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By George Monbiot,  
delivered at the Oxford Union,  
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## Eating the Earth

A rough transcript of my speech at the Oxford Farmers' Conference debate, on the motion "This House Believes Eating Meat Will Be A Thing of the Past by 2100"

☐ I always speak without notes, so this is not a verbatim transcript. But these are the notes I more or less memorised. You can watch the video of the debate.

I know that what I'm about to say is as welcome as a Jehovah's Witness at the door during the World Cup Final.

We don't expect to win the vote tonight. But I would ask you to try to judge this case on its merits, rather than on how it might affect your own immediate interests, difficult as this might be.

The reason I'm standing here now is that in 2017 I had a realisation. It is that *climate breakdown is only the third most urgent of the environmental crises we face.* This is not because it has become less urgent, but because *two other issues have emerged as even more pressing. They are the ecological cleansing of both land and sea to produce the food we eat.*

The speed and scale of change beggars belief. All over the world, habitats and species are collapsing before our eyes. The world population of wild vertebrates – animals with backbones – has fallen by 60% since 1970.

Animals that until recently seemed safe – ranging from lions to house sparrows – are now in danger. Insect populations are collapsing, with untold implications for both human beings and the rest of the food chain.

Soil is being stripped from the land. *According to the UN Food and Agriculture Organisation, at current rates of soil loss, the world has just 60 years of harvests left.*

*Ground water is being drained so rapidly that some of the world's most important aquifers are likely to disappear within a generation.*

*We are facing an existential crisis.* And it is caused, in large part, by the unsustainable ways in which we feed ourselves.

If we are to prevent both ecological meltdown and mass starvation, we must take these issues seriously – very seriously indeed – and address them as effectively and quickly as possible.

While there is no single solution, by far the biggest one is switching from an animal-based to a plant-based diet.

Why? Because a plant-based diet requires less land and fewer resources.

When we feed animals on crops, we greatly reduce the number of people that an area of cropland can support. This is because, on average, around two-thirds of the food value of the crops fed to livestock is lost in conversion from plant to animal.

This is why the UK has a farmland footprint over twice the size of its agricultural area. We eat, on average, our bodyweight in meat each year, and we cannot do that within our own borders. We rely on other people to feed us.

With a growing world population and the rapid degradation of farmland, feeding animals on food that humans could eat is a luxury the world simply cannot afford.

Of course, there's a second way of producing livestock: allowing them to find their own food, in a field or range. The problem here is that while we are not competing with other forms of food production, we are competing, massively, with the rest of the living world.

Grazing is an astonishingly wasteful system. It arguably has the highest ratio of destruction to production of any industry on Earth. Huge areas of land, that could otherwise support rich ecosystems and wildlife, are used to produce an appreciable amount of meat.

Let me give you a couple of figures to illustrate this.

❑ Roughly twice as much of the world's surface is used for grazing as for growing crops, yet animals fed entirely on pasture produce just 1 gram out of the 81 g of protein consumed per person per day.

❑ Sheep in this country occupy roughly 4m ha – more or less equivalent to all the arable and horticultural land in the UK. Yet they produce just 1.2% of the calories we consume here.

❑ Gareth is a lovely man, and entirely sincere. He will tell you about the Carneddau ponies on his land, the birds and the flowers, and he will do it beautifully. But what you see in the sheep pastures of Britain is a mere remnant of an ecosystem. A thriving living system contains large predators. A healthy stock of wild herbivores. A rich mosaic of vegetation. The land where Gareth farms would most likely, were it not for sheep grazing, be covered in Atlantic rainforest, punctuated by pockets of other habitats: a system many times more diverse than the one that prevails there today.

❑ Around the world, marshes are drained, trees are felled and their seedlings grazed out, predators are exterminated, wild herbivores fenced out and other lifeforms gradually erased as grazing systems intensify. Astonishing places – such as the rainforests of Madagascar and Brazil – are laid waste to make room for yet more farm animals.

In an age of ecological collapse, this is an astonishing extravagance, which I believe is unjustified.

❑ An analysis by the livestock farmer Simon Fairlie suggests that were we to switch to a plant-based diet in Britain, we could feed all the people of this country on just 3m of our 18m hectares of farmland.

❑ Alternatively, we could use the land here to feed 200m people. In a world threatened by starvation and ecological collapse, it seems perverse to do otherwise.

I don't blame livestock farmers for this any more than I blame coal miners for the problems with coal. They are simply trying to survive, and God knows it's hard enough. But the nature of this production is simply incompatible with a prosperous future for humanity. I would like to see people in Gareth's position paid from the public purse to restore nature. And with his energy and enthusiasm, I'm sure he would be brilliant at it.

So far I've been considering whether meat *should* be a thing of the past by 2100. But the motion asks whether meat *will* be a thing of the past by 2100.

And the answer, again, is yes.

The reason is simple: technological change.

It might seem obscure and marginal today, just as the motorcar did in 1880 and the personal computer did in 1970, but cultured meat is coming as inexorably as those technologies.

Today, like all technologies in their infancy, it is extremely expensive

In two decades it will be merely expensive

In about four decades, it is likely to reach cost parity with processed meat.

And, like everything that can be mass produced, the price will keep falling.

It will do what the motorcar did to the horse and carriage

And the telephone did to the telegram

And the computer did to the typewriter

And in doing so it will become entirely normal.

When that happens, we will see something that has also happened many times before: technological change creating an ethical tipping point.

When hydrocarbons provided a substitute for whale oil, we began asking ourselves why we were killing these magnificent beasts.

When automation undercut child labour, we started wondering why children were working in factories.

When there is a cheaper and kinder alternative, what was permissible becomes unacceptable.

Researchers at this university have shown that cultured meat will reduce water use by at least 82% and land use by 99%. This is because it is made of plant protein, not animal protein.

It will relieve the pressure on the living planet, allowing habitats and species to flourish once more. It will reduce the pressure on world food supplies, enabling everyone to be fed.

So will meat eating by 2100 be a thing of the past? It should be. And it will be.

Thank you.

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