

TIMES EVOKE

OUR POST-NATURE WORLD

July 2023 will be the hottest month ever recorded on Earth, manifest in the heatwaves searing Europe and the surreal temperatures — 48°C in Arizona, USA, 52.2°C in Xinjiang, China, 66°C in Bushehr, Iran — experienced elsewhere. Setting islands ablaze and baking entire rivers, this heat has an insidious new quality — scientists find these heatwaves have been made hotter by over 2°C not by forces of nature but humanity. This is the result of human-caused changes to the planet, summarised by researchers as ‘The Anthropocene’ and pithily described by Antonio Guterres, the UN Secretary General, as ‘the era of global boiling’.

We are here now because of humanity’s twin obsessions — combustion and consumption. The first rocketed as humans discovered the power of fossil fuels to transform industry. The second grew as billions discovered material culture, a smorgasbord of items, some necessities, some vanities, most ending as rubbish in soil and seas, circulated via the global scaffolding of fossil fuel-powered industry. These enchantments beguiled humans to think of Earth only as an ATM — and a trash can. Human activities have thus suffused nature’s balanced atmosphere with greenhouse gases, heating the planet’s air and water — July has seen the warmest ever oceans on Earth too. Human impacts even reflect in Earth’s geology now, scientists dating the Anthropocene to 1950, its traces captured in Canada’s Lake Crawford. This dating also raises questions over accounting for colonial history, which actually powered the Anthropocene.

This epoch thus brings us face to face with truth and reality. Earth is neither inanimate, nor passive — the more CO₂ we emit, the more heat it will return. Wrecking elements, ecosystems and other species has brought us to the brink of what William McKibben called ‘a post-nature world’, a place of no stability with climates twisted out of recognition by human beings. This explains why strawberry-studded summers now cause heatstroke while once-gentle monsoons destroy hills. However, as Times Evoke’s global experts emphasise, we can step back. An awareness of our impacts can help muster the nerve needed for alternatives. We require renewable energy, material and imaginative, to see how extraction, consumption and wastage don’t make the world go round — they’ll make it stop. Join Times Evoke in exploring the Anthropocene — and help prevent a ‘post-nature world’.

‘Humans have created a new epoch on Earth — its markers include plutonium to chicken’

Colin Neil Waters, geologist and honorary professor at the University of Leicester, is Chair of the Anthropocene Working Group. Speaking to Srijana Mitra Das at Times Evoke, he discusses the drivers of a new planetary era:

What is the core of your research?
Our group has been investigating whether the Anthropocene should be included on the geological timescale of Earth — this means recognising that humans have had such an impact on the planet, we’ve changed it to the extent of starting a new epoch.



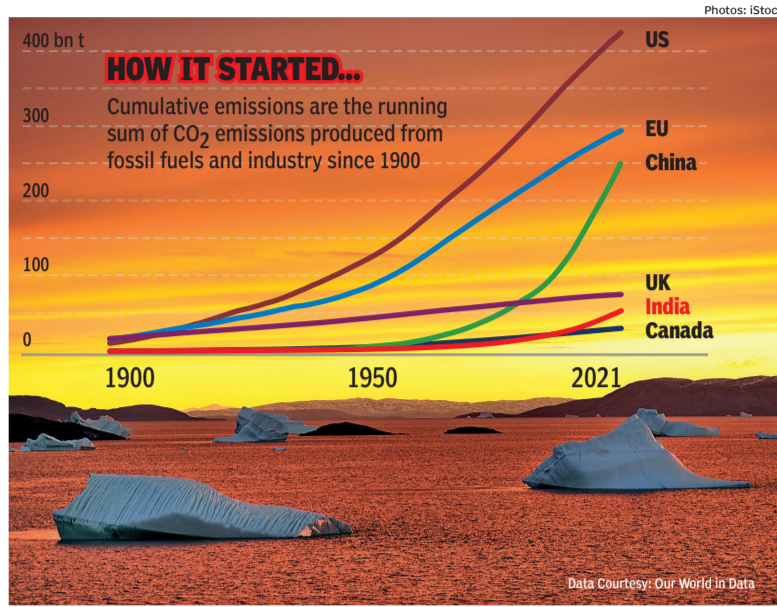
The present geologic time is called the Holocene which started 11,700 years ago after the last glaciation. Human civilisation expanded slowly across Earth then. However, from the mid-20th century onwards, human impacts have been so dramatic, there has been a very sudden change between that world of the Holocene to what we are living in now.

How do you define the Anthropocene?
To define units in geologic time, we study significant changes, examining sedimentary successions in lakes, oceans, corals, cave deposits, even glacial ice — these all have a record of what happened to the planet through time. We’ve been looking at 12 sites worldwide and recognised numerous changes — these include the presence of novel materials like plastics, chang-



HAVING A BLAST: The weapons industry masked many of its ecological impacts

es to Earth’s chemistry and atmosphere, including increasing greenhouse gases, pollution and altered planetary biology with the loss of species and transfers of these across regions. All of these are encompassed in the concept of the Anthropocene.



We’ve now selected one site called the Global Boundary Stratotype Section and Point (GSSP) or the ‘Golden Spike’ — in that core, we can place the exact boundary where the transition between the Holocene and Anthropocene happens, using this as a global reference. We’ve announced Crawford Lake in Canada as our candidate GSSP.

What does Crawford Lake show us about Earth’s history and human impacts on it?

The core of sediments from there has a history going back around 1,000 years. It has an annual increment of growth or layering which is like tree rings, with variations — these indicate changes in chemistry, species, pollen from trees, etc., showing how the environment altered over time. Initially, there were signs of indigenous North American populations developing agriculture the 1300s onwards there. The colonial phase saw further agricultural developments. But these were local signs of change.

From the 1950s, you start seeing a global signal with pollution like mercury and lead from heavy industry, altered nitrogen — there was a doubling

of nitrogen across Earth in the 20th century, driven largely by fossil fuels and nitrogen-based fertilisers — causing different species to emerge alongside diseases like Dutch Elm which ravaged the area in the 1950s.

But the key marker — importantly, this was present across all 12 sites — was the appearance of plutonium. This comes from the detonation of nuclear weapons in the 1940s and 1950s, spreading radioactive materials across Earth, this plutonium spike becoming a massive global signal. Burning fossil fuels increased carbon dioxide (CO₂) in the atmosphere and produced small particulates, changing Earth’s chemistry — these have even been found in the Antarctic’s ice core.

Are there other Anthropocene markers?

Plastic is a novel material herein — most polymers were invented around the 1940s, rapidly becoming part of our lives. Alongside rivers and oceans, microplastics are even in the atmosphere now. From the 1950s, there was

also a large change in the biology of domesticated species, embodied in the broiler chicken — compared to the red jungle fowl, the modern chicken bred for consumption has bone sizes which are twice as big and body mass five times greater. This happened rapidly since the 1950s, with this changed chicken looking practically like a new species. Chickens are the most abundant bird on Earth now and could be the fossil marker of the Anthropocene.

Most of these changes emerged from the West — what does this indicate about climate justice?

By the 1950s, the signals of human impacts had become truly global. Originally, Paul J. Crutzen, the Nobel Prize-winning meteorologist, felt the Anthropocene should be dated to the Industrial Revolution. But when we looked at evidence of changes that happened then, these were much more in Europe and North America and spread slowly. However, after WWII, the transitions impacted all countries. Greenhouse gases are a global issue now — historically, Western countries emitted much of these. But by volume today, countries like China are the biggest emitters. Total emissions are more globally spread — so are impacts on temperature, etc.



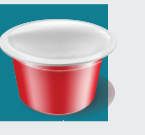
BEYOND BEAUTY: Eucalyptus and lantana (L) are invasive species humans moved

Is an understanding of human impacts central to environmental action?

Many impacts initiated in the mid-20th century started without much knowledge. Information about what fossil fuels or plastics do is widespread now. Scientists show us these effects

A MATERIAL WORLD

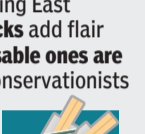
Many everyday objects are environmentally risky — over 30% US households now own a coffee pod machine. But such pods are either plastic or aluminium and hard to recycle — billions thus reach landfills, damaging soil and water. Coffee gourmands, seek out more sustainable options for your brew



Toothpaste is meant to brighten our smiles — but many contain plastic microbeads which add to the over-eight million tons of plastic entering oceans each year, choking marine wildlife. Microbeads are too small to be picked up in clean-up efforts and also pull toxic chemicals with them — opt for simple toothpastes for a real grin



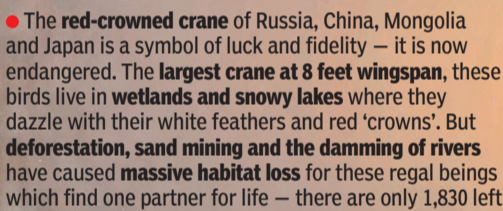
Watch out when eating East Asian dishes. Chopsticks add flair to the meal but disposable ones are denuding forests — conservationists estimate over 4 million trees are chopped annually to make these. Invest in a durable pair of your own — and enjoy a real bon appetit



Research: Smithsonian Magazine, CNN, BBC, Scientific American, Encyclopaedia Britannica

with real-time monitoring. Hence, it’s easier to make political decisions today about how to proceed — should we keep emitting like this or find alternatives? In the 1950s, a global population of 2.5 billion people dramatically changed Earth’s environment — if eight billion people were collectively determined, they could have a big impact on correcting our footprint. Once, lead in gasoline was common but with information, it became widely banned, reducing it in the atmosphere. We can have a significant impact quickly — if we know we have an issue.

DEAR FRIENDS, PLEASE STAY
The red-crowned crane of Russia, China, Mongolia and Japan is a symbol of luck and fidelity — it is now endangered. The largest crane at 8 feet wingspan, these birds live in wetlands and snowy lakes where they dazzle with their white feathers and red ‘crowns’. But deforestation, sand mining and the damming of rivers have caused massive habitat loss for these regal beings which find one partner for life — there are only 1,830 left



The high brown fritillary was once Britain’s most abundant butterfly, fluttering over woodlands or limestone rock outcrops. Since the 1950s, it’s experienced a 96% decline — this coincides with the clearing of bracken-based habitats for human activity and the loss of its food plant, the common dog-violet. Current efforts are helping with farmers and conservationists managing bracken landscapes more sustainably, hoping these striking beings reappear

The northern white-cheeked gibbon of southeast Asia is critically endangered. Both golden and jet-black, the gibbon has arms 1.4 times longer than its legs, handy for arboreal lives, gibbons residing in treetops, hugging each other tightly as they sleep. But their forests have been cut for fuel, timber and farming. As gibbons shrank by 80% over the last 45 years, they were also hunted for traditional medicine — but what could heal their loss?



‘The Anthropocene has colonial roots — its technological leaders gained from empires like India’



Mahesh Rangarajan is professor of history and environmental studies at Ashoka University. Speaking to Times Evoke, he discusses the complex colonial past — and a possible future of equity — shaping the Anthropocene:

The Anthropocene refers to a period of accelerated — and, to some extent, irreversible — changes in the ecosphere. In this, human actions have a central impact. Paul Crutzen first used the term for the period from the 1780s, coterminous with the Industrial Revolution in Europe (principally the United Kingdom) which was powered largely by fossil fuels, coal, oil and gas. Their combustion caused changes in greenhouse gases in Earth’s atmosphere, CO₂ being only one here.

The other definition used by historians, particularly John McNeill, has been applied to the period after 1945 — this has seen far-reaching transformations on Earth, much greater than anything in previous history. This includes the use of fossil fuels but also biodiversity loss, oceanic ecosystem change, an altered nitrogen cycle, etc. Importantly, these different transformations interact with each other — they are not to be viewed in isolation. There are different notions of the Anthropocene — but a commonality between them is that all these changes have a global, regional and local dimension.

It is also understood that the drivers of this epoch are not uniform — not all human societies everywhere have the same impacts. But the Anthropocene draws attention to how even a few who are burning fossil fuels or extracting minerals, transmitting compounds through the biosphere, have consequences for everyone on Earth.

Geologists have now dated the Anthropocene as starting in 1950. However, we cannot understand this view of the ecosphere without understanding the ‘technosphere’ or the technologies used by humans. Mid-20th century onwards, the impacts of these technologies were magnified



WARMLY AS EVER: The Industrial Revolution brought breakthrough commerce — with ever-rising fossil fuel emissions

— and the leaders of these were countries which had colonial empires earlier. Much of the Industrial Revolution was also about cotton, grown in India, Egypt and the Americas, mostly using slave labour in the US South. Cotton created wealth in England because of its overseas markets acquired often

THE PAST IS PRESENT

through force and deindustrialising Asia. So, 1950 has very deep roots. This past and climate justice today are entirely related. The world has a vast number of people who lack adequate access to energy from nutrition, cooling, heating or basic transport. We cannot freeze at these levels of development. But the manner in which energy, fossil fuels and other resources are extracted and used to create more power reflects how a disproportionately small number of people have a much larger environmental footprint — consider the 10 richest countries versus the 50 poorest.

This is not an argument for bringing all to the same base but the Anthropocene demands we phase out these extreme forms of energy inequality. We need wiser forms of

energy — and far more equity by privileging public transport over private, the targeted use of fertilisers instead of broadcast modes and renewable energy with minimal impacts on ecosystems and marginalised communities. Climate justice must go with the move to a greener model that keeps Earth safe, habitable and productive.

The Anthropocene also changed the equation between humans and other beings. The ecological writer, Barry Commoner, argued the technological revolution made people forget basic principles of ecology, such as all things being interconnected. Even flows of nitrogen and carbon need life systems to function — birds, fish, insects, etc., are all part of those cycles. Commoner argued nature knows best and its species evolved in consonance with its principles of life. The biosphere — the thin film of life which covers the planet and holds everything that lives — interlinks all organisms and the material substances around them. Humans have transformed many of these substances. It requires maturity to recognise this now. The way we conduct our activities has consequences — Boris Pasternak, the Nobel Prize-awarded Russian writer, said we should think of the consequences of such consequences. Establishing such thought is crucial to how we will relate to humans and other animals in the Anthropocene.

‘The horse symbolises both wildness and taming in the Anthropocene’



Yashaswini Chandra is Lecturer in South Asian Art History at the University of Edinburgh. Author of ‘The Tale of the Horse: A History of India on Horseback’, she tells Times Evoke about this being in the Anthropocene:

I work on South Asian art and history. I research the early modern and colonial periods. There are connecting threads in my work, the foremost being the placing of art at the centre of interdisciplinary research and pedagogy. The second is an interest in marginalised places and groups in South Asia — including animals. Over time, I’ve also become interested in what is termed ‘the sense of planet’, as reflected in Indian art as well. This has developed into a focus on animal history, interspecies relations and ecology and I have written a history of the horse in India — which is also a history of India from the lens of the horse.

This animal epitomises the historical relations that evolved between humans and non-humans. The history of these two species was closely intertwined — their partnership in fact shaped human civilisation. History would have taken a different turn had people not learned to domesticate and ride horses. In the case of the Indian subcontinent, game-changing effects this relationship has had could be seen in migration, trade and warfare over time. So, a tendency grew to view the horse as a war animal or an item of trade. But there have also been social identities formed around the horse which were subaltern and not only elite martial ones. There was a cultural and emotive dimension to this

partnership as attachments were often formed between riders, caretakers and their horses. I’ve also read of how the horse even enabled the romantic life of humans as lovers travelled on horseback to reach each other faster — the sight of bridegrooms riding horses remains a familiar one in India.



HORSE POWER

The writer Tabish Khair wrote in a review of my book of how the horse was human beings’ best friend — until it was replaced by the dog. The horse was thus a vital character in the human experience of the world. It has become marginal now but it has had an enduring impact on our imagination, which is perhaps best reflected in language and art.

The horse stood for both wildness and taming — this is the

THE EQUINE CHUKKER: Polo symbolises strands of the Anthropocene, from tribalism to feudalism and colonialism, all yoking a horse’s wild quality

animal’s dualism which allowed it to become so embedded in our psyche. It is fundamentally free-spirited even as it represents gaining control over wilder instincts. Horse-riding nomads over centuries threatened the world order but also became the founders of great empires, continuing to depend on horses to hold onto power. Even today, it’s a thrilling sight to see a horse or herd running wildly — this is why it continues to be a leitmotif in art, cinema and advertisements. From ancient cave paintings onwards, there is no dearth of depictions of horses in most cultures around the world — importantly, the anthropocentric or human-oriented gaze might often focus on the rider or the bigger picture but it’s worth remembering the horse is always intended to be a significant character in these compositions. Perhaps the painter who has become most renowned world over for his portraits of horses is George Stubbs, even though his work was not really considered high art in his lifetime.

Today, we look upon horses with both wonder and neglect. We can be struck by splendid horses seen at parades, races and polo matches — but we hardly ever notice the sorry-looking horses which might once have pulled carts or tongas or were beasts of burden. It’s still a powerful symbol though, whether in relation to mounted police in so many regions or a bridegroom who defies upper-caste appropriation of the horse by riding it in his own wedding procession. We project ourselves, our best and worst instincts, onto animals now. The horse symbolises that well in the epoch of the Anthropocene.

READERS WRITE

Dear Times Evoke, I enjoyed Sriram Murali’s TE interview (22nd July) on fireflies with the whole topic itself being so well-picked. Fireflies and their expansion through their natural lighting are unique. Human light impacts on them are a huge concern now. Thank you, TE, for making us aware of this. — Dikshita Jasrotia, Delhi

What a beautiful piece on the monsoons and fireflies! When I read my favourite TE, I learned how glowing fireflies are a miracle of nature. I loved the photographs too. I’ll visit Rajmachi which still has firefly species but I’ll do so very quietly, as Sriram Murali has suggested. — Vaibhav Chakure, Pune

Another beautiful TE feature that reaffirms the deep commitment of The Times of India Group towards saving precious nature and our planet. Sriram Murali’s environmental work on fireflies is phenomenal. Keep it up, TE! — Anant Balkrishna Gautampurkar, Navi Mumbai

Sriram Murali was truly in-depth, offering informative aspects about fireflies which many people would be unaware of, including the impacts of harmful artificial white light on them. Such important TE information should be a part of school curriculums. — Krishnakumar Menon, Chennai

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