

George Monbiot, Heat - Extract and Comments

Extracts and comments by Lynn
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Journalist George Monbiot's *Heat: How to Stop the Planet from Burning* is an excellent source of information on climate change, with a daunting statement as to what needs to be done to reduce greenhouse gas emissions before it is too late. It is both a depressing read for the extent of the changes deemed essential (Monbiot recalls the happier time when he thought an 80% reduction would do (prefix p. xvii), and a hopeful one, for he argues that it is not too late to avoid the worst.)

Specifically, Monbiot argues that in order to keep the rise in global temperature to 2 degrees (Celsius), the rich industrial countries must reduce their carbon emissions by 90% on average.

A foreword to the Canadian edition reveals Canada's appalling record and hypocrisy on greenhouse gases: that while Canada signed the Kyoto Protocol--the United States and Australia did not--our greenhouse gas emissions are as high (prefix p. ix). (Canada weighs in at 19.05 tonnes per person per year of CO₂, compared with 20.0 tonnes for the United States (prefix p. xix), 9.5 tonnes for the U.K., 10.2 tonnes in Germany, 6.8 in France, and 2.7 tonnes for China).

"You think of yourselves as a liberal and enlightened people....But you could scarcely do more to destroy the biosphere if you tried". (prefix p. ix) Against the Canadian excuse that our winters are colder he notes that:

The climate doesn't care... Every tonne of carbon you produce, however necessary you believe it to be, has the same impact on the climate as a tonne emitted by anyone else. Nice and well-intentioned as you are, you do as much to drown Bangladesh or starve the people of the Horn of Africa as the most obdurate throwbacks in the shrinking state of Bushistan. (prefix p. x) The limit for carbon dioxide emissions per capita is 1.2 tonnes, or one sixteenth of what Canadians now produce (prefix p. x).

Monbiot calls Prime Minister Harper "*an irresolute wimp*," unable to keep Canada's promise to cut emissions by 6%; "the calculations in this book suggest that Canada should cut her carbon emissions by 94% between now and 2030" (prefix p. x). He acknowledges that the Liberal government scarcely made it easy. They "talked a better line than Harper, but presided over just as much environmental destruction" (prefix p. x). He lampooned the excuse of the then Environment minister, Rona Ambrose, that targets for reduction should take into account a country's economy and energy sources, an open door for any country to wiggle out of its obligations (prefix p. xi). The Canadian Conservative government, like Bush in the United States, cut funding for energy efficiency programmes and other means of preventing climate change. He noted that the governments of Quebec, Manitoba and Newfoundland and Labrador have vowed to keep to the terms of Kyoto (prefix p. xi), and 1400 Canadian mayors committed themselves to cutting greenhouse gases by 30% by 2030, and 80% by 2050, not nearly enough, "but it still puts Harper and his flock of chickens to shame" (prefix p. xii).

To be fair, Monbiot also praised the Canadian R-2000 building standards as a world model, Ontario's "smart meter" initiative, and gave credit to Vancouver's planning laws (prefix p. xii).

Monbiot's purpose in writing *Heat* is to equip people with the political tools, arguments, technologies and ideas needed "to turn one of the most polluting nations on Earth into a place which commands the rest of the world's respect" (prefix p. xiii). The book is a "thought experiment," with a medium-sized industrial country, the United Kingdom, to demonstrate that the cuts required are compatible with industrial civilization, that the country can be decarbonized "while remaining a modern economy" (prefix p. xviii). While most of the examples are British, Monbiot tried to select approaches which could be universally applied (prefix p. xii).

Monbiot describes discovering that his instincts were "almost always wrong" (prefix p. xxii). There were many surprises. He learned whom not to trust (the "denial industry," those "*with something to sell*" (prefix p. xxiii).)

Learned societies and special committees proved to be the most useful.

His introduction concludes with a statement of his “one purpose in writing this book: to persuade you that climate change is worth fighting,” that it is not too late, that instead of lamenting governments’ failures to introduce the measures required, “to force them to reverse their policies” (prefix p. xxv).

In making (briefly) the case for drastic reductions in greenhouse gas emissions, he draws on the best official sources for his presentation of the problems:

- *that the two principal greenhouse gases, CO₂ and methane are both higher now than they have been for 650,000 years, as is shown in the core of Antarctic snow; both let in heat from the sun faster than they let it out (p. 3);*
- *that carbon dioxide in the atmosphere rose faster over the last century than at any time over the past 20,000 years, the period of use of fossil fuels (p. 3);*
- *that carbon dioxide has risen from 280 ppm of air (c1600) to 380 ppm now, mainly in the last 50 years (p. 3);*
- *that sea ice is shrinking and all the world’s glaciers retreating, permafrost is melting and coral reefs wilting (p. 5-6);*
- *that as diseases spread faster at higher temperature, there is already an additional 150,000 deaths per years as a result of global warming, as estimated by the World Health Organization, and this with an increase of only 0.60 C. rise in temperature;*
- *that the Intergovernmental Panel on Climate Change estimated in 2001 that the rise will be 1.4 to 5.8% this century, while other estimates are higher (p. 6).*

Monbiot argues that “*climate change must...become the project we put before all others. If we fail in this task, we fail in everything else*” (p. 15). To hold the rise in global temperature to 2 degrees (C). we must stabilize greenhouse gases at the equivalent of 440 ppm, which would require a reduction of 90% on average for the rich countries by 2030. In the case of the United States, Canada and Australia, since we are the worst offenders, the

reduction must be 94%. The Kyoto Protocol, by contrast, required only a 5.2% reduction by 2012 (p. 16).

“The cuts agreed under the Kyoto Protocol--5.2 % by 2012--bear no relationship to the cuts the problem demands” (p. 48).

Monbiot’s premise is that if in the year 2030 carbon dioxide concentrations in the atmosphere remains as high as they are today, the likely result is 2 degrees (C). of warming (above pre-industrial levels). This is the point “*beyond which certain major ecosystems begin collapsing.*” Then climate change will be “*out of our hands,*” and will “*accelerate without our help*” (p. xvii). (To keep this increase to two degrees requires the rich nations to cut their greenhouse gas emissions by 90% by 2030.) Monbiot’s takes it as his task to demonstrate that this is feasible (p. xviii).

Monbiot then goes through the various sectors to show how 90% cuts can be made, beginning with the most painless-- technological advances--but in some cases concluding that rationing and regulation will be required. He thinks he has found a workable solution for how energy might be supplied within those constraints. For aviation, however, “*there are simply no effective technological solutions....The only possible answer is a massive reduction in flights*” (p. xix).

Throughout the book Monbiot uses Christopher Marlowe’s *Tragical History of Dr Faustus, c1590*, as an anchor. The “*Faustian pact*” we make, however, is not with the devil, but with fossil fuels (p. 3), which allowed us to break into “*a world of profit and delight/Of power, honor, of omnipotence.*” Monbiot finds an apt description of our industrial age in Faust, who is “*humankind, restless, curious, unsated:*

*I’ll have them fly to India for gold
Ransack the ocean for orient pearl,
And search all corners of the new-found world
For pleasant fruits and princely delights. (p. 2)*

In Marlowe’s play *Faustus* summons the devil’s servant, Mephistopheles, offering to surrender his soul to hell, if the devil will grant him twenty-four years to “*live in all voluptuousness.*” Mephistopheles explains the

consequences, pain, but the doctor refuses to believe him. The bargain is signed in blood and Faustus acquires magical powers, with a “*chariot burning bright*” takes a sightseeing tour around Europe, performs miracles, even summoning fresh grapes from the south in the dead of winter. Alas, after twenty-four years the devils come for him and drag him down to hell.

The use of Dr Faustus is wonderfully telling. For example, on the costs of making cuts in carbon emissions, Marlowe notes the damage if we don't: “*For vain pleasure of twenty-four years hath Faust lost eternal joy*” (p. 58). Monbiot notes that the period in which we have been able to live in voluptuousness, the last half century, is roughly double Faust's twenty-four years (p. 2).

Chapter 2, “*The Denial Industry*,” explores why “*we have been so slow to act*” (p. 20). There are revealing comparisons between the tobacco industry's denial of the harm of smoking and (p. 33-37). The BBC until recently “*seemed incapable of hosting a discussion on climate change without bringing in one of the Exxon-sponsored deniers to claim that it was not taking place*,” and usually failed to tell listeners that the “*expert*” had been funded by the oil industry (p. 37). Collusion between the White House of George W. Bush and the climate change deniers is related (p. 39).

Monbiot notes further that even government scientists have hedged in their statements, for fear of losing “*credibility*” (p. 41).

The complicated issue of the cost of tackling climate change (or not) is explored in chapter 3. Here only a few observations will be noted to provide context, avoiding the big issues of the cost of lives lost from climate change and accuracy of projected costs of reducing carbon emissions. (See the Stern Report on costs.)

Monbiot cites Norman Myers' *Perverse Subsidies* to show how public money is currently being used to make the problem worse. The European Environment Agency subsidized the coal industry 13 billion euros in 2001, and 8.7 billion to oil and gas (p. 55). The 30 richest governments in 2001 were spending

some \$71 billion on fossil fuel and nuclear power subsidies, and \$1.1 trillion on road transport. Subsidies “*to destroy the earth's fishers*” were \$25 billion worldwide, “*to wreck our forests*” \$14 billion (p. 55). In the UK the government's budget for widening a major highway is nearly seven times what it spends on tackling climate change (p. 54).

Heat is effective in pointing out that much touted solutions are not at all, but may indeed make the problem worse (the old story of unintended consequences from even the most benevolent of intentions). He describes the *Khazzoom-Brookes Postulate*, that energy use increases as a result of efficiency. Technological fixes then must be accompanied by appropriate regulations to ensure the actual reductions in emissions. Otherwise, as aviation becomes cheaper and quicker, people fly more (p. 63). Car engines are more efficient than before, but fuel consumption has not declined; instead cars are heavier, faster and use up the fuel on air conditioning and power steering (p. 62). In a free market, energy efficiency can increase energy use (p. 61), hence the argument for a cap on total energy use, with rationing to ensure fair access (p. 63).

Similarly, with the “*explosive growth*” of electric gadgets, e.g., plasma television sets, consumption can rise even if efficiency (e.g., in refrigerators) has improved (p. 73-74). Monbiot argues that consumers should know how much carbon is being consumed in the equipment they use, just as we are told how many calories there are in the food products we eat (p. 76-77).

On electrical power, Monbiot argues for carbon catching and burying as the best way of decarbonizing (p. 89). He is careful and worried about nuclear power, aware of its connections with nuclear weapons and possible uses in terrorism:

In the first nuclear nations, nuclear power was a by-product of nuclear weapons development. In the later nuclear nations, nuclear weapons development was a by-product of nuclear power. Every state which has sought to develop a nuclear weapons programme over the past 30 years--Israel, South Africa, India, Pakistan, North Korea, Iraq and Iran--has done so by diverting resources from its civil nuclear reactors. The more nuclear material the world contains, the more weapons it is likely to

develop, and the more widespread they will become. (p. 90)

Subsidies for nuclear power, he notes, make it seem cheaper than renewable sources, giving an American example of 44-fold subsidies for nuclear power compared with wind power (p. 94). *“Nowhere is there a nuclear power station which does not rely on subsidies of one kind or another”* (p. 93). He blames Eisenhower’s *“atoms for peace,”* the desire for making *“nuclear ploughshares”* out of nuclear bombs, for the hold nuclear power has on the public mind. The price of nuclear power he describes as a function of the political position of the person estimating it (p. 95). In the end he ranks nuclear power, *“provisionally”* at second last, just above open-face coal mines, as an energy source (p. 99).

Monbiot shows considerable scepticism on renewable energy, avowing a dislike for the *“misleading claims”* often made by its advocates, and its often token use to disguise extensive fossil fuel use (p. 100). After pursuing several possible scenarios, he argues for High Voltage Direct Current cables as an important possible solution, permitting long distance transmission of solar and wind sources, necessary as neither work all the time (but the wind is usually blowing somewhere). *“Smart plugs”* in houses could be used to switch current on or off depending on cost, a signal indicating a rise or fall (p. 116). He concludes that the UK could supply half of its electricity by renewable sources, at a higher price, but not much higher (p. 117). Assuming his *“guesses are correct”*:

All our electricity could be produced by two kinds of low-carbon generators: power stations burning gas whose exhausts are stripped of carbon dioxide, and renewable power plants stationed either on our own soil, or hundreds of kilometres away, and connected to the grid by means of long-distance cables. (p. 119) *And this at 15% of current carbon emissions, or achieving almost the required 90% reduction for the sector* (p. 117).

Against the recommendation of many environmental advocates, Monbiot opposes the dismantling of the power grid. He is sceptical about the ability of solar and wind to provide enough power (p. 125). He points out that solar photovoltaic cells do not last long enough to repay their investment (p. 130) and

district heating is good for new housing construction, but not for existing houses (p. 134). Rather than dismantle the grid it should be expanded, he argues, with new cables to the use the best ambient sources of power (p. 141).

Perverse psychological aspects of car travel are suggested, for example:

When you drive, society becomes an obstacle. Pedestrians, bicycles, traffic calming and speed limits become a nuisance to be wished away. The more you drive the more you seek the freedom that the road promises, but always denies (p. 144).

He relates the well-known fact that the more roads are built, the more traffic increases to fill them (p. 144). He notes the decrease in the cost of driving in the UK (p. 145) and the fact that trains and buses are not replacing cars, but supplementing them, while means of transport not using fossil fuels--walking and bicycling--have fallen (p. 145). Bus travel causes much lower carbon emissions than car, but people hate it for the inconvenience and unpleasantness. Monbiot relates a recommendation by economist Alan Storkey for transferring bus stations to junctions with motorways. Frequent buses, with dedicated lanes, improved, comfortable buses, could substantially reduce car traffic (p. 148-54).

Biomass, a favourite recommendation of many environmentalists, is rejected in Heat for taking agricultural land needed for food production. There is only a finite amount of agricultural land, so that its use for biofuels could precipitate *“a global humanitarian disaster”* (p. 158). Indigenous peoples have been evicted from rain forests, and some tortured for resisting (p. 160). In Indonesia forest fires are used to fell the trees to be replaced by palms (p. 160). *“The biodiesel industry has accidentally invented the world’s most carbon-intensive fuel”* (p. 160). Yet the European Community is requiring vegetable oil in fuel.

The decision by governments in Europe and North America to pursue the development of biofuels is, in environmental terms, the most damaging they have ever taken. (p. 161)

Monbiot cites data by Lynn Sloman, in Car Sick, on the possible replacement of car trips in the “40/40/20 rule.” Some 40% of current car trips can be made by bicycle, walking or public transit; 40% could be by these non-carbon means if facilities were improved; leaving only 20% that cannot be diverted (p. 166). Bus services can be improved, taxibuses introduced, journeys shared with co-workers and trips avoided by “information workers” doing some of their work at home (p. 167).

Monbiot’s chapter “Love Miles” is perhaps the most devastating. He exposes “eco-travel” and “ethical tourism” as hoaxes, for people fail to consider the means of getting to their destination and back, whatever they do while there (p. 170-71). He contends that “well-meaning people are as capable of destroying the biosphere as the executives of Exxon” (p. 172). He describes the “moral dissonance” of flying: “When it comes to flying there seems to be no connection between intention and action” (p. 172). He himself of course gained valuable experience from his travels, and notes how many workers for “global justice” got their experience in other countries. Obligations are then formed by living abroad, and “love miles” must be travelled to fulfil them (p. 172). There are “two valid moral codes, in irreconcilable antagonism” (p. 172). No wonder “ethical people” are “in denial” about flying.

A return flight London-New York produces 1.2 tonnes of CO2 per passenger, or the quantity of emissions allowable, in a year, for all uses of energy if the 90% cut is to be made. And that 1.2 tonnes needs to be multiplied by 2.7 (3.24 total) to account for the warming effect made by flying independent of the carbon emissions (by mixing wet air from plane exhausts with the cold air of the upper atmosphere). (p. 173) Supersonic flights are worse. He gives no figures, but notes that some military flights are worse generally than ordinary civil aviation (p. 174).

The unhappy fact is that “aviation has been growing faster than any other sources of greenhouse gases,” and “unless something is done to stop this growth, aviation will overwhelm all the cuts we manage to make elsewhere” (p. 174). Yet the UK government predicts a double or triple rise in the number of air passengers by 2030. Obviously this cannot

be reconciled with its commitment to cut carbon emissions by 60% by 2050, which problem it avoids by not counting international flights in the national inventories of greenhouse gas emissions! (p. 174). Said government claims that it has no method for allocating the emissions! (Monbiot suggests 50-50 between the countries in question) (p. 175). Moreover, “the one certain means of preventing the growth in flights is the one thing the British government refuses to do: limit the capacity of our airports” (p. 176).

Monbiot dismisses the argument that cheap flights are “socially inclusive,” enabling poorer people to fly, pointing out that people in the lowest two social classes take only 6% of cheap flights, as they can’t afford even them, that 75% of those who use budget airlines are in the top three social classes (p. 177). People with secondary residences take an average of six return flights a year to use them. Those who are the “most vulnerable to climate change are the poorest inhabitants of the poorest nations, the great majority of whom will never board an aeroplane” (p. 178).

The chapter explores alternatives such as a return to propeller planes from jets--they use less fuel, but are best for short flights, for which other means of transportation would be better. Airships (blimps) also use less fuel, and pose other difficulties, but again are most efficient where better substitutes could be made. Air travel compares badly with other means, as noted (p. 180) in a table for London-Manchester travel (298 kms):

	Kg of CO2 per passenger
plane (70% full)	63.9
car (1.56 passengers)	36.6
train (70% full)	5.2
coach (40 passengers)	4.3

There is no “technofix,” no alternative carbon-free fuel for air travel. “The growth in aviation and the need to address climate

change cannot be reconciled” (p. 182). High speed trains are no solution either, for they produce more carbon emissions than lower speed trains, and would take customers away from them and other less polluting means of transportation (p. 184). Luxury cruise ships are even worse than planes. The Queen Elizabeth II, for example, traveling from Southampton to New York (return), produces 9.1 tonnes of carbon dioxide per passenger (p. 184).

Monbiot in short finds no way to make a 90% cut in carbon emissions without the end of distant foreign holidays, unless one is prepared to take a long time to get there. Business meetings must be held by internet or video conferences, trans-continental journeys by train, and that not the fastest, or by bus.

It means that journeys around the world must be reserved for visiting the people you love, and that they will require both slow travel and the saving up of carbon rations. It means the end of shopping trips to New York, parties in Ibiza, second homes in Tuscany...unless you believe that these activities are worth the sacrifice of the biosphere and the lives of the poor.

These “*privations*” of course affect only a tiny proportion of the population. They seem harsh because “*this tiny proportion almost certainly includes*” the readers of this book (p. 187). He notes how recent our expectations of such travel are.

Rationing alone will not work, he argues. And before a rationing scheme is in place “*we must lobby for a moratorium on all new runways*” (p. 188). Monbiot tried to prove otherwise, but reluctantly came to the conclusion “*that long-distance travel, high speed and the curtailment of climate change are not compatible. If you fly, you destroy other people’s lives*” (p. 188).

A chapter on retail sales condemns current practices with data on massively wasteful energy use, in transportation and the stores themselves, and proposes a radical alternative in “*virtual shopping*” (chapter 10):

The business practices of the superstores sometimes look like a carefully designed project to destroy the biosphere as swiftly as possible. Their freight transport arrangements,

for example, seem almost perversely designed to maximize the distance travelled. (p. 189)

Using data from the UK Royal Commission on Environmental Pollution, he shows that retail stores use vastly more heat and electricity than warehouses or offices (275 K Wh per sq. m for a store, compared with 81 for a warehouse, 39 for a local government office) (p. 191). Instead, Monbiot proposes that warehouses, with computer or telephone ordering and home deliveries. This “*virtual shopping*” would save major shopping trips (shopping in local stores is less dependent on cars), and eliminate the need for fancy packaging (p. 196).