THE NEXT FIFTY YEARS

*These were lecture notes for a public lecture given at Bath University in 2013. I wanted to bare my soul and express my deepest fears. It was not well received. The audience wanted hope, uplift. I never repeated it.*

The beginnings of modern environmental awareness.

Hunger and population. The exponential frisson

Exponential growth is counter-intuitive and always unsustainable. Venus?

SLIDE 1

Bacteria in a bottle: the good times, the reckoning; limits to growth in a finite system. Overshoot.

Neo-Malthusianism: *Famine 1975!* “Pollution”: Silent spring, oil tanker disasters, Bhopal, nuclear waste, deformed babies, lake and forest die-off from acid rain, Lake Erie. Is the industrial experiment intrinsically self-defeating?

 Many of us thought so. All the environmental impacts will add up to stifle us, and attempts to prevent it will only make things worse. Only alternative is de-industrialisation. Romantically alluring for urban young people!

SLIDE 2

The Limits to Growth: slightly more than back-of-the-envelope. Overshoot.

A vigorous reaction from the Orthodox: we are not bacteria!

The seventies and eighties: arm-wrestling. Orthodoxy vindicated?

SLIDE 3

Indeed, this is not bacteria. We can solve physical problems by largely technical means if we want to. The industrial experiment is not intrinsically unsustainable.

What did it look like around us in the UK, Europe? Basic ‘transition’.

But what about world-wide problems across national boundaries? The Ozone hole is a perfect example, but it took only a few years to get the agreements in place, and the Montreal Protocol. Substitutes emerge, dangerous emissions subside, stratospheric ozone starts to recover. We can do it.

SLIDE 4

Here is my model, I think widely shared, of how things might go (big graph). Essentially we take a big overdraft off the planet, get everybody through to the clean post-industrial condition and move seamlessly into a kind of perpetual universal Denmark.

SLIDE 5

Turn a page. The climate problem. Unrecognised at the start of modern environmental awareness. Understanding of the physics grows in the 1980s, although evidence of actual effects ambiguous. At Rio in 1992 we pretty well all agree to take measures to prevent dangerous climate change. How very sensible and proactive. The IPCC starts to produce its reports.

In the nineties things were a bit slow, but speaking for myself I felt reasonably relaxed. It looked as if the atmosphere might be rather forgiving; that we could lean on it a bit, take an overdraft as it were, and pay back later. There appeared to be enormous natural sinks that were mopping up at leat haf the emissions. It was fairly easy to imagine we could gradually switch over to low-carbon energy sources, while using the declining fossil fuels simply to fill in the gaps. 50 years, even 100. Easy peasy.

Everybody paid lip-service. Positive attitude in the media, the Kyoto protocol. Ozone as a model.

Then reality cut in and things started to fall apart. First the climate models started to show feedback processes and worse, non-linearities. There could be ‘tipping points’ creating irreversible changes. The George Bush got elected, and the US did not sign Kyoto. Subsequent COPs of the UNFCCC got worse and worse. Successive reprts of the IPCC got grimmer. The mighty natural sinks were not free but causing significant changes themselves such as ocean acidification. Emissions continued to rise. Suddenly we realised we had lost 20 years, and smart opinion started to realise it was going to be a much tougher problem than we had imagined.

SLIDE 6

Go back to the graph. It’s actually an amount of GHG, accumulated between now and the end of the century, if everything went according to the old plan, BAU. We know very well that this will not be harmlessly absorbed, but will create a great deal of cimate change and risks, not least risks of feedback making things worse, perhaps irretrieveably. Our assumption of a smooth transition is merely that: a hopeful assumption: chaotic jumbles are more likely.

So what is a sustainable ‘budget’?

SLIDE 7

1000Gt is probably generous, but let’s put it in. Unfortunately the ‘budget’ is already committed by the expectations of the already-developed nations. Are they entitled to more than their fair share? If not, very rapid decarbonisations are required. This is just physics and maths.

SLIDE 7B The broad and narrow way.

The dawning realisation is now bringing on a kind of fatalism. Ah. Right. You didn’t tell me that. And the government is unlikely to do so.

I have been waiting for this moment, but I did not expect it so soon. FT journalist Simon Kuper:



We didn’t realise what it would really entail. He goes on:



Now we are ‘poor’ nobody can be bothered.

In other words, we *never* took it really seriously. We don’t mind if, like the ozone problem, it can be dealt with by scientists and bureaucrats at little cost. Once it starts to cause actual inconvenience, the ostrich reflex cuts in, and governments know this very well.

This change in mood means we are now in a different world. We are in what Mathis Wackernagel calls ‘the race to lose last’. Rich nations, corporations, and households will now switch resources to positioning themselves in the better parts of these dismal graphs. Orthodoxy, having insisted it had the mechanisms to cope with the environmental problems of the 60s and 70s, is out of ammunition. We expected something by 2000, by 2005, by 2010. Nothing. Just words. The great machine grinds on.

SLIDE 8

The limits to growth models are now back on track. The ‘standard run’ has actually predicted the outcome rather well. So much for market responses and our being significantly different from bacteria. But do we have reason to suspect actual discontinuities, as opposed to those predicted by a model?

SLIDE 9

In climate terms, limiting the rise to 1 degree C is already impossible. According to Prof Kevin Anderson at the Tyndall Centre for Climate Change in Manchester, a 2 degree limit is conceivable if we carried out some very radical plans now – such as our own Zero-Carbon Britain2030 study. A 90% chance of avoiding 2 dgrees C allows us something like 80 tonnes per head between now and 2060. That is about 2 tonnes per head per year. UK is something like 15 per head per year. It is plainly not going to happen soon, and we are now on track for a 4 degree rise this century, possibly in the next 50 years.

This is Overshoot, which sober environmentalists have been warning against for 50 years.

Of course there are tremendous uncertainties, but in the last decade things have been turning out on the wrong side of the 1990s error bars. If there were signs of renewed commitment in the face of this bad news I would be less appalled. But if the opinion-formers are throwing in the towel this soon, the prospects are grim indeed.

SLIDE 10

Two degrees is already dangerous, and the acceptance of the dangers has deepened since 2001. It’s all happening faster than we expected. What can we expect from 4 degrees – a situation likely to happen this century, and possibly in the next 50 years.

SLIDE 11

An apocalyptic catalogue

SLIDE 12

The New North

In terms of self-interest, both households and nations will find it hard to decide whether to invest in trying to slow things down a bit, or using the same resources to adapt or position themselves for worse to come. I think most would go for adaptation: money spent helps you directly; with mitigation it only helps if everyone is on board, and they palpably are not.

Under these darkening circumstance, there will be considerable interest in nuclear weapons, and possibly a thriving black market in them, or at least fissile materials.

SLIDE 13

The Holocene

SLIDE 14

The ages

Slide 15

MY GREAT-GREAT GRANDDAUGHTER

from a feeling that each generation ought to leave the place in good order, and not simply strip the assets. But consulting the future is a bit like consulting nature: there’s never any reply!

In the case of nature we develop all sorts of rules to help, and sometimes we create imaginative constructs such as ‘Thinking Like a Mountain’. My construct for the future is conversations with my great great granddaughter. Of course she is just in my head, but I try to give her *her* head, and I listen carefully. [Her name, by the way, is Balqis, the traditional Arabic name of the Queen of Sheba: I imagine that in four generations’ time there will have been a great deal more cultural mixing and it is just as likely my great-great-great grand-daughter will draw on Islamic tradition as any other].

She’s a bit like Schroedinger’s cat, but she knows where she wants to be: in the neo-holocene. The difference between this and the Misanthropocene is so great that it trumps any other consideration.

Another quality she has, I don’t know which part of the world she will live in, and she won’t tell me, so she is interested in global rather than regional solutions. She is sharp-tongued and forthright.

Ten years ago my conversations with granddaughter were all about mitigation.

SLIDE 16

At first she was a great fan of what we might call the ‘Rolls Royce’ solution: a decarbonisation plan based on much reduced energy use, some lifestyle changes, and renewable energy. Why did she like renewable energy so much? Fossil fuels are the worst, unless you can capture and store the CO2, which is not perfect, so risky. She was not particularly anti-nuclear but said that if we could manage without, it, leave it out. Renewables always tend to be reversible so leave future generations with the greatest room for manoeuvre. I had one hilarious dialogue

Me: There’s been a bit of a snag for the all-renewable energy system.”

What?

Many people hate its effect on the landscape

What effect?

Well, they think it looks funny. People are very attached to the ‘traditional’ appearance of the countryside.

You mean they are willing to stuff the planet and posterity for the sake of *what things look like*?

OK I understand your immediate reaction, but what is point of saving everything if it’s sort of messed up?

Look if someone is bleeding to death in the street do you adjust their tie? Let’s get real here, grandpa. Whole societies hang in the balance, millions of people, vast ecosystems, and you’re whingeing about *aesthetics*?

OK OK, point taken

By about 2007, in spite of much rhetoric we were making very little progress. George Bush had been elected. My g-g-g-grand-daughter’s approach changed. She could see that in some respects, the Best was the enemy of the Good. She then started to argue that we should throw everything we had at it, renewables, nuclear, carbon capture and storage, biomass sequestration, land use changes, everything. Of course this entailed some risks but they were much less than continued GHG emissions.

I was surprised about her views on nuclear energy, but she argued that maintaining the function of natural systems was an important part of our bequest to the future, and in her view, nukes are best for nature. We have not finished that one.

By 2012 I was having to report that if anything, things were going backwards. People realised that it was a serious thing and it would entail noticeable changes. The chances look very poor of avoiding 4 degrees, almost certainly a trigger for extra climatic effects. Mitigation is officially the main policy, but without any serious intent. She still insists that it’s never too late for one last heave, but if we really do fail completely she then has one request: minimise the nuclear component. What? I thought you liked nuclear… Yes, if properly managed, but they are not compatible with a chaotic world. A Misanthropocene without nukes is better than one with them.

What else?

Please, don’t give up completely on mitigation. Prepare a complete emergency plan

with a strong element of geoengineering, particularly sequestration. Get everything ready. Eventually there will be a really God-awful catastrophe and you might be able to get a political consensus. You’ll have to pull the atmosphere back 100ppm or more. Probably technology, not lifestyles. This might (just) deliver a recognisable neo-holocene, even if it has a few scars.

SLIDE 17

Geo-engineering?

Let’s talk a bit about the ethics. I have enjoyed being a member of the post-war generation. It was a time of great hope. The second world war was an incredible trauma for the whole world, and rightly we emerged with the slogan ‘never again’. From the ashes of the war sprang a new world order, the UN and its agencies, FAO, WHO, WMO, UNesco; we the universal declaration of human rights; strengthened notions of inter-state conduct and war crimes. We got the Bretton Woods financial arrangements. The beginnings of the European Union. There is so much enthusiastic cooperation around the world, ISO, the IUCN, the scientific community. We do care about each other, and if there is any kind of natural disaster, aid flows vigorously – at least for a while.

We have also taken big steps to protect the natural world, WWF, IUCN, protected areas. The biggest charity in the UK I understand is the RSPB, and endangered species are often protected by pretty tough laws.

What we have done in the last 50 years, it seems to me, is to expand the moral universe. First it was just us and neighbours, and this gradually spread to all citizens of our native countries. Now we consider everybody in the world, and we try to give special consideration to the poor. And, again for the first time in history we feel obligated to other species, to try and imagine their ‘interests’ and take them into account.

All this might be described as the enlightened, Women’s Institute/Guardian-reading modern morality. I think of it as a development of a great humanist tradition that has inspired enlightened thought throughout recent history. Some of my favourites

Lao Tzu

Socrates

Marcus Aurelius

Jalaluddin Rumi

Thomas More,

Shakespeare

Erasmus of Rotterdam

Tolstoy

Isaiah Berlin

Such people would be both at home and astounded today.

What is missing? It’s posterity. The rights of people (and nature) in the future. How should we weigh their value?

This is not easy. Economists usually apply a discount rate such that nothing is worth anything after about forty years! It is interesting to see another economist, Nicholas Stern, insisting on very low or even zero discount rates to generate rational long-term policies.

My sense of sorrow, loss, grief is really about the loss of our relatively new Enlightenment morality that will come with the present trajectory of the world economy. It is like musical chairs in that the odds are quite good in the early rounds that you’ll get a chair. In the end we’ll find that everybody’s lost except a few fat cats in gated fortresses – and they won’t sleep easy either. Domestic politics in the UK will eventually descend into savagery, perhaps with the *Guardian* tendency arguing for token aid shipments while the *Mail* campaigns for more gunboats to sink the refugee ships surrounding the coasts.

I despair at this prospect, the loss of generosity of spirit. Where will the human spirit hide during these dark times? What possible form can enlightened values take?

And what will I tell my real grand-daughter? She will be living through this too, and possibly getting ready to produce my great-great grand-daughter’s mother. Sorry my dear, we gave it our best shot, but we failed. Good grief.