a source of income (cheese and butter being important foodstuff, just as Lancashire cheese still is today) and to graze their own cattle, but only so long as the lord's cattle had priority.

Vaccaries were not common all over England, but are particular features of Lancashire and other parts of northern England, presumably adapting to regional political and geographical situations. There are suggestions that they started in the post-Roman period or even pre-Roman Iron Age, but it is very clear that by the 13th century important landowners such as the de Lacys were engaged in a programme of large-scale cattle rearing.

Vaccaries utilised the special topography of their locations. They tended to be isolated and tucked away in steep–sided valleys that would ensure a good water supply and shelter from the worst weather. A moor wall separated the unenclosed common grazing of the fell–tops from the rest of the vaccary, and within this wall were droveways (driftways or stock funnels) that could be used to bring the cattle down from the upland pasture. These distinctive features sometimes survive within the pattern of the moor wall. All the Bowland vaccaries were located close to extensive areas of upland moor grazing that provided good pasture, especially in summer when the enclosed pasture on the fell-side (the 'in-bye') was being used to grow crops. Thus vaccaries used a small-scale localised form of transhumance or rotation, moving cattle in winter back down the hillside to take advantage of the 'aftermath' (the new grass growing after the crop harvest) and in turn to enrich the soil with their manure to benefit the next year's crops.

Close to each vaccary was an area of flat land that would have been used by the keeper and boothmen to grow crops to feed their families. It would also have been used to cultivate hay as an important winter fodder crop. Vaccaries were stocked with long-horned cattle with thick hides that were able to stand up to the rigours of winter. Medieval cattle were hardy creatures, and most would have been kept outdoors throughout the year: cows were only brought down from pasture as first year calves, and kept indoors during the harsh winter months, or for calving. They would not have needed shepherding, each herd knew its territory and did not roam beyond its limits; rather like sheep today they were 'hefted' to the fell–side. A herd would have comprised about fifty cattle plus followers (calves) and bulls. A calf that had lived through two winters was called a 't'winter', while one that had lived for three was called a 'th'winter'.

Painstaking historical research carried out over the past twenty years has traced a large

number of medieval vaccaries through the archives, as well as identifying their remains in the landscape. It is clear that vaccaries, like the royal forests from which many emerged, have had a significant impact upon how the landscape looks today. There is a surprising correlation between vaccaries and the modern farmsteads occupying the same sites, and much of the settlement pattern established in the 13th century continues in the present day. At the site of a former vaccary called Goldshaw Booth, for example, a cluster of farmsteads called Sabden Fold now stands around the infield in a girdle pattern, occupying the same sites as those of the boothmen and their families several centuries earlier. This is a common layout and the close proximity of farmsteads to the infield would have enabled the use of night soil (excrement and other human waste) as a fertiliser. At a casual glance the infield appears to be a small patch of flat land that is divided into a number of little fields, but a closer examination reveals a partly surviving bank and ditch that would once have encircled this area, preventing animals from straying and eating valuable crops. Boundaries also betray their past use. The moor wall and vaccary funnel, for example, can still be clearly identified, and within the hedgerows are tall holly bushes to remind us of how it was fed to cattle in the depths of winter when other fodder was in short supply.

Bowland has for a few thousand years been a relatively unchanging environment in terms of natural processes, and human interaction with it has been relatively smooth. Its medieval vaccary system can therefore stand for us as a striking example of how human systems of sustenance and social organisation could be fitted harmoniously into an environment that was perhaps not well suited for other types of farming. The vaccaries were peculiarly suited to the harsh environment of the fells of Bowland, making economic gain from the upland moor and the isolated valleys and in the process helping to create a system of much stronger and more direct lordship than in many other parts of England. Even today Bowland is mainly a land of very large, rich and powerful landowners. In the 19th and 20th centuries this led to interesting effects on the landscape, as it grew into an aristocratic hunting 'playground'. More importantly, this medieval cattle ranching system has had a profound effect upon subsequent land use and patterns of settlement and thus on the landscape that we perceive.

Not all the places and systems described by stories in this book can be said to show such harmonious relationships, although they can be equally striking examples of human-nature interactions. Very different types and levels of human response were needed in more dynamic environments, and our next section looks at some examples of these.

The Sabden Fold area today, Bowland

A reconstruction painting of the medieval vaccary of Sabden Fold, Bowland © John Hodgson

Vaccaries were stocked with animals like these hardy long horned cattle

Changing with nature

Many human environments have not been static, but have been subject to processes of change (sometimes prompted by people's activity, sometimes not), which may have had dramatic effects on human lives. Such drastic change may result from changes in climate, such as differences in temperature, rainfall and windspeed. Perhaps some of the best places to view the impacts of such changes are at the margins of agricultural systems. Both on the upland limits of cultivated land (a sort of inland 'coast' along the internal 'sea' of wasteland), and on the fluctuating coasts of the real sea, the tidemarks of human activity tell a story of adaptation resulting from climatic variation. The next two stories centre upon the latter area, exploring the impact of changes in sea level upon the cultural landscape.

The sea creates a natural boundary, but it is neither passive nor static. In one area metres of land may be lost every winter in violent storms, whilst in another, the sea retreats. A retreating sea will have a significant impact upon human activity. For those who make a living from it, the sea will become physically more distant and they may even be deprived of the very resource they are dependent upon. There are numerous examples of once important trading places and seaports becoming redundant as harbours silt up and trading patterns change, most famously at Ostia, the former harbour of Rome. Alternatively, an advancing sea may result in the loss of farmland and settlements, the destruction of maritime or coastal infrastructure such as harbours, fish traps and sea-walls, or the changing location of the sea's resources, such as oyster and mussel beds, or fish migration and breeding areas.

Change may be dramatic – the sudden loss one year of a whole section of cliff – but is more likely to be gradual and incremental – the slow, creeping silting up of an estuary or the drowning of saltmarsh. When natural change is slow, inhabitants have time to adapt: settlements may shift as was the case for Skanör and Birka near Stockholm in Sweden, where inhabitants relocated inland because of rising sea levels. Equally, when the sea slowly retreats new land may be reclaimed or flood defences constructed. All of these human reactions to natural change can leave a mark on the landscape. We have already in the previous chapter referred to examples of this from Vakka-Suomi, and it is to this area that we now turn for a more detailed story.

When the vast weight of ice that once covered much of Scandinavia began to melt 20,000 years ago, the underlying land began to rise. It is still rising today, ten thousand years or more after the ice has gone. On the west coast of Finland, land continues to rise at a rate of one metre per century. When people first settled Vakka-Suomi after the ice had disappeared, the land was about forty five metres lower than it is now. As the

Cairn on a ridge, Untamala

A former lake, Untamala

coastline has receded, people have had to adapt to new situations. This has made a significant impact on their activities and on their – and our – cultural experience of the landscape.

People arrived in the Vakka-Suomi area about 7000 years ago, in the middle of what archaeologists call the 'comb ceramic' period because of one of its most distinctive artefact types, pottery decorated with parallel lines as if drawn by combs. Their favoured place for settlement was on the sandy shorelines of what was then an archipelago of small islands. These were locations that facilitated seal–hunting and fishing. During the Bronze Age, however, Vakka-Suomi underwent great change. The sea continued to retreat to the west, giving up more land and joining islands together, so that the human population could expand. Little is known about the settlements of this period, but there are numerous burial and clearance cairns, which comprise the most prominent prehistoric element of the landscape in the area. They were often placed on the crest of coastal rocks, establishing a direct visual connection with the sea and the sun. These great forces, guarantors of daily life, must have had a central position in Bronze Age religion and ritual, and an immediate and important meaning in people's minds, perhaps more than at any time since.

In spite of its significance, the connections (both physical and mental) of the cultural landscape of the Stone Age and Bronze Age to the sea, have almost totally disappeared. Nowadays the sea is approximately fifteen kilometres further west from where its waves washed the Bronze Age shores. All of the monuments associated with this earlier period are now located in the rocky forests, far away from modern villages that have followed the sea to its new position. Land uplift has forced people to adapt to new demands of the changing environment. It has also offered them new opportunities; for example agricultural land (both mineral-rich and easy to work) could be reclaimed from the sea. The people of the Stone Age settled on the post-glacial moraine ridges, which drained easily, providing high, dry settlement locations and light, easy soils. In contrast the people of the Iron Age located their dwelling places in the vicinity of the 'new' clay soils recently risen from the sea.

In the coastal areas a dual economy has persisted since 300 BC because the weather was too unreliable for a total dependency upon agriculture. Hunting and fishing were an important part of day-to-day survival, which dictated that dwelling places would be situated on the coast. The sea offered a good route for transport; it was easier to navigate via coastal waterways than through the trackless wilderness. At the waterside, especially in areas where the sea had most recently retreated, sedge was grown, as an excellent feed for cattle.

As time passed, and as even a minor drop in sea level revealed significant new tracts of land, generation after generation had to adapt to a new environment. The central area of the Iron Age Vakka-Suomi changed from a bay to a lake in just two centuries. Eventually, however, the needs of agriculture tied people to the land. It became difficult for

An aerial view of the Wadden sea, once drained and farmed and now reverting to nature, Dithmarschen

villagers to follow the retreating sea further, because they had invested so much effort into draining and improving the new land that had already risen out of the sea. Settled farming communities had to stay by their now well-established fields and pastures. Today the ancient shores of Valko-Lake are still settled, because the lake itself has been drained to make arable farmland.

Our story from Vakka-Suomi illustrates human adaptation to natural change. It introduces concepts of a dynamic landscape – one which rarely remains static and which changes through time. It also introduces the idea of 'relicts' in the landscape, areas that reflect landuse and activities of an earlier time. These landuses or activities no longer take place, but they link between the present with the past, and their story helps to describe the living landscape.

Land uplift, however, is a process that still goes on to this day. As we have seen in Chapter 1, Finland grows larger each year. In Vakka-Suomi the former bays continue to silt over, while shipping routes become narrower and more difficult to navigate. Houses once built on the coast 'move' inland. The vegetation around them changes with the introduction and establishment of more and more continental species. Elsewhere there are areas of relict vegetation and it is not unusual to find marine plants in areas that are some considerable distance from the modern coast. Thus, still land uplift and its effects, and human reactions to it, continue to dominate our experience of the landscape today.

It is hardly possible to visit areas that so recently were at the coast or even underwater, as in Vakka-Suomi, or at the edge of the island of Saaremaa in Estonia, without interpreting the landscape in terms of the balance with one of nature's most unrelenting forces. These forces continue to cause rapid changes in environments such as this, as a mirror image of the usual perception of the effects of global warming. The long story of human and natural interaction is not finished; our cultural landscapes are not complete – but the question of how we manage them, which values we give priority to, is as hard as ever to decide. This can be said of all of our stories, but it is most clear here, where the need to manage unavoidable change in the landscape is strongly revealed.

Overcoming nature

We all know very modern examples of overcoming nature's barriers through feats of engineering and technology, such as the Channel tunnel between England and France, or the Öresund link that now joins Sweden to Denmark and, via Denmark's other new inter-island bridges, to mainland Europe.

Sheep in the Dithmarschen landscape

These often change our very perception of the landscape. The same spirit of innovation can be seen in the past, when communities have modified their sometimes harsh and uninviting surroundings in an attempt to secure their everyday existence.

One example of this struggle comes from the Dithmarschen salt marshes of Schleswig–Holstein. Whereas Vakka-Suomi's story is one of land gained as a result of uplift, the Dithmarschen story is about alternating periods of gain through hard work and loss to the sea. More than any other story so far in this chapter, it demonstrates the transient and provisional nature of human attempts at land reclamation. Here, for more than 2000 years, people protected themselves against the stormy sea. In the first millennium after Christ, they built artificial mounds, wurten, for their houses. We have told a story about the first centuries of the struggle with the sea, when battles were won but the war was unfinished; now we take up the story again at a time when another battle was necessary.

Since the 11th and 12th centuries summer dykes have been constructed to protect the farmland of the Dithmarschen against the stormy sea. Sometimes neighbours combined to build protective banks around their farms, villages and adjacent land, or alternatively larger groups of communities organised more comprehensive schemes of protection and reclamation. These usually consisted of 1-2.5 metre dykes with wooden valve-locks or just simple hollowed tree trunks at the lowest point of the base. Unlike many later sea defences seen across Europe these dykes had gentle slopes to ensure that wave damage would be dissipated, thereby limiting damage.

Around 1100 a long sea dyke was constructed parallel to the coast to protect the northern and southern Dithmarschen areas. Behind the newly–constructed dyke the former sea marshes became protected from the sea. These then were drained and settled, often by farming cooperatives or legally constituted societies, creating characteristic long linear settlements and adjoining strip-like fields in the landscape that remain visible today. On the seaward side of the dyke a succession of higher dykes illustrate improvements in technology of the 17th and 19th-centuries as areas of salt marsh and sea were rendered inhabitable and agriculturally productive.

In the northern part of the peninsula of Eiderstedt, preserved ring dykes, old tidal creeks, irregular patterns of fields and landholdings and single farmsteads on artificial mounds (wurten) provide characteristic examples of a medieval cultural landscape in the salt marshes. Archaeological excavations demonstrate that the first dykes had shallow sea and land banks.

Large storm floods, like the so-called first 'mandränke', destroyed large parts of the North Frisian Utlande in 1362. From the 14th century onwards the environment changed dramatically. Severe tidal flooding in the Late Middle Ages and the early modern era engulfed the entire Rungholt area as well as other parts of the North Frisian Utlande. Improvements in dyke construction in the 17th and 18th centuries are one of the themes in stories of this period. During this time new professional dyke builders erected larger dykes, which dissect the marshland as long banks. These later dykes were higher (up to 3.5-5 metres), with their width doubled and their volume tripled. They resulted in a significant reduction in dyke-breaches and, consequently, agricultural activities intensified in the areas protected by them. Increasing proportions of different crops, such as winter corn, were grown and pasture land improved. Farmers relocated from villages to construct new farms, surrounded by moats safe from occasional freshwater inundation that continued to occur until the later 19th century. Smallholders moved too, although less successfully, with many practising pastoral farming in the Dithmarschen area losing their properties and becoming labourers by the 18th century. Conversely, the arable farms became larger, often employing the former smallholders. Here then is a landscape reflecting social change as well as a constant battle against the sea.

The Dithmarschen area is a good example of a landscape where people and environment are linked together in many ways. There are many surviving traces of the rich cultural heritage of the salt marshes –

wurten as artificial mounds, farmsteads, churches, villages, old tidal channels and waterways, which allow us to reconstruct the landscape and its settlement development. The Wadden Sea region as a whole has a common cultural identity and the landscape and cultural heritage of this region are of outstanding importance.

The modern visitor to Dithmarschen is very much aware of the perpetual battle against high water levels. Dykes, dyke-locks, sluices and culverts are a constant physical reminder of the proximity of the sea and of the 'borrowed' nature of the landscape.

So far in this chapter the stories have, to varying degrees, been about survival and adaptation in the natural landscape. In the Vakka-Suomi and Dithmarschen areas we have explored how humans have reacted to changing natural conditions, fighting against their subservience to the whims of nature. Our next story looks at the other end of the spectrum, where nature is almost helpless in the face of human exploitation and cultural activity.

Exploiting nature's resources

Modern examples of the exploitation of natural resources are many. People now harness wind, water and sun to generate electricity. Historically similarly active processes can be seen in the draining of mosslands to create new agricultural land, the improvement of pasture to bring it into arable production, or the extraction of minerals and aggregates. Such exploitation of the natural landscape can have a high visual impact: for example, in our network alone the slate mines of North Wales, the afforestation of former common land in the Spessart and the damming of the Trentino valleys. Elsewhere the human touch is far subtler – the exploitation of salt marsh for grazing for example, of pools and wet areas for prehistoric ritual or, more recently, of upland landscapes for leisure and recreational activities such as hiking, rock-climbing or skiing.

In our next story we look at the exploitation of nature by extracting peat (or 'turf' as it is more commonly called in Ireland) from Irish bogs. Besides its central theme of landscape exploitation, the story also illustrates how a particular natural environment can influence many shades of cultural activities from the past to the present.

Our Dowris project is named after the famous Dowris hoard of Bronze Age objects, which was found at the beginning of the 19th century in farmland that had been reclaimed from bog-land over the centuries. Such bog-land, or peat bogs, are a very distinctive aspect of the Irish landscape. So characteristic of Ireland are they that the Gaelic word 'bog' has come to be used internationally for them. Curiously, the Irish themselves in their own language don't actually use the word bog in this way, preferring instead the Gaelic words 'móin' or 'portach'. But 'bog' means 'soft' in Gaelic, and is therefore an entirely appropriate name for lands that have been described rather more graphically as a sort of giant sponge that absorbs huge amounts of water. Bogs are fairly widespread across northern Europe, Asia and America, but in Ireland they are very common, covering about one-sixth of the whole island. In Europe, it seems that only Finland has a higher percentage of bog-land.

Bogs have been part of the story of human settlement in Ireland since people first came here after the Ice Age, about nine thousand years ago, and a significant amount of Irish culture is connected with bogs. Today they are seen as bleak, uninviting and even dangerous landscapes and, until modern environmentalists began to point out their relative rarity in Europe, they tended to be looked at in a negative light. They were often associated with the poorer and more backward-looking aspects of life. The nicknames 'bogman' and 'bogtrotter' are often used in an insulting way, and there is a

Remains of a possible Neolithic wall buried in a bog, Dowris

pessimistic and derogatory traditional saying in Ireland that 'while you can take the man out of the bog, you can never take the bog out of the man.'

Ireland has two main types of bog: 'raised bogs', mainly in the low-lying middle of the country with its lakes and slow-moving rivers, and 'blanket bogs', in upland areas and the western part of the country. The first of these main types, the 'raised bog', is in many instances the oldest, and has been developing since just after the last glaciation of the country. Raised bogs acquire a domed shape as they grow from the accumulation of mosses and wet-loving plants. Such types of bog are very common in the Dowris area.

'Blanket bogs', the second type, cover the surface of the land like a blanket, hugging its contours like a heavy fall of purple-brown snow. They look as if they have been there forever, but in fact they are relative newcomers to the Irish landscape, mainly being later in origin than the arrival of human beings. They may indeed, in part, have been indirectly caused by people during the Neolithic period (in Ireland around 4000 BC to 2500 BC), when the earliest farmers would have cut down forests to clear the way for agricultural use. With their primitive stone ploughs these farmers could not do much more than, literally, scratch the surface of their fields, so that over centuries the top layer of the soil was overused. Combined with a deterioration of the climate towards the end of the Neolithic period, and without the trees that originally would have absorbed some of the rainfall and helped more of it to evaporate, these poor, compacted soils lost the ability to remain dry. They became waterlogged, and a soil was created that was only suitable for the natural growth of plants such as heathers, rushes and mosses, which over time created the bogs we see now. Some of this bog has grown over the settlements of the ancient farmers, and nowadays archaeologists, when they examine the bogs, frequently turn up the living areas, tombs and fields used by those from the past.

For centuries at least, and probably for very much longer, people in Ireland have been cutting up the bog for fuel. Sometimes cutting has been carried out on an industrial scale. Most recently, commercial production of peat for garden use has started to make very serious encroachments into surviving bogs, and for most of the 20th century there has been a concerted national policy of digging peat on a massive scale to supply the country's electricity needs through purpose-built peat-fired power generating stations. Complete bogs have disappeared from the landscape, to be replaced by farmland or lakes used for agricultural or recreational purposes. This seems to have been the case at the site of the Dowris find.

The bogs of Dowris show the substantial influence exerted by humans on the environment. Indeed, that story tells us that as well as being the cause of the destruction of bogs, people of the past were partly responsible for their formation in the first place, by reusing and thus destroying prehistoric farmland (which in turn it seems they may have created by destroying natural forest). The story also makes a useful commentary on the changing perceptions of natural resources and the values that we attach to them, because of course peat bogs are now one of our most valued habitats and landscapes for conservation reasons.

Shifting balances – nature returns?

Our earlier stories have demonstrated that just as natural processes are ever changing, so are human reactions to them. The result is a landscape that reflects the changing interplay between people and nature. The time depth recorded within landscapes – the remains of earlier periods side by side with modern patterns, or the traceable chain of historical activities – can manifest itself in either a modern continuing use or in the creation of relict landscapes. A field boundary dating to the Iron Age may survive in use as a boundary today, or a 17th century farmhouse may still be occupied by a family that continues to work the land.

Conversely, many earlier land uses have changed and been superseded by a new use.

Relict components of past landscapes, sometimes misleadingly referred to as 'relict landscapes' in their own right, are often important aspects of the present day landscape. They are most often found in areas that have been largely abandoned by people, or at least where subsequent and current land use is less intensive than that which created the relict features. In many cases, then, it is the 'return' of nature that forms the predominant current land use. Other stories in this book from the Dowris and Bowland areas tell of Bronze Age settlements and fields being completely hidden by a blanket of peat. Such masking has contributed to the misconception that these landscapes are wholly natural. The same misconceptions can be applied to woodland – 'trees are natural, and so woodland must be'. This view fails to recognise the managed character of woodland, as evidenced by woodbanks and subdivisions, charcoal burning huts and mounds, sawpits, coppicing and pollarding, indeed the very location of woodland. Furthermore, historic features may both pre-date and survive within woodland. Fortunately, because sustainable management requires clear understanding, the historic dimension of woods and forests is gradually being recognised and, as the following story shows, there is a growing recognition of the added benefits of conserving nature and historic heritage together rather than viewing them as separate entities.

Sitting in his home in Hasslöv in southern Halland a little over 200 years ago, the vicar Pehr Osbeck was able to look out of his window and see deciduous woods on the north slope of the Hallandsås ridge. He saw a cultural landscape rich in trees, with thin beech woods where cows grazed and pigs searched for acorns, and arable fields and meadows with plenty of oak, hazel, birch, and alder trees. Osbeck was one of the most famous followers of the 'King of the Flowers', Linnaeus, and he has left us a unique description of the nature and culture of this district in the 18th century. He recorded more than 2600 species of plants, and with the aid of his lists it is possible to 'see' the landscape that he saw at the beginning of the 18th century.

There was a great wealth of species in the 18th century. Osbeck noted many insects and lichens, for instance, that can only live in old oak, beech, and other deciduous trees. Several of these species are no longer found in Halland, and some of them are completely extinct in Scandinavia. Osbeck also saw birds such as the roller, hoopoe, black stork, and middle spotted woodpecker, all of which have long since vanished from the area.

Despite these losses of species, the deciduous woodlands of Hallandsåsen are among the most valuable in Sweden for their biological diversity, with a large number of rare and endangered species. Several of these species find it very difficult to spread to new forests, and today they occur almost exclusively in ancient woods. Such species

Oak woodlands on Hallandsåsen, Halland

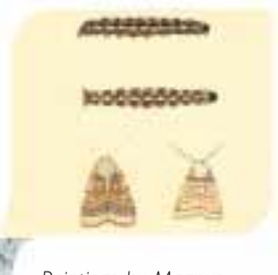
can be used as historical indicators to detect areas with a very long continuity of woodlands, often stretching back thousands of years.

The long continuity of the woods is confirmed by analyses of pollen and macrofossils. With the aid of these it is possible to follow the history of vegetation more than 2000 years back in time.

It may seem contradictory that these ancient well-established woods simultaneously contain numerous traces of human activity such as prehistoric graves, old roads, abandoned fields, and clearance cairns. Osbeck writes that the peasantry has long known about the old fields on Hallandsåsen but that no one knew when they were farmed. He reports a popular local legend telling how these fields arose in the distant past when a queen named Hackebila sent out all the newly married couples into the forest with a hoe and a cow to break new arable land. The abandoned fields have not yet been dated, but they probably have their roots in the Bronze Age or Iron Age. They may have derived from some process of colonisation as each generation broke new ground, but Hackebila, for all her common sense, sadly belongs in the world of fairytale.

Southern Sweden has many other examples of ancient woods containing prehistoric fields. Felling opened gaps in the woods where people could till the soil for a while and benefit from the fertilising effect of clearance while previously cultivated fields could rest, become overgrown, and be farmed again later. The fallow period was presumably much longer than the cultivation period.

Thus in the 2500 years since thick forests of mixed deciduous trees grew here, we can point to successive changes. A period of clearance began which led to a mosaic-like landscape of deciduous woods, pasture, and arable fields. This open landscape, still rich in trees, survived until the latter part of the 18th century, when Pehr Osbeck described it for us. Then large-scale felling changed the place again, at a time that was probably when many of Pehr Osbeck's species associated with old deciduous trees disappeared from southern Halland. Some species managed to survive in the deciduous trees that were left on Hallandsåsen, and the woodlands may therefore be assumed to have a long biological continuity. An effort is currently being made to form a large nature reserve in the area, to ensure that the land is managed in a way that favours biological diversity, preserves remains of ancient culture for the future, and gives visitors information about the natural and cultural value of the area.



Paintings by Magnus Lindgren of some of the species documented by Osbeck, Halland

Grifola Frondosa or 'hen of the woods', Halland

In this story about Hallandsåsen alone we have witnessed a long chain of events: land clearance in the Iron Age, later regrowth of tree-cover as areas were left fallow and finally abandoned, the establishment of a mixed, semi-open landscape until the 19th century clearances, and the modern conservation of woodland landscapes as part of environmental and cultural programmes. All links in this chain have left their mark if we look carefully.

The link between sustaining the natural and the historic environment is considered further in the next and final story in this chapter. Environmental benefit for biodiversity, or aesthetics, does not necessarily go hand in hand with the exploitation of the natural world for human economic needs. Management of the natural landscape in the past has often been carried out in ignorance of, or even despite, the potential impact upon wildlife species and habitats. The relationship between people and nature is fragile, but our modern society could choose by its actions to be considerate caretakers of our environmental inheritance.

Those who for the first time enter the Valley of Primiero, Trentino, in northern Italy, from the south find themselves squeezing through the narrow gorge of Schenèr, before emerging into an unexpected green hollow surrounded by imposing dolomite crags and peaks. The first image brought to mind may

Otters in the Cismòn River, Paneveggio

be that of a sea of meadows enclosed by high cliffs, but on entering the first village the attentive observer will notice an image of an otter painted on the walls of the municipality's hall.

Why an otter? Why not a more noble animal? Few visitors are aware of the reason until told about the ancient bond that ties the elusive water animal to the local landscape. This bond takes us back several thousand years, somewhere towards the end of the Ice Age, when the glaciers covering the Alps melted and the water remained trapped in lakes left by the retreating ice. Legend says that in those days the waters of the Cismòn River flooded the valley, and two large lakes lay as if between a crown of peaks. The hollow was a big blue mirror; a haven for numberless fish and an idyll for the otter that lived amongst them.

But the otter knew loneliness, and one day desired to have someone to talk to. He began to dig a deep hole in the bottom of the valley to search for companionship. He needed only a small hole, but the powerful and impetuous waters were released, and gouged out the narrow gorge of Schenèr. Soon the lakes were dry, and little by little beautiful flowers and plants came to the new land; then followed many wild animals and later still – only after a long time – the first people, who were ever after thankful for what this small animal had given them. Since 1367, the year when the villages of Primiero were granted their statutes, the otter has been the emblem of the valley. In 1785 the community of Vanoi also decided to adopt this symbol. Today the otter appears in the coats of arms of five municipalities of the valley.

Unfortunately, the coexistence of man and otter has not always been an idyllic one. The otter was hunted both for its fur and meat. Its aquatic nature, in fact, allowed the church to regard its flesh as fish, so it could be eaten on Fridays, during Lent and on other holy days. The otter hunters (lontrari) used specially designed traps to catch them so that the valuable fur did not get damaged.

The otter's natural habitat was damaged in the 1940s by the construction of huge concrete dams. Today, with the installation of several water conditioners along the course of the Cismòn River, the water quality has

Calaita Lake, Paneveggio

considerably improved. After a few decades in which the otter seemed extinct there have been several sightings in the lower course of the Cismòn, and particularly along the quieter banks of the Vanoi River and in Val de la Cortèla.

Conclusion

We started this chapter by introducing the natural dimension of landscape, and we end it by returning to nature. This time, however, we do so in the recognition that landscape is neither wholly natural, nor entirely artificial. We have demonstrated that even those landscapes that are perceived as 'wild' – salt marsh, upland moor or mountain scenery – have a strong cultural contribution. Conversely, the most man–made of environments will be touched by nature, even in towns, from the trees in a busy urban square down to the window-box on the sill of a metropolitan apartment.

This chapter has also begun to explore issues of sustainable management. Stories such as ours – and as we said, such stories can be found and told everywhere – are not mere historical anecdotes about a time past, with little relevance for the present. They are about today's landscape, and they provide both a memory of landscape change to explain our daily surroundings and an indication of the strength and direction of forthcoming change. Some of the stories we tell are about the achievement of a sort of balance between people and the natural environment, whilst others concern the results of failure to reach a sustainable balance. Taken together, they show that landscape requires careful management and protection. They also show how study and understanding of landscape can help us to find ways of sustainable management for the future. An important and growing trend for those responsible for managing the conservation of the natural and cultural environment is to look at the whole landscape. This means acknowledging its natural and social dimension and providing combined, interpreted proposals for managing future change. The lesson, once more, comes from the landscape itself – if the landscape is a combination of the cultural and the natural, then so too must be our solutions.