

# Learning to Think Like a Planet

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***The Anthropocene - literally, the Age of Humans.***

***The term entered popular usage as the proposed designation of a new geological epoch generally held to date from the 1950s. But over recent years it has been widely adopted across the social sciences and humanities to signify a transition in human affairs in response to changes in the Earth System triggered by humankind. The Anthropocene Transition is about what we do collectively to reshape the most fundamental of our relationships which has become deeply dysfunctional – our place in the Earth's precious web of life. Ultimately it is about what it means to be human in the 21st century and beyond.***

There has never been anything like 7.6 billion humans on planet Earth. There has never been another species able to invade and occupy almost every ecological niche in the biosphere from the equator to the poles. There has never been another species able to force so many of its planetary cohabitants into an unequal contest for habitat and critical environmental resources as to trigger a 6th planetary extinction spasm. And there has never been a single species capable of disrupting the life support systems of the planet.

From the very earliest chapters of our story humans have altered their immediate environment. But now, for the first time in the evolution of human cultures, our impacts on the Earth System have become inter-connected, systemic, and global.

This is in part a function of our sheer weight of numbers and of the even greater numbers of the animals we breed for our use, currently estimated as 70 billion each year. It's also a function of our ever more powerful technologies and the capacity they give us to exploit and manipulate the environment. But most significantly it's a function of a globalised system of hyper-production and consumption that depends on continuous growth and an unceasing flow of raw materials to maintain its stability.

We are a species in swarming mode consuming our host, with a technological hubris largely unrestrained by ecological or ethical limitations, driven by a globalised economic ponzi scheme.

Hence, the Anthropocene -- the age of humans.

## Humankind a geological force

The term "Anthropocene" arose from the physical sciences. It denotes the end of the relatively benign and stable environmental conditions of the Holocene, the very brief, in geological terms, 11-12,000 year period since the end of the Palaeolithic Ice Age in which most human civilisations past and present emerged. Only in this land, now called Australia, does there exist a culture that stretches back with uninterrupted continuity beyond the last Ice Age.

While the name and starting date have been vigorously debated, usually because of the supposed implication of the term "anthropocene" that humanity as a whole is equally responsible for this rupture in the Earth's history, the focus of the Earth sciences is, in the words of leading geologist Jan Zalasiewicz, "planet-centred rather than human-centred"<sup>(1)</sup>. Their concern has been to establish if a planetary state change is in fact underway and, if so, when it began. At this point the empirical evidence from all the relevant disciplines is overwhelming. We can now say with a high degree of certainty that we are witnessing the start of a new biophysical epoch, one likely to be characterised by systemic planetary disruption and instability.

The Earth can be seen as a single Complex Adaptive System – an integrated whole, a nested system of systems, all dynamically interacting and continuously forming new structures and patterns of relationships that cannot be readily isolated or predicted with any certainty. It is a system that has evolved to its present state of emergent, life-sustaining complexity over 4.5 billion years -- a number functionally incomprehensible to our human consciousness.

While humans came very late in the history of the Earth System, human societies have always been an embedded part of it. But, as Soviet geochemist Vladimir Vernadsky wrote, with great prescience, in 1926, "man [sic] is becoming a mighty and ever-growing geological force"<sup>(2)</sup>.

## The Anthropocene Paradox

While it has been the physical sciences that have progressively revealed the scale and nature of the Anthropocene, we must not forget that this research is describing the symptoms and the bio-geo-chemical dynamics of these changes. It does not necessarily address their origins in the human-technology complex.

Because these symptoms are most easily seen in physical systems like the climate, the water cycle, the carbon cycle, the phosphorus and nitrogen cycles, biodiversity loss, habitat destruction,

(1) Jan Zalasiewicz, 'The Extraordinary Strata of the Anthropocene,' in *Environmental Humanities: Voices from the Anthropocene*, ed Oppermann and Iovino, London, Rowman and Littlefield International, 2017.

(2) Vladimir I. Vernadsky, 'The Biosphere', originally published in Russian 1926, republished in English: Springer Science & Business Media, 1998. Long unknown in the West, 'The Biosphere' established the field of biogeochemistry and is one of the classic founding documents of what later became known as Gaia theory. It is the first sustained expression of the idea that life is a geological force that can change Earth's landforms, its climate, and even the contents of its atmosphere.

ocean acidification, etc, much policy debate and informed public awareness is focused on disruption of physical environments as problems we need to address. And indeed we do.

But, at least in the public domain, we talk as if each symptom is a discrete problem with its own answer – banning CFCs to solve atmospheric ozone depletion, renewable energy to solve climate change – and by addressing them separately we can ignore the dynamic interconnections and unpredictable knock-on effects with the potential to cascade across the whole Earth System. Thus our political responses have generally been conceived within dubious notions of simple linear causality and framed in terms of technological innovation and hard-systems interventions like geo-engineering.

This encourages a very dangerous disconnect, a belief that the answers are “out there” in the hands of scientists and technocrats and politicians. But the changes we have triggered just in the lifetimes of the post World War II generation will endure for thousands of years.

There is no going back. We must, as a species, learn to live with what we have created however discomfiting this may be. This clash of our power to wrought planetary change with our inability to control what we have done is the great paradox of the Anthropocene.

### **Understanding the Earth as a whole**

The concept of the Anthropocene has propagated and in many ways mutated through the humanities, social sciences and, increasingly, in the popular imagination (even if in fragmentary and sometimes incoherent ways). As Jan Zalaisiewicz says, "There are many Anthropocenes out there, used for different purposes along different lines of logic in different disciplines"<sup>(3)</sup>.

The uses of Anthropocene as a concept in the humanities and social sciences entails, in the words of historian Dipesh Chakrabarty, "a constant conceptual traffic between Earth history and world history", that is, between geological time and human time. "[I]f we do not take into account Earth-history processes that out-scale our very human sense of time", Chakrabarty writes, "we do not quite see the depth of the predicament that confronts humans today"<sup>(4)</sup>.

‘Anthropocene’ is a powerfully integrative concept. It draws together our thinking about specific aspects of Earth System disruption — like climate change or biodiversity loss or ocean acidification — to focus on their interdependencies. It illuminates the ways in which economic, social and cultural malignancies at the core of the dominant globalised mono-culture are triggering major shifts in the Earth System which in turn rebound on human systems and practices. By directing our attention to whole system dynamics, it encourages us to see the Earth as a single socio-ecological

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(3) Jan Zalaisiewicz, 2017

(4) Dipesh Chakrabarty, 'Anthropocene Time' *History and Theory* 57, no 1, March 2018

system of which human societies are dynamically interactive parts, conditioned by the whole. This is not a new idea. Buddhist scholars, for example, speak of the dependent co-arising of phenomena. But for the dominant Western culture it demands a reset of our reductionist worldview for the Anthropocene cannot be adequately understood through any single disciplinary lens. It requires a holistic knowledge synthesis that aims to transcend closed discipline-based modes of inquiry, driving a shift towards a transdisciplinary, Earth-centric epistemology.

Holism is an epistemic principle that emphasises the intrinsic coherence of complex systems and their emergent properties that cannot be understood from a knowledge of their parts. It implies that the system as a whole conditions in important ways how the parts behave, even while interactions between the parts determine the nature of the whole. As an approach to inquiry and learning, holism does not displace other modes of knowing but transcends them and opens the door to a more creative engagement with change in complex systems at all levels from the micro-organic to the planetary. Both scholars and activists must set aside their fragmented disciplinary and historically-bound world views to consider the implications of humans unsettling the entire Earth System.

## **A crisis of culture**

The Anthropocene is a concept that challenges many of our most deep-rooted taken-for-granted cultural assumptions.

Throughout recorded history humanity has regarded the continuity of Nature as a given — the reliable if episodically capricious backdrop against which the glories and tragedies of the human story are enacted. Now that backdrop is shifting rather rapidly. In the face of increasingly radical discontinuity, we must achieve feats of rapid adaptation beyond anything in our evolutionary experience. This will be a challenge for many generations to come. As science and technology scholar, Sheila Jasanoff, warns, it could take "decades, even centuries to accommodate to ... a revolutionary reframing of human-nature relationships."<sup>(5)</sup>

For this reason in the Anthropocene Transitions Program at UTS we chose to use the term "Anthropocene Transition" to designate a dawning historical period of indeterminate duration characterised by widespread and erratic disruption of human systems interacting with unpredictable changes in the Earth System. We can confidently say it will be an era that will profoundly challenge humanity's collective resilience and creativity. We can't know where this period of transition will take us over the generations to come but we can be assured it will result in a fundamental reframing of what it means to be human and of our relationship to life on Earth.

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(5) Sheila Jasanoff, 'A New Climate for Society', *Theory, Culture and Society* 27, nos. 2-3, 2010

Anthropocene Transition is a cultural term that encompasses the ways in which changes in the planet's bio-geo-chemical dynamics, triggered by the human-technology complex, interact with that complex. It spans the geo-political, economic, social, and even the personal. Look around. The symptoms are already everywhere apparent. They include resource wars, increasing competition for shrinking productive lands and fresh water, the eruption of violent extremisms, economic instability, trade wars, huge disparities of wealth and power, rising food shortages coexisting with massive waste, an ever-increasing risk of pandemics, large-scale population movements and societal trauma, political polarisation, and pervasive demoralisation and despair. These are soft-systems issues – driven by cultural understandings, aspirations, behaviours and values.

Culture is a civilisation's shared way of making sense of the world: what is real, what is knowable, and what has value. It conditions our ways of being, seeing, doing and imagining. It determines what we consider appropriate action in and on the world. It defines the taken-for-granted limits of the possible and the acceptable. As Swedish scholar Steven Hartman has written: "The great environmental predicament of the early 21st century is not primarily an ecological crisis, though its ramifications are far-reaching within ecological systems. Rather it is a crisis of culture."<sup>(6)</sup>

In the final analysis the Anthropocene Transition may prove to be either the apotheosis or the dénouement of humanity's cultural evolution.

### **Out-scaling politics**

Most of the public debate about specific aspects of the Anthropocene, like climate change, takes for granted the need to maintain the economic, social and political status quo, even as that status quo unravels around us. Unfortunately our political, commercial and educational institutions show themselves to be stubbornly wedded to "business-as-usual".

One of the most entrenched business-as-usual orthodoxies is belief in the primacy of economics and the equivalence of progress and growth. As we approach and exceed key planetary thresholds the words of evolutionary economist and cofounder of general systems theory, Kenneth Boulding, resound with ever greater force: "Anyone who believes exponential growth can go on forever in a finite world is either a madman or an economist."<sup>(7)</sup>

Conventional thinking across the political spectrum from right to left sees politics as the principal vehicle for social change. But what does it mean when the issues we face lay well beyond the remit of politics as we know it? British social theorist Nigel Clarke expresses this conundrum when

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(6) Steven Hartman, 'Unpacking the Black Box: the need for Integrated Environmental Humanities (IEH)', *Future Earth Blog* (online), June 3 2015, (<http://www.futureearth.org/blog/2015-jun-3/unpacking-black-box-need-integrated-environmental-humanities-ieh>)

(7) Attributed to Kenneth Boulding in United States Congress, House (1973), *Energy reorganization act of 1973: Hearings, Ninety-third Congress, first session, on H.R. 11510*. p.248

he observes that the Anthropocene "confronts the political with forces and events that have the capacity to undo the political."<sup>(8)</sup>

"Political thought", says historian Dipesh Chakrabarty, "has so far been human-centric, holding constant the 'world' outside of human concerns or treating its eruptions into the time of human history as intrusions from the 'outside'. This 'outside' no longer exists."<sup>(9)</sup>

Around the world under virtually every form of government we see political processes and institutions floundering, paralysed, deeply polarised, and frequently mired in denial in the face of existential threats. While often diagnosed as a failure of political will or leadership, this hiatus more likely reflects forms of governance that evolved in and for a fundamentally different world. Thus our institutions lack the capacity to deal with complex, long-term, planetary-scale processes. They are intrinsically maladapted for the Anthropocene. Again we see the clash between human time embodied in the political process, and geological time that is shifting the very ground on which we stand. As Chakrabarty says:

"What does it mean to dwell, to be political, to pursue justice when we live out the everyday with awareness that what seems 'slow' in human and world-historical terms may indeed be 'instantaneous' on the scale of Earth history, that living in the Anthropocene means inhabiting these two presents at the same time? I cannot fully or even satisfactorily answer the question yet, but surely we cannot even begin to answer it if 'the political' keeps acting as an anxious prohibition on thinking of that which leaves us feeling 'out-scaled'."<sup>(10)</sup>

Let's consider one example of this mismatch between our legacy institutions and the needs of this moment of existential danger and creative challenge.

Sovereignty is a foundational concept for our systems of governance, jurisprudence and international relations. But its expressions in the sovereignty of the nation state since the Peace of Westphalia in 1648 and the sovereignty of the individual according to some readings of the United States Constitution of 1787 have become inimical to the viability of our own species and many others as well. A new conception of sovereignty vested in the Earth and asserting the preeminence of respect for all life and the integrity of the biosphere has become a necessity. Such a definition of Earth sovereignty as prior to and more fundamental than human agency would provide a basis on which to reframe all our doctrines of authority, justice and responsible governance.

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(8) Nigel Clarke, 'Geo-politics and the Disaster of the Anthropocene,' *Sociological Review* 62, 2014

(9) Chakrabarty, 2018

(10) Chakrabarty, 2018

## A new imaginary

The Anthropocene Transition challenges us to explore new ways of imagining ourselves and our relationship to the planet and the other complex life forms we share it with. To recap, this new imaginary entails:

- First, a move beyond a modular view of the Earth System as an aggregation of its component "spheres" to a more holistic and participatory view of our place in this complex, dynamic, tightly coupled, evolving system of systems;
- Second, abandoning the underpinning conceit of the human-technology complex — that humans stand outside of nature with first claim on environmental resources. The nature/culture divide has been at the core of Western civilisation for centuries. It is no longer a tenable worldview and the sooner we recover more intimate and empathetic ways of being present to the Earth the greater our chances of a successful Anthropocene Transition. Enduring indigenous cultures have much to teach us about the interdependence of all life, and about respect and responsibility for our relationship with the Earth.
- And third, a new sense of scale, both spatial and temporal that locates human experience within the Earth System and deep time. To grasp the full implications of this transformation of our Western worldview requires us to scale-up our imagination of the human. The fact that we have reached the numbers and invented the technologies that can impact the planet itself implies that we have unleashed forces of similar intensity to those that wiped out the dinosaurs 65 million years ago. We have reached "a time when the geological and the planetary press in on our everyday consciousness."<sup>(11)</sup> This not only requires us to stretch our social imaginations. It also has far-reaching ethical implications that call us to accept an expanded collective responsibility for the consequences of our cultural choices at planetary and geological (or deep time) scales for generations yet unborn and for non-human others.

Perhaps the place from which to face the uncertainty and the unknowable we will encounter in our journey through the Anthropocene Transition is from an agnostic viewpoint, not in a theological sense but as a commitment to approaching the experience of living as an open question. Certainly at this point framing the right questions about what it means to be human in this radically different reality should be a priority.

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(11) Chakrabarty, 2018

## Mitigation, adaptation, transformation

Learning to frame our thinking in whole planet, deep time scales doesn't mean resiling from urgently seeking every possible way to mitigate human impacts on the biosphere – like rapidly reducing and then eliminating our dependence on fossil fuels and stemming the tsunami of toxic and intractable wastes overwhelming many terrestrial and ocean eco-systems, habitats, communities and even whole regions. But there is one vitally important caveat: In framing these interventions we must remember that all human knowledge is incomplete and thus provisional and our actions must be tempered by the precautionary principle lest we make bad situations even worse -- which is the danger of attempts at large-scale techno-fixes like geo-engineering.

At the same time as mitigation we need to develop comprehensive adaptation strategies to deal with the accelerating disruptions that cannot be avoided or reversed in a human timescale. Our priority in this respect must be to strengthen the resilience of our social and ecological systems, that is, to build their capacity to absorb and even utilise disturbances. A resilient ecosystem, human community, economy or society can withstand unexpected shocks by reorganising itself to preserve its sustaining structure and functions. Adaptation strategies are particularly important for the most vulnerable communities, populations and social infrastructures, fragile eco-systems and endangered species which typically bear the brunt of environmental dislocation. Thus, eco-social resilience must be a core organising principle for the Anthropocene Transition. It establishes eco-systemic integrity as a fundamental design criterion for human technologies, economies, habitats and systems of governance.

Eco-social resilience focusses attention on the critical relationship between human systems and the eco-systems in which they are embedded and on whose vitality they ultimately depend. Within this context it values the preservation, enhancement, and ultimate unity of both social and "natural" capital and favours distributed networked technologies with localised capability and control instead of centralised, capital intensive systems, even those labelled "renewable" or "sustainable".

But mitigation and adaptation are palliatives, necessary palliatives for sure, but palliatives nonetheless. In the longer term humanity's future will depend on our success in creatively transforming the soft systems – the human systems – that are driving the disruption of the Earth System. Thus, along with mitigation and adaptation, the third dimension to our response to the predicament we have created: the transformation of human social, economic and political systems and core cultural values to align with the life support systems of the planet.

We can already see the often catastrophic effects of environmental, geo-political, economic, social



and institutional breakdown in many areas of the world -- in the Middle East, wide areas of Africa, parts of Asia and Latin America, and indeed in several "developed" countries. History teaches us that when social and political institutions fracture and collapse all too often conflict, displacement, famine and disease follow. If the probability of systemic breakdown in the Anthropocene is high in many places around the world, surely the sensible thing to do is to build our capacity to respond creatively rather than reactively. This offers the best chance of ensuring that the sites of such collapse do not become the settings for societal and political polarisation and conflict or, in worst case scenarios, the next killing fields.

In his 2006 book, *The Upside of Down*, Canadian political scientist Thomas Homer Dixon, discussing the likelihood of varying degrees of breakdown, coined the term "catagenesis" to denote: "The creative renewal of our technologies, institutions and societies in the aftermath of breakdown."<sup>(12)</sup> He argued that complex systems go through a continuous adaptive cycle that includes stages of growth, decreasing adaptability, breakdown and then renewal. It could even be said that breakdown is a necessary condition for renewal. Wouldn't it make sense, Homer Dixon argued, to prepare now to seize the opportunities for renewal inherent in breakdown?

Upending centuries of cultural orthodoxy in the industrial world will involve a shift from the crippling conceit that we are the exception, standing outside and above nature, to a story of eco-mutuality – a mutually enhancing human-Earth relationship that restores our place as a co-creative partner within the planet's community of life. Eco-mutuality is a core relational principle that incorporates the principle of equity but extends it beyond the sphere of social relations to embrace our interdependence with all living creatures and the eco-systems of which they are an integral part. It transcends the essentially anthropocentric and utilitarian concept of sustainability to recognise the intrinsic value of all life forms within the socio-ecological wholeness of the Earth System.

The virtual habitat of human culture has become the primary vehicle of our continuing evolution. We are both the subject and author of our part in a bigger evolutionary story. Now, the Earth calls us to mobilise this consciousness to creatively refashion the medium of our own evolution by restoring values of eco-mutuality at the core of our shared human culture. This means we must learn to think like a planet.

### **Reaching beyond the limits of sustainability**

For decades our principal response to the looming existential threats of our own making has been a grab bag of policies, processes, practices and products bearing the label "sustainable". But "sustainability" as both a concept and a practice all too often falls short of the mark. As

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(12) Thomas Homer Dixon, 'The Upside of Down: Catastrophe, Creativity and the Renewal of Civilization,' Island Press, 2006

Christopher Wright, co-author of *Climate Change, Capitalism, and Corporations: Processes of Creative Self-Destruction*, suggests, many of the policies and practices of sustainability are really about being less *un-sustainable*. As such they fail the test of proportionality — valuable but inadequate in the context of the challenges of cultural renewal and systemic redesign we face in the Anthropocene Transition.

Sustainability is a contemporary story that inspires many deeply committed people to worthwhile action. But it is a story being steadily leeched of relevance. Even fossil fuel corporations and their political camp followers proclaim their own version of the sustainability narrative, apparently without a skerrick of irony.

Within the fair dinkum sustainability community there is a perennial tension between the relative merits of "weak" sustainability, which aims for a pragmatic balance between the needs of the economy, society, and the environment using tools such as triple bottom line accounting; or "strong" sustainability which asserts the primacy of environmental values over the demands of both society and economy.

The 1987 Brundtland Report offered a now widely accepted definition of sustainability: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs"<sup>(13)</sup>. By making human needs the basis for judgement and action it reproduces the very problem that has brought us to the brink of catastrophe. Focusing on sustainability within the cultural and political envelope of the status quo means we maintain the convenient illusion that "we" (who?) are in control and can manage the transition to a viable planetary future by economic, technical and lifestyle tinkering. At the very least the continuing use of the term sustainability now requires a qualifying prefix such as "eco-systemic" to have any real meaning in the Anthropocene.

It's not that honest efforts to advance sustainability are pointless. Many significant incremental gains can be achieved. Indeed, the true worth of many sustainability initiatives lies not so much in their outcomes as in the opportunities they open up for essential professional and social collaboration and co-learning, particularly when embedded in value networks which have the potential to become learning networks. It's just that we're attempting ad hoc workarounds when the problem is with the operating system — the dominant cultural values and economic and political orthodoxies they generate that shape the forms and functions of key social institutions.

How apt is Einstein's oft cited warning about the futility of attempting to solve complex problems using the modes of thinking that created them. This is precisely what we are doing in response to

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(13) Gro Harlem Brundtland (Chair), 'Our Common Future: Report of the World Commission on Environment and Development,' United Nations General Assembly, 1987.

the systemic issues of our times.

## Regenerative transitions

For eco-systemic sustainability to address the Anthropocene paradox we need a fresh mode of thinking about our professional, social and cultural practices. The key to this fresh approach may well be the word "regenerative".

"Regenerate" means to revive, to grow again. Instead of simply buying time by slowing the pace of destruction, a regenerative approach aims to restore and enhance the integrity of local and regional ecosystems with the human actors conceived as integral and creative partners in this process. The goal of regenerative transition strategies is to create conditions for more life, more diversity, more resilience, and antifragility. Earth-centric regenerative practices are an antidote to the maladapted extractive, growth-driven, human-technology complex that threatens to be an evolutionary dead end.

One example of this approach is regenerative design, the practice that best reflects the latest phase of ecological design thinking. Regenerative design is based on process-oriented systems theory. A regenerative system makes no waste; its output is equal to or greater than its input; and part or all of this output goes toward creating further output — in other words, it uses as input what in conventional systems would become waste. This concept is being applied in areas as diverse as architecture, urban planning, agriculture, business enterprises and even civil engineering.

Another attempt at breakthrough in this key practice domain is Transition Design, developed by a team at the Carnegie Mellon University's School of Design in the USA.

"Transition Design acknowledges that we are living in 'transitional times'. It takes as its central premise the need for societal transitions to more sustainable futures and argues that design has a key role to play in these transitions. Transition Design focuses on the need for 'cosmopolitan localism', (Manzini 2009; Sachs 1999) [an approach] that is place-based and regional, yet global in its awareness and exchange of information and technology."<sup>(14)</sup>

Commons-based movements for societal and cultural change offer other examples of creative thinking about the transformation of human systems within the Anthropocene Transition. They are animated by, in the words of *Patterns of Commoning* authors David Bollier and Silke Helfrich, "the irrepressible desire of people to collaborate and share to meet everyday needs"<sup>(15)</sup>. Versions of this can be seen in a flowering of experimentation and collective learning from the bottom up in

(14) About Transition Design, (<http://transitiondesign.net/about-transition-design>)

(15) David Bollier & Silke Helfrich (Editors), 'Patterns of Commoning: The Commons Strategies Group,' Levellers Press, 2015

countless communities around the world from the citizens of Bologna, Italy, who have declared their whole city a commons, to indigenous agriculture and community forests, Bolivian water committees, high-tech FabLabs, theatre commons like Latinx and HowlRound, arts festivals like Burning Man in the USA and Woodfordia here in Australia, innovation networks designing open-source farm equipment and reviving troubled neighbourhoods in Kenya, the Enspiral enterprise network in Aotearoa/New Zealand... The list goes on.

One key institution in this loosely coupled global network is the P2P Foundation, the name of which is derived from the abbreviation of “peer to peer”, or sometimes “person to person”, or “people to people”. The essence of P2P is this direct relationship and its core characteristics include the creation of common goals and goods through open, participatory governance processes. These global trans-local networks include social change movements like Lock the Gate, experimenting with new modes of organising and mobilisation in defence of local ecosystems and communities threatened with devastation by rapacious fossil fuel corporations. Lock the Gate has utilised complex systems theory and network theory to develop an approach to community self-organising designed to avoid the polarisation of traditional environmental campaigning and unite whole communities across often deeply entrenched cultural and political divides.

Then there are initiatives like FlipLabs, Forum for the Future, Next System Project, Transition Network, New Weather Institute, Small Giants, New Economy Network Australia, Business Alliance for Local Living Economies, Australian Institute of Ecological Agriculture, Next Economy Australia... and an expanding and deepening dialogue across this diversity of practice labs.

Transition times require this kind of innovation and experimentation in the way we organise and govern ourselves at all levels. We must seek for more dynamic social forms with permeable boundaries that can respond rapidly and flexibly to emergent needs and opportunities. The plasticity of the human brain is a metaphor for the organisational forms we need to invent. As neurologist Elkhonon Goldberg has observed: "The evolution of the brain teaches us the lesson that a high degree of complexity cannot be handled by rigidly organised systems. It requires distributed responsibilities and local autonomy."<sup>(16)</sup>

By and large it is not governments and corporations that are demonstrating the necessary creativity to meet the challenges of the Anthropocene Transition, despite their rhetoric of innovation and agility. Everywhere we can see how deeply compromised they are by the blinkers of short-termism, the greed of vested interests, the denial and obfuscation of ideologues, institutional inertia, political opportunism and, all too often, corruption. It's grassroots

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(16) Elkhonon Goldberg, 'The New Executive Brain: Frontal Lobes in a Complex World, Oxford University Press, 2009.

organisations, local communities, collaborative and mutual enterprises, and civil society movements and networks that are nurturing the transformative changes we must embrace to remain a viable species on a planet conducive to life.

There are good reasons to believe that such open source experimentation and rapid prototyping is most likely to flourish in local communities, small workplaces, and networks of practice where institutional inertia is weakest, resistance by vested interests less, the risks of failure manageable, and the bonds of human solidarity strongest. It is in these settings that the seeds of a deeper and more authentic democracy are emerging.

### **A new story of co-creation**

Ultimately humanity's ability to survive and thrive in a period of radical uncertainty and profound change will depend on our capacity for wise collective action reflecting a new consciousness of our place in the Earth System. This requires a greatly enhanced capacity for adaptive social learning — groups of people sharing their experiences in action, experimenting with different ways of dealing with common challenges, reflecting together on the meaning of their experiences, and deciding on new forms of co-operative action.

At the very core of every civilisation lies a theory of human nature and a cosmology — the foundation stories of who we are and where we came from. These stories are the ultimate source of the unifying narratives of our societies. They are explicitly or implicitly manifest in the cultural practices of society; its public ceremonies, its performing and visual arts, its literature, its music, its popular culture. Contemporary science has unfolded for us an origin story of breath-taking magnificence. This story shows us that our human journey on planet Earth has seen the emergence of a uniquely reflexive consciousness, embedded in our many cultures, and complementing the great diversity of non-human adaptive intelligences with which it has co-evolved.

There is no blueprint to guide us through the Anthropocene Transition. This will be a learning journey along a path we must invent as we go. By its very nature, it is a collaborative undertaking. Finding ways to more fully manifest this collective creativity to serve the future of our species within planetary boundaries is the key challenge before us. Creativity is not a singular event, but an on-going universal process within which each one of us has a part to play. As the ancient stories tell us, we issued from a creative universe and can continue only as participants in its inexorable creativity.

## **To be worthy ancestors**

Last year I received an email headed: “What’s your 1,000 year plan?” It referenced a TED<sup>X</sup> talk by Canadian author Rick Antonson in which he spoke about what he called “cathedral thinking”. Antonson reminds us that when medieval architects, artisans and labourers began work on one of the great Gothic cathedrals of Europe many of them knew they would not live to see its completion. Such undertakings were the work of generations – each making a contribution to a collaborative venture that others would build on to bring to fruition in the future.

How different from our myopic contemporary mindset with its immersive focus on the 24 hour news cycle, 3 to 5 year electoral cycles, quarterly corporate reporting, and short-term business cycles. What a contrast to the competitive individualism embedded in the very labour process of so many industries and professions, including academia.

It struck me that cathedral thinking is closer to what we need to be doing now to prepare for the Anthropocene Transition. What should our generation be doing to lay the foundations for those to come who must face the task of transforming our institutions, our professions, our social structures and our core cultural values to restore a mutually enhancing human-Earth relationship?

So the challenge for us is to climb out of our disciplinary and professional silos, take off our institutional blinkers, and start exploring genuinely transformative change; to ask ourselves how can we step into the “space between” disciplines and cultures where new thinking and ways of knowing and acting in the world are possible; where new ways of understanding and valuing the Earth can emerge?

In short, what must we do today to earn the title of worthy ancestors?

**Further reading:**

- **Trajectories of the Earth System in the Anthropocene**

Will Steffen, Johan Rockström, Katherine Richardson, Timothy M. Lenton, Carl Folke, Diana Liverman, Colin P. Summerhayes, Anthony D. Barnosky, Sarah E. Cornell, Michel Crucifix, Jonathan F. Donges, Ingo Fetzer, Steven J. Lade, Marten Scheffer, Ricarda Winkelmann, Hans Joachim Schellnhuber

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<https://doi.org/10.1073/pnas.1810141115>

- **Palaeo-ontology.** Clive Hamilton,<sup>(1)</sup> August 2018

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Palaeo-climate records show an Earth history punctuated by periods of dramatic change, from ice ages to warm periods to little ice ages, at times shifting into completely different states, with radical changes in the conditions and forms of life. This often-violent geological history stretching back to the planet's formation 4.5 billion years ago has been the product of the blind forces of nature, ranging from solar fluxes, volcanism and weathering to subduction and asteroid strikes.

Yet in the few years after the Second World War something almost inconceivable happened.<sup>(2)</sup> A conscious, willing decision-making 'force of nature' began actively changing the functioning of the Earth System as a whole,<sup>(3)</sup> so much so that a new geological epoch, the Anthropocene, is expected to be added to the Geological Time Scale to supersede the Holocene.<sup>(4)</sup>

#### **New Earth**

The canonical statement of the new epoch is: 'the human imprint on the global environment has now become so large and active that it rivals some of the great forces of Nature in its impact on the functioning of the Earth system'.<sup>(5)</sup> With substantial human-induced climate change now locked in to the system, a return to the Holocene is now not possible. It now seems certain that as long as humans inhabit the planet all future epochs, eras, periods and other divisions of the Geological Time Scale will be hybrids of the blind forces of nature and the powers of the decision-making creature known as *homo sapiens*. The merging of conscious with unconscious forces of nature means that around 1945-50 an ontological turning point in the deep history of the planet was reached.

The identification of the Anthropocene as a new epoch (in the year 2000) was made possible by the emergence of the new discipline of Earth System science.<sup>(6)</sup> Earth System science asks us to set aside previous conceptions of nature and the environment and begin to think instead of the Earth System, that is, Earth as a single, dynamic, integrated, ever-changing *totality*.<sup>(7)</sup> Before we learned to think of the Earth as a complex, dynamic and self-regulating totality it was not possible to speak of the 'functioning' of the Earth as a system. It's a conception that supersedes prior scientific conceptions of nature and the environment, all of which were local or regional.<sup>(8)</sup>

The hybrid Earth is no longer a wholly natural object, but nor is it a 'humanised Earth', subject to our control.

Although now infused with a new force of nature—one with a will, a capacity for reason and enormous technological power—the Earth is becoming more volatile and less controllable, especially under the influence of human-induced climate change, now strong enough to change not only the atmosphere, but also the planet's biology, the level and chemical composition of the oceans, and the stability of the lithosphere. These changes are irreversible, at least on a human time-scale. While humans can deploy more power, the Earth will not succumb to human regulation. It has been bounced out of the unusually stable and clement conditions of the Holocene epoch. It is, to borrow from the scientists' metaphors, 'the wakened giant', now 'seeking revenge'.

#### **New human**

The new understanding of the natural world requires a new understanding of the creature that transformed it. The arrival of the Anthropocene is revealing to us some previously unimagined qualities of humankind, calling on us to rethink the significance and meaning of humankind's place on Earth, our essential relationship with the physical world that generated us and that we inhabit. The Enlightenment philosophers searched for the nature of human being in a world of reason, of freedom, that is, of subjects divided from nature. It was a new world of progress and human possibilities. The dawning of the epoch of the Anthropocene urges us to consider afresh human existence within the unfolding history of the Earth. As Dipesh Chakrabarty incisively observed, the deep history of the Earth has now become entwined with the short history of human beings.<sup>(9)</sup> The incipient merging of the histories of nature and humankind is a repudiation of Enlightenment philosophy's hard division between subject and object, although not in any simple way.

An answer to the reopened question of the relationship between freedom and necessity is by no means obvious. It does not mean that humankind is a helpless life-form tossed around by forces over which it has no influence. To bury human agency in the world of nature, as some environmental and post-humanist philosophers tend to do, misses the essential characteristic of the new epoch, the brute fact that humans are the *unique being* whose decisions are capable of changing the functioning and geological evolution of the planet, the being whose activities are now infused into the natural processes that constitute the Earth and help shape its evolution from one state to another.

Plotinus placed humans between gods and beasts; in

the Anthropocene, we are revealed as both god and beast. We are the being that learned to dominate all other forms of life (a god), even if that domination threatens to backfire catastrophically. Despite our most determined efforts to free ourselves from the dictates of nature, and despite the construction of a philosophical consciousness that is predicated on a radical separation of the human and the natural, we remain a being that cannot disentangle itself from its environment (a beast). In fact, we are utterly dependent on that which we tame and domesticate. We are a creature gifted with enormous creativity, ingenuity and the ability to develop powerful technologies (a god), yet we often seem unable to control our own urges (a beast).

### Thought together

Contrary to all subjectivist ontologies, under the stimulus of the Anthropocene *the nature of the Earth and the nature of humans need to be understood together*. In the confronting words of leading Earth System scientists, 'the fate of one determines the fate of the other'.<sup>(10)</sup>

Previous conceptions of the human cannot accommodate the *dual truths* of Anthropocene science: the simultaneous *inflation* of humankind's significance on the Earth—by shifting the planet's geological arc we are more powerful than ever imagined—and the *deflation* of our significance—we are extremely vulnerable to an Earth made more volatile and uncontrollable by our carelessness and rapacity.

Against these dual truths, previous anthropocentric conceptions of the human – the being chosen by God, the uniquely rational creature, the being capable of technological mastery – cannot survive the awakening of the giant. Modern philosophy's founding conception – the freedom of the subject split off from and rising above a disenchanting natural world – appears more and more to be a half-truth founded on Holocene conditions.

On the other hand, the post-humanist dethronement of the human – reducing it to its ecological networks with no special agency – is another half-truth, one that cannot account for the unique planet-shifting power we possess. As humans reach a peak of physical impact, arguing for an ontological flatland in nature appears perverse. Anti-Cartesian philosophies that want to dissolve the subject into something larger (back into nature) or all-encompassing (consciousness, the divine) seem to have missed the entity that would actually claim us, the Earth System itself.

So if ecology and post-humanism reveal that the

human being is networked into the natural world in ways far deeper and more inextricably than we imagined, the same human being has also become a *super-agent*. If the subject cannot separate itself from the object, it is also true that the subject has more power to disrupt the object than ever. Rage against anthropocentrism can blind us to the distinction between the power humans *actually have* to disrupt the Earth System and the *attitude* of rapacious mastery that has typically accompanied that power.

### A fifth ontology

Humankind is now locked in a struggle for the destiny of the Earth, an unprecedented condition that requires new thinking, beyond the ontologies of the last 10,000 years, that is,

beyond the Holocene. In *Nature and Culture*, Philippe Descola identifies four human-nature ontologies that, he says, exhaust all possibilities.<sup>(11)</sup> Yet none of Descola's four ontologies captures, or comes close to capturing, the relationship between humankind and the new Earth brought by the Anthropocene. It's not at all clear where the emergent relationship between humans and the Earth in the Anthropocene could fit. Descola's taxonomy describes mechanisms of ontological discrimination between ourselves and *other entities*, living or not. But these differing forms of discrimination that we learn as children cannot include the kind of consciousness that overtakes an adult when he or she stands trembling before the truth of the Anthropocene, when he or she grasps the Earth in its sublime totality, as an entity in itself. If the four ontologies exhaust the possibilities, they exhaust the possibilities of the Holocene.

Just as it's too late to turn back the geological clock, so it's too late to turn back the ontological clock. So we begin the search for a fifth ontology for the new epoch. What can this fifth ontology be? We cannot yet know; the 'no-analogue state' of the new epoch is only just emerging. One thing seems clear though: we must think within the evolving Earth System, a palaeo-ontology, rather than imposing ontological frames on what we see, or divining the inner essence of being. It may take some decades of living in this liminal condition before the picture becomes clearer and our consciousness remakes itself concordant with the new epoch. And so we must sit patiently, in a state of ontological unknowing, seeking ways to live with the terror as well as the beauty of the Earth, and struggling to reconcile our power with our powerlessness.

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2 Jan Zalasiewicz et al. When did the Anthropocene begin? A mid-twentieth century boundary level is stratigraphically optimal, *Quaternary International* (2014), <http://dx.doi.org/10.1016/j.quaint.2014.11.045>

3 Clive Hamilton, *Defiant Earth: The fate of humans in the Anthropocene*, Cambridge: Polity, 2017, chapter 1.

4 See the work of the Anthropocene Working Group and its several papers, e.g. Jan Zalasiewicz et al., Making the case for a formal Anthropocene Epoch: an analysis of ongoing critiques, *Newsletters on Stratigraphy*, 50: 2, April 2017, pp. 205-226.

5 Will Steffen, Jacques Grinevald, Paul Crutzen and John McNeil, The Anthropocene: conceptual and historical perspectives. *Philosophical Transactions of the Royal Society A* 369, 842–67, 2011, 843

6 Clive Hamilton and Jacques Grinevald, Was the Anthropocene anticipated? *The Anthropocene Review*, 2:1, 59-72, April 2015

7 Clive Hamilton, The Earth System, in Noel Castree et al. (eds), *Companion to Environmental Studies*, London: Routledge, forthcoming; Clive Hamilton, The Anthropocene, in Brian Fath (ed.), *Encyclopedia of Ecology*, 2nd edition, Elsevier, forthcoming

8 Hamilton and Grinevald, Was the Anthropocene anticipated?

9 Dipesh Chakrabarty, The climate of history: Four theses, *Critical Inquiry*, 35:2, 197-222, 2009

10 Jan Zalasiewicz, Mark Williams, Will Steffen and Paul Crutzen, The New World of the Anthropocene, *Environmental Science and Technology*, 44:7, 2228–31, 2010, 2231

11 Philippe Descola, *Beyond Nature and Culture*, Chicago: University of Chicago Press, 2013