

In the previous chapter, we briefly considered the argument that the only obligation we have to strangers is not to harm them. For most of human existence, that view would have been easy to live by. Our ancestors lived in groups of no more than a few hundred people, and those on the other side of a river or mountain range might as well have been living in a separate world. We developed ethical principles to help us to deal with problems within our community, not to help those outside it. The harms that it was considered wrong to cause were generally clear and well defined. We developed inhibitions against, and emotional responses to, such actions, and these instinctive or emotional reactions still form the basis for much of our moral thinking.

Today, we are connected to people all over the world in ways our ancestors could not have imagined. The discovery that human activities are changing the climate of our planet has brought with it knowledge of new ways in which we can harm one another. When you drive your car, you burn fossil fuel that releases carbon dioxide into the atmosphere. You are changing the chemical composition of the atmosphere and, hence, the climate. What does this do to others?

In some parts of the world, what you are doing is already apparent. According to the World Health Organization, the warming of the planet caused an additional 140,000 deaths in 2004, as compared with the number of deaths there would have been had average global temperatures remained as they were during the period 1961 to 1990. This means that climate change is already causing, every week, as many deaths as occurred in the terrorist attacks on September 11, 2001. The immediate causes of the additional death are mostly climate-sensitive diseases such as malaria,

dengue, and diarrhoea, which is more common when there is a lack of safe water. Malnutrition resulting from crops that fail because of high temperatures or low rainfall is also responsible for many extra deaths.

Changes are also already apparent in the fertile, densely settled delta regions in Egypt, Bangladesh, India and Vietnam, which are at risk from rising sea levels. The Sunderbans, islands in the Ganges delta that are home to four million Indians, are disappearing – two islands have vanished entirely; in total, an area of land measuring thirty-one square miles has disappeared over the last thirty years. Hundreds of families have had to move to camps for displaced people. Some small Pacific nations like the Maldives, Kiribati and Tuvalu, which consist of low-lying coral atolls, are in similar danger; within a few decades, these nations may be submerged beneath the waves.

These are only the first signs of much greater change to come. In 2007, the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, the scientific body established by the United Nations Environment Program and the World Meteorological Association, found that a temperature rise, by 2080, in the range of 2.0°C to 2.4°C would put stress on water resources used by 1.2 billion people. Rising sea levels would expose, each year, an additional 16 million people to coastal flooding. If temperatures rise as much as 3.3°C over the same period, the stress on water resources would affect 2.5 to 3.2 billion people, and each year would expose an additional 29 million to coastal flooding.

What we are doing to strangers in other communities right now is, therefore, far more serious and far more widespread than the harm we would do if we were in the habit of occasionally sending out a group of warriors to rape and pillage a village or two. Yet causing imperceptible harm at a distance by the release of waste gases is a completely new form of harm, and so we lack any kind of instinctive inhibitions or emotional response against causing it. We have trouble seeing it as harm at all.

The polar bear perched on a melting chunk of ice has become an icon of the campaign against global warming, making the point that it is not only humans who will suffer from climate change. Millions of animals will die in droughts and floods. Some will be able to move as their environments change, but for others there will be nowhere to go. In some regions, for instance, alpine species will be able to move higher up mountains as temperatures increase, but in others – Australia is one example – alpine plants and animals are already clinging to the most elevated regions of the country, and there is nowhere higher to go. Global warming will cause extinctions on a vast scale.

In the previous chapter, I argued against the view that the only obligation we have to strangers is to avoid harming them; but even if we were to take that view, the facts of climate change would demonstrate clearly that we *are* harming hundreds of millions, perhaps billions, of the world's poor. It would seem, therefore, that on *any* plausible view, we have an obligation to stop harming them and to compensate them for the harm we have already caused them – harm that will continue to unfold for the next century at least, even if we cut all greenhouse gas emissions to zero today. We need international arrangements to deal with climate change, and we need a global ethic on which to base these arrangements. This chapter will discuss what this global ethic might look like and what the responsibilities of both nations and individuals are in respect of climate change.

'ENOUGH AND AS GOOD'

Imagine that we live in a village in which everyone puts their waste down a giant drain. No one quite knows what happens to the waste after it goes down the drain, but because it disappears and doesn't seem to bother anyone, no one worries about it. No matter how much we pour down the drain, others can do the same. For as long as anyone can remember, the capacity of the drain to dispose of our waste has seemed limitless. We believe that we can take what we want and still leave, in the words of the seventeenth-century English philosopher John Locke, 'enough and as good left in common for others'. This, on Locke's view, is a key factor in our being able to acquire property from natural resources. Now imagine that we start producing more waste, and suddenly we find that the drain's capacity is not limitless after all; on the contrary, it is being used to the full. At this point, when we continue to throw our wastes down the drain we are no longer leaving 'enough and as good for others', and hence our right to unchecked waste disposal becomes questionable.

Think of our atmosphere as that giant drain and our wastes as carbon dioxide, methane and other greenhouse gases. We have just discovered that the atmosphere's capacity to absorb our gases without harmful consequences is limited. The evidence shows that we are already using it beyond its capacity. Before the industrial revolution, carbon dioxide in our atmosphere amounted to only 270 parts per million (ppm). Then humans began to burn coal in large quantities, and later oil and gas. In 2010, carbon dioxide in the atmosphere reached 390 ppm. This is a higher level than at any time in recorded history, and it is still

increasing at 2 ppm each year. There is general agreement that if we cause average temperatures to increase by 2°C, dangerous, large-scale consequences, much more severe than anything we have seen so far, are probable. Until about 2008, most scientists agreed on 450 ppm as the level of carbon dioxide in our atmosphere that should not be exceeded if we are to prevent a greater increase than 2°C. On current trends, we will reach 450 ppm of carbon dioxide in the atmosphere by 2040.

Allowing levels of carbon dioxide in the atmosphere to reach 450 ppm is already taking a grave risk. In the first decade of the twenty-first century, global warming repeatedly exceeded the predictions made by earlier reports of the Intergovernmental Panel on Climate Change, and we developed a better understanding of the dangers of feedback loops in planetary warming. The melting of arctic ice is one visible example of something happening more rapidly than scientists had predicted. It also illustrates the dangers of a feedback loop. Four hundred years ago, explorers sought the legendary 'Northeast Passage' that would enable them to sail across the north of Europe and Russia to China. They found the arctic ice impenetrable and gave up their quest. In 2009, commercial vessels successfully navigated the Northeast Passage. The large area of the Arctic Ocean that is now ice-free in summer is a symptom of global warming. In addition, it is itself a cause of further warming. Ice and snow reflect the sun's rays back upwards. An ice-free ocean surface absorbs more warmth from the sun. Our greenhouse gas emissions have, by causing enough warming to melt arctic ice, created a feedback loop that will generate more warming, even if we were to stop emitting all greenhouse gases tomorrow. Other feedback loops pose even greater danger. In Siberia, vast quantities of methane, an extremely potent greenhouse gas, are locked up in what used to be called 'permafrost' – regions in which the ground was permanently frozen. Areas that used to be frozen are now thawing, and as they thaw they release the methane, contributing to further warming and to the thawing of further regions, releasing more methane.

Evidence of this kind led James Hansen, of the U.S. National Aeronautics and Space Administration, and his colleagues to conclude, in an article published in *Science* in 2008, that if we wish 'to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted,' we need to reduce carbon dioxide to 'at most 350 ppm'. That is, of course, a level that we passed some years ago. So if we think of the atmosphere as a giant drain, then the drain is already overused. We

need to cut back on our usage. How can we decide who should cut back the most?

WHAT IS AN EQUITABLE DISTRIBUTION?

Historical Responsibility

In addressing the question of justice in distribution in his book *Anarchy, State and Utopia*, the philosopher Robert Nozick made a useful distinction between ‘historical’ principles and ‘time-slice’ principles. An historical principle is one that says: to understand whether a given distribution of goods is just or unjust, we must ask how the distribution came about; we must know its history. Are the parties entitled, by an originally justifiable acquisition and a chain of legitimate transfers, to what they now have? If so, the present distribution is just. If not, rectification or compensation will be needed to produce a just distribution. In contrast, a time-slice principle just looks at the existing distribution, at this moment of time, and asks on that basis if it is just.

One historical principle, often applied in the case of pollution, is ‘You broke it, you fix it’ – also known as ‘The polluter pays’. If a chemical factory pollutes a river, then the owner of the factory is responsible for cleaning up the river. If we apply this principle to climate change, then it would assign responsibility for fixing the problem to each country in proportion to the amount that the country has contributed to causing the problem. Historical emissions of carbon dioxide are relevant, because most of the carbon dioxide emitted a century ago is still in the atmosphere today.

In discussions at the United Nations on climate change in 1997, the Brazilian government proposed that emission reduction targets should be set according to the impact of a nation’s historic emissions on temperature rise. A scientific group was set up to evaluate the proposal and indicate whether the data existed to allow conclusions to be reached on what contributions different nations or regions had made to the increase in global temperatures. This group eventually reported, in 2008, that the data was adequate for this, especially for fossil fuel emissions, although contributions due to changes in forestry and agriculture were more difficult to quantify. The group took as its period for measuring contributions from 1890 to 2000, noting that different dates would give slightly different results. It concluded that the United States is responsible for 20 percent of the temperature rise and the European nations that are

members of the Organization for Economic Cooperation and Development (OECD) are responsible for 14 percent. Somewhat surprisingly – and perhaps disconcertingly for the Brazilians – Latin America also comes out as contributing 14 percent of the temperature rise, although the study notes that this figure falls as low as 8 percent if different data for forestry and land use changes are used. On the other hand, all of East Asia, including China, has contributed only 10 percent, and South Asia, including India, only 7 percent. On the ‘You broke it, you fix it’ view, therefore, it is the United States and the long-industrialized European nations, perhaps together with Latin America, that ought to bear the largest share of the burden of solving the problem.

China has offered support for the Brazilian proposal, but with the explicit proviso that historic contributions to climate change should be considered on a per capita basis. *Carbon Equity*, a report prepared by five Chinese academic and policy-oriented think tanks for the 2009 conference on climate change in Copenhagen, argues that the fact that China has a much larger population than the United States has to be taken into account in apportioning responsibility for the greenhouse problem. The assumption here, which seems reasonable, is that each person is entitled to an equal share of the atmosphere, and we should be looking at the extent to which people in some nations have, in past centuries, used more than their share. The report calculates that over the period from 1850 to 2004, the average American has been responsible for putting twenty-one times as much carbon dioxide into the atmosphere as the average Chinese and fifty-three times as much as the average Indian. On average, Britons and Canadians are responsible for sixteen times as much carbon being in the atmosphere as Chinese and forty times as much as Indians. The principle of historical responsibility thus indicates that almost all of the sacrifices required to stop global warming should be made by the older industrialized nations.

One sometimes hears the objection that the industrial revolution has benefited the entire world, not only the industrialized nations, and hence that the emissions required for industrialization should not be regarded as only the responsibility of the industrialized nations. It’s true that the industrial revolution made possible the development of science and technology, and this has benefited and is continuing to benefit billions of people all over the world. But it also enabled the industrialized nations to colonize much of the world and, even after the era of colonization, to dominate the global trading system. This has greatly benefited those living in the industrialized nations, whereas its impact on the colonized

nations was, at best, much more mixed. So even if industrialization has been, on balance, a benefit rather than a harm for the world as a whole, it is a benefit that has accrued disproportionately to those in the industrialized nations themselves, and the emissions can fairly be seen as their responsibility.

Another objection to holding the industrialized nations responsible for all their emissions since the industrial revolution is that for most of this period they did not know that these emissions would be harmful. That's true, though as early as 1896, the distinguished scientist Svante Arrhenius predicted that burning fossil fuels would lead to a build-up of carbon dioxide in the atmosphere that would heat the planet. (He thought, however, that this would be a good thing, making the earth's climate 'more equable' and stimulating food production. Perhaps that benign view of global warming had something to do with his location in Sweden.) Human-induced global warming was not seriously studied until the 1970s, however, and climate change only became an issue of international concern in the 1980s. At U.S. congressional hearings in 1987 – at the time the hottest year on record, but now already not even one of the ten hottest years – James Hansen warned of the dangers of global warming. Other scientists supported him. The following year, the Intergovernmental Panel on Climate Change was set up, and two years later that body reported that the threat of climate change was real, and a global treaty was needed to deal with it. The United Nations Framework Convention on Climate Change was agreed to at the "Earth Summit" held in Rio de Janeiro in 1992. This convention, accepted by 181 governments, including all the major industrialized nations, calls for greenhouse gases to be stabilized 'at a low enough level to prevent dangerous anthropogenic interference with the climate system'. The nations of the world have not done what they said they would do. Instead, their greenhouse gas emissions continued to grow. (The Kyoto Protocol, agreed to by most industrialized nations in 1997, was an attempt to get action from the industrialized nations that would fulfil the pledges made at the Rio Earth Summit five years earlier. The United States, then the world's largest emitter of greenhouse gases, and one with a particularly high per capita level of emissions, did not ratify it.)

Though not legally binding, the Rio de Janeiro commitment demonstrates that in 1992 the developed nations were aware of the need for action. The study of the Brazilian proposal to consider historical contributions, referred to previously, also examined what the outcome would be if the starting date for historical responsibility were not 1890 but

1990 – a date by which there could be no claim of ignorance about the fact that greenhouse gas emissions posed a risk of bringing about dangerous climate change. Although this much more recent starting date did of course reduce the contributions of the older industrialized nations, the difference was smaller than might be expected. The contribution of the United States declined from 20 percent to 16 percent, and that of the European OECD nations fell from 14 percent to 11 percent. China's contribution increased to around 13 percent, but India's remained near 5 percent; Africa's contributions remain extremely small whatever dateline is used. The per capita contributions of the industrialized nations remain lopsidedly greater, because of course the population of the United States is only about one quarter that of China. Thus, even if we accept the argument that the 'You broke it, you fix it' rule applies only from the time when the biggest emitters knew that their emissions were risking dangerous anthropogenic climate change, it would still be the case that the United States and the industrialized nations of Europe ought to be doing much more than any other nations to solve the problem.

Equal Shares

At a 2009 United Nations Summit meeting on climate change, the president of Rwanda, Paul Kagame, pointed out that climate change will probably have a more severe impact on Africa than on any other part of the world – and yet Africa has fewer resources to draw on to meet this challenge. Many models of the changes that global warming is likely to bring show that precipitation will decrease nearer the equator and increase nearer the poles. The rainfall on which hundreds of millions rely to grow their food will become less reliable. Moreover, the poor nations depend on agriculture far more than the rich. In the United States, agriculture represents only 4 percent of the economy; in Malawi it is 40 percent, and 90 percent of Malawians are subsistence farmers, virtually all of them dependent on rainfall. Similar patterns of dependence on farming and rainfall are common across Africa.

It is also obviously true that the poorer nations lack the resources to adapt. In southern Australia, when several states were faced with a long-term trend of declining rainfall, governments built costly desalination plants to ensure that major cities will not run out of water. In the Netherlands, the government has raised dykes to keep out rising sea levels and is designing amphibious houses that can rise and float, while remaining securely moored, if rivers flood. Other countries cannot afford such

expensive ways of providing water and controlling flooding from rising sea levels.

President Kagame went on to point out that climate change is only 'very marginally, if at all, a problem of Africa's making'. We have seen that he was right about this too. Nevertheless, he offered to wipe the slate clean and forget about the responsibility of the industrialized nations for causing the problem. Because we are all facing a struggle for survival, he said, he did not want 'a new round of blame game' which would not only be in poor taste but also counterproductive. Instead, he proposed that every human being is entitled to an equal share of the atmosphere. At the same United Nations meeting, Sri Lanka made a similar proposal.

'Equal shares' has the great merit of simplicity. It is a time-slice principle – it takes no account of the past and gives everyone an equal share of the atmosphere from now on. Like other developing nations, Rwanda and Sri Lanka are using far less than their equal per capita share, and so even if they give up their right to make a claim against the industrialized nations on the basis of historical responsibility, they will still do well on an equal shares basis.

What would equal shares mean in practice? Suppose that we aim to stabilize greenhouse gas emissions at a level that will prevent us exceeding 450 ppm carbon dioxide. It is controversial how much carbon we could emit per person while remaining below that level, but one plausible figure is two tons of carbon dioxide per person per year. (Emissions are sometimes expressed in terms of carbon rather than carbon dioxide. One ton of carbon is equivalent to 3.7 tons of carbon dioxide, so two tons of carbon dioxide is not much more than half a ton of carbon. We should also remember that the figure for 'carbon dioxide' really means 'carbon dioxide equivalent' for it includes other greenhouse gases such as methane, converted at a rate that takes into account their potency to heat up the planet.) Now compare actual per capita emissions for some key nations with this estimate of two tons of carbon dioxide per person that could be emitted each year. In 2010, the United States, Canada and Australia all produced about twenty tons of carbon dioxide per person per year, while Germany produced eleven tons, China about four, India not much more than one ton, and Sri Lanka only about two-thirds of a ton. This means that Sri Lanka could triple its emissions and India could almost double its emissions while still remaining within their per capita shares. China would need to halve its current emissions, Germany would have to reduce them by more than 80 percent, and most dramatically of

all, the United States, Canada and Australia would have to reduce their emissions to only one-tenth of present levels.

It is, of course, not possible for industrialized nations like Germany and the United States to make such dramatic reductions in the short term, or at least not without devastating economic consequences that would be likely, in a democracy, to lead to a change of government and a reversal of the policy. Before we conclude that this makes the principle of equal per capita shares an unrealistic idea, however, there are two mitigating factors to consider. The first is that making greenhouse gas emission quotas tradeable would ease the transition to a low-emissions economy. Emissions trading works on the simple economic principle that if you can buy something more cheaply than you can produce it yourself, you are better off buying it than producing it. In this case, what you buy will be a transferable quota to produce greenhouse gases, allocated on the basis of an equal per capita share. International carbon trading means that cuts in carbon emissions will be made at the lowest possible cost, thus doing the least possible damage to the global economy. Moreover, a carbon trading scheme gives countries with few greenhouse gas emissions – generally, poor countries – an incentive to keep their emissions low, so that they have more emissions quota to sell to rich countries that are over their quota. Thus, an international emissions trading scheme could contribute towards solving the problem of poverty discussed in the previous chapter. It would involve the transfer of resources from rich nations to poor ones – not as altruism, but as payment for a valuable commodity.

There are, however, some serious objections to an international carbon trading scheme. One is whether such a scheme would be verifiable – that is, whether the emissions of each nation could be properly checked against the nation's quota – and what would happen if it were not. Without a reliable means of verifying emissions cuts, nothing will be achieved. Secondly, payments from rich nations to poor nations will only reduce poverty if the governments to which they are paid use them for that purpose. In the case of governments that refused to do so – which, as we saw in the previous chapter, often happens when dictatorial or corrupt governments earn royalties from the sale of oil and minerals – it would be better for the payments to be held in trust until a government emerges that can demonstrate that it will use the funds for the benefit of its people as a whole.

The third objection to an international emissions trading scheme is one that James Hansen has made to any 'cap and trade' system – that is, any system that sets an overall cap on emissions, divides them up

into emission permits for nations or corporations or individuals, and then allows these permits to be traded. Hansen points out that such schemes have a perverse effect on altruistic actions. If I decide to cut my greenhouse gas emissions by buying a fuel-efficient hybrid car, this does not reduce the emissions total for my country. The cap determines the total, and if some people reduce their emissions, this will make the price of emission permits fall. Thus, fossil fuels will be cheaper than they would have been if some people had not altruistically decided to reduce their emissions, and others who are not altruistic will no doubt decide to buy a bigger car, or use more energy, because of the price fall. Hansen therefore prefers a tax on the carbon content of fossil fuels, with the proceeds divided equally between all of a country's legal residents – he calls it a 'fee and dividend' scheme. This would reward those who reduce their carbon footprint, and doing so would reduce the overall emissions total. In response, the economist Paul Krugman acknowledges that a cap and trade system does reduce the opportunities for climate altruism, but he denies that altruism is going to enable us to cut emissions to the extent we need. He also points out that allowing permits to be traded uses the mechanism of the market to ensure that emissions are reduced at the lowest possible cost – why reduce emissions at a high cost if someone else can reduce them for much less and still profit by selling their permits to you? Thus, in Krugman's view and in the view of most economists, a carbon fee or tax is less efficient than a cap and trade system.

This discussion of the advantages and disadvantages of a carbon trading scheme is, however, a digression from our discussion of whether it is possible for developed nations to reduce their emissions to the extent needed to avoid catastrophe. A carbon trading scheme was one factor that may make this task a little more possible than it at first seems. A second factor is that the cuts do not need to be made all at once. The German Advisory Council on Global Change, a scientific body that advises the German government, has suggested that the total amount of permissible emissions of carbon dioxide should not be calculated for a single year, but rather should be set for the entire period between now and 2050 and designed to make it likely that global temperatures do not rise more than 2°C. For this purpose, the council suggested a maximum of 750 billion tons of carbon dioxide to be emitted between 2010 and 2050 (although even with this amount, the council warned that there would be no more than a two-thirds probability that the temperature rise could be kept below 2°C). This total, the council proposed, should be divided between countries on the basis of equal per capita shares. Countries could

then produce their own 'road maps' showing how they would reduce their carbon dioxide emissions so as not to exceed their carbon budgets before 2050.

Although the German proposal gives industrialized countries time to make changes, for those countries with the highest current per capita emissions outputs, the time is very short. About sixty countries, mostly industrialized nations, will, at current rates, use up their budget in less than twenty years. Germany, for example, if it continued to emit at the same rate as it did in 2008, would use up its emissions budget in just ten years, requiring it to have zero emissions for the next thirty years. (It is therefore commendable that Angela Merkel, the German chancellor, has accepted the equal shares principle, saying: '... our long-term measure can only be that per capita CO₂ emissions in the world must be equalized.') The United States, Australia and Canada are currently on track to use up their budgets in just six years. Another group of thirty countries, which includes China, Mexico and Thailand, will, at current rates, use up their budgets in twenty to forty years. The remaining ninety-five countries do not need to reduce their emissions, as at current rates their budgets will last at least forty years. Brazil is in this group. So too is India, which would take eighty-eight years to exhaust its budget at current levels. Some of the poorest nations emit so little carbon that at current rates it would take them several centuries to use up their budget. At the extreme end of this spectrum, the small African nation of Burkina Faso would take 2,892 years to use up its budget – which means that under an international cap and trade scheme, it would be able to sell a large amount of its quota to those nations that will have the most difficulty in meeting their targets.

Apart from the question of whether the rich nations could realistically comply with the equal per capita share approach, another objection to this approach is that if a country's population grows, then that country gets a larger allocation; while everyone else's allocation diminishes because the total permissible emissions level must remain constant. Thus, a country with a rapidly growing population is imposing a burden on other countries, forcing them to reduce their emissions still further. It would be better to have a system that gives countries an incentive to slow population growth. We could do this by setting national allocations that are tied to today's population rather than letting them rise with an increase in population. Because different countries have different proportions of young people about to reach reproductive age, however, this provision would produce greater hardship in countries with younger populations than in those with older populations. That problem could be

avoided if national allocations were based on an estimate of a country's population at some future date. The Population Division of the United Nations Department of Economic and Social Affairs publishes predictions of the population that each nation will reach in 2050. Using this figure as the basis for the per capita allocation would encourage countries to aim to remain below their projected population, for any country that could achieve this would have a larger per person allocation than that to which its actual population would entitle it. Conversely, a country would have a reduced emission quota per actual resident if its population growth exceeded the UN population forecast.

Luxury versus Subsistence

In *A Theory of Justice*, perhaps the most influential work on justice published in the twentieth century, John Rawls argued that if devoting more resources to those who are worse off will improve their situation, then that is what justice requires us to do. In the 1992 United Nations Framework Convention on Climate Change, the importance of favouring those who are worse off was recognized by a provision stating that the countries signing the convention 'have a right to, and should, promote sustainable development'. This accepts the importance of development for poor countries, but the right to development is constrained by the need for development to be sustainable. The countries of the world therefore have, in the wording of the convention, 'common but differentiated responsibilities'.

In 1993, the philosopher Henry Shue argued that a just allocation of quotas to emit greenhouse gases would distinguish between 'subsistence emissions' and 'luxury emissions' so that methane from rice paddies in poor countries would not rank equally with emissions from large vehicles used for recreational driving in the rich nations. At a United Nations General Assembly debate on climate change in 2007, a diplomat representing China used the same language, saying that 'emissions of subsistence' and 'development emissions' of poor countries should be accommodated by any future agreements, whereas the 'luxury emissions' of rich countries should be restricted. Whether one chooses an egalitarian, Rawlsian, or utilitarian principle of justice, that is difficult to deny.

Drawing a distinction between subsistence and luxury emissions shows convincingly that Burkina Faso is under no obligation to restrict emissions that are helpful for its development – but then, as we have seen, that is also apparent from an application of the principle of equal per capita

shares. The distinction between subsistence emissions and luxury emissions is of only limited use to China, however, because there are already more Chinese living an affluent lifestyle, and therefore responsible for a high level of emissions, than there are, say, Germans. Admittedly, almost all Germans are responsible for a high level of emissions, whereas only a small proportion of Chinese are, but if China is calling on rich countries to restrict their 'luxury emissions', it can scarcely ignore the luxury emissions coming from its own elite.

A FORM OF AGGRESSION?

All of the three principles we have discussed have something to be said for them, and the choice between them is difficult. We could try to combine them, modifying the basic idea of equal per capita shares by giving some weight to historical contributions and some to a country's need to develop and provide the means for all its citizens to reach a minimum standard of living. Without going into the complexities of such possible combinations, it is clear that on any of these principles, or on any combination of them, the rich nations cannot justify their continued high output of greenhouse gases. It is impossible to think of a plausible ethical principle by which they could justify it. We can therefore conclude that they are doing something wrong.

What exactly is the nature of the wrongdoing? At an African Union summit in 2007, President Yoweri Museveni of Uganda told the nations of Europe and North America: 'You are causing aggression to us by causing global warming . . . Alaska will probably become good for agriculture, Siberia will probably become good for agriculture, but where does that leave Africa?' We have already seen that the facts to which Museveni refers are basically accurate. Nevertheless, his use of the term 'aggression' shocks us. Can he be right?

When we think of 'aggression', we imagine troops moving across a border, or planes bombing enemy positions. In emitting high levels of greenhouse gases, the rich nations are not deliberately attacking another country, but their actions may be even more devastating than conventional forms of aggressive war. Because of what the rich nations are doing, lands that now grow crops will become barren, glaciers that for millennia have fed rivers will dwindle, the sea will take over fertile fields, tropical diseases will spread, and people will starve or become refugees. For at least the past twenty years, the rich countries have known that their actions risk causing these effects; and from some time in the first decade

of the twenty-first century, they have known that their actions very probably will have these effects. The fact that these harms are an unwanted but unavoidable side effect of pursuing otherwise innocuous goals, like giving people the kind of lifestyle they desire, is no justification for causing such harms. According to the doctrine of double effect, knowingly causing harm can be justified if the harm is not intended, the goal is sufficiently important to outweigh the harm caused, and there is no other way of achieving the goal without causing at least as great a harm. In the case of global warming, however, the reverse is the case: the harm caused far outweighs the good obtained. President George W. Bush admitted as much early in his presidency when, asked if he would do something about global warming, he said: 'We will not do anything that harms our economy, because first things first are the people who live in America.' Shortly afterwards Ari Fleischer, his spokesperson, was asked at a press briefing whether the president would call on drivers to sharply reduce their fuel consumption, Fleischer replied: 'That's a big no. The President believes that it's an American way of life, and that it should be the goal of policymakers to protect the American way of life.' Such remarks suggest that the United States was bringing life-threatening harm to hundreds of millions of people because its leader put a higher priority on preserving its citizens' economic interests, and their rights to burn as much fuel as they wish, than on the survival of people outside the United States. Though George W. Bush is no longer in power, unless the United States drastically changes course on emissions, that will remain true. One could say the same about other developed nations, even if their leaders are more guarded in their comments.

What we are doing to the people most at risk from global warming, therefore, is similar in its impact to waging aggressive war on them. It differs in its motivation, but that will be little consolation to them. Moreover, because we know what we are doing and yet do not stop doing it, we cannot shirk responsibility for it. We are culpable for the harm we are doing to them.

WHAT OUGHT INDIVIDUALS TO DO?

The next question to ask is: what obligation does this place on us as individual citizens of the culpable nations? When we looked at our individual responsibilities as affluent individuals in a world with a billion people living in extreme poverty, the answer was clear. We may well try to change the behaviour of our government, urging it to increase its aid

to the world's poor and to make that aid as effective as possible, but we also can and should act on our own, even if – or especially if – the government does not live up to its obligations. As long as we can, by giving to aid agencies, stop something very bad from happening without sacrificing anything of comparable moral significance ourselves, then giving to those agencies is what we ought to do. That does seem to be the situation: a given donation can have a significant, discernible impact – not on the problem of poverty as a whole, but on a child and the child's family. Can we say the same about climate change?

At first glance it seems that we can. Suppose that, like the average American, I am personally responsible for emitting the equivalent of twenty tons of carbon dioxide every year. I use air-conditioning to keep my house cool in summer, with the electricity coming largely from coal-fired power stations, and I use oil to heat it in winter. My diet is heavy in beef and dairy products, I drive a car, and I fly to Florida for my winter vacation. Then I become concerned about climate change, so I switch to eating mostly plant-based foods, improve my home insulation, install solar hot water, heating and electricity generation, ride my bike or the train instead of driving, and take vacations closer to home. Amazingly, I manage to cut my greenhouse gas emissions to two tons a year. Will the change in my lifestyle have a significant, discernible impact on anyone? It surely won't have an impact that anyone can detect. Even if we assume that the result of my actions is that eighteen fewer tons of carbon dioxide go into the atmosphere each year, that is too small a quantity to have any discernible effect on anyone. That's not to say that it won't have any effect at all, but rather that we cannot know what effect – if any – it has.

We often find ourselves faced with actions that seem to be wrong, even though it isn't obvious that they will have bad consequences. A favourite example of philosophers is taking a short cut across a beautiful lawn. Assume that all of us would save a few seconds by taking the short cut, but none of us want to see the lawn damaged. Still, what difference will it make if *I* take the short cut, just this once? The grass will not show any perceptible damage from one person walking on it. To this the usual reply is: 'What if everyone did that?' If everyone did it, of course, an unsightly muddy path would form, and none of us want to see that. The suggestion is that, because it would be bad if everyone were to do it, it must be wrong for me to do it.

'What if everyone did that?' isn't always a good objection to an action. 'What if everyone became a philosopher? We would all starve!' is not a good reason against becoming a philosopher, as long as we know that

there is no chance that everyone *will* become a philosopher. Even where sufficient others might want to do what I am doing to bring about the bad consequence – as in the lawn-crossing example – it isn't clear that 'What if everyone did that?' really shows that an action is wrong. Is it wrong for me to cross the lawn because I might set a bad example to others, and thus increase the chances that everyone will do it? What if it is late at night and no one else is around? Is it wrong because my imprint on the grass will make a causal contribution, even if only a small one, to the grass wearing out? Suppose that I have studied the amount of traffic this lawn can bear, and I find that it can withstand ten people walking across it per day without showing any signs of wear at all. I also know that no more than six people do walk across it each day. So as long as I only do it when fewer than ten people are crossing it each day, and I do it when no one else is looking, and so do not influence others to cross it, my stroll over the lawn will have no harmful consequences at all. Am I still wrong to do it because it would be bad if everyone did it?

Here consequentialists and non-consequentialists differ. An act-utilitarian who judges every act in accordance with its consequences would say that if you could really be sure that walking across the grass would have no harmful consequences at all, it would not be wrong to do it. A rule-utilitarian could say that because the best rule for everyone to observe in these circumstances would be 'Do not cross the lawn', it would be wrong for me to cross it, even if my crossing would have no bad consequences. A Kantian, too, could reject lawn crossing because Kant said that if I cannot will the maxim of my action to be a universal law, then it must be wrong. The difficult question for the rule-utilitarians and Kantians, however, is how to formulate the rule or maxim that must be universalized. It is true that 'Cross the lawn whenever it is convenient to you to do so' would, if widely observed, damage the lawn; and because I value the unspoiled lawn, I could not will it to be a universal law. What about 'Cross the lawn whenever crossing it will not set a bad example and will not damage the grass'? If we are allowed to make our rules or maxims as specific as that, then, as David Lyons showed in his book *Forms and Limits of Utilitarianism*, rule-utilitarianism becomes indistinguishable from act-utilitarianism – that is, rule-utilitarians will approve of just those actions of which an act-utilitarian would approve, and they will disapprove of those of which an act-utilitarian would disapprove. R. M. Hare made a similar claim in respect of Kant's appeal to the idea of universal law, arguing that this principle leads utilitarianism.

In *Ideal Code, Real World*, Brad Hooker argues for a version of rule-utilitarianism that provides a barrier against making rules too complicated. He holds that we act wrongly if we act contrary to a rule that would be part of the set of rules that, if internalized by the overwhelming majority of people, would have the best consequences. If we make rules too specific, people will find them too difficult to internalize, or act on, and the costs of educating people to act on the rules will be too high. Because, on Hooker's view, the code must be publicly known and promoted, it is hard to imagine that a rule like 'Cross the lawn only when you can do it in secret' could be part of the best moral code, for then everyone would know that 'secret' lawn crossings were permitted, and too many people would cross the lawn.

Christopher Kutz examines these issues in his book *Complicity: Ethics and Law for a Collective Age*, and suggests what he calls the Complicity Principle:

I am accountable for what others do when I intentionally participate in the wrong they do or the harm they cause.

This principle is not consequentialist, Kutz says, because it makes me accountable independently of the actual difference I make. As an example of complicity, he considers the emission of chlorofluorocarbons, or CFCs, the gases that damage the ozone layer and enlarge the ozone hole, causing an increase in the rate of skin cancer in many parts of the world. Although in many respects the ozone hole problem was similar to the problem of climate change – individual emissions from many nations were damaging the atmosphere, to the detriment of all – the ozone was being damaged by a much more specific and economically less significant class of gases, used largely in refrigerators and some air-conditioners. International agreement on stopping the use of the gases was therefore far easier to obtain and was achieved by the 1987 Montreal Protocol, which granted developing countries a longer period than the industrialized nations to phase out their use of CFCs. Kutz focuses on an individual driver who uses a CFC-based coolant in his car's air-conditioning. Is he doing anything wrong? Kutz says that although there is no clear victim of the driver's use of CFCs, 'individuals must think of themselves as inclusively accountable for what they do together'. If collectively we cause harm, then – even though we do not deliberately set out to do something together, and the contribution of a single individual may make no difference to the harm done – each one of us is complicit in causing the harm and accountable for it.

It isn't clear, however, that we need a special non-consequentialist complicity principle of the kind that Kutz proposes. Neither the ozone damage nor global warming is like the case of a lawn that could withstand the tread of a few more people without any damage. By the time the dangers of CFCs and of greenhouse gases were known, the threshold for damage had already been crossed. Our emissions of CFCs were, and our emissions of greenhouse gases still are, making the situation worse – and of course the damage is much more serious than ruining a lawn. This suggests that we do not need to depart from consequentialism to show what is wrong with emitting harmful gases into the atmosphere. In *Reasons and Persons*, Derek Parfit points out that we tend to think that we can only be harming others in a serious way if there is someone who has a ground for a serious complaint. That may be a relic of the conditions of our earlier existence when, as mentioned at the beginning of this chapter, if we harmed someone, it was usually obvious that we had done so, and nothing we did was likely to affect a very large number of people. Now our actions can affect millions – perhaps billions. This means that we can inflict harm that is so broadly dispersed that no one individual can plausibly claim to have been seriously affected by it.

Jonathan Glover offers a vivid illustration of how ignoring imperceptible harms can lead us astray. Glover imagines that in a poor village, 100 people are about to eat lunch. Each has a bowl containing 100 beans. Suddenly, 100 hungry bandits swoop down on the village. Each bandit takes the contents of the bowl of one villager, eats it, and gallops off. Next week, the bandits plan to do it again, but one of them is afflicted by qualms about causing poor peasants to go hungry. These doubts are set to rest by another bandit who proposes that each of them should take no more than one bean from any villager's bowl. Because the loss of one bean cannot make a perceptible difference to any villager – you don't really notice if you are eating 99 or 100 beans – no bandit will have made anyone worse off. So the bandits swoop down on the village, but instead of just grabbing a whole bowl from a villager, each bandit goes to all 100 villagers, taking just one solitary bean from each bowl. The villagers are just as hungry as they were the previous week, but the bandits can all sleep well on their full stomachs, knowing that none of them has harmed anyone.

Glover's example shows the absurdity of disregarding tiny harms. Even if each of us makes no perceptible difference, we are each responsible for a share of the total harms we collectively cause. If, acting together with a billion other affluent people, we each emit twenty tons of carbon dioxide,

each of us makes only an imperceptible difference to the climate and so inflicts only an imperceptible harm on anyone. Yet we are still, collectively, inflicting a very great harm on a very large number of people, and we must bear our share of responsibility for that. We can, following Kutz, see the wrongness of what we are doing in terms of a non-consequentialist principle of complicity, but we can also see it, at least in this kind of case, as consistent with a strict application of consequentialism.

Up to this point, we have been assuming that my change of lifestyle, and that of many others acting on a similarly voluntary basis, will over time result in less carbon dioxide in the atmosphere than there would have been if we had not reduced our emissions. That seems obvious, but as we saw earlier, James Hansen has pointed out that if the government adopts a cap and trade scheme for reducing carbon emissions, individual reductions in carbon emissions may have no effect on reducing emissions. Suppose my government commits itself to reduce greenhouse gases by, say, 50 percent by 2050. In order to achieve this, it calculates how much carbon can be emitted each year and auctions permits, which major emitters need to buy in order to continue to run their power stations or factories. If more people install solar panels, and fewer coal-fired power stations are required, power companies will not need to buy so many permits; or if they have already bought them, they will have surplus permits to sell to whoever needs them. The price of permits will fall and with it the cost of carbon-intensive products. Consumers who care more about saving money than about doing what is right will buy more of these products, and, if the emissions trading scheme is well-designed and implemented, emissions will still equal the target the government has set. The savings in emissions caused by my change of lifestyle will not have resulted in fewer emissions overall.

Could there still be benefits in voluntary lifestyle changes that reduce emissions, even under a cap and trade scheme? People who consume less demonstrate that we can live more lightly on the planet. If the target set by the government for cutting greenhouse gas is easily met, that could persuade the government to make its next target more ambitious. When people change their lifestyles, they are expressing their values and encouraging others to reconsider their values as well. That could lead to greater concern for the environment and for all who share the planet with us. Changes in consumption could also reduce the profits of carbon-intensive industries and thus diminish their lobbying power with the government. This might be particularly important with an industry that has a lot of political muscle, such as the beef industry. Cattle and sheep

emit high levels of methane, and hence the livestock industry is a major contributor to climate change – in fact, worldwide, livestock contributes more to global warming than all forms of transport combined. Because of this, in 2010 the UN's Food and Agriculture Organization proposed a tax on livestock. Nevertheless, in many countries livestock producers are lobbying to be exempted from carbon trading schemes, and in some countries, at the time of writing, these lobbying efforts appear to be having considerable success. If they do succeed, a voluntary boycott of products from cattle and sheep would be the only way to reduce the large quantity of emissions these industries cause.

For non-consequentialists, the complicity principle is relevant here. If the government's emissions trading scheme does not cut greenhouse gas emissions to a point at which there is no further danger of serious damage to the planet's climate – and at the time of writing, no country has implemented a scheme that will cut greenhouse gases sufficiently to eliminate such risks – then to continue to emit greenhouse gases, even at a level consistent with the government's scheme, is still to participate in a wrongful practice that will harm others. A non-consequentialist could therefore hold that our intentional participation in this practice is wrong, even if cutting one's own emissions to zero would have no impact on the total amount of greenhouse gases put into the atmosphere. This is a kind of 'I'm keeping my hands clean, anyway, even if it makes no difference' approach that is difficult to justify on direct consequentialist grounds, but some successful movements for change have their origins in the actions of those who resist evil without really giving themselves any chance of making a difference. A resolutely non-consequentialist stance can have good consequences. Perhaps our sense that it is objectionable to be complicit in a harmful practice, even if our own actions make no difference, has arisen because it will sometimes have best consequences if people act as if they were non-consequentialists.

One thing on which everyone can agree is that in addition to being responsible for the wrong we do, either individually or collectively, through our emissions, we have an obligation to try to change the policy of our government in whatever way will best slow the rate of climate change. As we have seen, in failing to cut their greenhouse gas emissions, the rich nations are culpably causing harm to others on a vast scale. There is room for diverse opinions on the best method of cutting emissions. It might involve adopting a carbon trading scheme, or a carbon tax, so that everyone has a strong financial incentive for avoiding products that required the emission of greenhouse gases. By putting a price on

carbon emissions – which ideally would mean, including in the price of activities that emit carbon the full cost these activities impose on third parties who are harmed by climate change – we create an incentive for finding new ways to discover cost-effective, low-emission forms of energy that will replace the use of fossil fuels simply because they are cheaper. We can also urge governments to fund research and development in such forms of energy. Note, however, that even if we did find a replacement for fossil fuels, that would still leave untouched the problem of methane emissions from cattle and sheep, so these emissions also need to be taxed or brought within the scope of a carbon trading scheme.

Given the gravity of the risks that our planet and its entire population face from climate change over the next century, the level of protest against inaction has, to date, been quite small. There is an urgent need for greater understanding about what is likely to happen if we do not start cutting, deeply and rapidly, our greenhouse gas emissions. In this situation, we should not be passive spectators.

On the actions of the Salwen family, see Kevin and Hannah Salwen, *The Power of Half: One Family's Decision to Stop Taking and Start Giving Back* (New York, 2010). On Zell Kravinsky, see Ian Parker, "The Gift", *The New Yorker*, August 2, 2004. Susan Wolf's article "Moral Saints" appeared in *Journal of Philosophy*, 79 (1982), pp. 419–39. For a discussion of whether a position like that defended here sets too high a standard, see the "Symposium on Impartiality and Ethical Theory", *Ethics* 101:4 (July 1991). For a forceful defence of impartialist ethics against this objection, see S. Kagan, *The Limits of Morality* (Oxford, Clarendon Press, 1989). See also Peter Singer, *The Life You Can Save*, chap. 9–10.

CHAPTER 9: CLIMATE CHANGE

The basic documents for assessing climate change are the Assessment Reports of the Intergovernmental Panel on Climate Change. At the time of writing, the most recent of these documents is the *Fourth Assessment Report*, released in 2007. The reports are available at www.ipcc.ch. Tim Flannery's *The Weather Makers* (New York, 2001) is a fine broad introduction to the topic, as is the same author's briefer *Now or Never* (New York, 2009). The literature on ethical aspects of climate change includes: Stephen Gardiner, *A Perfect Moral Storm* (Oxford, 2011); James Garvey, *The Ethics of Climate Change*, (New York, 2008); and Jeremy Moss (ed.), *Climate Change and Social Justice* (Melbourne, 2009). A useful collection is: Stephen Gardiner, Simon Caney, Dale Jamieson and Henry Shue, eds., *Climate Ethics* (New York, 2010).

The figure on the number of deaths already caused by global warming comes from World Health Organization, *The Global Burden of Disease*, 2004, Annex, p.8, http://www.who.int/healthinfo/global_burden_disease/GlobalHealthRisks_report_annex.pdf.

On the disappearance of the Sunderbans: Somini Sengupta, "Sea's Rise in India Buries Islands and a Way of Life", *New York Times*, 11 April 2007. The predictions regarding the likely future impact of climate change are drawn from the Intergovernmental Panel on Climate Change (IPCC), "Summary for Policymakers", in IPCC, *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge, 2007 and online at www.ipcc.ch), pp. 1–22. For the Brazilian proposal, see:

http://unfccc.int/methods_and_science/other_methodological_issues/items/1038.php For figures on historical responsibility for climate

change, see: Niklas Höhne et al., *Summary report of the ad hoc group for the modeling and assessment of contributions to climate change (MATCH)*, November 2008, http://unfccc.int/files/methods_and_science/other_methodological_issues/application/pdf/match_summary_report.pdf; see also Michel den Elzen et al., "Analysing countries' contribution to climate change: scientific and policy-related choices", *Environmental Science & Policy*, 8 (2005), pp. 614–636. The Chinese document referred to in the text is: Chinese Academy of Sciences, Chinese Academy of Social Sciences, Development Research Center of the State Council, National Climate Center, Tsinghua University, *Carbon Equity: Perspective from Chinese Academic Community*, December 10, 2009.

The United Nations Framework Convention on Climate Change can be found at <http://www.unfccc.int/resource/conv/conv.html>.

The suggestion that we should not exceed 350 ppm of CO₂ in the atmosphere was made in James Hansen, et al., "Target Atmospheric CO₂: Where Should Humanity Aim?" *Open Atmosphere Science Journal*, 2 (2008), pp. 217–31. Hansen argues against a cap and trade scheme in his "Cap and Fade," *The New York Times*, December 7, 2009; Paul Krugman responds in his "Building a Green Economy," *New York Times Sunday Magazine*, April 5, 2010.

For the approach taken by the German Advisory Council on Global Change, see WBGU, *Solving the Climate Dilemma: The Budget Approach* (Berlin, 2009). available at http://www.wbgu.de/wbgu_sn2009_en.html. The quote from Angela Merkel is from her speech at the symposium "Global Sustainability" given in Potsdam, October 9, 2007, available in German as 'Rede von Bundeskanzlerin Dr. Angela Merkel beim Symposium "Global Sustainability" am 9. Oktober 2007 in Potsdam,' Bundesregierung, *Bulletin* 104-1 10.10.2007, http://www.bundesregierung.de/nn_1514/Content/DE/Bulletin/2007/10/104-1-bk-klima.html. For Henry Shue's distinction, see his "Subsistence Emissions and Luxury Emissions", *Law and Policy*, 15 (1993), pp. 39–59. For China's defence of something like this view in 2007, see Xinhua news agency, "China urges accommodation to 'emissions of subsistence'" *China Daily*, 2007-08-02.

President Museveni's remarks are from his speech at the African Union summit, Addis Ababa, Ethiopia, February 2007, as reported in Andrew Revkin, "Poor Nations to Bear Brunt as World Warms", *New York Times*, 1 April 2007.

The UN Food and Agriculture Organization's proposal for a tax on meat was included in its report, *Livestock in the Balance: The State of Food and Agriculture*, 2009 (Rome, 2010), p. 74.

The quotation from President George W. Bush is reported in Edmund Andrews, “Bush Angers Europe by Eroding Pact on Warming”, *New York Times* April 1, 2001, and that from his spokesperson, Ari Fleisher, is from the White House press briefing of May 7, 2001.

On issues about individual responsibility for actions to which we contribute, the following are relevant: David Lyons, *Forms and Limits of Utilitarianism* (Oxford, 1965); R. M. Hare, “Could Kant have been a Utilitarian?” *Utilitas*, 5 (1993), pp. 1–16; Brad Hooker, *Ideal Code, Real World* (Oxford, 2000); David Schwartz, *Consuming Choices* (Lanham, Md, 2010); Derek Parfit, *Reasons and Persons*, (Oxford, 1984), chap.3; Christopher Kutz, *Complicity: Ethics and Law for a Collective Age*, (Cambridge, 2000); and Jonathan Glover, “It makes no difference whether or not I do it”, *Proceedings of the Aristotelian Society*, Supplementary Volume XLIX (1975).

CHAPTER 10: THE ENVIRONMENT

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For details on the alternative Christian thinkers, see Keith Thomas, *Man and the Natural World* (Allen Lane, London, 1983), pp. 246–7, and Attfield, *The Ethics of Environmental Concern* (London, 1929), pp. 246–7.

The quotations from Bill McKibben’s *The End of Nature* (New York, 1989) are from pp. 58 and 60. See also the same author’s *Eaarth*, (New York, 2010).

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Campion, (2nd edition, London, 1929). The quotation is from pp. 246–7. The quotations from Paul Taylor’s *Respect for Nature*, (Princeton, 1986) are from pp. 45 and 128. For a critique of Taylor, see Gerald Paske, “The Life Principle: a (metaethical) rejection”, *Journal of Applied Philosophy*, 6 (1989).

Holmes Rolston’s objection to what I wrote in the 2nd edition of this book can be found in his “Respect for Life: Counting what Singer Finds of no Account”, in Dale Jamieson (ed.), *Singer and Critics* (Oxford, 1999), pp. 247–68; see also my response in the same volume.

A. Leopold’s proposal for a ‘land ethic’ can be found in his *A Sand County Almanac, with Essays on Conservation from Round River* (New York, 1970; first published 1949, 1953); the passages quoted are from pp. 238 and 262. The classic text for the distinction between shallow and deep ecology is Arne Naess, “The Shallow and the Deep, Long-Range Ecology Movement”, *Inquiry*, 16 (1973), pp. 95–100. For other works on deep ecology, see, for example: Arne Naess and George Sessions, “Basic Principles of Deep Ecology”, *Ecophilosophy*, 6 (1984); W. Devall and G. Sessions, *Deep Ecology: Living As If Nature Mattered* (Salt Lake City, 1985) (The passage quoted in the “Deep ecology” section of Chapter 10 is from p. 67); Lawrence Johnson, *A Morally Deep World* (Cambridge, 1990); Freya Mathews, *The Ecological Self* (London, 1991); Val Plumwood, “Ecofeminism: an Overview and Discussion of Positions and Arguments: Critical Review”, *Australasian Journal of Philosophy*, 64 (Supplement, 1986); and Richard Sylvan, “Three Essays Upon Deeper Environmental Ethics”, *Discussion Papers in Environmental Philosophy*, 13 (1986) (Published by the Australian National University, Canberra). James Lovelock, *Gaia: A New Look at Life on Earth* was published in Oxford in 1979. Christopher Stone’s *Earth and Other Ethics* (New York, 1987) is a tentative exploration of ways in which nonsentient beings might be included in an ethical framework.

The original *Green Consumer Guide* was by John Elkington and Julia Hailes (London, 1988). Adaptations have since been published in several other countries, as have many similar guides. On the environmental extravagance of animal production, see the references given for Chapter 8. For an excellent introduction to environmental ethics, see Dale Jamieson, *Ethics and the Environment* (Cambridge, 2008). Dale Jamieson (ed.), *A Companion to Environmental Philosophy* (Oxford, 2001) is a comprehensive collection of essays. See also the article “Environmental Ethics” by Andrew Brennan in the online *Stanford Encyclopedia of Philosophy*.