



A river delta in Iceland, seen from the air.

CONSERVATION

# Earth reframed: a big idea

Huw Lewis-Jones reflects on how conceptualizing nature anew became a call to action.

Are we robbing the next generation by impoverishing the planet? Can we find a way for economies to grow without depleting the environment? Barely 50 years ago, such provocative questions might have seemed unimaginable. This was not because people were unaware of the damage already wreaked. Instead, as an intriguing book reveals, no one had fully conceptualized the intricate interconnections of nature. Without that framing, humanity could not adequately describe the scale of its own impact on the planet. From the infinitely complicated was born a simple term: the environment.

In *The Environment: A History of the Idea*, environmental historians Paul Warde, Libby Robin and Sverker Sörlin trace the concept's emergence from 1948 to today. They show that in the years following the Second World War, awareness grew of humanity's capacity for cataclysmic destruction. Fears for the

future ignited a desire to improve definitions of Earth systems. The environment as a concept was nurtured over succeeding decades in political demonstrations, unsung conferences and drawn-out legislative processes. The story is also one of new tools of measurement and interdisciplinary thinking, the aggregation of scientific results and shifting authorities, later enabled and enhanced by the digital revolution.

A vocabulary evolved to frame human-driven effects on the planet during post-war reconstruction, a feverish period for



**The Environment: A History of the Idea**

PAUL WARDE, LIBBY ROBIN, AND SVERKER SÖRLIN  
*Johns Hopkins University Press*  
(2018)

building global institutions and philosophies. In 1948, one of the first large-scale environmental organizations — the International Union for the Protection of Nature (IUPN), later the International Union for Conservation of Nature — was founded in Fontainebleau, France. Its mission was the “preservation of the entire world biotic community”; the idea of placing absolute limits on essential resources, later captured in expressions such as ‘peak oil’, was born. Yet, as the authors point out, that year also saw the launch of Soviet leader Joseph Stalin’s ‘Great Plan for the Transformation of Nature’. In response to half a million deaths from drought and famine in 1946–47, Stalin ordered a programme of dam and irrigation construction to protect the future of agriculture on the steppes. It ultimately wreaked “new havoc, including the desiccation of the Aral Sea”.

‘Thinking globally’ had long predated

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the IUPN. Nineteenth-century polymath Alexander von Humboldt, for instance, saw nature as a “living whole” and predicted climate change. Soviet scientist Vladimir Vernadsky introduced the idea of Earth’s life-supporting zone in his 1926 book *Biosfera*. But by the 1950s, an infrastructure of expertise and mainstream will had arisen to sustain the global approach.

A new cadre of experts was called upon to help inform public understanding. They included biologist Rachel Carson — who had been publishing popular books on marine biology since 1941 — and ecologist William Vogt, author of the 1948 *Road to Survival* (A. Rome *Nature* 553, 152–153; 2018). In 1954 came geochemist Harrison Brown’s rumination on planetary resources and human population, *The Challenge of Man’s Future*. In 1970, the first Earth Day took place — and systems scientist Jay Forrester developed a model of global dynamics based on 120 lines of computer code. That laid the basis for the Club of Rome’s hugely influential report *The Limits to Growth* in 1972.

The environment as an idea “burst into life in a futurological soup”, as the authors write, but it was also driven by pioneering scientists compelled to provide solutions to the degradation they witnessed. The ambitious 1955 international symposium *Man’s Role in Changing the Face of the Earth*, called by the New York-based Wenner-Gren Foundation for Anthropological Research, began to shift the emphasis to humanity as culprit. It brought together the likes of geographer Carl Sauer, zoologist Marston Bates and urban-planning theorist Lewis Mumford, but regrettably only one woman: plant geneticist Janaki Ammal, then leading the Botanical Survey of India.

A decade on, Future Environments of North America, convened by the US Conservation Foundation in Warrenton,

Virginia, and including many of the same people, looked to extend those ideas across disciplines, from conservation to geology, economics and sociology. ‘Public policy’ and ‘management’ became part of established discourse, and the vision of Canadian ecologist Pierre Dansereau was widely embraced: “A valid imaginary reconstruction of our world is now our greatest task. It may even be the condition of our survival.”

Five decades on, that warning is more important than ever. Overwhelming evidence reveals how Earth-system processes, from hydrology to biology, are altered by human activity. With the concept of the Anthropocene, an epoch defined by human impact on Earth, reaching the mainstream — as much metaphor as formal term — it is useful

to look back and consider how conversations sustaining this theme first found voice, and to examine the challenges this radical way of thinking faced. Many now well-known threads in modern conservation and ecology — resources, biodiversity, pollution and climate change — have a cultural history. *The Environment* maps that territory well.

As I was reading it, the 2018 special report of the Intergovernmental Panel on Climate Change launched in South Korea. It finds that limiting global warming to 1.5°C above pre-industrial levels, rather than 2°C, (as pledged in Paris in 2015) will require “rapid and far-reaching” transitions in land use, energy, industry, buildings, transport and cities. Refusal will trigger a staggering sequence of knock-on effects

**“As environmental movements past have shown, we need imagination, accuracy, long-term political will — and hope.”**

at every scale. At least twice as many key insect pollinators and plants would be likely to lose half their habitat. Corals would be 99% lost. There are thousands of other desperate scenarios, across species and landscapes. Beyond “integrated expertise” — a concept unfortunately challenged by leaders of some of the world’s most powerful economies — concerted, immediate action by governments is imperative. Individual action is still crucial, but might not be enough without policies that look beyond the political short term.

In 1987, Earth scientist Wallace Broecker noted in *Nature*: “We play Russian roulette with climate, hoping that the future will hold no unpleasant surprises” (W. S. Broecker *Nature* 328, 123–126; 1987). That narrative of ecological collapse has finally found its audience: as Warde, Robin and Sörlin show, we have progressed since the word environment bubbled into public consciousness. But some still refuse to listen. How can so central a concept retain urgency and impact in the decontextualized online war of words, truth, lies, expertise and its rejection by the march of populism?

As environmental movements past have shown, we need imagination, accuracy, long-term political will — and hope. “The environment is about people, too,” the authors note, “and how they respond to its changes and challenges.” Our relationship to nature goes far beyond resources, amenity or the scientific idea of an archive we learn to read. There are, as *The Environment* shows, ethical complexities in how we use and abuse the planet — and in how we frame its improbable riches. ■

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## SPACE SCIENCE

# A rock legend retells the race to the Moon — in 3D

Queen guitarist and astrophysicist Brian May’s latest collaboration is a stereoscopic delight, finds **May Chiao**

In 2019, it will be 50 years since the first Moon landing. Almost more remarkable is that no human has touched that surface since Gene Cernan’s lunar stroll during the last of NASA’s Apollo missions in 1972. To celebrate the scale of that programme, writer and editor David Eicher, together with

Brian May — astrophysicist, Queen guitarist and stereoscopic photographer — take us back to the beginning in the spectacular *Mission Moon 3-D*.

On 25 May 1961, President John F. Kennedy declared that the United States would land a man on the Moon and bring him

**Mission Moon 3-D: Reliving the Great Space Race**  
DAVID J. EICHER AND BRIAN MAY  
*London Stereoscopic Company* (2018)

safely back before the decade was out. That ambitious timetable surprised the president’s own science advisers, as well as the US Congress and the rest of the world. Kennedy was spurred by the phenomenal successes of Soviet space exploration. Sputnik 1, launched in 1957, was the first artificial satellite to orbit Earth; and a month before Kennedy issued his challenge, Yuri Gagarin had become the first human in space.

The story of how NASA overtook the Soyuz programme during the cold war has been told many times — in interviews and books and on film. So what do Eicher and May bring to the table?

Primarily, Eicher compares the Soviet ▶