

By the author of *Nature Cure* and *Flora Britannica*

THE ASH AND THE BEECH

THE DRAMA OF WOODLAND CHANGE



RICHARD MABEY

'Wonderfully subversive, far-reaching
and unsentimental' *Observer*

VINTAGE

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About the Book

From ash die-back to the Great Storm of 1987 to Dutch elm disease, our much-loved woodlands seem to be under constant threat from a procession of natural challenges. Just when we need trees most, to help combat global warming and to provide places of retreat for us and our wildlife, they seem at greatest peril. But these dangers force us to reconsider the narrative we construct about trees and the roles we press on them.

In this now classic book, Richard Mabey looks at how for more than a thousand years we have appropriated and humanised trees, turning them into arboreal pets, status symbols, expressions of fashionable beauty – anything rather than allow them lives of their own. And in the poetic and provocative style he has made his signature, Mabey argues that respecting trees' independence and ancient powers of survival may be the wisest response to their current crises.

Originally published with title *Beechcombings*, this updated edition includes a new foreword and afterword by the author.

About the Author

Richard Mabey is the father figure of modern nature writing in the UK. Since 1972 he has written some 40 influential books, including the prize-winning *Nature Cure*, *Gilbert White: a Biography*, and *Flora Britannica*. He is a Fellow of the Royal Society of Literature and Vice-President of the Open Spaces Society. He spent the first half of his life amongst the Chiltern beechwoods, and now lives in Norfolk in a house surrounded by ash trees.

For Bob and Libby

RICHARD MABEY

The Ash and the Beech

The Drama of Woodland Change

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Foreword

THESE DAYS I gaze out of my study with a mite of foreboding, waiting for a premature and maybe terminal autumn. Rooted in the bank of the ancient pond beyond the window are two multi-trunked ashes, airy, sprawling trees which together form a canopy stretching 20 metres across. They're fine at the moment, but just a few miles further north is the wood (its name, Ashwellthorpe, now seems an eerie black joke) where ash die-back first appeared in the wild. All winter the gales have been blowing Chalara spores south and west, and it's almost inevitable that the fungus will reach our garden. If these two trees are smitten, it will change the whole feel of our home patch. They have a spaciousness that ashes rarely have the chance to reach on narrow hedgebanks or in the tight ranks of woods. They're amphitheatres for bird flocks, vast and dramatic weathervanes. Ash branches are elastic, and when they flail in the wind it is as if waves of wood are breaking across the garden. Losing them would mean not just a transformation of our view, but an unsettling shift in our sense of what constitutes a landscape, and what it contributes to a sense of home and security.

Much of Britain waits in a similar mood, wondering what the country will look like without our third commonest tree. Ash doesn't have the craggy grandeur of oak or the voluptuous grace of beech. It's short lived, usually collapsing at about 200 years, unless it's been coppiced or pollarded. Its pale trunks and filigree leaves, and a habit of regenerating in dense colonies, make it an often unnoticed choral background in woods, a visual hum behind the

strong *timbres* of the big trees. But it's this quality that we love in it, that quiet, pale, graceful, background presence. Woods will, for a while, look emptied of *depth* if the disease hits badly.

And in hedgerows they make up a tenth of all mature trees. Most of the older individuals are pollards, low-slung and often cloaked with dense second-storey thickets of ivy, so these too are easily passed by, unremarked. But we will notice their absence, if and when they go.

But catastrophising (entirely understandable in the wake of Dutch Elm Disease) isn't a helpful response to threats to trees, and our anxious concern for them is easily trumped by our ignorance of their survival skills and community life. So this first spring after the Chalara's arrival in the UK I make a dispassionate surveyor's tour of the garden, trying to imagine what it will really be like if these two great sheaves of wood, and half a dozen younger trees, succumb. And, close to, the portents don't look so bad. Our ashes are surrounded (as they are in many places) by thorn trees, burgeoning self-sown oaklings, suckering wild cherries. In ten years' time the gaps they leave will have closed up, and the ashes will be metamorphosing into complex catacombs of decaying wood, full of beetles and woodpecker probings.

We have a cultural block against looking at trees like this, as dynamic and evolving vegetation. We want them to stay exactly as and where they are, and don't entirely believe either in their powers of self-regeneration or their afterlife. In an unstable world they've become monuments to security, emblems of peacefulness. We hug them, plant them as civic gestures and acts of reparation, give them pet names. When this cosy relationship is turned upside down – as it was, for instance during the Great Storm of October 1987 – we're shipwrecked ourselves, wondering if we've been bad guardians, not protected them enough. 'Trees are at great danger from nature' warned the Tree Council after the '87 storm – in an extraordinary solecism which seemed

to place the arboreal republic entirely inside the kingdom of man. Very rarely do we ask whether we might have mothered them too much.

When Chalara struck the UK in 2012 it was clearly, in part, a breakdown in proper stewardship. The general public (and a good number of landowners) had never heard of the disease, but woodland ecologists and commercial foresters had been nervously tracking its inexorable westward march across Europe since the mid-1990s. Some urged the government to impose greater restrictions on the import of ash saplings, but most had few ideas about how to interpret or react to it. That is not surprising. The fungus, now dubbed *Chalara fraxinea*, is biologically mysterious, an entirely new organism of uncertain origins, which probably evolved in eastern Asia, where it appears to be harmless to native ash species. Its ancestor is a benign leaf fungus called *Hymenoscyphus albidus*, widespread, and native even in the UK. But at some recent date, this threw up a mutant, *H. pseudoalbidus*, with slight genetic differences but a terrible new virulence. The windblown spores infect ash foliage in spring, turning the leaf-tips brown. The fungal 'roots' (hyphae) spread through the leaf stalks into the branches and trunk, blocking off the tree's water supply. Typical diamond-shaped lesions appear on the trunk, and the leaves turn brown and wilt. Young trees can die within a year, but older ones appear able to survive for much longer. The fungus forms its spores in the leaf litter in summer, and these are dispersed in the wind over the following months. This is effective at spreading the disease over relatively short distances, but wind dispersal is limited by the fact that the spore can only survive in the air for a few days. In Norway Chalara has moved 20–30 km a year.

The first European cases were recorded in Poland in 1992. It had reached Lithuania by 1994, and then moved west and north, arriving in Italy, France and the

Netherlands between 2007 and 2010. In Denmark the susceptibility of trees proved to be almost total, with not much more than 1 per cent left alive since the disease first arrived there in 2003.

It was this remorseless, epidemic contagiousness that caused such alarm and confusion when Chalara was spotted here, first on nursery saplings imported from Holland, then on wild trees which it can only have reached on the wind. Fantastical statistics were banded about in the media - that 30 per cent of all Britain's trees were ashes, and that with a host of other tree diseases already established here, we were facing a dead and denuded landscape, like the Somme after the Great War. In fact, Britain's ashes make up a little over 5 per cent of our tree cover, and are highly diverse genetically. The consequences of this variability, in terms of disease susceptibility, is already making itself shown in Poland, the first country to be hit. Between 10 and 25 per cent of Polish ashes are showing some level of natural immunity. In closely monitored populations in Lithuania, 10 per cent of trees have survived infection for 8 years and appear to be able to pass the resistance on to their offspring.

Natural resistance is likely to be the best hope for the survival of a core population of UK ashes. Isolated from the continent for nearly 8000 years, our trees may be more genetically diverse than those in Poland. For example, ashes that thrive in the sparse clitter of Yorkshire limestone are quite distinct from the tall poles that grow in damp East Anglian loams, and neither will survive if transplanted to the other habitat. Many ashes have male and female branches (and therefore flowers) on the same tree, so the potential for complex cross-pollination and extreme genetic variation is high.

It's a relief that the government has for once listened to its scientists and based its response on giving time and space for natural resistance to appear, and then

capitalising on it, if need be, with cross-breeding programmes. Sanitation felling, which was talked about in the first wave of panic, would have been worse than useless, doing the disease's work for it, eliminating potentially resistant trees, and throwing more dormant spores into circulation.

But this laissez-faire approach isn't much liked. The public cry is for 'something to be done', for the excoriation of scapegoats in what is as much a natural event as a bureaucratic disaster, for raising the barricades, conjuring up a new woodland estate for the next generation. How have we come to regard trees like this? Human products, or worse, dependent arboreal children, only capable of appearing if we artificially inseminate the ground. Vulnerable to abuse from outside agencies ('nature' or nasty foreign organisms), but never from ourselves, and best put out of their misery if they become ill or old.

Understanding how these stereotypes and attitudes originated, and what perpetuates them today is crucial if we are to make a proper cultural response to and an accommodation with ash die-back, and with the many other diseases that are likely to affect our trees in the decades to come. *The Ash and the Beech: The Drama of Woodland Change* is a reflection on these cultural framings, a brief history of the narratives we've constructed about trees over the past thousand years, to make them accessible, useful, comprehensible and obedient to us. It's about the ideal forms created by artists, the explanatory dogmas of forest scientists, the fashionable plans of landscape designers. About trees as status symbols, political icons, emblems of reparation, and as investments, legacies, heritable goods. About the demonisation of trees that 'go wrong', become twisted, senile, decayed. About our new discovery of their crucial importance as regulators of the climate.

This would be a daunting task for the whole tree community, and in the book's first edition I chose to approach it through one species, the beech. The book is not exclusively about this tree - there is much on its relations with the ash and the oak - but the species is always there, as a kind of lens. There are personal reasons for this. The beech has been the key tree in my own life. I was born and grew up in the beechwoods of the Chilterns, and ran wild in them as a child. I seem always to have had beeches at hand as companions, or at least a kind of clock-face. One grew, quite unbidden, in the garden of the house where I lived most of my life. I had a table and chair under it for summer afternoons, an alfresco study. I'm living in East Anglia now, outside the tree's current natural range, and our garden is dominated by ash and cherry. But a planted beech - nestled among the municipally-protected chestnuts and oaks in a neighbours' garden - is still the first tree I see on waking in the morning. It wavers and swells if I move my head on the pillow - a refractive trick of the old glass in the windows, though beeches, sinuous and shape-shifting creatures, seem able to do this anyway. It's been the species which has framed my own view of trees - from feral childhood to rather studious middle-age. In the end it became part of the furniture and fittings of a piece of personal real estate, a wood of my own, which I bought and ran as a community project in the 1970s and 80s.

But the beech is also a fascinatingly awkward tree. It subverts clichés, refuses to behave as an upstanding parable of sturdiness and deep roots. It's unpredictable, possessive, prone to catastrophes - just as, unexpectedly, the ash has become. Our history of trying to make sense of the beech's contrariness is a reminder of just how far we will go to make nature over in our own image.

What follows is a set of discursive essays around some key episodes in the history of trees in Europe. The arrival of trees in Britain after the Ice Age; their early use as fuel

wood and building timber; the apparent timber crisis during the naval wars of the 17th and 18th century, and the consequent invention of the plantation. Then the development of deliberate tree planting as a way of establishing status and legacy; the exploration of natural beauty through trees in the 18th century - for me, the pivotal chapter in the book; the attack on the last wild, wooded commons in the 19th century, and how they were saved by new ideas about the value of naturalness; the 20th century's flirtation with tree-spirits, ecologists' analogous attempts to explain the mysteries of tree succession, and the mythical idea of a 'climax forest' - all of which were to turned upside down during the storm of 1987.

The lessons of the Great Storm, explored at length in Chapter Seven, ought to inform how we respond to ash die-back, practically and culturally, and there should be no rushed or aggressive action. There was more damage caused to our woods by reckless clearing-up after the storm, than by the wind itself, and living trees, millions of seedlings and even the topsoil was often swept away by bulldozers, responding to political pressure and the public distaste for what appeared to be 'untidiness'. The contrast between the miserable replanting in these areas, and the spectacular re-growth in areas left completely alone has been a lesson which has still not been widely absorbed.

That favourite GP's phrase 'watchful waiting' is also appropriate. There is still much to learn about Chalara - about, for instance, its speed of spread and which ages of trees are most susceptible. The detection - and protection - of trees that seem to be resistant must be highest priority. So, wherever issues of safety aren't important, should the preservation of larger trees which succumb. A 'dead' tree is still a tree, and provides a rich habitat for bird, insects, fungi and mosses.

Replanting, especially with ash, should not be an option, until seed from local, resistant trees is available. Ashes

from any other source (especially intensive nurseries both at home and abroad) are likely to quickly succumb, and may even introduce new strains of the disease. Tree species which naturally colonise areas where ashes have died are likely to be, by definition, those most suited to the site. Even where these are non-native (e.g. sweet chestnut, turkey oak, sycamore) they should be welcomed, with tolerance as well as vigilance.

Sycamore, of course, is currently demonised as an 'invasive alien', introduced sometime in the late Middle Ages (though it is quite possibly indigenous, given to erratic and untypical behaviour for a native because of its own fungal affliction, black spot). But we should do our best to make an accommodation with it, as perhaps the best natural coloniser of bare patches that is currently available. It can't host many of the insects that have co-evolved with ash over thousands of year, but it will be partial refuge for the lichens which are ashes' outstanding familiars, and restore at least an ambience of woodiness. Climate change is making the categories of native and non-native increasingly fuzzy, and we may find ourselves grateful for some immigrant biodiversity.

Above all, the lesson of the storm was that catastrophes - be they disease, climatic trauma, insect predation - are entirely natural events in the lives of trees and woods. They respond, adapt, regroup. What emerges in their recovery stage may not be the same as before, but it will always be a vital, dynamic, arboreal community. The same process will happen with ash, perhaps more quickly than we think.

Norfolk 2013

Chapter One: 'The Lowest Trees have Tops'

'The lowest trees have top, the ant her gall.

The flie her spleene, the little sparke his heate.'

Attributed to Sir Edward Dyer (1543–1607)

I

I CAN NEVER MAKE it out from a distance. I must know every twist of its knotted trunk and serpentine branches, but a couple of hundred metres away it's just part of a general woodiness, a green blur. It's called the Queen Beech, but in reality it's just a commoner, one of a grove of ancient beeches that have grown on the waste above Berkhamsted since at least the Iron Age. Trees, even the teeming mosaics of individual woods, always vanish in the long view. Move closer and different images, different perspectives, swim into sight. At a hundred metres I can see the Queen as a separate tree, a member of a species, a manageable object. But at thirty it's a wild individual, its immense and snaky branches beyond any accounting or control. At a dozen I'm inside it, and it's scarcely a tree at all. It's a catacomb of labile wood, a veil of translucent leaves exchanging breaths with me. Is any of these images truer than the rest? Is there such a thing as a real tree, beyond the images we make of them as lovers of views or curious naturalists or harvesters of timber?

I've been coming to this wood since I was a boy. It's called 'Frithsden Beeches' - 'a beechwood in a wooded valley'. It's an old and cryptic place, and its long history is engrained in the trees. They were lopped for fuel by early

peasants, looted by the Normans and almost lost during the enclosures in the 19th century. Now, as unseasonal gales rip across the Chiltern plateau, more and more of them are entering a new phase of existence, as horizontal trees. At every stage in my life they've had a different meaning. When I was young they were my benchmarks and touchstones, and I found a kind of security in their ancient quiriness. I gave them shamelessly anthropomorphic names. Falstaff - low-slung, bulbous, cankerous, undeniably jovial. The Organ-pipes, topped with an immense Gothic spray of vaulted branches. The Praying Beech, with two branch stubs fused in the form of a pair of clasped hands. The nameless tree with a muddled frieze of ancient branch-stubs that looked like nothing so much as an X-ray of the human digestive system. Even when they were blown to the ground, they still looked lucky: elbows in, paunches cushioned in the mud, roots like flagstaffs - or like saplings to come.

But the Queen has never looked like coming down in the gales. Hunched at the very edge of the wood, just where the Beeches abut onto the open common, it's an antic and indomitable matriarch. I gaze at it, for the umpteenth time. It seems elephantine, an impossible mass for a living thing. It is, I guess, between 350 and 400 years old: two centuries of being repeatedly beheaded for firewood, two more as a picturesque monument. It grew up in the open, unrestricted by other trees, and its long low branches trail out like the arms of a giant squid. Its trunk is vegetable hide, a mass of burrs, bosses, wounds, flutings, folds of scar tissue congealed around the points where the branches were lopped. One storey up there are mosquito pools in forks, old woodpecker holes, generations of graffiti. Some of the scratchings are in implausible positions: the higher you carve your message, the code reads, the more impressive your feelings. With my binoculars I can just make out some of the inscriptions. The names and

homesick addresses of American servicemen stationed nearby during the Second World War. The linked pledges of sweethearts from the outbreak of the First. The copperplate initials of Victorian schoolboys, now stretched beyond deciphering. The letters 'S.A.' many times. A heart. A rose. Not really tree-abuse, as it's so often reckoned, nor always a compulsion to leave one's mark on the world. More, I think, the result of the world's leaving a mark on you. No one encounters trees like this without some kind of conversation taking place, an exchange that deserves a memento. Beech-scribbling goes back to classical times, and has its own Latin epigram: *Crescent illae, crescit amores.* 'As these letters grow so will our love.'

I once tagged along behind a party of forestry professionals on a tour of the Beeches. They were a gaggle of estate managers and big landowners, out to check each other's woodland growth against their own, or against some abstract ideal of tree productivity. They were outraged that this collection of 'mutilated freaks' had been given living space for so long. 'They're rubbish,' growled a local major, whom I'd last seen in his own wood, shovelling up piles of men's magazines as if they were leaf-mould, 'an insult to the forester's craft.' There was talk about the dangers to walkers, of crippling insurance claims. The consensus was that the whole lot should be summarily felled and replaced with 'proper' trees. The owners of the Beeches (the National Trust), remembering that the wood had been saved from destruction during the 19th-century enclosures by an epic local uprising, put up notices instead, their own gesture towards inscription: 'These very old pollarded trees and associated deadwood in this area are being managed for their nature conservation and historic interest. They are liable to shed branches and the public is advised to keep to the waymarked rights of way.' The public resists the advice, feeling much as the ancients did, that as these trees grow so does their love.

In those days, the Queen Beech was my party piece. I led people through the mazy thickets of the common and unfurled it like a bunch of flowers from a conjuror's hat. *That* is how tough nature is, I think I was saying. That is what a tree can become, beyond our conceptions of perfection and usefulness. But that was as partial a view as the major's, a romantic's hope that nature might show us the way. These days I stand more pensively at the Queen's foot, earthbound, dwarfed, gazing up. Pondering perspectives. What does a tree seem like to a creature perched on the top, looking down on the immense supporting mantle that we groundlings call the canopy? What is its own version of the agenda of survival, its own attitudes towards shape, productivity, decay? I remembered the transformed view of the world we had as children, hanging upside down from the branch of a tree. All the details the same, but in a different order, a different hierarchy.

The Czech poet Miroslav Holub's poem 'Brief Reflection on Cats growing in Trees' imagines how trees might be interpreted from a mole's-eye view. The moles emerged at different times to report on the way things were above ground. The first saw a bird on a branch, and reported that 'birds grow on trees'. The second, surfacing later, saw a cat, and concluded that cats were the true fruit. The confusion worried the top mole, so he went to see for himself:

By then it was all pitch-black

Both schools are mistaken the venerable mole
declared. Birds and cats are optical illusions
produced by the refraction of light. In fact, things
above

Are the same as below, only the clay was less dense and the upper roots of the trees were whispering something but only a little.

Our views of trees are scarcely more inclusive than the moles'. We blink at them from our cultural burrows and see what we want to see. Models of beauty, wastes of space. Dangerous excrescences, and the dwelling places of gods. Workhorses, ornaments, investments. Source of the crown of thorns and the olive branch. Metaphors for the state, for the human body, for life itself. If the forest has always been an ambivalent idea in human consciousness - the contrary of civilisation, yet also its primary life-support system - so have the trees that comprise it. Trees, historically, have been a *challenge* to humankind. They are monumental, long-lived, stubborn, territorially ambitious. They don't fade into the background or live modestly on the peripheries. Trees occupy space. They insinuate themselves into every kind of environment. They are what dry land aspires to become. At repeated points in human history, it has seemed to be a case of them or us.

Mostly it has been us. The beginnings of agriculture, the founding of cities, the creation of energy systems based on fossil-fuels, were all made at the expense of trees. Collectively, the world's trees have been on a downward path for the past 5000 years. But we can never dismiss them entirely - not just because they produce much of the oxygen we breathe, but because they are the measure of us. They are our lost home, our epitome of nature, one of the benchmarks by which we judge, for better or worse, our standing as a species. To be without trees would, in the most literal way, to be without our roots.

So we try to reach some kind of accommodation. We've cast trees in roles, negotiated with them. In hunter-gathering societies, it was often thought proper and necessary to placate trees' spirits when they were cut

down. Strip off some of the bark to set the spirits free. Slip a wad of herbs into the soil as a votive offering. Later, in the temperate zone at least, there was a kind of secular equivalent to these rites of arbitration in practices which took a continuous crop from trees without killing them. Nature itself would do the renewing. But for the last three centuries, we've increasingly appropriated for ourselves the role of regenerators. We've deployed trees across the landscape as if they were incapable of doing it themselves. To satisfy our timber needs we plant and harvest them like arable crops. We raise them as screens for eyesores and dignifiers of developments. Children are encouraged to plant and coddle them to nurture their feelings for the natural world, as if they were pets. Only rarely are they seen for themselves, as autonomous, anciently evolved beings, quite able to sustain their own lives - and sustain ours into the bargain. The mutuality of our relationship is being forgotten. 'Trees give off carbon dioxide in the night and poison me' was the verdict of one London householder, so alarmed at the excesses of these intruders in her street that she notified the local environmental health officer.

Remarkably, trees still cover one-third of all dry land, in one form or another. They are the one kind of natural organism that most humans are rarely out of sight of for more than a few seconds. As plantation clones, desert dwarfs, virgin forest giants, they continue to be the primary engines for converting solar energy into the solid materials that all other organisms need for food and shelter. That fundamental chemical exchange - the light-activated reaction between carbon dioxide and water that's known as photosynthesis - also produces much of the planet's oxygen. Without trees, or something very like them, most of the Earth's present inhabitants, ourselves included, could not survive.

But what could that alternative have been? There was something inevitable about the evolution of the tree, this structure for defying gravity, for raising life above the ground - and above the confines of the present, too. Trees are the architectural climax of evolution, scaffolding for the rest of terrestrial life. Many widely different plant families - palms, club-mosses, buglosses - have produced them. If you were trying to devise a perfect plant form that had the same strength and durability as rock, it would be the trunk of a tree. In their maturity, not quite like any other living thing, they become increasingly complex, vast elaborations in three dimensions. As their branching becomes more intricate, so do the niches formed amongst the branches. A full-grown tree is a catacomb of reticulations, rot-holes, snags, fissures. Even the twigs develop architectural layers - flakes of bark, small bosses where smaller twigs have broken off, velvet sheens of moss. It's impossible to measure the area of a tree's surface exactly. It's what mathematicians call a 'fractal' quantity, one that increases indefinitely the closer you examine it. The American writer Annie Dillard's question to God in *Pilgrim at Tinker Creek* was: 'You want to make a forest, something to hold the soil, lock up solar energy, and give off oxygen. Wouldn't it have been simpler just to rough in a slab of chemicals, a green acre of goo?'

Some of the most majestic trees on earth, the giant coastal redwoods of California, actually change the structure of the ground. They're shape-shifters, securing their own and others' futures as generously as beavers damming a river. When the redwood's roots are drowned by high water they send up new roots vertically, which then sprout new lateral roots just below the level of the new silt, anchoring the tree and stabilising the ground. Along some of the coastal rivers, a thousand years of flooding have raised the level of the whole area by 9 metres - and the

redwoods, every bit as old, have responded by developing multi-layered root-systems like inverted pagodas.

But the immense genetic intelligence of trees like these hasn't saved them from the floods of humanity. The coastal redwood's cousin, the 'Big Tree' of the Californian sierras (our 'Wellingtonia', but properly *Sequoiadendron giganteum*), was one of the most infamous victims of the opening-up of the American West. When the sequoias were first glimpsed by dirt-poor miners in 1852, they were looked on as wooden gold. They were incomprehensibly huge, 30 metres or more in girth, and rose beyond human sight. They might hold as much as 10,000 cubic metres of lumber, and even though it could take five men three weeks to fell a single tree, down they came. For a while the redwood groves in Yosemite became a kind of botanical amusement park. A two-lane bowling alley was built along the surface of half a trunk. The stump of one felled tree was made into a dance floor for the tourists, where, in the words of the entrepreneur who set up the show, 'thirty-two persons were engaged in dancing four sets of cotillion at one time, without suffering any inconvenience whatever'. But within ten years attitudes towards the redwoods changed. Those that remained standing began to be seen as a fundamental part of America's heritage, proof of the nation's ancient and sacred roots. In 1864, at the height of the Civil War, Abraham Lincoln signed a bill to create the world's first wilderness park, and granted the Big Trees to the state of California, 'for the benefit of the people, for their resort and recreation, to hold them inalienable for all time'.

Just a decade for official opinion to turn around - and just another hundred for it to go almost full circle, with North America's ancient forests coming under threat again. Across the globe (not least in Britain, site of the earliest and most thorough forest clearance in Europe) we profess an understanding of the importance of trees while

continuing to raze them into oblivion. The consequences have almost become clichés: erosion, flooding, the mass extinction of species, the disintegration of local cultures. Now we know that tree loss has contributed to climate change. Global warming is partly the result of recent deforestation, particularly the burning of forests, but chiefly of the extravagant release into the atmosphere of the carbon of prehistoric trees, locked up by nature under the ground. Yet there is an equivalence that should make us pause. The excess carbon dioxide in the atmosphere could be absorbed, for a couple of centuries at least, by about 10 million square kilometres of new tree-land – of the same order as the area we have destroyed globally since the start of the Industrial Age. After that, it would be slowly released again as the trees started to die and decay. But reforestation would buy us time, and the quibbles about its supposedly temporary benefits (only two hundred years!) are mostly sour grapes, from alternative energy suppliers. *All* new trees are important now. But, at present, such a dedication of civilised land to wood is socially and politically unimaginable. So we make token gestures, plant a few trees in the school grounds, recycle an armful of newspapers. It all helps, but it is not the kind of heroic action that's needed.

The long pattern of our relations with trees begins to look familiar, the same shape as our paradoxical relations with nature itself: dependence and notional respect at first; then hubris, rejection, the struggle for dominance and control; then the regret for lost innocence, the return of passion, the pleading for forgiveness ... A cynic might say this is exactly the love-hate see-saw that occurs in abusive relationships. But generalisations of this kind don't help. Both nature and humanity are too complex. Even 'tree' as the epitome of nature begs too many questions, invites a view of them as emblematic staffs of life, totem poles. Beyond the fundamental of a tree's life – the sun shines, the

leaf breaks, makes oxygen, lays down mass – what happens next is both extravagant and particular. The tree's identity counts, not just, in the most basic of ways, to itself, but to all other beings that live with it. The coastal redwoods, cousins of the Big Trees of California, spring again from their stumps. The remains of 1,000-year-old giants cut down more than a century ago are surrounded by rings of their regenerated shoots more than 50 metres tall. No one expected the redwoods to be one of the few conifers that would coppice, and to be virtually immortal. Trees are individuals. Every species has its own habits, its own cargo of metaphor. Close-ups of the forest's green chaos help.

In the temperate zone eyes have traditionally focused on the oaks, a family of trees so useful and adaptable that they've provided, single-handed, most of the materials necessary for the development of technological cultures. Their bounty included handles for axes, bark for tanning leather, charcoal for fuelling iron-furnaces, boats for warring navies, galls for the first inks for the first natural history books.

The American arborist, William Bryant Logan, has made an audacious suggestion about the global role of the oaks. In *Oak: The Frame of Civilisation* he argues that it was specifically this huge family of beneficent trees that enabled humans to make the transition between hunter-gathering and settled cultivation. Archaeologists normally grant this role to the wild grasses of the Middle East, which made possible the development of agriculture, bread, permanent villages, and the division of labour – a way of living that was exported, for better or worse, across the planet. Logan's alternative is seductively argued. He has produced a map in which the distribution of early settled societies throughout the temperate zone appears exactly to coincide with the geographical spread of the 400-odd species of oak. He cites cultures in North America, ancient

Mesopotamia, the highlands of Mexico, where a style of living midway between nomadic gathering and rooted agriculture was evident long before the advent of cereal farming. You could, I suppose, call it fixed foraging, the communal exploitation of a long-lived local resource. The resource was the oak tree, usually around in one form or another. Its first and most fundamental gift was the acorn – prolific, nutritious, cookable, storable. Acorns, Logan argues, were the world's first staple food. Then came the incomparable gift of oak-wood, tough, durable, cleavable. Oak planks made possible that ironically crucial stepping stone to civil society, the fence. Then they enabled migration, as the infrastructure of waterproof boats and of wooden walkways across the swamplands.

It's a beguiling case, and a more pleasing image of the natural transactions that gave birth to early civilisations than the bludgeoning march of agriculture. But like all Grand Theories, it overstates its case, and the uniqueness of oak as a cultural root and branch. In Kyrgyzstan, there are ancient semi-nomadic communities based around walnut and wild apple trees. In the Italian Appennines and many pockets of southern Europe, whole cultures were framed on the sweet chestnut, as a source of nut-flour, building timber and fuel wood. The early Turks built very serviceable ships from pine, elm and mulberry. Even in oak-proud southern England, it was beech not oak that provided most of the fuel for London, and for the iron- and glass-works of the Weald. There would always have been some kind of symbiosis between pre-industrial societies and trees. No other resource could provide such a range of food, fuel and raw materials. But trees are a multifarious tribe, and human ingenuity has usually been able to make something out of whichever happened to be at hand. It just happens that oaks were pretty well always at hand.

The ubiquitousness and usefulness of the oak have tended not only to obscure the value of other tree species,

but to warp the image of the tree itself. Its qualities – strength, longevity, a kind of frontier spirit – have come to be seen as the quintessence of the ‘good’ tree. And sometimes, by association, as the quintessence of the places in which it grows. In 17th-century England famously, the oak became a symbol of national pride and naval aspiration, the spiritual – as well as material – source of the people’s ‘hearts of oak’. A case, perhaps, of not being able to see the tree for its wood.

The biographies of other trees frame other parts of civilised history. The small-leaved lime, once the commonest north European forest species, and the great wood-carvers’ tree. The elm, favourite fodder species of early herdsmen, a building wood second only to oak, but an ancient victim of disease and symbol of death. The ash, pioneer coloniser of open ground, and abundant and basic rural wood source, for furniture, tools, firewood.

II

This book focuses on the beech and on its negotiations with other trees, especially ash and oak. I’ve spent most of my life amongst beeches, and know them better than other trees. But there’s an intriguing eccentricity about them, too. They don’t conform to the image of the ‘good’ tree. They can appear in the archetypal form we imagine is correct for trees – a rounded bush of foliage on top of a straight pole – but most beeches come in odder shapes than this. They can be elongated, dwarfed, as bulky as oxen. They can have the look of sinuous strength, but be useless as building timber. They are elegant but also catastrophic, vulnerable to gale and drought. No one would ever sing about ‘Hearts of Beech’. Some writers (myself included, in the past) have tried to magnify these differences to make a neat poetic contrast between the oak and the beech. The tree of robustness and the tree of fashion. The light-lover

and the shade-bearer. The deep-rooter in clay and the frail haunter of thin soils. But the realities are more complex than that, the differences a matter of degree. All trees need light and some kind of stable base to root themselves in. All of them need mineral nutrients from the soil. And, as the Great Storm of 1987 showed, in its tipping-up of 15 million trees, almost all of them have much shallower root-systems for fulfilling these functions than was popularly imagined. The beech's roots are happier than the oak's in mineral-rich chalk and limestone soils - but their shallowness makes them more unstable on such sites. Both species flourish on thin, acid soils, but on well-drained sands their seedlings have trouble reaching nutrients, so regeneration can be poor. Checks and balances perhaps. Even their respective responses to shade don't suggest an absolute difference. Oak, which now seems to regenerate only in the open, did, until about 1910, grow quite happily under its own canopy (the change may be due to the arrival in 1906 of an American mildew that weakens its seedlings, especially when they're growing in high humidity inside woods). Beech, conventionally seen as the archetypal shade-giver and shade-bearer, needs some break-up in the canopy before its seedlings can grow. The only real generalisations that can be made about the two trees' relationship is that the beech's greater height and denser foliage give it the edge over the oak in the short term, but that its greater instability will eventually balance that out. Rather in the manner of a risk-taking actor, the beech can command an immense presence, but may at any moment fall flat on its face.

Out in the real world, trees break all the generalisations made about them. Beeches can survive hurricanes, but have a genetic tendency to split in two of their own accord. They are sensitive to drought, but supposedly die if their roots are waterlogged - until you discover them growing in

a bog. Trying to make hard and fast rules about them is as futile as straightening a snake.

The family *Fagaceae*, which contains the families of both oak and beech, split off (from the marrows) about 90 million years ago. Some time later the beeches branched off from the oaks. There are just ten species in the genus - seven in Asia, two in North and Central America and one in Europe. The European species, *Fagus sylvatica*, is now widespread, and across many eastern parts of the continent is more dominant than the oaks. As a wild, indigenous tree it grows from southern Sweden to the northern reaches of Turkey. There are ancient beeches, draped with lichens, in the moist Atlantic air of the Pyrenean foothills, and bleached pollards in the hot mountains of Greece. Natural beechwoods stretch all down the central spine of Europe, through Normandy and the Alps and the German heartland into the Appennines. Beech grows with silver fir in the wood-pastures of the Czech Republic and Slovakia, and with dark yew and pale ash on the English chalk downs. There are native beechwoods in the very heart of the Mediterranean, on the island of Corsica. If you climb up from the parched coastal belt of rosemary and cistus, through belts of deciduous oaks, then of silver fir, you come to another layer of broad-leaved trees, the mountain beechwoods. They grow up to the edge of the snowline at 1,500 metres. I've walked them in early spring, before the leaves have opened. They're the epitome of European beechwoods, pale, gracious, airy, a touch monastic. But even without leaves they're shadowy places, the leaf-litter lit up here and there by meagre clumps of crocus and cyclamen. On flatter ground, and tucked in close to waterfalls, there are huge lopped trees, evidence that even in these remote heights, humans have been beavering.

But there are no wild, self-sprung beechwoods in the dry Mediterranean lowlands, or in the cold north European

hills. Planted beeches can survive in these regions, but may not be able to flower and seed successfully, because of drought or frost. Their sensitivity to weather is a check on all beeches, and keeps them on a narrow edge between triumph and collapse.

The roots underpin this continuing gamble. They've evolved as an adaptation to thin soils, and brace themselves across the surface, saturating the ground with secondary capillary roots. They draw most of the nutrients out of the topmost layers of soil, making it hard for other trees to establish themselves close by. In most sites they only reach 0.3 to 0.6 metres into the earth, in deep soils 1.2 metres at the most. In dry spells they turn upwards, towards the surface, to take the first advantage of rain. During long periods of high temperature that dry out the top layers of soil, beeches become dehydrated. Their outer twigs shrivel. Irrelevant branches may die. The thin soil round the roots becomes dusty and desiccated, and the whole exquisite architecture for making the best of any water that is available becomes as inadequate as a spider's web in a storm, a shallow lacework that can scarcely anchor the tree to the ground.

The beech's root-form helps determine not only where it can grow, but how it grows. Beeches in the open, or at the edges of woods, develop broad root-plates, mirrored by wide, low crowns. Inside woods, with less space and light, the trunks soar upwards but the roots can't always expand sideways to compensate. In the cramped conditions of plantations they're even less secure. Plantation forestry has spread the beech far beyond its natural 'comfort' zone (into northern Scotland, for example), but, packed in at high densities, the trees are especially vulnerable to hostile weather.

The trunk contributes to stabilising the tree. Flared buttresses can develop where root and trunk meet. The tree will try to keep its centre of gravity down, with long

lower branches, but in the competitive shade of its neighbours will shed these early as it reaches up for light. In woods it can grow up to 40 metres tall, and the first 20 of these may be free of branches. This is the natural form of what are often called 'high forest' beeches. In the open, with room to spread, they'll branch much lower. Wordsworth described the 'Alfoxdon Beech' in Somerset, as 'throwing out arms that struck the soil, like those of the banyan-tree, and rose again. Two of the branches thus inserted themselves twice, which gave to each the appearance of a serpent moving along by gathering itself up in folds.' Beech always has this plasticity, responding to the opportunities of space and to disruptions of its growing pattern with extraordinary improvisations of form. As the oak tends towards angularity, a certain abruptness in the way its branches jut and turn, so the beech drifts towards sinuousness. Its branches curve upwards, the twigs emerge in sprays. Wounds are rounded off as if the wood were potter's clay. I've seen trees like immense candelabra, the outer branches driven into vertical growths by competition from surrounding trees. And I've once seen a bonsai beech, centuries old but no more than a metre tall, curling out of a crack in a vertical cliff. Somewhere, in the flat limestone karst of eastern Europe, I've no doubt, there is an entirely horizontal beech, creeping along in the damp shade of a crevice, as ashes do in the limestone pavements of northern England.

Up in the canopy, next year's buds appear in May, just after the opening leaves; by August the little spikes are already full of embryos. They hatch in late April and early May, and so rapid is the transformation of a beechwood by this effusion of sappy, luminous green, that I used to believe the leaves simply unwrapped, took on their full form in a matter of hours. But I've watched them more closely now. I've tied tapes round the twigs so that I can identify individual leaves. They do unwrap, in a sense.