The greening of Greenland

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Disko Bay lay glinting with ice on the bright afternoon we sailed in. Bergs as big as buses floated among others the size of houses. But houses from another world – these were castles and fairy grottoes, crazy monumental statues sculpted into fantastical shapes by the sea, the wind and the pressure of centuries of falling snow. Pools of unearthly blue water shimmered on their surfaces. One iceberg with five straight sides – on the surface, an exact cube – drifted slowly, slowly by, its geometry bewitching.

These were just the beginning. Further on were floating mountains, ice cliffs hundreds of metres tall, marching forth from the mouth of the glacier that reaches the sea at Disko Bay. Most of these break up or are worn down before they get here, but some last for years, as huge and menacing as when they were calved from the Jakobshavn Isbrae, the most productive glacier in the northern hemisphere. Every year, 35 billion tonnes of ice break free of the Greenland ice sheet here. Only the mammoth glaciers of Antarctica can compare. The Isbrae – also known as Sermeq Kujalleq – moves at 40m a day. For glaciers, this is pretty quick.

Glaciers have always made their way to the sea. Snow falls on the vast Greenland ice sheet – this is by far the world’s biggest island – and the weight pushes out the ice at the edges. But the remarkable thing about the Jakobshavn Isbrae – and nearly all of Greenland’s glaciers, and most of the glaciers in the world – is how fast those outward waves are flowing now. In 2002, when researchers measured the Jakobshavn Isbrae, which drains 6.5 per cent of the Greenland ice sheet, it was moving only half as quickly as it is today, and pouring only half the present volume of ice into the fjord. The earliest known maps of this glacier date from the 1850s, but observations of it have intensified since the 1950s. They track the marked acceleration of the ice over recent decades, and show its speed increasing dramatically in the past few years. The Hellheim glacier, draining 4 per cent of the Greenland ice sheet, tells a similar story. Its speed increased from 8km a year in 2000 to 11km a year in 2005, and has since accelerated.

The reason the glaciers are speeding up is simple: Greenland is getting warmer. Jacqueline McGlade, director of the European Environment Agency, says: “The amount of ice that is being lost is far more than we thought. Greenland is warming faster than the computer models predicted, and that is a worry.” The Arctic has warmed at three times the rate of the rest of the world in the past 100 years, and temperatures continue to rise. Ola Johannessen, chief of Norway’s Nansen Environmental and Remote Sensing Centre, has worked on ice for more than 30 years. He has never seen anything like the current situation. “There is no doubt that what we are seeing is the result of global warming. The glaciers are moving faster. Ice is being lost from the Greenland ice sheet, and that will raise sea levels.”
In the past two decades, the evidence for global warming has piled so high it is no longer disputed by mainstream scientists. Much of this evidence has come from Greenland, as have the long climate records that have allowed scientists to predict the future progress of global warming. Now, on the eve of the most important meeting on climate change ever held—the United Nations conference in Copenhagen this December—politicians are looking closely at Greenland—both as time capsule and as crystal ball—and are attempting to face up to the dangers the ice foretells.

On top of the Jakobshavn glacier, where we landed in a helicopter, Danish government official Frederik Schmidt poured glasses of whisky and filled them with chunks of ice he had chipped from the edge of the glacier. They fizzed when they hit the liquor. “Thousand-year-old air!” he grinned. Greenland holds within its ice the history of past climate changes. Each year, a new layer of snow settles and that snow bears in tiny bubbles the traces of the atmosphere at the time it fell. Over the centuries, the snow is compacted but the layers remain. Scientists have learnt to drill kilometres deep and bring up cylinders of ice, cores that can be carefully sliced and analysed. The bubbles within them reveal characteristics such as the level of carbon dioxide in the atmosphere when they were laid down. In this way, researchers have painstakingly amassed a history of the earth’s climate over the past 100,000 years.

The tale the ice cores tell is full of foreboding. Climate changes of the past have not been slow, gradual increases in temperature. Rather, they have been abrupt—sudden and steep warmings and coolings, sometimes over a matter of decades. This has led researchers to suggest that certain feedback loops, or tipping points, exist in the earth’s climate system—points at which the warming or cooling becomes self-reinforcing and much more rapid. Some feedback effects are already at work in Greenland. Stand on top of a glacier, far from where the bergs calve with loud cracks, and you hear a strange background murmur, a ceaseless whispering that appears to have no source. This is the sound of meltwater rushing down through fissures in the ice. When it reaches the bottom, the water lubricates the flow of the ice over the rocks beneath, speeding the glaciers on their way. The more meltwater, the more lubrication and the faster the ice moves.

Other tipping points might include the rapid disappearance of the Amazon rainforest, which could be caused by drought. If that happened, all the carbon the forests absorb would be released, and global warming would accelerate. If temperatures rose more than 4°C above pre-industrial levels, catastrophe would ensue, according to the Intergovernmental Panel on Climate Change. More than one-third of the world’s species would disappear; hundreds of millions of people would face famine; floods and storms would whip rich and poor countries alike.

Looking out over Disko Bay and the Ilulissat ice fjord from the balcony of the world’s northernmost four-star hotel this July stood a group of politicians and officials from 29 countries. They were called here by Connie Hedegaard, the forthright Danish
enlightened. Agriculture and livestock husbandry were out of the question, so was the cash crop. It seems incredible that human beings could cling on life for the Inuits, before air travel opened up the country and the cold climate ended in failure after more than a decade of wrangling. The Kyoto protocol required developed countries to cut their emissions by an average of 5 per cent by 2012. Poor countries had no emissions reduction targets, but would benefit from green investments made by the richer nations on the understanding that this would help them move from high-carbon to low-carbon economic growth. Kyoto was greeted as a triumph in 1997 when it was signed, but scarcely was the ink dry than the whole project collapsed. It became clear the US Congress would never ratify it. Other countries such as Russia and Australia also refused to do so for many years, and some – notably the Japanese and Canadians – tried to wriggle out of aspects of their commitments. When George W. Bush took office, Kyoto looked to be on the scrapheap of history.

In one of the tortuous turns that climate negotiations so often take, the protocol eventually came into effect, eight years late, in 2005. But by then it was clear that few countries would meet the obligations they had agreed. Global emissions rose at ever faster rates. The resurrected protocol stated that the period from 1997 to 2012 would be the first of many “commitment periods” in which governments would agree ever stiffer targets to reduce greenhouse gases. With the first deadline in 2012 looming, a worldwide effort has begun to forge a new framework – even if the first commitment period has largely been ignored.

Things have changed since Bush left office. Now no country wishes to be left out and all profess eagerness for a deal. But divisions remain, as deep as the cracks in Greenland’s ice. According to poor countries, the emissions cuts that rich countries have offered are inadequate, as are the sums they are willing to commit to help to build clean energy sources in the developing world. Meanwhile, the developed world complains that emerging economies – which will soon be responsible for by far the biggest slice of global emissions – will not adopt the targets demanded.

There have been dozens of formal and informal political get-togethers – like July’s Ilulissat meeting – aimed at breaking the deadlock. But agreement on the big issues seems as distant as ever. Some observers believe there is little hope of writing a strong treaty at the Copenhagen conference, so it would be better to carry on negotiations for another year. “If it looks like we would be left with a bad deal, it would be better to have a moratorium on the talks and wait a year,” said Sir David King, former chief scientific advisor to the UK government and the man who made Tony Blair take climate change seriously. This argument cuts no ice with the Danes running the conference. “There is no plan B,” Hedegaard said firmly, fixing me with a frown. “We need to have a deal at Copenhagen. That is the deadline, and it will be hard work, but we can make it.”

Denmark has a special interest in climate change, in part because of its sense of responsibility – some would say guilt – towards Greenland, a Danish colony since the early 18th century. Although Greenland this summer took an important step towards independence, taking responsibility for judicial affairs, policing and natural resources, the Danish government must continue to fund the country’s social services, on which many of the citizens rely.

The Jakobshavn glacier is on Greenland’s west coast, where most of the country’s settlements lie. Though hardly lush, the west coast has patches of greenery where grasses and tiny arctic flowers grow. Much of the east coast is even more inhospitable, with little more than ice and rocks. Near the settlement of Tasiilaq, on the east coast, I walked through a sheltered, snow-covered valley where, in the past, the Danes tried repeatedly to grow potatoes. They failed, and turned instead to converting the locals to Christianity, a more realistic goal.

Life for the Inuits, before air travel opened up the country and the cold war brought a little wealth in the form of air bases and listening posts, was so harsh it seems incredible that human beings could cling on here. Agriculture and livestock husbandry were out of the question, so Greenlanders subsisted on a diet of mainly fish and seals, and learnt to use every part of each creature. With no trees, they relied on driftwood to build their boats. Half the year was spent in darkness, mainly in communal turf houses dug into the thin soil, lit only by blubber lamps. With no means of softening the hides of the animals they killed, Inuit women chewed seal skins for much of the winter, their saliva curing the hides and readying them for use. Early visitors reported that the women’s teeth were worn down to the gums from an early age.

Little wonder that Greenlanders had no voluble relationship with their gods. They had a creation myth, but did not bother to pray to the undersea goddess from whose hair mankind was combed. Why would they? It must have been self-evident that they were on their own.

Today, Greenland’s problems are of a different kind. This is a poor country, with high unemployment. People here feel that the Danish government has always treated them with disdain, only taking an interest when it seemed that Greenland’s mineral wealth might become accessible. There are high rates of alcoholism and other social problems. The children score poorly on school tests relative to their contemporaries in Denmark and there are limited prospects for the young.
Jimmy Hymøller, a schoolteacher, told us how he was trying to change things by encouraging parents to take a more active part in their children’s education which many felt unable to before. Most Danes you meet in Greenland have a similar sense of purpose – a new wave of secular missionaries bent on trying to reverse the mistakes of their forebears.

Lars Olsen, a fisherman, took our photographer, a local businessman called Tom Ostermann and me on his boat to where he fishes for halibut. The small craft crunched easily over the smaller lumps of ice – merely the size of household furniture – and wove a path deftly among the larger bergs. Danger precluded him from taking us near the really big ice closer to the glacier edge, the pieces that rose into the sky taller than office blocks.

Close up, the ice looks harmless and stable, stately as a galleon and twice the size. Bubbles rise to the surface in a steady stream from the nine-tenths of its bulk that is submerged. But in their voyage to the open sea, icebergs can turn over dozens of times, unpredictably, as the melting above and below the waterline suddenly shifts their centre of gravity. And floating beside an iceberg, it is impossible to judge whether an overhang is stable or riven with fissures that will suddenly sheer. “It’s wise not to get too near,” Ola Johannessen, the ice expert, warned me – though, later, I found out he had a propensity for landing on bergs in helicopters.

In his 30 years as a fisherman in these waters, Olsen has seen his catches decline drastically. ‘I get fewer fish on my lines now – and the ones I do get are smaller,’” he told us in Greenlandic. He catches halibut by laying down several lines, many metres in length, with hooks every foot or so, and leaving them in place overnight. “I have to lay more lines and don’t get as much. And the price of the fish is not good.” He blames the reduced catches squarely on overfishing. "They should not allow so many fishermen. They should not give so many licences." Would his children follow him into fishing? Certainly not, he replied. His son was an economist.

... Inuit people, though, even those with town jobs in the schools, hospitals and fish factories, carry on fishing and hunting. Every house in the settlements has what look like washing lines on the roof, hung with drying fish. We met one teacher who had taken his children from his class to live on a small island for the summer, to teach them traditional skills such as catching and curing fish.

Hunting is the way of life for the Inuit, and staying in Greenland leaves little room for squeamishness. On the first night of my first visit, accompanied by Jacqueline McGlade from the European Environment Agency, we had a delicious soup with small squashy pieces I took for vegetables. No, our host explained, it was the skin of a narwhal, one of the rarest mammals in the world – the Inuit are allowed to hunt a certain number each year. Later, I ate whale steaks – tasty, with a rich gamey flavour. Seal was on the menu, too, and we visited a factory where the fur was stripped from baby seals, leaving holes where the flippers had been. These would become hats, slippers, waistcoats and scarves for sale in the airport shop.

Hunting, like fishing, is under threat. Hunters we met complained that the season was growing shorter as the ice had become treacherous. Whereas before, it froze firm enough all winter to take dogsleds and skidoos, now it has thinned and breaks up easily, making sledding impossible for months. Ice fishing has also become impossible for much of the winter in some traditional hunting grounds.

And then there’s the problem that some of the Greenlanders’ traditional quarry are rapidly dying out. At a small settlement near Tasiilaq, I saw a polar bear that had recently been killed along with its cub. The flayed skin was stretched out to dry on a wooden frame. It stank a little, with the last remnants of flesh and blood oozing on to the ground, but the fur was silky to the touch. The skin itself is black, to attract sunlight and keep the bear warm. But the claws were the most striking thing – more than 9in long, curved and deadly. It was easy to see why the Inuit call them Nanuk: mighty hunter worthy of respect.

There are only about 20,000 polar bears left in the world. Their population has declined as their habitat has shrunk. Polar bears hunt seals from ice floes, swimming between them. There have been reports of bears drowning – a previously unheard-of event – because the distance between floes on to which they can climb is too great. Some have probably starved. There is an increasing problem of bears straying into villages in search of food. Other Arctic mammals are also suffering. A US Geological Survey expedition in September spotted a large group of walrus carcasses, more than 100, on an Arctic shore. They were almost certainly corpses from a bigger group seen a few days earlier congregating on the ice. Examination of the carcases, mostly calves and yearlings, indicated they had been trampled to death by other walruses, stampeding to find a place on the crowded shore.

... Much though environmental groups would protest, the harsh truth is that human beings – even Greenlanders – can live without polar bears and walruses. Their demise would simply lengthen the long and ignoble list of species our kind has made extinct. Besides, Greenland will take a very long time to melt completely – a thousand years, according to the best estimates. The loss of the Greenlandic way of life long before this would also be mourned, but not by many. If this were merely an Arctic problem, politicians would not be visiting Nuussat. The real threat of climate change is not that the ice will melt (though when it does, we are in trouble because the departure of reflective ice leaves dark sea that absorbs more of the sun’s heat, increasing the rate of global warming in another feedback loop). The real disruptions of climate change will be felt far from here: in sub-Saharan Africa, where the heat will become unbearable; in south-east Asia, where rising sea levels will claim more and more land and typhoons will destroy towns and villages; in southern Europe, where drought will render the land unsuitable for agriculture.
The biggest threat of all is to the world’s social and political stability – the famines, droughts, floods and storms of a warming world could cause prolonged conflict, mass migration on a scale we shudder to imagine, and a counter-reaction to that migration from the lucky northern countries.

It’s just that Greenland, and the rest of the Arctic, are where we see the first and clearest signs of rapidly increasing temperatures and their effects on the natural world. Greenlanders, in fact, are often ambivalent about warming. In the south, a few people are successfully growing potatoes – a century after the Danes gave up – and even more surprising crops such as tomatoes. They are also raising cattle. In the inflight magazine of Air Greenland, I couldn’t help but notice that global warming was referred to as “climate improvement”.

Greenlanders have been the world’s master survivors, stubbornly carving a life for thousands of years out of the most inhospitable desert on the planet. They have little to fear from warming. Tom Ostermann told us: “I have no concerns that the people of Greenland will survive and will be OK. We have always been able to adapt. We are more concerned about places like Holland, for when the sea level increases. It’s those places where people have to be worried.” He leaned forward in his boat, smiling mischievously, and added: “One up to the Eskimo.”

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