Cities are at a turning point. Despite a recognition that green space is vital to urban quality of life, it is facing major development pressure. Four million more homes will be needed in England over the next two decades – and the "sustainable" solution, according to the Government, is to build as many as possible in urban areas.

This view is profoundly mistaken, argues David Nicholson-Lord in the latest NEF pocketbook. High-density urban living almost certainly means walling the countryside out of cities. Yet a mass of evidence in recent years has shown not only that nature is good for human health – physical, psychological and spiritual – but that it's essential to the vitality of cities. If we ignore such a fundamental truth, we could end up with a planning disaster to rival the postwar proliferation of tower blocks.

Green Cities – And Why We Need Them draws together, for the first time, the different strands of research on human relationships with nature. It calls for a radical and comprehensive strategy to green our cities, creating new landscapes and land-uses, from hills, forests and wetlands to farming and tourism. Green cities would form part of a "new preventative health service", the author argues, paying for themselves many times over and proving, in the long term, the genuinely sustainable option.

David Nicholson-Lord is an environmental writer, formerly with *The Times*, *The Independent* and *The Independent on Sunday*, where he was environment editor. He is author of *The Greening of The Cities* (Routledge, 1987), a former director of Think Green – the Campaign for Liveable Cities and a member of the UNESCO UK Man and the Biosphere Urban Forum.

The New Economics Foundation is the leading independent think-tank involved in the development of a fairer and more sustainable economy. It won the *Prospect* magazine 2002-03 Think Tank of the Year award.

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Green Cities

David Nicholson-Lord

NEF Pocketbook 9

Green Cities – And Why We Need Them

David Nicholson-Lord

A NEF Pocketbook

The New Economics Foundation (NEF) was founded in 1986 by the leaders of The Other Economic Summit (TOES), which has forced issues such as international debt on to the agenda of the G7/G8 summit meetings. It has taken a lead in helping establish new coalitions and organisations, such as the Jubilee 2000 debt campaign, the Ethical Trading Initiative, backed by the Government and leading retailers, the UK Social Investment Forum and the Green Gauge "alternative" indicators of social and environmental progress.

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Green Cities – And Why We Need Them

David Nicholson-Lord

Contents

Introduction 1

1 Voting With Our Feet 4

2 Nature and Body 10

3 Nature and Soul 20

4 Green Fields – or Brown? 30

5 Un-Designing Cities 39

6 Summary: A Manifesto for Green Cities 50

Introduction

The Hanging Gardens of Babylon were one of the Seven Wonders of the Classical world. In the seventh century BC, when the standard settlement in Britain was the hill fort, Nebuchadnezzar rebuilt the city sacked by the Assyrians in spectacular style. Among its sights was a series of arches, the tallest 23 metres high, on which terraces were laid; on these, in a space over 30 metres wide, trees and flowers were planted. It's possible there were streams running through, the water brought up by leather buckets from a triple-shafted well below.

Why so much effort for a garden? According to the Jewish historian Josephus, the king "rendered the prospect an exact resemblance of a mountainous country" in order to please his queen, who had been brought up in a remote region of Asia "and was fond of a mountainous situation." And since the topmost arch was at the same height as the city walls, it must have been possible to stand in this paradise – as gardens were then known – and gaze out over rural Mesopotamia.

Ever since human beings created cities, we have tried to escape them. We have moved out – to suburbs and more recently to distant villages and small towns. We have moved the countryside in – as parks and gardens. We have moved out psychologically – immersing ourselves in rural fiction or

country-style decor. We've moved out spiritually, too – increasingly, we only seem to be able to "find ourselves" when we're in nature, away from the crowds. And as these various movements gathered pace, in the 19th and 20th centuries, cities lost their classical and medieval role as places of freedom and civilisation and became, at best, collections of imposing buildings and centres of service industry; at worst, post-industrial ruins. Cities have lost much of the cultural and industrial logic that once made them both inevitable and, arguably, desirable; they just happen to be, now, where most of us live.

Most of us would like to live in the countryside; this is the message of just about every relevant opinion poll or survey conducted. This pocketbook argues that we need to take account of this aspiration if we are to create successful cities. That, in turn, means radically re-envisaging the way we plan and design them.

In the 21st century, a successful city must be "sustainable". Since the publication of Government forecasts that around four million extra households will have to be accommodated in England over the next two decades, a new orthodoxy has set in favouring "compact" cities – because, it is said, they are more sustainable. As a result, green space in cities – notably so-called "brownfield" land – is coming under intense development pressure. The more city land is used for housing, the argument runs, the better we will be able to "preserve" the countryside. The Government has fallen in with this orthodoxy and now

treats the proportion of brownfield land redeveloped for housing as one of its indicators of sustainable development.

This pocketbook argues that the new orthodoxy is profoundly mistaken. For all the inspiring talk of sustainability and urban renaissance, our obsession with compact cities risks another great planning disaster – a new era of town cramping which, by ignoring human relationships with nature, will do nothing to secure the long-term stability of the city. By recognising those relationships, however, it's possible to envisage a city which is genuinely sustainable, because it fulfils human needs, and a countryside which, while altered, may be greatly improved.

1 Voting With Our Feet

Cities are not what they used to be. In the past – in classical Greece, medieval Italy, feudal Europe – they were places where jobs were created and culture and creativity prospered. Serfs fled to them to escape the tyrannies of rural life and gain their freedom – *stadt luft macht frei* (city air makes you free) was the saying in Germany. They were also radically different in their layout from the places that we now call cities – smaller by several orders of magnitude, often walled off from the countryside. You could walk across them in a few minutes. From the bell-tower in the piazza you could survey, like Nebuchadnezzar's wife, the surrounding fields and rivers.

This is the human-scale image of the city that lies behind much contemporary enthusiasm for urbanism but it is not the urban reality most of us experience and it hasn't been for over two centuries. The modern industrial or post-industrial city bears about as much relationship to its predecessors as a larva does to a butterfly. It is a terminally mutated form of collective life – vast, sprawling, anonymous, polluted, congested, crime-ridden. Saying that modern London (population seven million) and medieval London (less than 50,000) are in some sense commensurate because they are both "cities" is as useful as lumping the Isle of Wight and Australia together and calling them islands.

One of the lessons of urban history is that when cities become too large and unpleasant, those who can afford it get out – to suburbs, summer retreats, country houses, weekend cottages. But in the 1960s the middle class's main escape route, to the suburbs, began to turn into something else. Urban refugees began to move beyond the suburbs into the remoter countryside beyond. This was the phenomenon planners christened counter-urbanisation.

Every year about 90,000 people – roughly the population of Bath – leave Britain's major urban areas. This is the net figure – the gross total of movers-out less the number of immigrants and the natural increase in population – so the actual outflow is much greater. The urban exodus is the most significant feature in the redistribution of Britain's population – outweighing the North-South drift, for example – and has been going on for four decades. Not only have millions of people, usually the better-off middle classes, left our cities: many of the jobs have gone too.

The haemorrhaging of employment, intelligence, money and social skills lay behind the inner-city crisis and riots of the 1970s and 1980s. It opened up vast new tracts of emptiness in urban areas. The terms of the debate have now changed somewhat: rioting has subsided into endemically high crime rates and we talk of social exclusion rather than the inner cities. But there is no doubt that the flight from cities of those able to flee has dangerously distorted and "unmixed" many urban communities, creating an unstable human monoculture – a concentration of the socially and economically disabled.

Counter-urbanisation clearly has a lot to answer for. Unfortunately, we don't properly understand it. It has been described almost exclusively from a quantitative, statistical perspective – through the methods of social science. Social science can tell us a great deal about the causes of counter-urbanisation but there is a point, when the quantitative shades over in the qualitative and the "speculative", at which it falls silent. One aim of this pocketbook is to take the discussion beyond that point.

Social science tells us that counter-urbanisation has occurred throughout much of the developed world, notably in north America and northern Europe. It appears to be directly linked to the degree of urbanisation – bigger cities are associated with higher rates of flight while the fastest-growing places are the smallest, remotest and most rural. Population density – perceptions of crowding and lack of space – is a key ingredient. *Urban Exodus*, a review of existing research for the Council for the Protection of Rural England in 1998, found that high-density areas "have a greater tendency to lose their residents to non-metropolitan areas." Density, however, may only be a kind of statistical marker – a shorthand for urban ills such as congestion and pollution.

For most of the industrial period people could only escape from the city as far as the suburbs because their jobs remained in urban centres. Since the 1960s, changes in industrial structure and technology have meant that business is more able to respond to the values of its workforce. High-tech and service industries go where space

is cheap and plentiful and quality of life is perceived to be high – otherwise they will find it hard to attract the right staff. The same technologies – initially the car and the telephone, more recently fax, e-mail, mobile phone, internet and video links – are also enabling people to make freer choices about where they will live. So are changes in the nature of work – the growth of self-employment and contract working, for example.

Pull of the countryside

What makes us gravitate to the countryside? Copious research has been done on this subject. First, there are "push" factors, to do with urban ills, and "pull" factors, linked to countervailing rural benefits. The push, or anti-urban, factors include crime, congestion, pollution, racial tension, high house prices – and, of course, poor environments. The pull factors range from scenery, space, tranquillity and natural surroundings to the desire to escape from the "rat race" and live in a genuine "community." Summing these up in *Urban Exodus*, Tony Champion and colleagues from Newcastle University concluded that two reasons predominate – "the advantages of living in a physically attractive environment and the search for a different kind of community and lifestyle." Scenery was the most common reason cited for moving to Devon, for example, mentioned by 50 per cent of respondents. Next, cited by a third, was "way of life".

Second, the desire to move out is powerful, widespread and largely unfulfilled. Put another way, the numbers of people who would like to leave vastly outnumbers those who have already left. Surveys as far back as 1939 put the proportions of those wanting to live in the countryside at between 59 and 72 per cent. Compare these with the numbers who *actually* live in the countryside – depending on definition, somewhere between 10 and 20 per cent – and the amount of unrealised aspiration becomes clear. Indeed, a Mintel survey of 1992 suggested that four million people expected to leave cities over the succeeding five years but that over 13 million, equivalent to two Londons, actually *wanted* to.

How far should we go in meeting these aspirations? It is not too much to say that the answer to this question is critical to the future shape of city and countryside. Yet two features stand out from the debate. One is that, for all the research done, we are still not sure where "push" ends and "pull" begins. For example, we don't know to what extent the quality of life features associated with countryside can be replicated in cities and what effect, if any, they might have on the urban exodus. It's assumed in the current debates over national housing plans that providing "better" urban environments will tempt people into staying – but "better" in what way? Or is there some fundamental, qualitative difference between city and country for which there is no cure in the policy manual?

The second feature is something of a paradox. As the Newcastle University researchers remark, the evidence

suggests that "there is a force deep in the English psyche which is driving people to aspire to a rural lifestyle." That, sadly, is as far as they go – and it's probably as far as geography, or any other social science which wants to be thought academically respectable, can go. Yet this force – whatever it is – is redrawing the map of Britain. It's threatening our countryside with urbanisation and our cities with dereliction and hopelessness. Given such evident power to transform, doesn't it deserve closer investigation? The next two chapters attempt to do that.

2 Nature and Body

We can't live without nature. We need it for breath and life but also for emotional and psychological sustenance: we are organisms that interact with our surroundings, that have a compulsion to explore and discover. Without such exploration and interaction, we go mad – which is why sensory deprivation is used as both a punishment and a form of torture.

For most of the two or three million years we have existed as a genus, we have been in close touch with nature, as hunter-gatherers, pastoralists, farmers, peasants. Over the last two centuries this connection has been largely severed. By 2006 half the world's population will be living in urban areas – a 20-fold increase on a century before. In the UK urbanisation began early so the proportion is far higher – over 80 per cent. And all of us, urban and rural, are now spending far longer indoors – at least 90 per cent of our lives. Studies in the US suggest that 99 per cent of us now spend less than one day in our lifetime in conscious sensory contact with nature. In evolutionary terms, it's an entirely new habitat – we've swapped the fields, forests and savannahs of our ancestors for the tinted windows and fitted carpets of high-rise offices. Clearly we're a highly adaptable species. But what if there was a cost to our adaptation?

Cities, and the buildings they enclose – the "double-indoors" we now inhabit – offer less of the stuff that we

need for our sustenance: less light, less oxygen, less of the commodity that we describe, loosely, as "fresh air." The early years of urbanisation taught that humans who don't get enough light suffer Vitamin D deficiency, which causes rickets. More recently we have discovered seasonal affective depression – SAD or "winter blues" – also caused by lack of light, a process that involves the pineal gland and the production of the hormone melatonin. Partly because of pollution and the absence of vegetation, cities are deoxygenated – oxygen levels may be as low as 10–12 per cent, compared with a more typical 20–21 per cent.

Oxygen, of course, is vital for mental performance as well as cellular health and is used increasingly in alternative medicine, notably cancer treatment – cancer cells develop faster in an anaerobic (oxygen-free) environment.

Cities tend to be hotter, drier, more smog-ridden, stuffier than rural areas. Concentrations of artificially heated buildings block cooling, cleansing breezes and create urban "heat islands" 5–9°C warmer than the surrounding countryside. Research has shown that running or breaking water produces negative air ions, associated with a sense of well-being – one reason, no doubt, for our enjoyment of the seaside. Yet we have ruthlessly imprisoned the water in our cities, canalising and levelling, culverting streams, turning rivers into concrete drains. The absence of greenery means less moisture – which plants produce as part of their normal "breathing " processes (the evapo-transpiration cycle).

By most measures of social, physical and mental health, cities perform worse than the countryside. There are socio-economic reasons for this – cities tend to create large concentrations of poorer and less healthy people – but there are also reasons to do with the kind of places they are. They are more densely populated, for example – which means more noise, from neighbours, traffic, machinery. Over the last three decades noise-induced stress has been on an inexorable upwards trend but it is only one of the stress factors generated – apparently – by too many people with too little time and patience living, working and travelling too close to one another. The 1990s coined a new label for this phenomenon – rage – and it is clear that cities, by virtue of people densities alone, are far more potent breeding grounds of such psychological stress factors. Yet they offer few places in which to escape them.

The prominence of various forms of rage in recent years – noise rage, road rage, air rage – may well be a sign that the routine pressures of daily life are pushing many people near their tolerance thresholds. In other words, "rage" is not merely a relabelling exercise by tabloid newspapers: it does signify something new and worrying. According to the World Health Organisation, one in four people can now expect an episode of mental illness at some point in their lives: by 2020 depressive disorders, currently the fourth leading cause of disease globally, will be the second, behind heart disease.

Stress, worsening mental health, and outbreaks of rage may all be symptoms of our maladaptation. Another is the

epidemic of "sick building syndrome" that spread through office-dwellers in the 1980s and 1990s as people were confined inside air conditioned, double-glazed, deep plan office blocks, denied fresh air and exterior views. Vast numbers fell sick, their ailments ranging from headaches and rashes to respiratory problems. At its height, sick-building syndrome was estimated to affect up to 80 per cent of office staff.

If lack of nature produces stressed or maladapted humans, its presence has been shown to be a cure. At a physical level, for example, greenery air-conditions cities. This happens both on a large scale – the German city of Stuttgart's "air hygiene" corridors, for example, in which green wedges reach in from the surrounding hills and flush out pollutants – and on a small one.

The urban tree, we now know, is vital to the health of cities. One mature tree transpires up to 450 litres of moisture a day – equivalent to five room-sized air-conditioners left on for 19 hours. A large beech tree produces enough oxygen for 10 people. Planted near buildings to provide shade and reduce wind speeds – a single tree, for example, has a sun protection factor of between six and 10 – trees can reduce a building's energy costs by 25 per cent.

Their role as pollution-busters – absorbing dust and pollutants – is also increasingly appreciated. A mature beech may have as many as 800,000 leaves – each one a

small organic filter. The canopy these leaves provide makes up a surface area up to 10–12 times greater than the ground they shadow. Even a conifer like a Douglas Fir can filter out around 20 kgs of sulphur dioxide a year without harm to itself. Not surprisingly, a tree-lined street has only 10–15 per cent of the dust of a street without trees: it's also 6–10°C cooler. But all vegetation does this to a greater or lesser extent – the humble spider plant has proved itself a remarkably effective atmospheric cleanser. In public health terms – not least for the growing numbers of asthma sufferers – the benefits are obvious. In St Louis, Missouri, only five per cent of the land area would have to be planted with trees – about 50 million of them – to take out all the sulphur dioxide released in the city each year (462,000 tonnes). US research has put the net value of a tree, after subtracting planting and maintenance costs from its climatic benefits, at $402 (£270).

In the 19th century, which was able to witness at first hand the traumatic transition from a rural to an urban habitat, the health benefits of green space were taken for granted. In recent decades science has begun to back up their intuition. The US programme of manned space flights, in which people spent long periods in enclosed spaces, played a key role in demonstrating the oxygenating and air-conditioning properties of plants. The sick-building epidemic also sparked a search for more people-friendly offices. As a result the 1990s saw the spread of naturally lit, naturally ventilated buildings with indoor courtyards, or atria, filled with greenery and running water. This design revolution has

spilled over into hospitals, where research has started to put a measurable value on the therapeutic effects of greenery.

Trees and therapy

A study by Oxford Brookes University, for example, found that introducing plants into a hospital atrium lowered anxiety levels among patients. At one US hospital, the outcome of two groups of post-operative patients were compared, their treatment and care identical except that one group could see trees through the windows of their ward and the others only a brick wall. Those with a tree view were more cheerful and co-operative, recovered more quickly, had fewer complications and – the clinching argument – required nearly two-thirds less drugs. A similar study in a prison found that prisoners whose cells looked outwards on to countryside, not inwards on to buildings, suffered fewer headaches and stomach upsets and required fewer visits to the prison medical centre.

The sums spent on intensive care are immense – equivalent to one per cent of GNP in the US. If trees, in effect, are a substitute for drugs, the potential savings are equally huge. Throughout Europe and North America, wards or intensive care units are now being designed to provide views of nature. It is illegal in the US to build a care space without a window. In Sweden, where hospitals are required to provide angled rooms with bays giving natural views, many are

situated in urban forests. Yet hospitals, or prisons, or even offices, are merely scaled-down versions of the city – man-made institutions from which nature is excluded. Why should the therapy not work over a larger scale?

The answer appears to be that it does. Researchers tested people who went for a nature walk in a city park and compared them with others who had spent the same period relaxing inside with magazines, comfortable chairs and a radio. They found, afterwards, that the walkers were happier and less aggressive than the relaxers; they were also, interestingly, better able to concentrate – on tasks requiring detailed attention, such as proof-reading, for example.

The therapy also works at a distance. A study in the US found that 20 per cent of the variation in a family's mood during the evening could be related to the stress caused by the journey to work. By comparing two sets of volunteers taking a virtual-reality car journey to work – one group through natural landscapes, the other along treeless urban roads – and measuring a range of indicators of arousal and performance, the study was able to demonstrate that the "nature-drivers" arrived at the office less stressed and more able to solve mental problems. Other studies have shown that simply viewing green space produces measurable recovery from stress, as indicated by blood pressure and heart activity, within three to five minutes.

Research into moods and depression has arrived at similar conclusions. At California State University, researchers have

found that the best cure, and the most widely successful strategy adopted by sufferers, is exercise – usually in the shape of a brisk walk. It's not possible to say conclusively whether it's the exercise that is curative – one hypothesis is that it helps loosen the fight-or-flight "freeze " response that lies behind tension – or the context in which it takes place. The overall experience, however, is curative.

Medicating on nature

In one sense, it's a criticism of our measurement-driven culture that any of this needs to be said, since it's clear that millions of us routinely self-medicate on nature. An estimated eight million people in Britain – nearly a seventh of the population – use parks every day. A survey for the Healthy City programme in the London borough of Camden found that public gardens were by some margin the most popular "leisure facility", used by 76 per cent of respondents. Six out of 10 visit the countryside on day visits every year, with walking by far the most popular activity – 15 times more so than going to an open-air event. Gardening is the country's most popular outdoor leisure activity – 85 per cent of households have a garden and people spend on average six or seven hours a week looking after them.

Previous generations didn't need persuading of these arguments – which is why they set their sanatoria and mental hospitals in rolling grounds. As long ago as the 14th

century, Irish monks cared for "troubled people" by setting them to work in monastery gardens. In 1856 the county asylum in Dorset introduced regulations stipulating that inmates should be involved in outdoor work. And the tradition of using plants as a means of treating the mentally ill, though largely abandoned by the NHS in the 1960s when it was decreed that hospitals and farming were incompatible, has persisted in the work of organisations such as Horticultural Therapy.

Yet we still can't be certain whether the curative value of nature lies in the whole or the parts. Is it the plants or the landscape? Is it, perhaps, the "fresh air"- and if so, what do we mean by that? Exercise, oxygen, light? And if, as common sense would suggest, it is the whole experience that confers the benefits, what would that experience, ideally, encompass? Nor can we be certain whether the therapy works physically or psychologically – or indeed if there's really a difference.

For example, some biologists speculate that evolution is responsible. E O Wilson, the Harvard scientist and author of *Biophilia*, argues that we have a kind of programmed preference for the park-like grassland landscapes of the African savannah, where we originated as a species. "Whenever people are given a free choice," he argues, "they move to tree-studded land on prominences overlooking water." It's also suggested that we like greens and blues because much of our history as a species was spent under blue skies on green plains. One can express this

"scientifically" by saying that, unlike reds or yellows, blue and green are long wavelength "low arousal" colours known to relieve muscle tension and produce pleasurable moods.

But are blues and greens innately therapeutic or therapeutic only by association? If we had evolved on a red-and-yellow planet, would we derive similar comfort from reds and yellows? Unfortunately, it's virtually impossible to design research that would tell us. Modern science breaks such large questions down into smaller ones – the so-called reductionist approach. Yet in trying to assess this broadest of questions – what nature means for us – reductionism can only take us so far. And that, in a culture soaked in the paraphernalia of reductionism – target-setting, "best value", league-tables – is a serious handicap. Some things – the best things, one might argue – can't be proved.

This is a key point because there is a strong cultural element in our relationships with nature. Our images of an ideal nature are governed by fiction, mythology, social fashion and so they not only vary a good deal; they change over time. The 18th century fell in love with wilderness – which had until then been regarded by civilised people with fear and distaste. In other words, there is, overlaying and informing our physical reactions to nature, a layer of psychological and imaginative response which is crucial in determining the significance of the whole experience. This, one might say, is how nature affects our soul, and it forms the subject matter of the next chapter.

3 Nature and Soul

Analysing what makes nature, or the countryside, different from towns and cities is no easy task. Some profound human responses are involved, which people find hard to put into words. We also, no doubt, take the nature experience for granted – which may explain why relatively little research has been done. It's clear from such research as has been done, however, that the experiences gained from nature are rich, complex and extraordinarily diverse. And they take us into new and uncertain territory.

In 1978 the Nature Conservancy Council (now English Nature) asked people involved in four urban conservation projects why they enjoyed the experience of nature in cities. They spoke of escape, freedom, adventure, discovery; of the sense of a world apart – a "timeless" world, a "paradise", an "oasis"; of the rediscovered richness of once-ordinary sensations. One schoolboy talked about "fun with dirt." Others dwelt on fresh air, the "feel" of flowers, the crackle of ice, above all, perhaps, on smells – "smells", as one Londoner said, that "you wouldn't smell anywhere else. Your whole senses are alive."

More recently, research by University College, London, with residents of Greenwich has suggested that people see nature in cities as a "gateway to a better world"- one that is uncommercialised, rich in sensory impressions and, most

important, alive. People feel "part of a living word in which plants, insects, birds, water, mud, birdsong and earthy smell all have their place," the researchers concluded.

Cities, by contrast – or more specifically, the built environment – are typically seen as dead. A "sensory mapping " exercise in an American town found that four-fifths of its best-loved places were natural landscapes; the most disliked parts were "constructed-urban." Three-quarters of the most memorable sensory experiences cited by residents were linked with "primitive-natural" landscapes. When, in another study, psychologists asked 20 adults – not, it should be noted, country people – to describe the most significant places in their childhood, 19 drew a sketch of trees, rocks or bushes – in other words, somewhere out of doors. University students shown photographs of urban and rural scenes found that the natural scenes made people friendlier, more playful, less nervous, more content; the urban ones made them depressed and aggressive.

A dominant theme of such studies is not only that the physical shades over into the psychological but that the two often cannot be disentangled. We react to nature with body and mind: and the two kinds of response feed off and enrich each other. A Countryside Commission study in 1996 found that the feature people most appreciated about the countryside was the sense of relaxation and well-being, followed by "fresh air" and peace and quiet. But, significantly, 93 per cent of people benefit from "just

knowing it is there" – merely the thought of it is a comfort. American student campers, asked what they enjoyed most about nature, put the natural environment top of the list, followed by "cognitive freedom" – the freedom to control one's thoughts, actions, use of time.

Much of the evidence of the powerful symbolic meanings represented by nature has come in studies by psychologists. In 1994 a study for English Nature reviewed over 250 of these and came to some intriguing conclusions. Nature, it found, offers a "sense of coherence" – in contrast to the confusion of the man-made world. It is mysterious – provoking awe and wonder, a sense of the sublime, encouraging contemplation and "effortless attention" yet resisting explanation. It is largely devoid of "negative feedback" – it does not, in other words, carry a burden of human meaning, or rejection – and thus reinforces self-esteem. And although it has a life of its own, it responds to human guidance.

From this perspective, gardening becomes a wholly understandable activity – one that combines accessibility, creativity and therapy in the context of a partnership with something far greater than the individual. Hence, as noted in the last chapter, the development of horticultural therapy; hence also the use of "wilderness therapy" – controlled experience of wild places – in the treatment of psychiatric patients and juvenile offenders, mainly in the US.

With concepts such as coherence, mystery and freedom, however, we are into challenging terrain. Cities were once

associated with freedom: how, and why, have roles been reversed? One reason, clearly, is that the urban freedom of medieval times was political, to do with emancipation from serfdom. No doubt there was also a sense of liberation from what Marx called the "idiocy of rural life." The freedom that nature confers today, by contrast, has more of a psychic dimension to it – the freedom of a world from which people, their rules and hierarchies and interfering ways, have been excluded. A world in which nature is seen as free is a world in which human society has become – or so it seems to many people – oppressive, invasive and intrusive.

Behind such responses there is often a long cultural history – a history of associations that derive from art, fiction, religion and mythology and have sunk deep into our minds, colouring our attitudes at a level below conscious thought. Nature is rich in such meanings, from the prelapsarian idylls of a Golden Age, of which the Biblical Garden of Eden is one example – the term Paradise derives from the Avestic (ancient Persian) word for enclosure or park – to the role of forests and wilderness. Throughout myth, legend and literature, as authorities such as Joseph Campbell have pointed out, forests are not only places of awe, mystery and fearfulness – places inhabited by wild men and beasts. They are also places where quests begin and adventures follow – places of escape, loss of self and subsequent finding of self.

The questing knights of the Grail enter the forest "where it is thickest." In Shakespeare's Forest of Arden, wrongs are righted, the world-weary refreshed, the world turned upside

down. From Robin Hood to the Zapatistas of Chiapas in Mexico, forests are home to outlaws: to subversion, revolution and world-changing. Indeed it's hard to avoid the conclusion that a vital part of ourselves lies in forests, or at least in the rich yet unknown space they represent, and that if the forests and the wilderness die, this part of our selves will die too – or, perhaps worse, atrophy and turn septic. Some such logic helps to explain the paradox that increasing numbers of comfortable, affluent Westerners are now actively courting danger, walking across continents or rowing round the world – activities that former ages would have deemed inexplicable.

Many of these psychological responses, of course – mystery, awe, redemption – have long had religious associations and there is much evidence that nature, for many people, now serves as a spiritual focus, rivalling or replacing that of organised religion. While church attendances have been falling, secular religions such as paganism and witchcraft have undergone a resurgence. Movements such as creation spirituality and green Christianity – the latter stressing man's *stewardship* of the planet as opposed to his *dominion* over it – have emerged out of Christian orthodoxy. New Age beliefs – the product of a new distaste for the disenchantments of science, a new openness to mysticism and mysteries – have proliferated.

In the main, however, the new nature-based spirituality has eschewed "isms"; it has not organised itself or codified its beliefs, preferring to remain private, celebratory, free of

ideology. Its public face is the sprawling confederation of green NGOs and pressure groups now referred to as the environmental movement, which has grown explosively over the last three or four decades and is now estimated to number, in the UK, between four and five million people. In their defence of wilderness and resistance to development and "pollution" can be glimpsed a much older sense of what is sacred, profane and taboo.

Nature, mysticism and spirituality

That environmentalism has become a form of secular religion would surprise nobody who has seen tree-huggers protesting against bulldozers or heard deep ecologists telling us to "think like a mountain." Nor would it surprise historians or philosophers of religion. A century ago the psychologist William James collected scores of accounts of life-changing or life-enhancing experiences – semi-mystical moments that submerge the ego and give a new sense of life and hope – for his classic work *The Varieties of Religious Experience*. James was struck by the number of cases that occurred out of doors. "Certain aspects of nature," he wrote, "seem to have a peculiar power of awakening such mystical moods." Religious awe was "the same organic thrill we feel in a forest at twilight or in a mountain gorge."

Such moments are not as uncommon as one might imagine. Freud labelled them "oceanic"; the American psychologist Abraham Maslow called them "peak experiences." One

survey found that 36 per cent of British people (and 42 per cent of Americans) own up to them. And it's clear not only that they are the raw material of religion – the emotional charge that generates a belief in divinity – but that nature is a potent source of them.

This may be not so much because nature is "beautiful" as because it is mysterious, awe-inspiring, endlessly fascinating. According to the German philosopher Rudolph Otto, author of *Das Heilige* (The Idea of the Holy), a sense of the sacred involves a recognition of a power which is *ganz andere* – wholly other. Otto distinguished two chief components of this perception – the *mysterium tremendum* and the *mysterium fascinans*. The first can be translated as "fearful majesty", the second approximates to a sense of "plenitude of being" – the richness and diversity of life. Charles Darwin experienced something of both, it seems, on his first encounter with a tropical forest in Brazil in 1832. "Wonder, astonishment and sublime devotion fill and elevate the mind," he wrote afterwards.

Nature's potency, in other words, lies in its *otherness* – the fact that it is fundamentally and inalienably different from man and his works. The historian Mircea Eliade, attempting to analyse what it was that led "primitive" cultures to worship the vital force they believed nature to express, chose a slightly different formulation – "real existence." Nature was mysterious, awe-inspiring, certainly; more important, it was real, in a way humans were not.

Whatever term is used, attempts to capture this quality of mystery about nature are a dominant theme of myth, religion, art and literature – poetry, in particular. Yet different cultures have gone about the task in different ways. As Eliade has shown, older, more earthbound cultures – North American Indians, Pacific Islanders – thought the otherness was immanent. In other words, it was *within* nature – a vital, indwelling force permeating living things which they called *wakanda* or *mana*. By contrast, theologies of transcendence, such as Christianity, moved God "outside" nature.

Many Christians thus believed that in celebrating the beauty of nature they were celebrating the glory of God, whose handiwork it was. As the poet William Cowper put it, "God made the country and man made the town." Yet Eliade also showed that it is part of the natural cycle of religious belief for monotheistic Gods to grow remote and unloved – at which point there arises a desire among their former worshippers for a more vital and immediate contact with "real existence." Eliade calls this a "fall into life" – and if the diagnosis holds true for the 20th and 21st centuries, it carries some far-reaching implications.

First it means that from the slow collapse of Christian monotheism a new spiritual quest is emerging – for a direct and unmediated relationship with nature, no longer camouflaged by theological doctrine or confused with divinity. If that is the case, then the presence, or absence, of nature in cities becomes a question of religious rights – of

freedom to worship. For growing numbers of people, nature is their church – a sacred place, a place of "otherness", and thus a source of inspiration, illumination, comfort and celebration. To deny them this outlet is tantamount to religious persecution.

Second, nature in cities is a vital ingredient of spiritual health as well as physical and psychological health. In a self-avowedly secular society, this may seem a strange thing to say, but it's clear that the decay of Christian belief has left many people spiritually stranded. It's also clear, from evidence such as the World Values Survey, which has investigated changing patterns of belief over the last three decades, that the spread of affluence and the satisfaction of material needs in the developed world has brought with it a slow but seemingly inexorable increase in "post-materialism" – the search for a meaning and pattern to human existence.

We ignore such evidence at our peril. The more we discover about the workings of the immune system, the more we see how inner health feeds through into outer, bodily, health. Studies have shown that people with a deep religious faith tend to be more optimistic; and that spiritual activity vies with exercise as the most successful strategy for coping with anxiety and depression. It may be, however, that they're the same thing – that going for a country walk is, for many people, a form of spiritual activity, refreshing the soul just as the "fresh air and exercise" refreshes the body. As mentioned in Chapter 5, initiatives such as Health Walks

and the Green Gym are using nature as a way of getting people to exercise and lose weight. But surveys of those taking part have demonstrated clearly that without the nature component, the idea wouldn't work. The most important element in encouraging people to walk – cited by 80 per cent – was "to be in the countryside/green space." Sixty per cent cited "watching the seasons change." Only 10 per cent mentioned losing weight.

Third, the potential consequences for the future of cities are profound. In TS Eliot's poem, *The Waste Land*, the narrator watches a crowd crossing Westminster Bridge and laments: "So many – I had not thought death had undone so many." If only nature is "real" and "other", cities which become more urban will be condemning themselves to a kind of psychic death – to becoming the emotional desert depicted by Eliot. They may well be efficient as places to work, shop, eat and drink, they may even boast a role as cultural centres, but they will lack a dimension without which, for increasing numbers of people, life has no meaning: it is, like Eliot's "unreal city", psychologically and spiritually desiccated. And in pursuit of that dimension – in pursuit of emotional and spiritual energy and fulfilment – people will continue to leave them, in ever greater numbers.

The other possibility is that cities re-energise themselves by welcoming back nature. Before we can do that, however, we need to consider what is at stake in the way we design our settlements, and why we are in imminent danger of getting it seriously wrong.

4 Green Fields – or Brown?

The unknown – the mysterious – has always played a vital role in human affairs. It offers us hope and purpose: the grass, we say, is greener on the far side of the hill. It holds out the prospect of escape from daily tedium – hence we travel, explore, go on holidays. Through myth, legend, fiction – whether it's ghost stories or tales of UFOs, alien abductions and the paranormal – it captures our imagination. It is, in some way that is almost impossible to describe, life-giving , energising – a kind of sustenance for the soul. It is also, undeniably, under threat.

For much of history, the unknown has been associated with physical space – with the blank spaces on maps which used to be known as *terra incognita* and teemed with fabulous beasts and monsters. For most people until recently, forests were an aspect of the unknown – hence the legends of shape-changing wolves, of children cast adrift in the Wild Wood. But these realms of mystery are vanishing: we have discovered and mapped them, now we are "developing" them, through roads, farms, settlements. It is, in one sense, a process of knowing – the kind of knowledge that undid Adam and Eve in the Garden of Eden – but it is also a process of disenchantment. Cities are its culmination – the ultimate settlement, the pinnacle of that long-drawn-out act of enclosure and taming we call civilisation – and although they may contain beasts and monstrosities, these are man-made, often human.

The costs of such disenchantment cannot be measured but it is one of the most pervasive human experiences of the modern era. Who has not known a favoured place that has been lost to roads or housing? It was some such memory that impelled J R R Tolkien to write *The Lord of the Rings*, one of the 20th century's favourite books, in which he attempted to re-enchant the world. Urbanisation, once a triumphant act of rescue – a redeeming of wilderness – now provokes feelings of loss, gloom, anguish. People must have homes and jobs – but it would be nice if we didn't need the buildings that go with them.

This may seem an odd way of starting a chapter about planning and design but there is a logic to it. Planning is about land, space, areas and densities but it is also about values and feelings. We project our feelings on to the world outside – on to "real" landscapes – and the landscapes reflect them back. They also come to express and embody them. When the landscapes are lost, so are our feelings. To an important degree, inner and outer worlds – the world of mind and spirit and that of physical "reality" – occupy the same space.

Kenneth Grahame, imaginer of the wild wood in *The Wind in the Willows*, recognised these realities when he wrote – in another work, *Pagan Papers* – that technology was destroying what he called "the steadfast mystery of the horizon – so that the imagination no longer begins to work at the point where vision ceases." Another way of putting this is to say that minds, as well as planets, are laid waste by deforestation, development and the growth of cities.

It's worth remembering these things when we talk about cities and countryside. Every act of development involves gains and losses. The losses are not only physical – land, trees, fields, farms. Where nature is involved, they are powerfully psychological. A mobile, expansive society is in a kind of permanent development frenzy. Yet it's those selfsame characteristics that make us increasingly conscious of the losses. The more "unnatural" our way of life – the more urban, the more crowded, the more stressful – the greater our yearning for what we perceive to be natural. The greater our *disconnection* from nature, the greater our desire for *reconnection*. The more we want *development*, the more we seem to need what might be called *undevelopment*. Both as a society and as individuals we are split down the middle. The planning system has to try to sort this out.

These dilemmas are at their most acute in the debate over population, housing and the countryside, which has occupied Britain now for over a century – as long ago as 1847 Dickens, in *Dombey and Son*, compared the city's outward march to a "a giant's brick and mortar heel. " Ebenezer Howard's *Garden Cities of Tomorrow*, published in 1902, is perhaps the seminal text in this saga – Howard, a clerk in the House of Commons, decried the "unholy, unnatural separation of society and nature" and envisaged small, nucleated towns largely taken up by private gardens and farmland and divided from each other by swathes of open country. The garden cities movement shaped much 20th century thinking on planning – not least the postwar programme of population dispersal and decentralisation

that gave us the New Towns. A century on, the dilemma is more acute than ever.

This is partly because population is much greater than in Howard's day – around 59 million compared with 38 million – and still growing. Divorce and singledom are producing more households. Lives are more complex and affluent – we need space for our white goods and gadgets, separate bedrooms for children, somewhere to put desks and computers. Most of us want a garden, too. Spacious living is more available in a rural setting – the "density-size" rule tells us that cities of over half a million are four times denser than villages of under 10,000. Yet the country is far more urban than when Howard wrote.

It is against this background that the current debate needs to be viewed. By 2021, it is forecast, 3.8 million extra homes will be needed in England, an increase of about 20 per cent. The spectre of green fields "disappearing under concrete" has caused widespread consternation and split the environmental movement, setting long-standing opponents of urban sprawl such as the Council for the Protection of Rural England against latter-day garden-city enthusiasts, in the shape of the Town and Country Planning Association, and urban conservation groups such as the Wildlife Trusts

The green fields of England, it is argued, will be better protected if we use more "brownfield" sites – broadly, land which has fallen out of development – for housing. Higher

densities, in the shape of "compact cities", will meanwhile reduce car usage and cut the carbon dioxide emissions that cause climate change. Tighter cities are thus more sustainable. The Government's urban task force, chaired by the architect Lord Rogers of Riverside, has lined up behind this position; so have environmental groups such as Friends of the Earth. Ken Livingstone's new mayoral development strategy for London envisages providing homes for three quarters of a million more people in the city over the next 15 years – with higher densities, again, the solution.

There is not the space here to re-enact the arguments about densities and urbanisation that have characterised the debate since the forecasts were issued. However, certain broad conclusions can be drawn.

First, after a century and a half during which the fabric of cities was becoming looser, it is now starting to tighten again. The proportion of urban brownfield sites recycled into housing has been steadily rising, from 38 per cent in 1985 to 61 per cent by 2001 – in London the figure is much higher, around 90 per cent. In 1997 the UK Round Table on Sustainable Development recommended an aspirational national target of 75 per cent. In 1999 the Government enthroned the redevelopment of brownfield sites as one of its headline indicators of sustainability.

It's important to understand what this means. The looseness of cities, particularly from the 1960s onwards under the impact of counter-urbanisation, released large amounts of

land. This was seen as a major problem – the land was officially "derelict". But nature rapidly outgrows bureaucratic typologies. Derelict land blossomed – it became what the author Richard Mabey labelled "unofficial countryside". As such, it served as the means for a long-overdue reincorporation of greenery into urban areas – and thus a huge improvement in urban quality of life and urban people's reconnection with nature. Thanks largely to campaigning efforts by local people, hundreds of green spaces were created – parks, community gardens, city farms, nature reserves. This large-scale greening movement emphasised the crucial link between nature, green space, quality of life and urban regeneration – as Government implicitly recognised in the early 1980s when it borrowed the idea for its garden festivals programme.

Putting history into reverse

A second conclusion, therefore, is that the move towards higher-density living in cities looks worryingly like an attempt to put history into reverse. It is at odds with some fundamental trends of long-standing – suburbanisation, counter-urbanisation, the move towards more spacious living, the desire to reconnect with nature. It may well be against the grain of our culture – a Cnut-like endeavour to hold the tide at bay.

Third, if that is the case, we may need to revise our ideas about what is genuinely sustainable. A society in which

people remain dissatisfied with urban life and continue to hanker after a place in the country, as opinion polls and demographic evidence show they do, is not a stable one. It is one in which physical mobility and psychological friction are inherent. Even the Government acknowledges this – its plan for sustainable communities, announced in early 2003, defines these as "places where people want to live *and will continue to want to live*" (author's italics).

Over the long term – which is the perspective sustainability tells us to adopt – the environment impact of "tight" cities may well dwarf short-term, often technology-specific, calculations about the relationship between, for example, higher densities, public transport, car usage and climate change. Development of a non-polluting car engine based on the fuel cell might take climate change out of the equation: urban sustainability would then look very different.

By contrast, settlements that fulfil human aspirations are durable. A Dutch study found that people who moved from flats to houses with gardens travelled less – because they spent more weekends at home. In 2001 a Gallup poll found that 75 per cent of the population would be prepared to live in high-density housing provided it had a rural or village setting; only 23 per cent would be interested in high-density housing in cities. Clearly, access to "real" nature is a major determinant of the acceptability of settlements; equally clearly, people in cities are denied this. Recent research from the CPRE found that in predominantly rural areas such as

Wales, the South West and East Anglia, between 55 and 61 per cent planned to visit the countryside once a week; in Greater London the figure was only 14 per cent.

A city that satisfies more of an individual's needs to connect with nature will generate fewer second homes, less travel and traffic congestion, less of the resource use that results from constant population upheaval and disruption to infrastructure. Equally important, a city which can retain the affections of its people is less likely to experience the middle-class flight that, by depriving so many urban communities of their leaders and defenders, has torn great holes in the social fabric.

The point is probably best illustrated by one of the great planning disasters of modern times – the ideological urbanism that led to the building of hundreds of tower blocks. A generation later, when it was discovered people did not want to live in them, many had to be demolished. Compact cities, and their high-density housing estates, look set to be another ruinous ideological fashion.

The skewing of the debate suggests that this is all too likely. Urban brownfield sites are usually contrasted, to their deep detriment, with the "greenfield" sites of the shires. Rarely do we hear about their ecological wealth. In fact, about a third of all nature conservation sites – from nature reserves to sites of special scientific interest – were brownfields originally. When land-rights campaigners squatted on "derelict" land owned by Guinness in Wandsworth,

London, in 1996, they found over 300 species of plants – in contrast to the 50 or so typical of a "flower-rich" meadow in the countryside. Nor is this surprising, since the distinguishing feature of a brownfield site is that nature has been left entirely alone – and when this happens it usually produces rich and exciting places. By contrast, on many greenfield sites, particularly those that have been intensively farmed, nature has been blitzed out of existence.

Brownfields are not just good for nature, though. Many humans like them – children because they can provide a spectacular alternative to bureaucratised urban playscapes, adults because they may be the only patch of greenery in a world of concrete. And this raises another neglected issue in the debate – equity. If nature is as significant for human beings as this chapter and the last two have suggested, is it right that so many people should be starved of it? Given that 80 per cent of us live in urban areas, which in England constitute just seven per cent of the land, doesn't natural justice suggest that we should be doing as much as we can to bring nature into them – instead of shutting it out?

The vogue for tight or compact cities is a product of an environmentalism that is more about technics than about human beings. Indeed, we need to do the opposite – to "undesign" cities, make them looser, welcome nature back in. The next chapter describes how this might be managed.

5 Un-Designing Cities

In *News from Nowhere*, William Morris's Utopian view of the city of the future, 21st century London is much changed from the grimy and crowded 19th century version known to Morris. Trafalgar Square is an apricot orchard, rose gardens bloom off Shaftesbury Avenue, the Thames once again has salmon. The city itself, thanks to the "exodus of people from the town to the country", is much shrunken, although some "noble" buildings and elegant shopping arcades remain. Parliament is a dung market.

How would the green city of the 22nd century look, viewed from the 21st? Perhaps the biggest change will come in its walkability. Leaving one's home for a Sunday stroll, one might step into a street from which through traffic has been banished – there is a single track for vehicles bordered by permeable paved ways or grassy paths and shaded by tall trees, with here and there a play structure or a patch of garden. Follow this to the end of the road and it will criss-cross with other similar streets: from one of these, perhaps 100 metres from your home, you will be able to take a "proper" path, bordered by hedges or gardens, that leads into a wider network of tracks and green lanes.

Used by cyclists and horseriders as well as walkers, these will take you to local parks and green spaces, past city farms and urban forests, along the banks of rivers and

canals, perhaps around a wetland or two, until eventually, if you have the time and the stamina, you will reach open country – the land "outside" the city. Your walk will have been free of traffic, noise, distractions, but rich in connections with nature. You will return home fitter, mentally and physically. In a very practical sense, even though you are a city-dweller, the countryside will be on your doorstep.

Utopian? Probably not. Visions of the future have a habit of coming true – for good or ill – because people are inspired by them and try to shape the world to fit. London is cleaner than in Morris's day – salmon *have* actually returned to the Thames – because those who thought like him worked hard for it to be so. It's also less crowded because people, where they could, have escaped – in that sense, too, the distinction between "prediction" and "achieved dream" blurs. It begins to look, therefore, that, over time and perhaps irresistibly, we create the cities of our dreams – which, since the city is a vast man-made artefact, is not surprising. But what kind of city do we dream about?

It's possible to see 20th century planning as an extended rivalry between two ideals of a future city. One was the Continental model – a city of piazzas and pavement cafes, architect-designed and hard-surfaced, in which nature is a pleasant but inconsequential backdrop to human discourse. The other was the green or garden city, in which the relationship between humans and nature is as important as that between human beings themselves. It is designed by

humans – up to a point. But beyond that point nature takes over. Indeed, as Chapter 3 made clear, the *absence* of human design is fundamental to nature's otherness – the perceived presence of design, in that sense, blocks the flow of energy from nature to humans. Design thus needs to be permissive rather than prescriptive – minimising the human role, creating the best conditions for nature to flourish.

Many of our dreams, however, are taking shape. We already have traffic-calming and, to a more limited extent, "home zones" – the name is British but the ideas were pioneered in the Netherlands and Germany – in residential areas. Urban forestry is thriving – there are a dozen community or urban forests in England, and a National Urban Forestry Unit, all dating from the 1990s. We have over 60 city farms, the first founded in the early 1970s. And "greenways" – traffic-free tracks or paths for green travel – are prospering, from long-distance footpaths such as the Thames Way or the Capital Ring to the cycleways built by the charity Sustrans.

Greenways are the fundamental element of any urban greening strategy. By removing the physical and psychological obstacles to escape – roads, buildings, development – they turn the city inside out. In a peculiarly literal way, they "unmake" it. For this to happen, they must be accessible – they must start as near one's own front door as possible. When people in the heart of the city can, in effect, walk straight out into the countryside, a vital act of reconnection will have been made.

It is for reasons such as this that since 1996 English Nature, the Government's adviser on conservation, has recommended that everyone should have an accessible natural greenspace within 280 metres (in a straight line) from their home; it has also set a standard of one hectare of local nature reserve for every 1,000 people. But although the role of greenways has been recognised since the 19th century – the "green necklace" designed by Frederick Law Olmsted around the New England city of Boston was one of the first "linear space systems" – they are not easily created. In new towns such as Milton Keynes and Warrington they can be laid out on the master plan. In old industrial cities, they need to be assembled, painstakingly, often over decades. A thorough-going greenway strategy requires vision and planning over time scales that sit unhappily with politicians' horizons.

Greenways have other roles, however. As *green corridors*, they are migration systems for wildlife, from plants and insects to larger mammals, connecting larger green spaces that serve as biodiversity reservoirs – and the larger the green space, research tells us, the greater the biodiversity. Alongside rivers in particular, greenspace systems have a vital role in flood relief – climate change is re-emphasising the value of greenery in cities, notably its capacity to absorb run-off from storms, prevent flooding and protect against higher temperatures and increased radiation. Hence ideas such as "porous" cities and "sustainable urban drainage systems" – both of which involve preserving or creating green space in urban areas to soak up heavy rainfall,

sponge-like, releasing it slowly afterwards. A grass roof absorbs 75 per cent of the rain that falls on it – leaving only 25 per cent run-off. In the US city of Milwaukee, trees save an estimated $350m a year that would otherwise be spent coping with run-off.

Gardens and sustainability

"Soft" landscaping is fast becoming a key ingredient of green architecture. In Tokyo all new medium-sized buildings must dedicate at least 20 per cent of roof space to a garden; there are similar green-roof laws in Germany, Austria and Switzerland. Reed-bed sewage systems (and green roofs) are now far beyond the experimental stage – they are being created at the pioneering BedZed housing development in south London, for example.

It's also true, however, that these and many other adjuncts of a sustainable lifestyle – composting green waste, collecting rainwater in butts, even growing your own food – are greatly simplified with access to land, most conveniently in the shape of a garden. There are overwhelming environmental arguments, for example, in favour of locally-grown food – it cuts down "food miles" (and thus oil use and global warming), supports the local economy, simplifies the food chain and almost certainly means safer food. Hence the boom, since the mid-1990s, in organic box schemes and farmers' markets. But in most big cities there is no locally-grown food – it has to be trucked in from

outside. As groups such as Sustain have demonstrated, there is thus a powerful new case for making cities fit – once again – for food production.

Increasingly, it seems, nature in cities turns out to have an economic payback. Three decades of experience of urban regeneration have taught us that green space is a vital ingredient – Barcelona, which has created 200 new open spaces over the last two decades, is one of the best-known examples. Equally, the Western world is facing an epidemic of obesity, with alarming consequences in terms of health spending on heart disease, cancers, diabetes and so on. Dr. William Bird, originator of the Green Gym and Health Walks projects, estimates that lack of physical activity costs 2–3 per cent of the NHS budget – a figure which works out at £1–£1.5 billion. In NHS cost-benefit terms, a decision by one individual to become regularly active instead of inactive achieves the same result as continuous medical treatment for 16 middle-aged man over five years for raised blood pressure and cholesterol.

How can people be encouraged to walk or cycle? Making cities exercise-friendly is one way. Nine-tenths of children own a bike but only two per cent cycle to school. Traffic-calming experiments in the UK have produced a 50 per cent increase in the number of children aged 7–9 being let out on their own. But as the Health Walks research quoted in Chapter 3 suggests, motivating people to take exercise has to do with the presence of nature – not merely the absence of traffic. A well-connected greenways network, with a

general expansion of greenspace, would produce an explosion of demand, currently pent-up, for walking and cycling – and big savings for the NHS.

Worries about crime and personal safety are often raised in discussions of urban green space. In fact, as Jacquie Burgess of University College, London, has pointed out, the British Crime Survey shows that, despite one or two well-publicised cases, the absolute incidence of crime in parks and commons is far less than in other public or private spaces. Urban forestry over the last decade has also provided invaluable experience of designing natural spaces to make people feel safe – thinning dense stands of greenery to improve sight lines, leaving uncluttered margins along paths, improving "interpretation" to that places become popular and well-used.

Many people who might worry about walking in a woodland by themselves will nevertheless appreciate its presence. A study 20 years ago looked at the 40-acre Rollestone wood in the Sheffield district of Gleadless and found that although only eight per cent of adults visited it regularly, 72 per cent considered it personally important to them and 86 per important to the area. Similarly, the city of Portland in Oregon, another classic case-study in regeneration, remade itself by removing freeways blocking access to the river and opening up what it called a "view corridor" to one of its favourite extra-urban landmarks, Mount Hood. As Chapter 2 made clear, *visual* reconnection with nature is in itself measurably therapeutic.

At a deeper level, however, we need to clarify our thoughts about safety. It may be possible to make public spaces in cities completely safe – but only by making them completely sterile. This is one direction urban design has been taking but it is a cul-de-sac: it leads only to places from which people want to escape. They escape, of course, to the seaside and the countryside – places full of deep waters, dark woods and precipitous heights, places full of risk and uncertainty, places also that capture our imagination, challenge us to experiment, and perhaps as important, *play*. Would we want our beaches or our mountains redesigned by local authority architects – or subjected to health and safety legislation? And if we're serious about the *imaginative* regeneration of cities, isn't nature our best ally in redesigning them?

The psychic sanitisation of cities probably affects children worst. Today's city youngster is a kind of battery human – a sedentary organism imprisoned indoors by fears of traffic and crime, growing fat for lack of exercise, imaginative stimulus no longer supplied by woods or streams but by television and computer games. Compare that with the free-ranging rural childhood of yesterday, as depicted, say, in Richmal Crompton's *Just William* stories, and it becomes clear that for many city children the key requirement for successful development – self-reliant exploration or what the developmental psychologist Jean Piaget called "acting-in-space" – is not happening. Urban adolescents, the planner Kevin Lynch concluded in his international survey *Growing Up In Cities*, were victims of experiential starvation.

Green cities matter for children not only because they provide the "space" to "act in" but because the space itself is challenging and richly textured – it contains that element of the mysterious, the unknown, the *other*, which is nature's key contribution to design. Nearly half the primary school children who lived near Sheffield's Rollestone wood, for example, played there regularly – hiding, climbing, jumping streams and swinging on ropes – and found the local park boring by comparison. But they matter for adults, too. If we are serious about mixed communities, the ghettoisation and privatisation of urban space should concern us deeply. Cities divided up between affluent gated communities and "sink" estates will fossilise the distance between rich and poor.

Re-mixing communities

Urban commons – by which is meant any kind of public green space – are in that sense unique. They are places where the community, collectively, relaxes – where people with different lives and backgrounds sit, chat, play and stroll, within sight of each other and where, in consequence, socio-economic divides are abolished. Shopping malls, private leisure facilities, even the urbanists' piazzas provide, by contrast, an experience that is functional and economic – it is about paying, getting, spending, eating, buying. If civilisation renews itself in play – that is, play for play's sake – urban green spaces provide the only genuinely "free" territory where this can take place.

Critics might object that this is altogether too idyllic a picture. Who will manage and pay for new green spaces? Won't they degenerate into litter-strewn wastelands? Won't a new emphasis on ecology – or even "wilderness" – produce places that many people consider untidy? Can we can really recreate countryside in a city?

The next chapter tries to answer these questions. But a few general points should be borne in mind.

First, ecological management of greenspace is much cheaper than traditional horticulture. Wild flower grasslands may be cut three times a year compared to 16 cuts for "amenity" grassland: annuals are 68 times as costly as the same area of woodland. However, it is not free. Green cities will require money to plan, implement and manage. It is a fundamental argument of this pocketbook that since the modern city has become a pathogenic environment – one that generates severe psychological, physical and environmental stresses – nature will form part of a new preventative health service. Green cities, in other words, will pay for themselves, over and over again.

Second, tastes in landscapes differ, and also change. What to an adult may be a wasteland may, to a child, be a jungle – or a prairie, or simply somewhere to go biking or skateboarding. What to an adult a generation ago may have been "neat" – close-cropped municipal parkland – may to an adult today be boring, sterile, a wildlife desert. Attitudes towards wilderness and wildlife have changed dramatically

over the last three centuries; as the loss of wild places accelerates, and our understanding of ecology and ecosystems grows, that process will continue.

Third, and finally, we do not know whether "genuine " countryside can be recreated in cities and we shan't know until we have tried it. But since virtually all of Britain's "real" countryside has been shaped by human beings it would seem a good bet that we can do something similar inside cities. That this would change the way they look and feel is inevitable but since the kind of city we live in is, historically speaking, a highly provisional form – most people for most of history have not inhabited such places – this is less of a revolution than it seems. What would be something of a revolution is to take control of our urban future. For most of history, we have had to put up with the kind of settlements we got. Isn't it about time we created the ones we wanted?

6 Summary: A Manifesto For Green Cities

The theme of this pocketbook is the need to reconnect human beings with nature. While the disconnection of people and nature imposed by urbanisation and industrialisation over the last two centuries persists, cities will remain places from which people wish to escape. We need to green our cities, far more imaginatively and on a far larger scale than currently envisaged.

The arguments are grouped into chapters as follows:

Voting With Our Feet. Those able to escape cities have always found ways of doing so. Since the mid-20th century this escape has turned into the large-scale demographic phenomenon known as counter-urbanisation, which has devastated inner-city areas. The larger and more densely populated the city, the faster population outflow has occurred. Conventional social science techniques go only so far in explaining counter-urbanisation. One key study on England attributed it to a "force deep in the English psyche." (Chapter 1)

Nature and Body. Nature is vital to human functioning. Evidence has accumulated over the last two decades that the "double indoors" of office and city is harmful for

human health, physical and psychological. Greenery, by contrast, is therapeutic – relieving stress and aggression, promoting creativity and healing. It also plays a vital role in air-conditioning cities. (Chapter 2)

Nature and Soul. Science cannot fully explain the relationship between humans and nature. Culture, mythology and spirituality are also involved. Nature has always been a primary source of spiritual experience; since the decline of Christianity in the West, it has emerged as the basis of the "secular religion" of environmentalism. In effect, the lack of nature in cities deprives people of their religious rights. (Chapter 3)

Green Fields – or Brown? Over the next two decades 3.8 million more homes will be needed in England, according to forecasts. Since the late 1990s a new orthodoxy has emerged – that building houses on brownfield sites and creating "compact" cities is the sustainable choice. The reverse is true. Brownfield sites have more human and conservation potential than many green fields; town cramping will not meet human needs; and compact cities are a planning disaster in the making. (Chapter 4)

Un-Designing Cities. Cities can be turned "inside out" by networks of greenways linking up with larger blocks of open space, from parks and commons to urban forests, wetlands, river floodplains and city farms. These will reconnect people, both pychologically and physically, with nature by removing the barrier between city and

countryside. The green city of the 22nd century will be healthier, better for wildlife and biodiversity, more efficient at coping with the effects of climate change and more socially inclusive. Green cities will pay for themselves many times over. (Chapter 5)

Manifesto for green cities

Recent official thinking on cities, notably the Urban White Paper and the Sustainable Communities plan, has begun to recognise the value of green space in cities. However, it is still seen as compatible with intensive redevelopment. In some cities, such as London, green space is being lost to development; in others, particularly in the North of England, it is left as "wasteland". A first step is to re-examine Government sustainability indicators and targets. Changes include:

- Scrapping the Government's indicator that measures sustainability by the proportion of brownfield sites redeveloped; also scrapping the target that 60 per cent of housing should be on brownfield sites.

- A new qualitative sustainability indicator measuring people's satisfaction with the urban environment.

- A new Government target for cities based on the amount of managed land in designated greenway strategies (see below) as a percentage of the overall urban area. Public open space is estimated at 15–25 per cent of UK towns and cities: this could form the baseline for improvements.

- Mandatory standards for the quantity and accessibility of green space in cities, working from English Nature recommendations (see Chapter 5: one hectare of nature reserve per 1,000 population; a natural greenspace within 280 metres of home).

More imaginative forms of green space need to be designed into cities. Changes include:

- Requiring local authorities to draw up comprehensive greenway strategies for urban areas. These should link all existing city green spaces and other community centres into an off-road car-free travel network. The strategies should include land-assembly and land-purchase plans for the creation of new green spaces and linkages.

- Devolving management of green spaces, with budgets, to friends' or user groups, with powers to levy a local rate, subject to referendum.

- A nationwide programme of experiment in new kinds of soft urban land-use. The aim would be to draw up an alternative menu – a design palette – for local authorities, planners and communities (see below).

Legislative and institutional changes needed to translate these ideas into reality include:

- A national Green Cities Agency, independent of Government, to fund, oversee and monitor the greenway strategies and to advise on urban green space

- A moratorium on the development of all urban open space, including brownfield sites, until the greenway strategies are completed. This could take in all proposals not yet granted planning permission.

- Green City league tables. A regular "beauty contest" for the title of the UK's greenest city, based partly on greenspace targets (see above).

- A task force to examine the impact of greenway strategies on urban land values. High land values are a serious obstacle to developing new low-intensity uses. The land market blocks the redesign of cities – most crucially in central areas where the need for green space is greatest. The task force should revisit planning legislation and recommend equitable solutions.

Many of the recent innovations in urban land-use were mentioned in Chapter 5. Ideas include:

- Road closures. Many roads will have to be wholly or partly closed to traffic to create greenway networks.

- "Wild" zones. "Wasteland" sites could be handed over to young people to manage, for education, play or adventure. Possible uses range from mountain-bike trails to wildlife areas. Management of these zones would provide valuable lessons in citizenship and civic responsibility.

- City farming. Cities could play a significant role in the expansion of organic farming and local food supply. This could be achieved through an extension of the existing city farming movement; an increase in allotment provision (reversing the long-standing postwar decline); and new homesteading schemes in which land is made available to individual small farmers or market gardeners. Food and vegetable gardening by households should also be promoted.

- Green housing. In resource terms, cities are parasitic – their ecological footprint is many times their land area. Future housing in cities should conform to a comprehensive zero-impact environmental design specification – covering, for instance, energy and carbon emissions, water use and recycling, construction materials, drainage and run-off, noise insulation, food consumption, waste, biodiversity. New urban settlements should aim at self-sufficiency.

- River restoration. Many urban streams and rivers have been turned into drains. Renaturalising them would provide riverside greenway routes and wildlife habitat as well as flood control.

- Urban wetlands. New ideas such as "porous cities" and "sustainable urban drainage systems" (SUDS) need to inform urban design in an age of climate change. In terms of run-off absorption and water conservation, conventional hard-surfaced, pipe-drained cities are highly inefficient. Urban wetlands – balancing lakes, reed beds, grazing marshes – would also help to "climate-condition" cities and redress the losses of one of the world's most threatened ecosystems. They could be linked to large-scale experiments in water and sewage treatment and recycling.

- Habitat creation. Many types of habitat traditionally associated with countryside can be successfully recreated in urban areas. These include forests, hills, lakes, meadows and marshes. Recent examples include: the UK's new urban forests; Stave Hill, in Rotherhithe, London, Beckton Alps, in east London, and the former garden festival site at Otterspool, Liverpool; the Wetlands Centre, London, and the lakes of Rother Valley country park, in south Yorkshire. Landform sculpting and redesign should be integral to new urban greening strategies. New urban uplands, in particular, could be built from rubbish or development spoil and would provide views over, and a sense of identity with, cities.

- Green tourism. New habitats, or "artificial" countryside, are a proven draw for tourists. (Recent examples include the Eden Project in Cornwall, the Earth Centre in South Yorkshire and the Center Parcs holiday villages). Hills can

double as urban ski resorts; or they can be designed for rock-climbers or para-gliders. Lakes can be used for sailing, canoeing or sub-aqua, wetlands for bird-watching, forests for orienteering. Siting facilities in cities would boost urban economies, reduce travel, congestion and carbon emissions, and relieve pressure on the "real" countryside.

- Renewable energy. A sustainable city produces its own energy. However, sustainable living may take up more local land-space – whether this is for an urban wind farm or a garden compost heap. This can be balanced against an environmental gain elsewhere. The more city wind farms, for example, the fewer (coastal) power stations. The more compost heaps, the less long-distance landfill.

- Wilderness. People's attitudes to nature, and what is "natural", vary. Green city planning should reflect this diversity; but it should also reflect the fundamental shift in attitudes taking place. In practice, this means designing "undesigned" landscapes – those which mimic autonomous natural ecosystems. Implicit in the green city vision is that wild places are essential to spiritual and psychological health.

Building in the countryside

More nature inside cities means more development outside them. Yet this doesn't have to be a recipe for rural Armageddon. Odd as it may seem, there are grounds for optimism.

It's worth remembering, first, that the four million extra homes predicted are not the caprice of some malign and inscrutable deity. They are the result of social and political choices – our own decisions on family size and structure and population growth. As such, they are amenable to change. Decentralisation, political and institutional, would take the heat off London and the South-East; so would a strategic regional investment programme. Policies that directly address our fracturing social fabric could reduce household break-up. The absurdity persists of housing shortage alongside housing waste – the 730,000 homes in England that stand empty, for example. And the UK, still, has nothing resembling a population policy.

We should also be clear about the equity of any solution proposed. Over four-fifths of British people are crowded together on roughly a tenth of its area. Is it heresy to suggest that this ratio should be relaxed a little? Or that people should have a right to nature? In campaigning parlance, the issue is one of environmental justice. Surely it's time to give cities, and city-dwellers, a break.

If we did that, we might be pleasantly surprised at the results. First, since much of the countryside has been badly damaged by intensive farming, it's not beyond belief that settlement could improve it environmentally – in terms, say, of wildlife value or landscape features. Second, the UK's population will eventually start to decline – around 2040 on current forecasts. This means we could design short-life developments – to be recycled back into nature

when human pressure abates. Third, whether it's the pioneering zero-impact BedZed project in south London or the 15,000 communities that form part of the international eco-villages network, an enormous fund of knowledge has been built up on how to design settlements that are green, sustainable and good to live in. Why don't we put this knowledge to use?

Development, in other words, doesn't have to be for ever and doesn't have to involve a vast and expensive infrastructure. A series of self-sufficient eco-cities – each laid out as a constellation of eco-villages and each designed to "live lightly" on the land – is a vastly different proposition from an agglomeration of heavily-serviced dormitory housing estates. Combined with experiments in building and tenure – for example, kit-built timber-framed houses on short-term leases – it could be an act of reclamation, not devastation.

Perhaps most important, it would be a critical, and long-overdue, act of reconnection. That people might experience it as such is evidenced by the much greater readiness to accept higher-density living in a rural environment (see Chapter 4). The conclusions to be drawn are somewhat counter-intuitive, however. First, that the countryside inside cities can be better than the countryside outside them. And second, that building outside cities would mean, simply, less building – anywhere. It could thus help to save *all* our countryside.

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