BOOKS & ARTS

Imagine a better world

Given that humans are here to stay on Earth for some time yet, what can we do to lessen our impact?

The World Without Us

by Alan Weisman

Thomas Dunne Books/Virgin Books: 2007.
288 pp, \$24.95/£20.00

Stuart L. Pimm

Imagining “the world without us” is such a clever idea. It powerfully motivates thinking about what the 6 billion of us do to Earth. It conjures, too, reflections on the sometimes surprising parts of Earth that we have left alone. How these have fared might shape future environmental choices.

The examples in Alan Weisman's *The World Without Us* are familiar from numerous other books about the planet today. Of course, good science books assemble what is already known to the academic priesthood to make the ideas widely accessible. They strongly influence that priesthood, embarrassed as we often are to admit we found the original literature unintelligible. Great books synthesize facts and ideas onto a sweeping canvas. Sadly, Weisman's book does not assemble, synthesize, step back from its details to pose larger questions, engage the reader in a debate about the salient features of human impact or present solutions. It has no introductory and final chapters laying out key issues.

The book does come frustratingly close to being more than its collection of set pieces. Chapter one has a photo of the massive trees in Bialoweza forest, Poland. Many trees get that way — if we allow them to. Without us, one can almost imagine the loud sucking sound of Earth's trees growing to old age, taking back the carbon. Without us, some 15 million square kilometres of former cropland and another 5 million of tropical forest cleared for grazing would re-grow, sucking up roughly 10 gigatonnes of carbon each year for the next 30 years or more. Even ignoring other sinks, including soils, this very rough calculation suggests an immediate, significant reduction of atmospheric carbon, with attendant climate changes. The all too obvious practical answer to Richard Branson's challenge to remove carbon dioxide from the atmosphere is growing trees. Without us, there are lots of places for them to re-grow; even with us, there are too.

Without us, the nitrogen junkies of the global flora would protest the halving of their annual fix. Human chemistry has doubled the availability of fixed nitrogen through

There are still places that exist without us, such as the Bialoweza forest in Poland.

fertilizer in the biosphere. Without us, trees would flourish, nitrogen-dependent weeds would not, and most domesticated crop plants would die within the year.

Weisman worries about the bison in Bialoweza, imprisoned there by its fence. He moves on promptly to discuss how our buildings would decay and how the subways of New York would flood if we were gone, a subject of a morbid fascination, no doubt, to those who enter them daily.

He misses an opportunity in the chapter on “the world before us”. Our nearest relatives remain in this book's conceit. Evolution might not recreate us, but what about an ape with our intelligence? Palaeoanthropologists argue that man is just the forest ape who moved into the savannas in compelling (if often contradictory) creation stories. So, what is to stop a repeat performance? Weisman concludes that the aggressive common chimpanzee (*Pan troglodytes*) will overwhelm the meek — and much rarer — bonobo (*Pan paniscus*). Would this prevent a new ‘man’ from following in our path, or is an aggressive *Pan* the key step? This is an interesting, but unexplored possibility.

Such debates are fun over morning coffee. Other issues are practical and vital. There are places without us and we could designate more. Some of them are in this book — the demilitarized zone between the two Koreas, the Bialoweza forest, a few isolated reefs, decreasing areas of rainforest. These examples broach the biggest challenges of this century: can we reverse global carbon emissions, cool off the planet and prevent the irreversible loss of biodiversity?

Weisman discusses how nature returns in our absence. Allowing native trees to recover — the Lorax solution — so that both the trees and their friends will come back is also a good start to solving the biodiversity problem. He also discusses the constraints we have placed on recovery. For example, we have introduced weeds — that is, species that belong in other places. But we have not followed US environmentalist Aldo Leopold's first law of intelligent tinkering: to keep every cog and wheel. Nor have we followed the second law: to keep the instructions. There is no guarantee that even with all the pieces, we would be able to put nature back together again. The book

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successfully warns us that almost everywhere are human artefacts that will be with us for a long time — plastics, for example — making things ever more complex.

These and many other good leads are in *The World Without Us*, but their placing is incoherent. There is not going to be an Earth without us. So excluding us from some of it and reducing our impacts elsewhere is an important part

of a discussion that this book could do a lot to facilitate. Perhaps the broader vision — the missing introductory and final chapters it so clearly needs — could be added on a related website.

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Degrees of change

Six Degrees: Our Future on a Hotter Planet

by Mark Lynas

Fourth Estate: 2007, 384pp, £12.99

Stefan Rahmstorf

This book is not for the faint-hearted. British writer Mark Lynas ventures where few scientists would dare to tread. He sets out to answer the question that many of us climatologists ponder in private and often get asked by journalists, but usually shy away from answering: what will it really be like to live on a warmer planet? In Lynas's words: "Will we all, as some environmentalists suggest, be reduced to eking out a living from shattered remains of civilization in Arctic refuges, or will life go on much as before — if only a little warmer?"

Lynas sets out to answer this systematically on the basis of his extensive reading of the scientific literature. He has spent many months in Oxford University's Radcliffe Science Library trawling through thousands of papers. The result is arranged in six chapters, one for every degree Celsius of potential global warming. His statements are referenced throughout, and, as a palaeoclimatologist, I was familiar with fewer than half of the 500 or so papers he cites. That is the nature of scientific specialization: few researchers could afford the time for such a wide-ranging literature review.

One of the best aspects of *Six Degrees* is that it pulls together data from past climate changes in Earth's history to get an idea of what a warmer climate might look like. The often dramatic natural climate changes of the past are sometimes cited by those opposed to reducing greenhouse-gas emissions as evidence of why we need not worry about the ongoing warming. But the latest Intergovernmental Panel on Climate Change (IPCC) report (www.ipcc.ch), which contains a 65-page chapter reviewing the main palaeoclimatic findings, shows that the first lesson from the past is that Earth's climate system is very sensitive. It has always responded strongly to natural changes in Earth's energy budget — the balance between the absorbed incoming energy from the Sun and the outgoing long-wave (thermal) radiation from Earth. So we have every reason to believe that it will respond strongly again to the growing

perturbation to the radiation balance that humans are now causing. *Six Degrees* hammers home the second lesson to be drawn from the past: mega-droughts or sea-level changes of tens of metres accompanied past cooling and warming episodes of similar magnitude (albeit probably not as rapid) as that expected this century.

I have my quibbles with some of Lynas's interpretations and there is the odd error, but such complaints seem petty in view of the overall achievement and importance of this book. Lynas avoids the obvious pitfall of cherry-picking the most dramatic possibilities; *Six Degrees* is alarming but not alarmist. He tries to give a level-headed account of what we may expect, mentioning scientific controversies where they exist. For example, he gives balanced discussions about the future of the Sahel region of northern Africa, citing studies that conclude that global warming may end the ongoing drought there, and about the risk of a shut-down of the North Atlantic Current, to which the new IPCC report assigns a probability of up to 10% this century.

Six Degrees is essentially about risks, because much remains uncertain about the future. My major beef is that he often makes risks sound like truths. After a sensible discussion of amplifying feedbacks from the carbon cycle and methane release, in which he states how uncertain and hard to quantify these still are, he then claims that three degrees Celsius of warming "inexorably leads to four degrees, which leads inexorably to five". Even a small risk of this happening is bad enough, without making it sound so definite.

Lynas, who is not a natural scientist, must be highly commended for basing his book thoroughly on science — more so, in fact, than some popular books on climate change written by scientists. Gloomy as his story sounds, in some cases he may even be too optimistic. The possibility of violent conflict in regions struck by drought and food shortages is only mentioned in his three-degree-warming chapter. A recent report by the German Advisory Council on Global Change (www.wbgu.de/wbgu_jg2007_engl.html) sees this risk arising much sooner.

The book ends with a lucid description of the state of denial about climate change that humanity is still in (but hopefully now emerging from), and a good account of the policy options available to us to stop global warming. Lynas is interested in leaving the reader ready for action, rather than depressed.

Lynas is a gripping story-teller, making the book infinitely less tedious than the papers it is based on. A must-read for those who can stomach it.

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Climate change will bring water shortages to many regions, but it may end ongoing drought in others.

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