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# CIO letter TO



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## ECONOMIC DEVELOPMENT, THE CLIMATE WALL AND THE HUMAN FACTOR

### PART 3: THE LIVING WORLD

**“GO TAKE YOUR LESSONS FROM NATURE,  
FOR THAT IS WHERE OUR FUTURE LIES”**

LEONARDO DA VINCI

**T**he current globalised capitalist model is leading us into a dead end in environmental (E), social (S) and governance (G) terms. It is this firm belief that we elaborated on in the first two parts of this letter<sup>1</sup>. Simply relying on different governments to work together to change this dynamic is not realistic. The task is too daunting, as it requires not only resistance to lobbying but also consensus among many states with conflicting interests. Such an approach would also entail calling into question the habits of everyone who accepts the model as it currently stands, since it provides them with a level of comfort that exempts them from challenging their own opinions. On the other hand, simply hoping that technology will come to our aid allows us to remain in the comfortable mindset of “let’s not change anything, they’ll figure something out”. This is a tempting yet dangerous gamble because it results in us sidelining our freedom while we wait for the miracle of technology to come and save us. We concluded our previous letter by saying that the only possible way of steering our economic system towards a more sustainable model was to adopt an approach that entails moving beyond the division of knowledge, rethinking our relationship with the living world and putting the human factor back at the centre of the economic equation. The effort involved is considerable but necessary, because making only slight changes to our economic system will not be enough to avoid the dead end our current model is leading us into. To clarify, when we refer to adopting a more sustainable model, we are talking seriously about preventing the collapse of our civilisation, as we are at a pivotal moment in human history. The economic model presented to us as the only path to prosperity and happiness is failing us to such an extent that it is threatening the survival of humankind.

<sup>1</sup>. Tikehau CIO letter: Human after all, September 2022 and Tikehau CIO letter: The good, the bad and the ugly, January 2023



## BEING AN ENTREPRENEUR MEANS QUESTIONING THE NORM TO CREATE VALUE BY BREAKING AWAY FROM ESTABLISHED CODES AND PRACTICES

2 Some of our readers were bewildered by the first two parts of this letter, asking: how can an investment company primarily motivated by profit take such a standpoint? It is true that one of our priorities is to provide our investors with the best financial return on the risks they take. However, to secure this financial return over the long term, we recognise that our business model must evolve in such a way as to prevent the collapse that will, inevitably, bring about mass destruction of financial value. This can only be achieved by changing the way in which the world's \$120 trillion in assets under management are allocated. Investing the capital our investors entrust to us is what we do. We believe that investing this capital in a way that impacts assets and companies and allows them to be successful according to our non-financial metrics is the only way to maximise financial returns in the long term. That is why these topics warrant the significant amount of time we spend reflecting on them. Unfortunately, most financial stakeholders, policymakers and opinion leaders prefer the easy way out, which prevents them from taking this uncomfortable step. Unfortunately, **an idea is not accepted for the truth it contains, but according to whether or not it is aligned with the prevailing ideas in the world.** And yet, being an

entrepreneur means questioning the norm to create value by breaking away from established codes and practices. This state of mind, when nurtured, allows us to see reality from a different perspective. It also leads us to cast doubt on what we have been taught, to constantly challenge our own prejudices and to call into question what constitutes an appropriate mindset or behaviour. Entrepreneurship entails stepping out of your comfort zone to tame the chaos that ensues from accepting perpetual ignorance. Therefore, we believe it is our duty to ask ourselves these questions at such a crucial time.

In this third and final part, we will delve even deeper into the incredibly important concept of a link with the living world, the guardian of our freedom. We saw in Part 2<sup>2</sup> that self-deception is one of the human brain's defence mechanisms. When something forces us to step out of our comfort zone and challenge our deeply rooted convictions, we humans prefer to dwell in blissful delusion rather than assume the uncomfortable position of admitting we are wrong and seeking to correct our mistake. Unfortunately, this seems to hold true even for

2. Tikehau CIO letter: The Good, the Bad and the Ugly, January 2023

behaviours that may eventually lead to the collapse of our civilisation. In Part 1, we sought to explain how humankind came to believe that a system based on the quest for infinite growth through intensive exploitation of our planet's natural resources was the very best economic model to provide it with freedom and prosperity. Open almost any academic book on economics and you'll see. For example, the economist Per Bylund<sup>3</sup> explains that economics is about understanding how economic value is created. We can see that **the materialistic approach removes all traces of a connection with the living world from the outset, plunging nature into a state of inferiority when compared with humanity, which has de facto claimed the right to exploit it with no regard for the time needed for its resources to regenerate. It is the very absence of this concept of regeneration that guarantees the demise of the globalised capitalist model. The quest for infinite growth in a world of finite resources inevitably boils down to jeopardising the future in favour of the present.** The limitations of this system are becoming increasingly obvious. Between the 2009 financial crisis and the peak of quantitative easing in 2021, central

3 banks around the world were required to make 474 cuts to interest rates in order to extend the economic cycle<sup>4</sup>. During this period, the combined size of the balance sheets of the four central banks in the US, UK, Eurozone and Japan increased from \$6.5 trillion to \$26 trillion. In other words, the equivalent of 30% of global GDP was subsidised by injecting liquidity to keep the economic cycle afloat in a system based on consuming goods and services produced via the intensive exploitation of natural resources. This unprecedented exercise in money creation resulted in negative interest rates and encouraged reliance on debt and financial engineering, which in turn led to an increase in fraud, bubbles and poor practices for allocating capital, as well as accelerating climate change and growing social inequality. With new bank failures occurring today, it is clear that no one could have imagined at the beginning of 2023 that extending the economic cycle for 15 years through these monetary policies would only delay the destruction of value and weaken an economic model on its last legs. And yet we are still under the illusion that this system is the very best model possible. Why is that?

3. How to Think about the Economy – Per L Bylund, 2022  
4. BAML credit research – January 2023

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## THE EDUCATION WE RECEIVE FILLS US WITH CERTAINTIES AND CONFINES US IN STRAITJACKETS

### GENERATING CERTAINTIES

**“IN EVERY ASYLUM, THERE IS AN ABUNDANCE OF LUNATICS POSSESSED BY AN ABUNDANCE OF CERTAINTIES!”**  
FERNANDO PESSOA

The education we receive fills us with certainties and confines us in strait-jackets. Scientific rigour, universality weeding out any anomalies and systematic denigration every time the norm is called into question all encourage scientists to stay within the framework of materialism in order to maintain their social status. The same is true for economists who continue to promote globalised free trade as a virtuous system. To remain in the comfort zone of professional and social recognition, they must steer clear of subjects that lie on the fringes of their discipline, especially those relating to intuition or unmeasurable, informal concepts. Siloing knowledge allows people to live with their contradictions. It is for this reason that every religion in the world advocates mutual aid, solidarity and informal ties. Yet many economists and scientists practise their faith while refusing to accommodate anything that cannot be measured within the scope of their professional practice. We find the contemporary equivalent of materialism in the Catholic Church: the universe is made of matter, empty and cold, except where God is concerned. This divide makes it possible to remain within the realm of convenience while avoiding the

risk of marginalisation, which is experienced by anyone who breaks away from the norm or dares to speak out about topics that might prove unsettling. **Certainties reassure us and allow us to hide from the world by remaining in our caves.**

In an analysis of the 2020 public health crisis, ESCP professor Sylvain Bureau<sup>5</sup> looks into how such reassuring certainties are generated. In his analysis, he links art to our vision of nature. He writes: “Depicted by Andy Warhol in his famous silkscreen prints, the Coca-Cola bottle symbolises the power of a social model. Its goal is to generate certainty. Everywhere on the planet, regardless of climate and culture, Coca-Cola offers an infinitely reproducible standard, an unchanging taste, colour, flavour and packaging. No mistakes or changes are made to a production standard that is certain to be respected. This certainty, consumed at a rate of 1.9 billion units every day in over 200 countries, is indifferent to cultures and territories. The manufacturing of certainty has spread to many spheres of life. From production sites to distribution networks, Taylorism and bureaucratisation have shaped these worlds of certainty. With these ‘still lifes’ of modernity, Warhol shows how the mass production of certainty has spread beyond material goods to affect cultural universes. [...] In the wake of this never-ending cycle of cults of consumerism, Warhol encourages us to reflect on boredom and then death. **Through speed and certainty, human beings shape the world in the belief that we can control it. Scientific and technological progress has been**

5. Le COVID-19: symptôme d’une société de la certitude (COVID-19: a symptom of a society of certainty) – Sylvain Bureau ESCP Business School/Institut Jean-Baptiste Say

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## WE’RE AT WAR WITH NATURE. IF WE WIN, WE’RE LOST

**instrumental in this delusion. [...] The society of certainty knows that it is lost. It can even foresee its own end. Climate change and the extinction of animal species are not new phenomena. Scientists have been aware and have informed us of these facts for over fifty years now. Yet the trajectory remains the same.** Since the famous Meadows Report in 1972, the collapse has been modelled. The society of certainty knows it and can foresee and assess it, yet the destructive dynamics of our living environments seem unstoppable. **It is almost as if the society of certainty could not accept the uncertainty of its foundations being called into question. As if it had to follow through until it reached a logical conclusion and dictate the end of its own story, even if that means disappearing completely.”**

The global economy is, by definition, the sum of multiple local economic systems. Industrialisation and the subsequent globalisation of the economy have prompted economists to establish uniform rules despite differences in how individual economic systems operate. In elevating the status of economic theory by making it universal, economists have drained it of its human dimension and severed all ties with nature, which is considered a resource, a primitive or even disgusting

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## THE SOCIETY OF CERTAINTY KNOWS THAT IT IS LOST

place (the word ‘soil’ can also mean ‘to make something dirty’). **Most theorists assume that the economy is a set of individual decisions and actions motivated by self-interest, which all add up to create the economic cycle. Viewing the economy as the product of actions driven by empathy, solidarity or generosity is akin to admitting that economic theory cannot be universal and cannot ignore local distinctiveness. This is why economics has been dehumanised.** Only a handful of people, such as Karl Polanyi, have understood that failing to take the human factor into account has distorted reality and can only lead into a dead end, that of which we find ourselves in today.

**“WE’RE AT WAR WITH NATURE. IF WE WIN, WE’RE LOST.”**  
HUBERT REEVES

For French author René Guénon<sup>6</sup>, modern-day humans are characterised by egocentrism. **In his view, the sin of modern-day humans is that we have forgotten that our existence is part of a cycle and a future that is infinitely superior to us, a cycle we cannot escape.** Human beings are not able to conquer the universe. Descartes stated that the purpose of humans was to “become like masters and possessors of nature”. When considered within the

6. The Crisis of the Modern World – René Guénon, 1927

current context of climate change and the social and geopolitical turmoil it prefigures, this assumption seems naive to say the least, with all due respect to Mr Descartes. In Guénon's view, Renaissance humanism, which put human beings at the centre of the universe, was based on a desire to place humans on a par with gods. The divine absolute was replaced by a human absolute, disregarding the fact that we are governed by higher principles: the laws of the universe and of nature. In 1927, Guénon wrote that the crisis facing the modern world is the result of people finally realising that the 'progress' they have been led to believe will improve and resolve, is in fact a lie.

**Modern schools of thought have used the word 'progress' to refer to what should be called 'development'. Progress is now measured in terms of the growth of Gross Domestic Product. The improvement implied in the notion of progress is thus synonymous with the increase represented by economic growth. Quality (progress) has been replaced by quantity (growth). This is the lie identified by Guénon.** For Dr Chris Martenson<sup>7</sup>, the changes that await us over the next twenty years will

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**MODERN SCHOOLS OF THOUGHT HAVE USED THE WORD 'PROGRESS' TO REFER TO WHAT SHOULD BE CALLED 'DEVELOPMENT'**

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**ONCE A DIVINE CREATION, HUMAN BEINGS ARE NOW SEEN AS A NATURAL ACCIDENT**

be unprecedented compared with those experienced over the past two decades. These changes concern the economy, energy and the environment and range from the acceleration of money creation to population dynamics, resource depletion, inflation concerning fossil fuels and the effects of pollution and waste. We have covered all these topics in some of our previous letters<sup>8</sup>. The whole point of challenging our beliefs is to allow us to make changes now to monitor and control these trends, rather than be subjected to them.

**The problem is that the dominant culture on this planet, which colonised others and imposed its way of thinking, places humans above all other forms of life in the universe, which justifies the domination of the natural environment.** For Michael Zimmerman, an American philosopher and expert on Heidegger<sup>9</sup>, **anthropocentric humanism underpins frameworks of political, economic, scientific and religious thought. This lies at the root of the intensive exploitation of resources.** Western science describes humanity as a cosmic accident, the product of chance, an exception in the universe. Once a divine creation, human beings

7. The Crash Course: The Unsustainable Future of Our Economy, Energy, and Environment – Chris Martenson, 2011

8. Tikehau CIO letters: Les QE sont éternels (QE is forever) – December 2019, The myth of infinite growth – September 2020, Just about people – June 2021

9. Michael Zimmerman – Contesting Earth's Future: Radical Ecology and Postmodernity, 1997

are now seen as a natural accident. **And it is because we humans are alone in the universe that we can establish our own rights and duties and allow ourselves to subjugate nature.** The British biochemistry and physiology researcher, Rupert Sheldrake, mentions in his book *The Presence of the Past*<sup>10</sup> that we have inherited a dual vision of the world from nineteenth-century science: on the one hand, a great evolutionary process on Earth and, on the other, the physical eternity of a mechanistic universe. Matter and energy in the universe were assumed to be eternal and were subject to equally eternal laws of nature. This dual world view has shaped Western scientific thought. And since Western culture was imposed on the world through colonisation and then through globalisation, this view has spread to all reaches of humanity. Scientific progress is now beginning to transcend this materialistic outlook, but we will come back to this later.

Western scientific and economic culture is materialistic. Anything that cannot be measured or quantified does not exist or is not worth considering. Gone are informal ties and local solidarity in the economy. Gone from modern medicine are the concepts of energy that are so important in Chinese or Ayurvedic medicine, for example. You would be forgiven for thinking that this attitude is both incredibly naive for such scientific minds and extraordinarily arrogant, for one simple reason: humanity is a 20-million-year-old phenomenon on a microscopic speck in the universe, which is itself 13.5 billion years old. Astrophysicist Avi Loeb<sup>11</sup> believes that this observation should make every human feel a profound sense of humility and infinite gratitude. But it does not.

## HOW DID HUMANISM AND MATERIALISM COME TO BE?

Humanism emerged in the 15th century, during the Renaissance. The movement places human beings at the centre of the universe. Materialism, on the other hand, was developed by the French philosopher René Descartes and British physicist Isaac Newton, who observed in his second major work on physics<sup>12</sup> that: "God in the Beginning form'd Matter in solid, massy, hard, impenetrable Particles [...] even so very hard, as never to wear or break in pieces." In this extract, the mathematician was referring to atoms.

**The combination of humanism and materialism is at the root of the vast majority of scientific concepts in European societies and has shaped Western world views.** Europe began its colonisation of the world with the discovery of America in 1492 and has imposed its culture ever since. In Part 1 of this letter, we saw that economic globalisation can be viewed as a continuation of the spread of Western culture around the world.

In Western antiquity, nature had a consciousness. Celestial bodies were considered living beings. These concepts can be found in papers written by alchemists in the Middle Ages. **Descartes transformed nature and all living beings into inanimate objects and human beings into biological machines. This materialistic process resulted in the Scientific Revolution during the Age of Enlightenment**

10. The Presence of the Past – Rupert Sheldrake, 1987

11. Director of Harvard University's Department of Astronomy

12. Opticks – Isaac Newton, 1704

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## WHICH SOUGHT TO RID THE SCIENCES OF THEIR LINK WITH THE LIVING WORLD AND MAKE THEM UNIVERSAL

which sought to rid the sciences of their link with the living world and make them universal. The omnipotence of the Catholic Church, however, forced Enlightenment thinkers to separate the divine and categorise it in a sphere outside the laws of materialism, whereas in other religions and ancestral forms of worship, the divine is an integral part of the laws of nature. Mechanism, the mechanical universe that we have inherited from nineteenth-century physics, was a vast machine governed by eternal laws. The theory of evolution applies to our planet in a universal context, whereas the mechanical world rejects any notion of purpose. Living beings are complex biochemical machines. In Darwin's view, the evolution of living beings does not constitute a completed process of effort and is not guided by a divine entity, but instead falls to chance and descendants inherit their own variations. As a result, different forms of life evolve without design or reason and are influenced by the random actions of natural selection. Human beings, the product of chance and evolution, are the most evolved life forms in a mechanical, empty universe. This condemns humanity to great solitude. In 1970, the biologist Jacques Monod reported<sup>13</sup> that: “If man accepts this message in its full

significance, he must at last wake out of his millenary dream and discover his total solitude, his fundamental isolation. He must realise that like a gypsy he lives on the boundary of an alien world; a world that is deaf to his music, and as indifferent to his hopes as it is to his suffering or his crimes.” In *Ways of Being Alive*, the Aix-Marseille University lecturer, Baptiste Morizot<sup>14</sup>, affirms that: “By no longer paying attention to the living world, to other species, to environments, to the ecological dynamics that weave everyone together, we are creating from scratch a mute and absurd cosmos”. **“If we do not see anything in ‘nature’, it is not only because of our lack of ecological, ethological and evolutionary knowledge, but because we live in a cosmology in which there is supposedly nothing to see, in other words nothing to translate: no meaning to interpret”.**

Between the 15th and 20th centuries, the West imposed a practical and formal culture based on norms, standards, laws and materialism on the rest of the world. **Since then, this ethnocentric culture, which places our ego on too high a pedestal, has been built on the superiority of humans over nature, viewed as no more than a mass of living organisms that humans can shape in their image and use to extract wealth from. Nature can therefore be considered a commodity destined to be exploited, but also brought to heel, for our comfort.** In art, the term ‘still life’, which first appeared in the 17th century and consists of representing

<sup>13</sup>. Chance and Necessity – Jacques Monod, 1970  
<sup>14</sup>. Ways of Being Alive – Baptiste Morizot, 2020

dead animals or plants in a home environment (in a dish placed on a table, for example), symbolises the omnipotence of humans over nature.

The laws of man that prevail over the laws of nature therefore derive their nobility from a supposed universalism that justifies the ‘purification’ of our sciences. Any local distinctiveness, be it cultural, economic, social or spiritual, must be crushed in order to rid theory of all dross. Western science has made enormous contributions to knowledge in this way, but it has failed to include the ancestral knowledge of dominated cultures. **Combining the two, i.e., adopting an inclusive approach to unify knowledge, would have been a good way to create a stable and sustainable economic, scientific and political system.** Instead, ancestral practices have been scorned and even criminalised. People with a strong connection with nature have been treated as backward savages or witches and marginalised, ridiculed or disposed of. **By considering economic growth as the only indicator of wealth, the system was able to maintain the illusion that it brings progress and modernity**

**to dominated populations. Human beings are nothing but productive assets and biological machines, and the economy is no more than the sum of individual behaviours motivated solely by personal interest. By cutting people off from their link with the living world and funnelling their contributions into economic growth, the system gives rise to individuals who are dependent on buying, often by going into debt, what nature was able to offer them originally. Humans become consumers, deprived of their freedom by resorting to debt and living under the illusion that the comfort they feel by being able to consume brings them happiness. Happiness shifts from being associated with wellbeing to being associated with possession. This dependence creates alienation and suffering.** Preserving comfort implies defending your own interests to the detriment of others and by submitting to a higher authority that offers protection. The frequently championed individualistic approach confines individuals to their own beliefs and prejudices and breeds fear of ‘the Other’, fear of missing out and fear of dying. Our culture, based on the quest for infinite

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## THE FREQUENTLY CHAMPIONED INDIVIDUALISTIC APPROACH CONFINES INDIVIDUALS TO THEIR OWN BELIEFS AND PREJUDICES AND BREEDS FEAR OF ‘THE OTHER’, FEAR OF MISSING OUT AND FEAR OF DYING

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**THROUGH OUR ABILITY TO TRANSFORM THE PLANET AND EXTRACT ITS RESOURCES, HUMANS ARE CREATING A GEOLOGICAL ERA OF THEIR OWN: THE ANTHROPOCENE**

growth, divides humanity into castes and compartmentalises knowledge. This dominating relationship with nature is causing us to lose the knowledge and the subtle mechanisms that contact with nature had always provided to ancestral civilisations. This economic model leads to aberrations that are so enormous we refuse to even acknowledge them. For example, in our system, a dead tree is worth more than a living one! Another symptom of the crisis of sensibility that we are currently experiencing is in our approach to the animal kingdom. In our culture, we have turned animals into objects for our children’s amusement. Evidence of this can be found in zoos and circuses, as well as wildlife parks. Being an ‘animal lover’ is likened to sentimentality while feeling a connection with the animal kingdom is ridiculed and infantilised.

The quest for growth at all costs requires the creation of leverage. Mechanisation, industrialisation, globalisation of markets and use of debt are all sources of leverage. Efficiency has been prioritised over resilience. The economic and political system underpinning the consumer society was ‘sold’ to conquered peoples in the form of globalised, free-trade capitalism, with the incredible claim that it was the only system that could provide freedom and happiness because it allowed for access to material comforts, whereas the reality is that it only creates servitude and the insatiable pleasure of consumption.

**“WE BUY THINGS WE DON’T NEED WITH MONEY WE DON’T HAVE TO IMPRESS PEOPLE WE DON’T LIKE.”**  
 FIGHT CLUB – FILM BY DAVID FINCHER

**THE ANTHROPOCENE, INFINITE GROWTH AND SOCIETAL COLLAPSE**

Through our ability to transform the planet and extract its resources, humans are creating a geological era of their own: the Anthropocene. **In 2020, humankind produced more anthropogenic mass (concrete, asphalt, plastic, glass, rubble) than the total mass of all living beings on our planet<sup>15</sup>.** In most countries, urban development involves making the network of peri-urban areas denser with buildings that are supposed to make it easier for those living in cities to access consumer products, such as warehouses, supermarkets and wholesale trade areas. In *La France sous nos yeux* (The France Before our Eyes)<sup>16</sup>, sociologists Jérôme Fourquet and Jean-Laurent Cassely explain in detail how this network operates in

<sup>15</sup> <https://www.visualcapitalist.com/visualizing-the-accumulation-of-human-made-mass-on-earth/>  
<sup>16</sup> *La France sous nos yeux* – Jérôme Fourquet, Jean-Laurent Cassely, 2021



France through the large-scale distribution that started in the 1960s. Major retailers guarantee their economic domination by increasing the number of large stores that are opened first on the outskirts of major urban areas, then medium-sized cities and finally smaller towns, as if no part of the country could escape their presence. Nowadays, in addition to these retailers, there are also logistics centres for deliveries of items bought online.

These buildings cut humans off from nature by not only removing spaces for contact with it, but also by eradicating the link between consumers and the producers of the food they buy. For Baptiste Morizot<sup>17</sup>, **it is our way of life that is in danger, especially the idea that being alive means living side by side with other living beings, be they human, animal or plant.** One of the

<sup>17</sup> *Ways of Being Alive* – Baptiste Morizot, 2020

major causes of today's biodiversity loss is habitat fragmentation, i.e., the invisible fragmentation of other living beings' natural homes, which is caused, for example, by the roads we construct through them or the fences we build around our properties to protect ourselves from the very nature we are afraid of. In the previous letter, we mentioned Éric Julien's initiative to invite the Kogis to France<sup>18</sup> to perform an analysis of the forest in the Drôme department. One of the conclusions they reached was that the fences put up to mark out reforestation areas had prevented some animals from being able to access bodies of water or their own habitats, causing them to flee, and, as a result, we ended up destroying the very ecosystem they were contributing to. **The crisis in our way of life is underpinned by our denial to grant others their status as residents. It stems from our inability to see the link with the living world as a fundamental principle of a more sustainable growth model.**

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**ONE OF THE MAJOR CAUSES OF TODAY'S BIODIVERSITY LOSS IS HABITAT FRAGMENTATION**

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**THE CRISIS IN OUR WAY OF LIFE IS UNDERPINNED BY OUR DENIAL TO GRANT OTHERS THEIR STATUS AS RESIDENTS**

An economic model based on the quest for infinite growth can only flourish in a world where nature is dominated and humankind is divided. This model is heavily promoted by policymakers as it creates a great deal of material wealth for them. We have seen that the elites ensure the system's stability by leaning on the middle classes who, in exchange for material comfort, become submissive to them. The notions of prosperity and happiness are then associated with this comfort, which is based on overconsumption and debt.

But nowhere in the equation do we find the waste produced or the time needed to replenish the resources extracted; in other words, the model's sustainability. On the one hand, the waste produced hinders growth. On the other, taking GDP as the only indicator of value creation is based on the assumption that technological progress will provide solutions in the future to the depletion of exploited resources, which are not

<sup>18</sup>. Éric Julien – Les Indiens Kogis : gardiens de la planète (The Kogi Indians, guardians of the planet), YouTube – <https://www.youtube.com/watch?v=g65jq2nQKNU>

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**A MAJOR FLAW IN OUR GROWTH MODEL**

replenished at the same rate. Herein lies a major flaw in our growth model. **This model is simply not sustainable and its sustainability is inversely proportional to the development taking place through globalisation. The more the world's populations adhere to the Western globalised system, the greater the likelihood that this system will collapse as more and more people lust after unsustainable consumption.** Waste, climate change and societal changes have started to hinder growth, which is the first stage in the system's downfall.

**“EVERYBODY HAS A PLAN UNTIL THEY GET PUNCHED IN THE MOUTH”**  
MIKE TYSON

The failure of the current model is becoming increasingly apparent. The quest for infinite growth is having a negative impact on biodiversity, the climate and inequality. Prolonging the cycle through debt and money creation is leading to the misallocation of capital, bubbles and instability. The over-optimisation enabled by the continual decline in interest rates over the past 40 years and the acceleration

of globalisation has made our system more efficient, but also much more vulnerable. The first punch in the mouth was COVID. The impending knockout blow is the acceleration of climate change. And so the plan is changing: recent extreme weather events, the COVID pandemic and the war in Ukraine are evidence of the limits of the system, so much so that the priorities of all governments, businesses and organisations are shifting back to building resilience simply to survive. In the coming decades, the return of resilience as the main driver for value creation will entail a much weaker, less optimised growth regime with less reliance on debt and financial engineering, but also a more sustainable one in which non-financial metrics will play an essential role in economic and political decisions to generate financial value. The link with the living world is finally regaining the upper hand, but in a different way. By prioritising the local over the global, and resilience over efficiency, the link with the living world can bring freedom. As French philosopher Gilles Deleuze said, the defining characteristic of freedom is connection.

# Scientific progress, materialism and the revival of ancestral knowledge

**“TRUE PROGRESS BEGINS WITH SOMETHING NO KNOWLEDGE ECONOMY  
CAN PRODUCE: WISDOM ABOUT WHAT IT MEANS TO LIVE WELL.”**

RUTGER BREGMAN

**T**his quote by Rutger Bregman, who explores ways to eradicate poverty<sup>19</sup>, raises a pertinent question: by removing the link with the living world, has materialism not caused something to be lost? Materialism has certainly enabled incredible scientific progress, but it has lost elements for explaining the living world along the way, although it is important to acknowledge the limitations of scientific theories in explaining things nowadays in any case. In Part 2 of the letter, we saw how this may explain why some scientists who are renowned for their skill and rigour take an interest in ancestral knowledge as a way of supplementing materialism in the fields of medicine and agriculture, for example. This interest in the unmeasurable appears to be widespread among the scientific community in the early 21st century, but this is not a recent phenomenon.

**“IMAGINATION IS MORE IMPORTANT  
THAN KNOWLEDGE.”**

ALBERT EINSTEIN

In the 20th century, Swiss doctor and psychiatrist Carl Gustav Jung, a student of Sigmund Freud, was already attempting to reconcile psychology with quantum physics in an effort to unify knowledge. In a materialistic world, these two sciences are considered to be unrelated. But in the 20th century, both disciplines led to revolutionary changes in Western knowledge of the laws of the universe and this progress appears to be gaining momentum in the 21st century. Jung dedicated his life to clinical practice and psychological theory, as well as exploring other areas such as religion, philosophy and sociology. He incorporated notions from

<sup>19</sup>. Utopia for Realists – Rutger Bregman, 2017

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**IMAGINATION IS  
MORE IMPORTANT  
THAN KNOWLEDGE**

the human sciences into his methodology, dipping into fields as diverse as anthropology, the study of dreams, mythology and religion, which allowed him to understand the “reality of the soul”. Carl Gustav Jung’s works on the human spirit reflect the discoveries made in quantum physics in the 20th century, which revealed the shortcomings of classical physics and brought about a change in the Western worldview. Due to quantum phenomena, we must now assume that the basis of the material world is immaterial and that there is a part of the world that we cannot see. Jung’s theory and recent progress in quantum physics lend greater weight to the hypothesis that the world is an interconnected whole.

Leading scientists, including Albert Einstein, have confessed to making their most impressive discoveries in dreams. The Danish physicist Niels Bohr (1885-1962) admitted that he had discovered his atomic model during a dream, after spending months searching for it in vain. Were scholars in the remote past, like many others since, able to use their intuitive reasoning to come up with extremely complex physical concepts?

**QUANTUM PHYSICS  
AND CONSCIOUSNESS**

Modern physics is grounded in the theory of relativity and quantum theory. These two theories are very different. In the theory of relativity, there is only one variable when it comes to time and space: space-time. Energy and matter are two separate entities. By contrast, quantum mechanics views space and time as being different, but matter and energy as one single unit. It aims to explore the “infinitely small”, made up of elementary particles, whereas general relativity focuses on the “infinitely large” to study the structures of the universe. According to Cassandra Nania<sup>20</sup>, professor of international relations and crisis management at University Lyon 3, quantum physics raises numerous questions about its relationship with the living world. She cites Bernard Guy, a doctor of science and research director at the École des Mines de Saint-Étienne:<sup>21</sup> “one of the most important questions of our century is ‘How can we combine the theories of relativity and quantum mechanics?’”. Carlo Rovelli, a theorist at the University of Aix-Marseille, states that: “we have two brilliant theories that say different

<sup>20</sup>. La physique quantique comme explication de la conscience (Quantum physics as an explanation of consciousness) – Cassandra Nania, January 2021

<sup>21</sup>. Relier la mécanique quantique et la relativité générale ? Réflexions et propositions (Linking quantum mechanics and general relativity: reflections and suggestions) – Bernard Guy, 2016



things about the world. They cannot both be true: they must make space for one another.” Cassandra Nania adds: “Quantum theory and the scientific discoveries surrounding it have led to changes in our perceptions and awareness of the way in which the universe and life function. Some people have drawn comparisons with spiritual philosophies like Buddhism or Hinduism. In the Western vision, science and spirituality are separate.” The doctor of physics, Alain Boudet, reminds us that **physical theories that advocate a deterministic world are mere interpretations of the phenomena that surround us and the mentalities that influence these interpretations. These theories are loaded with controversy. Our consciousness evolves with every scientific and theoretical discovery.** Niels Bohr, one of the leading thinkers in quantum mechanics, was among the first to say that human consciousness could be formed by quantum theory. Quantum consciousness or the quantum mind is a hypothesis whereby quantum phenomena are believed to play a role in the emergence of consciousness. Matter and consciousness cannot be separated from one another, according to some theorists. This hypothesis is linked to the entanglement and superposition of states. It aims to cast light on how consciousness, an abstract, subjective notion, is formed in a scientific manner. It assumes that consciousness is the product of a complex neural calculation and that it emerged during biological evolution as an adaptation of living systems that are extrinsic to the composition of the universe. In this way, the elements

of the universe are all deemed to be quantifiable and overlapping. It is impossible, then, to perceive reality as it really is. This premise also holds for the brain and, therefore, for quantum consciousness. American neuropsychologist Donald Hoffman<sup>22</sup> observes that progress in quantum physics and other sciences has led us to question our understanding of what is real. In his view, what we perceive and interpret to be real is no more than an interface simplifying the complexity of reality and helping us understand our environment. He compares it to a computing interface: to send an email to a friend, we use an application that allows us to write with a keyboard, but if we were to understand everything that really happens to allow such an email to exist and reach the recipient – from the tapping of fingers on the keyboard to the email being read by the recipient – we would be incapable of pressing ‘send’. **The same is true of reality and Einstein’s space-time serves as an interface of reality that is ultra-simplified yet sufficient to substantiate the scientific theories that explain what we perceive. Today, scientific progress allows us to seriously consider the existence of additional dimensions besides the four dimensions of space-time**, as explained by the American physicist Thad Roberts, a former astrophysicist who was responsible for training teams of astronauts at NASA.<sup>23</sup>

<sup>22</sup>. Lex Fridman podcast #293 – Donald Hoffman – Reality is an illusion, how evolution hid the truth, June 2022

<sup>23</sup>. TEDx Talks – Visualizing Eleven Dimension – Thad Roberts, 2010 – <https://www.youtube.com/watch?v=aSz5BjExs9o>

## NATURAL TIME VS HUMAN TIME

Nathalie Geetha Babouraj, a medical graduate, former doctor with the Paris fire service and member of a NATO working group on the role of integrative medicine in the health system, has attempted to explain our relationship with the living world and with what we call reality<sup>24</sup>. She identifies four different temporalities. The first three relate to the notion of time in Ancient Greece. Chronos represents human time (24 hours in a day, 365 days in a year). Aion represents the cyclical time present in nature. Kairos represents the time of the opportune moment. This is the feeling that allows us to sense when the time is right. Kairos lacks the linearity of Chronos and the cyclical nature of Aion. It is a temporality that is very familiar to sportspeople. Being ready at the right time. This notion can be found in martial arts: constantly contracting our muscles quickly saps our energy. According to Gregory Babene, ranked 8th in the world in his category of MMA<sup>25</sup>, a good fighter can stay relaxed most of the time and knows how to add intensity and contraction only at the precise moment when he delivers his blow. The training behind a knockout blow is based on maximum relaxation in the fighter’s movements. This approach is also present in animal behaviour. Guided by their intuition, animals are capable of concentrating the intensity of their actions in the opportune moment and remaining relaxed the rest of the time. Cats are a good example of this. Kairos, then, is a kind of suspended time, a transition from a familiar reality



## KAIROS REPRESENTS THE TIME OF THE OPPORTUNE MOMENT

to a subtle one. Kairos is the temporality of reconnection with the living. Unlike Kairos, Numeros, the fourth temporality cited by Nathalie Geetha, is the temporality of permanent connection enabled by technology. It is this temporality that engages and harnesses our attention on social media. It is dangerous, as social media algorithms seek to hold our attention for as long as possible in order to collect data. A user’s attention span holds economic value, as they transition from content consumer to product. Kairos and Numeros are opposites. One reconnects us to the living, while the other transforms us into human capital, machines or products. Numeros is the time when we freely offer ourselves up through our personal data to other people who generate income from this data: the very definition of servitude. Numeros also has a positive side, connecting people despite the physical distance between them. But this asset must be used wisely. Chronos and Numeros, both non-natural temporalities, make us slaves to the passing of time. We endure them. Kairos, meanwhile, allows us to cast off the stress and servitude linked to time and offers a sense of freedom thanks to the serenity and uncertainty that come with it.

<sup>24</sup>. Danse avec le chaos (Dance with chaos) – Nathalie Geetha Babouraj, 2022 – [https://www.youtube.com/watch?v=vid\\_foJbmPk](https://www.youtube.com/watch?v=vid_foJbmPk)

<sup>25</sup>. Gregory Babene is a mixed martial arts fighter and a pioneer of the sport in France: @gregorybabene on Instagram

## TECHNOLOGY, FREEDOM AND A LINK WITH THE LIVING WORLD

In the previous letter, we mentioned the hope that technology will enable us to escape the spiral of natural resource depletion. Technology forms part of the solution but it also brings danger along with it, especially if we opt to bury our heads in the sand by continuing to worship the quest for infinite growth. **In this quest, intensive exploitation of resources is replaced by intensive exploitation of humans, or rather, of their personal data. Data is a new resource, whereby practically unpaid exploitation contributes to an exponential rise in profits. In offering us convenience, technology deprives us of our link with the living and, ultimately, of our freedom.** We addressed this topic in the previous letter, concluding that a society that prioritises the living is at low risk of sliding into transhumanism. In his TED talk<sup>26</sup>, the French science-fiction author Alain Damasio summarised the issue with these remarkable words: “We have no need to become transhuman; instead, we must become very human”. In entrusting our cognitive abilities to machines, we alter them. We entrust our ability to look for information to a search engine, our ability to find our



**THE LINK WITH THE LIVING WORLD RESTORES OUR FREEDOM, BUT IT ALSO ALLOWS US TO LIVE LONGER**



**IN ENTRUSTING OUR COGNITIVE ABILITIES TO MACHINES, WE ALTER THEM**

way to a GPS, our ability to perform calculations to a calculator, our ability to translate to an application and our ability to physically recover after exercise to a smart watch. This technological assistance alters the cognitive abilities that humans have developed through thousands of years' worth of contact with the natural world and their peers. It leads to dependence. We can no longer do without technology. By contrast, the ability to listen to our bodies without needing an application, look for information in a book without a search engine, find our way without a GPS, do sums without a calculator or speak other languages without a translation app is synonymous with freedom.

The link with the living world restores our freedom, but it also allows us to live longer. A study on longevity by the University of Chicago demonstrated that people who live long lives often share strong ties with their social circles until they die. It appears, then, that social ties help us live to an old age<sup>27</sup>. Of course, this is not as impressive as the processes of transhumanism, but **is it better to die old and free or to live forever as a slave?**

<sup>26</sup>. TEDx – Alain Damasio – Très humain plutôt que transhumain (Very human, not transhuman) – 2014 – <https://www.youtube.com/watch?v=cROT5-a6YTc>  
<sup>27</sup>. Zones Bleues, les secrets de la longévité (Blue zones, the secret to longevity) – YouTube <https://www.youtube.com/watch?v=2lkr9TvLHhc>



**THE LATEST HEALTH CRISIS MIGHT HAVE PROVEN THAT REJECTING THE LINK WITH THE LIVING IS NOT THE WAY FORWARD**

Recent public health crises have shown that the use of technology associated with the will to control state and economic structures gives rise to servitude and moral distress. The latest health crisis might have proven that rejecting the link with the living is not the way forward, but technology reassures us amid the solitude caused by cutting human ties. It also allows us to control our environment. And now, it gives us hope in the face of our finite existence: it frees us from death. Transhumanism is not promoted by poor people or people living difficult lives. It is driven by those who are already dominant and wish to prolong their dominance for as long as possible. This is why they are so afraid of death. Those who do not fear death see no purpose in transhumanism. In the previous letter, we mentioned several philosophers and sociologists who have studied fear. Fear leads to servitude. Fear of missing out, fear of “the Other” and fear of dying explain why humanity is divided into castes. The fear of death is now driving us to relinquish our freedom to technology.

**Let us be clear at this point in our reflection: this letter is in no way intended as a rejection of scientific progress. Progress in medicine and the development of new drugs offer humankind tremendous comfort. The same goes for progress in agriculture, computing, digital sciences and chemistry. In these letters, our aim is to show that progress in materialistic science combined with understanding based on intuition and knowledge transfer has provided our species with considerable added value. This value is economic, physical and spiritual at the same time. By combining knowledge, we can speed up the transition towards a more sustainable model and prevent the collapse of the current model. Yet, paradoxically, it is exciting to note that the scientific progress imbued with Western materialistic culture, which has poured ridicule on any reference to intuition, now appears to be leading us back to what the peoples with ancestral traditions who were colonised by the West foresaw thanks to their special link with the living: the notion of intention in matter.**

In the words of quantum physics researcher Emmanuel Ransford<sup>28</sup>: “perhaps the world of atoms and electrons is permeated by a psychic dimension capable of interfering with tangible matter”. This interference would leave a trace that could be detected by scientists. In each psychic dimension, there would be a decision-making power. Particles would thus contain said decision-making power. This intangible part of the quantum universe is not concerned with the space-time in Einstein’s theory of relativity or with distance. In the previous letter, we referred to Erwin Schrödinger’s experiment with his cat, which describes the principle of superposition based on the idea that a quantum state can possess several values for a specific observable quantity. This theory remains highly contested. Most scientists stick with a materialist explanation of consciousness and reject the theory of quantum consciousness. **The aim here is not to decide one way or another, but it seemed relevant to mention that progress in materialistic sciences is restoring credibility to what peoples more closely connected to the natural world were already aware of.** Given that science appears to be capable of reinstating the notion of intentionality in nature, we would like to explore the topic in a little more detail.

## THE LINK WITH THE LIVING WORLD AND THE CONCEPT OF THE WHOLE

**“WE ARE THE UNIVERSE TRYING TO UNDERSTAND ITSELF.”**

CARL SAGAN

In recent years, scientific progress in astrophysics, quantum physics, biology and neuroscience increasingly appears to challenge the purely mechanistic vision of the laws of nature, making way for an evolutionist vision of reality at every level. In the 1980s, many scientists believed that progress would allow most of the major issues that society faces to be quickly resolved. Genome sequencing, brain imaging and progress in computing would provide solutions to almost all our problems. In 1997, American science writer John Horgan published *The End of Sciences*<sup>29</sup>. But despite the huge progress made in genetics, astrophysics and neuroscience, no evidence has yet been found to suggest that life and spirit can be explained by physics and chemistry alone. In *The Presence of the Past*, biochemist Rupert Sheldrake<sup>30</sup> proposes a unifying thought as part of a vision that considers the living as a whole. His theory is that memory is inherent to nature and that what we refer to as laws of nature are more like habits than genuine rules of universal physics. **The living world is thus a depositary of collective memory. Habits are inherent to the nature of all living organisms.**

Sheldrake’s theory echoes the Gaia hypothesis posited in 1970 by British climatologist James Lovelock and American microbiologist Lynn Margulis.

<sup>28</sup>. La conscience est-elle quantique (Is consciousness quantum?) – Emmanuel Ransford, 2017 – <https://www.youtube.com/watch?v=3WIGmA5QDPM>

<sup>29</sup>. The End of Sciences – John Horgan, 1997

<sup>30</sup>. The Presence of the Past: Morphic Resonance & the Habits of Nature – Rupert Sheldrake, 1987

They suggest that the Earth is a dynamic physiological system that includes the biosphere and has kept our planet in harmony with life for more than three billion years. Within this system, the living beings on Earth form a vast superorganism whose components self-regulate to enable life to be preserved. The atmosphere, oceans and biomass make up a single, large entity comprising a series of individuals each working towards their collective survival, rather like a colony of ants living in symbiosis. In short, the Earth is alive. Maximilien Rouer, Head of Regenerative Economy at AXA Climate, explains that the Earth has only had a stable climate for approximately 15,000 years. The emergence of civilisation around 11,000 years BCE is no coincidence, as

an unstable climate would have prevented the development of agriculture. This climate stability is made possible by the fact that plant yields, i.e. the relationship between the amount of energy released and the amount of energy absorbed, are extremely low at around 1%. By absorbing far more energy than they release, plants are believed to have stabilised the climate over a very long period, which would have been impossible with a higher yield. This observation prompted James Lovelock to develop the Gaia hypothesis, which has been taken up by numerous modern scientists. What was originally no more than intuition may well be backed by science. In the context of the Gaia hypothesis, which views the Earth as a living organism, humankind is capable of

## FOCUS

# What funding do we need to regenerate the living world?

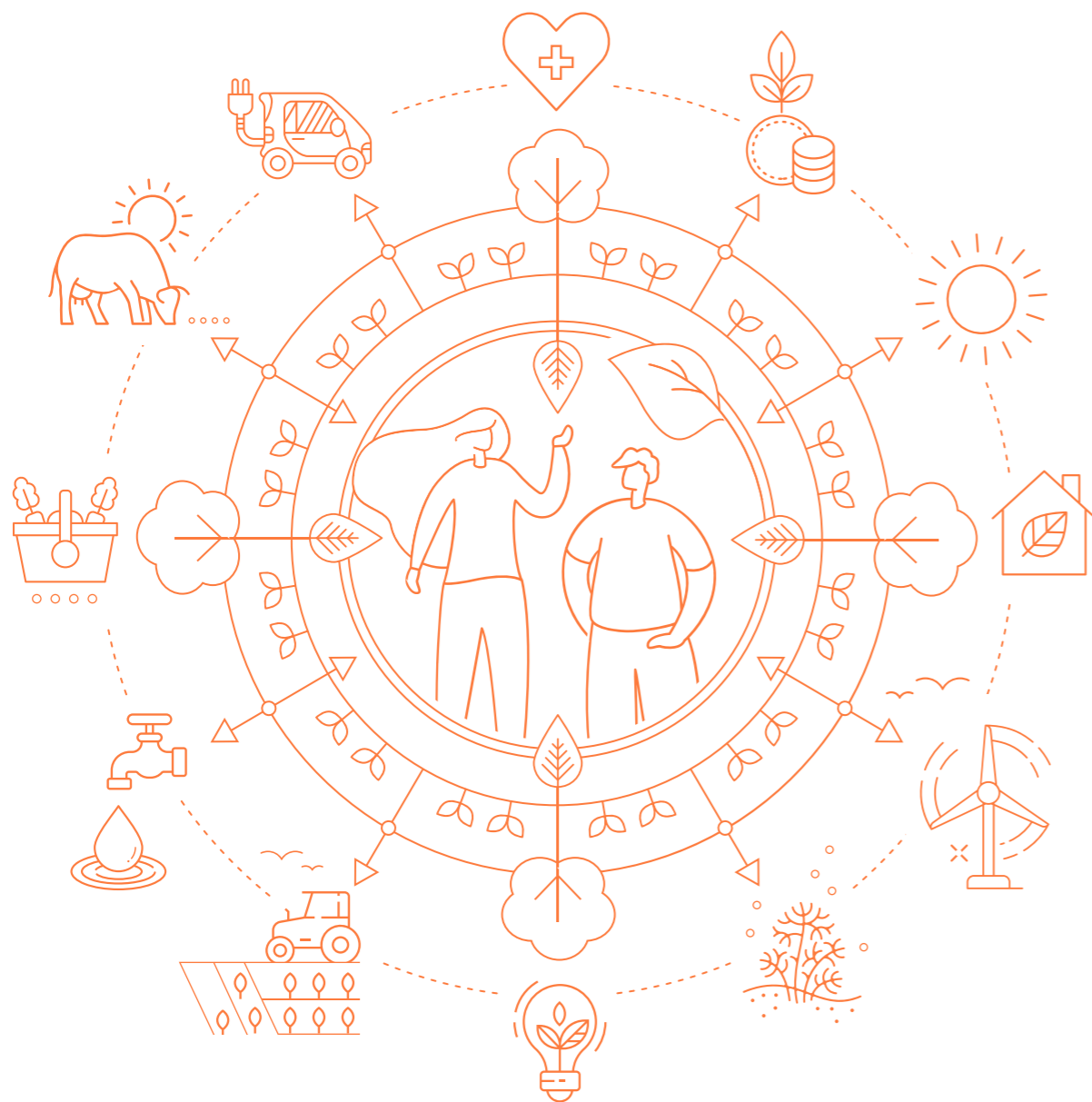


by Maximilien Rouer

Biologist at Paris Cité University and AgroParisTech engineer, head of regenerative economy at AXA Climate

While the lives we lead have been granted to us through the simple act of being born, they nevertheless remain the outcome of a series of unlikely events. In fact, nowadays very few astrophysicists dare to speculate on the possibility of life forms as developed as they are on Earth existing elsewhere in the Universe. The lives we enjoy depend on the existence and continuation of an ecosystem capable of providing the resources needed for survival, including air, water, food and suitable temperatures. Evidence tells us that this system is currently on the brink of collapse. Human beings must now act to recover it.

CONTINUE READING ON PAGE 34 >



killing the planet. According to French sociologist and anthropologist Bruno Latour, the Gaia hypothesis holds “[similar] importance in the history of human knowledge [as] Galileo’s theory”. After meeting James Lovelock at his home in England, Bruno Latour, one of the most influential contemporary thinkers on the living world, wrote in the French newspaper *L’Obs*<sup>31</sup>: “I listened to this paradoxical and feisty old man, still with a fresh ring to his voice. How had he introduced something quite new into the history of science that had also been the object of so many misunderstandings? When I was climbing back into the car, I asked myself if it was me who had

exaggerated the importance of Gaia, or if it was more the case that I was like a person who had the opportunity to meet someone like the venerable Galileo Galilei in the 1620s before his ideas became the common sense of a civilization to come.” In one of his latest books, *The Vanishing Face of Gaia*, published in 2009, James Lovelock acknowledges that the impact of human industrial activity is upsetting the Earth’s systems... The Anthropocene could yet kill our planet.

31. <http://www.bruno-latour.fr/sites/default/files/P-187-VISITE-LOVELOCK-NOUVEL-OBS.pdf>, English translation in Los Angeles Review of Books: <https://lareviewofbooks.org/article/bruno-latour-tracks-down-gaia/>

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## LIKE ANIMALS, PLANTS EXPRESS A WIDE VARIETY OF TEMPERAMENTS

Our understanding of the living world has evolved as new scientific discoveries have emerged, but here too, research into plants tends to draw on ancestral knowledge based on intuition. In *The Revolutionary Genius of Plants*, Italian phytobiologist Stefano Mancuso<sup>32</sup> looks back on the history of our perception of the plant world and on the state of contemporary knowledge. Although plants account for more than 99% of the Earth’s biomass, leaving less than 1% for animals and humans, our knowledge of the plant world has been distorted throughout the history of economic development. Yet while plants are perfectly capable of living without humans, the opposite is not true – at least on Earth. Without photosynthesis, the oxygen that sustains animal life would never have appeared on the planet. To this day, plants form the basis of our food chain, as well as being a source of the energy (especially fossil fuels, which are derived from slowly decomposing plants) that has allowed our civilisation to develop. We now know that plants possess the same five senses as humans, albeit in different forms, and that they have an additional fifteen senses allowing them to perceive phenomena such as electromagnetic fields, humidity and gravity. They use their senses to orient themselves in space, communicate and exchange information with other plants via chemical molecules and interact with animals or other plant species. Like animals, plants express a wide variety of temperaments: they can be generous, deceitful, grateful or dissuasive. In a striking video<sup>33</sup>, researcher Jean Thoby highlights the astonishing qualities of plants that have too often been ignored by humans, with the exception of some

peoples with ancestral traditions. Today, science is able to demonstrate that plants are intelligent, or in other words, that they are capable of receiving signals from their environment, processing the information received and calculating solutions to ensure their survival. They also display “swarm intelligence”, which allows them to adopt not only individual but also collective behaviour, rather like an ant colony or a shoal of fish. Despite this, in almost every language, the word “vegetate” or “vegetative state” refers to conditions in which life has been reduced to a minimum.

“

## THE FEMININE IS PRESENT IN EVERYTHING

“THE EARTH DOES NOT BELONG TO MAN, MAN BELONGS TO THE EARTH.”

NATIVE AMERICAN PROVERB

For geologist Eric Julien<sup>34</sup>, the link with the living world in all ancestral cultures is characterised by a balance between masculine and feminine in the natural world, the universe and every living being. Our patriarchal societies heighten the masculine via notions of control, dominance and conquest. The feminine is thus stamped out. We are not talking here about feminism or woke culture, because the feminine is present in everything. Rather, we are referring to the notion of masculine and feminine that is present in the Chinese yin and yang, as well as in practically every ancestral culture with close links

32. *The Revolutionary Genius of Plants* – Stefano Mancuso, 2013  
33. Jean Thoby, *l’homme qui parlait aux oreilles des végétaux* (Jean Thoby, the plant whisperer) – YouTube – 2022 – <https://youtu.be/NHV-7UdeQug>  
34. *Se reconnecter à la nature* (Reconnecting with nature) – Eric Julien and Thierry Thouvenot – YouTube, 2021 – <https://www.youtube.com/watch?v=CMvqDdjrDYY>



## NATURE MUST BE SUBJUGATED AND DOMINATED BECAUSE IT SCARES US IN ITS NATURAL STATE

to nature. When witches and alchemists, individuals who were connected to nature, were burned in the Middle Ages, the feminine was erased from Western society. **The tipping of the scale towards the masculine in the patriarchal tradition triggers a fear of nature.** The masculine is synonymous with control. The feminine represents unexpectedness and overflowing. Nature must be subjugated and dominated because it scares us in its natural state. In children's tales, forests are scary and harbour evil spirits and witches. They must be subjugated as gardens and purpose-built parks. We saw in our previous letter how much this impacts our perception of risk.

Reconnecting with nature and other humans restores our liberty. As we reflect on the consequences of this statement, we are reminded of Part 1 of this letter<sup>35</sup> and the libertarian thought that consists of restoring power to the local level. This way of thinking is clearly dangerous for a system based on the quest for infinite growth, which must be underpinned by a consumer society and the use of debt. Indeed, the consumer society permits a degree of control over the population, which is ensured by the dominance of a class of experts and enabled by the consent of the masses. The connection with the living world challenges this system for several reasons. Firstly, it puts the local back at the heart of human relations

and weakens central power. Secondly, it restores the freedom afforded by local solidarity, informal bonds and proximity to nature. Finally, it invalidates all the theories that justify large-scale agricultural and industrial production, intensive exploitation of resources and land and the systematic use of drugs to treat the symptoms rather than the causes of dysfunction in the human body. In short, it undoubtedly diminishes the speed at which financial profit is generated. This return to nature is embodied by farmer and writer Pierre Rabhi in a TEDx talk titled *Is there a life before death?* which is self-explanatory<sup>36</sup>.

Ancestral knowledge is re-emerging all around the globe, echoing the now apparent failure to which our refusal to see the obvious is condemning us: the quest for infinite growth is leading humankind into an abyss. "Values are like fallen leaves. They are only stirred when the wind picks up." With this quote from Hannah Arendt, Éric Julien<sup>37</sup> conveys the idea that when humanity senses a threat to its existence, it is capable of stepping out of its comfort zone and adopting an inclusive approach. When crisis overwhelms us, we are able to work together and break free from the mechanisms of survival based on selfishness and self-deceit that are triggered by our brains.

Lyla June is a "Native" American from the Navajo tribe who graduated from Stanford University. In a TED talk<sup>38</sup>, she discusses the regenerative agriculture

35. Tikehau CIO letter: Human after all, September 2022  
36. Ted Talks: Is there a life before death? – Pierre Rabhi, 2011 – <https://www.youtube.com/watch?v=HyNinbzbGuE>  
37. Se reconnecter à la nature (Reconnecting with nature) – Éric Julien and Thierry Thouvenot – YouTube, 2021 – <https://www.youtube.com/watch?v=CMvqDdjrDYY>  
38. Ted Talks – 3000-year-old solutions to modern problems – Lyla June – <https://www.youtube.com/watch?v=eH5zJxQETI4>



## RECONNECTING WITH NATURE AND OTHER HUMANS RESTORES OUR LIBERTY

techniques passed down through generations of native peoples, emphasising that these systems, which were not centred around humans but in which they played a part, were capable of producing agricultural goods in large quantities. Her talk is full of lessons to be learned.

**Escaping our dependence on the addictive pleasure of convenience offered by consumer society requires an elevation of consciousness. The return of the link with the living enables this elevation, as it teaches us that we need less than consumer society would have us believe. In turn, the return of consideration for the narratives of native peoples who have preserved their connection with the living world shows that this elevation of consciousness is already underway.** The resurgence of attention to these cultures, rendered invisible by colonisation and globalisation, is expressed through increasingly popular platforms offered by opinion leaders such as Éric Julien for the Kogi people or the website Survival International<sup>39</sup> whose discourse is led by Amazonian tribal chief Nixiwaka Yawanawa, among others<sup>40</sup>.

## UNIFYING AND SHARING KNOWLEDGE

When it comes to adopting a sustainable model, we must not only rethink our link with the living world but also encourage the repartitioning of knowledge, which, as noted in our previous

letter<sup>41</sup>, is a factor that divides humanity. In this context, the intellectual property model seems increasingly obsolete and reserved for individuals and companies with an interest in prolonging the highly unequal system for distributing economic value that is currently in place. The open-source model is prospering, but it may hinder innovation in certain areas. Straddling intellectual property and open source, the "Creative Commons" model merits further consideration. The Creative Commons organisation was founded in 2001 by Lawrence Lessig, Hal Abelson and Eric Eldred with support from the Center for the Public Domain. It offers standard contracts for making works available online or offline. Inspired by free-software licences and the open source movement, these contracts allow works (texts, photographs, music, websites, etc.) to be used and reused. Rather than subjecting any use of these works to prior authorisation from the rights holders, Creative Commons licences allow the author to authorise certain types of use in advance according to the conditions they establish and to inform the public of these conditions. The aim is to encourage the circulation of works, dialogue and creativity in a simple, lawful manner. Creative Commons is intended for authors who prefer to share their work and enrich common cultural heritage and freely accessible information. Their works evolve as they are shared.

39. <https://www.survivalinternational.org>  
40. TEDx – We are all connected with nature – Nixiwaka Yawanawa – [https://www.youtube.com/watch?v=xkO-yebNA\\_o&t=12s](https://www.youtube.com/watch?v=xkO-yebNA_o&t=12s)  
41. Tikehau CIO letter: Human after all, September 2022

# Consequences for the economic cycle and for companies

**W**e are convinced that in this new economic cycle characterised by the end of the continuous decline in interest rates and the shift in the globalisation process, extra-financial considerations will be a vital generator of financial value. Meanwhile, ignoring these extra-financial considerations will destroy value. In an interview in March 2023, the United States Treasury Secretary Janet Yellen warned that climate change could have a considerable impact on the American economy<sup>42</sup>. Recent developments in the evolution of companies' capital structure and financial flows seem to confirm this hypothesis.

To begin with, companies that do not perform well on extra-financial metrics have decreasing access to available capital. Their financing cost and cost of capital both rise, placing them at a

huge competitive disadvantage compared to their peers who perform better on these metrics. We can see this happening in our investment activities in debt (private debt and debt traded on capital markets) and in capital (private equity and listed shares), as well as in real estate. This trend is on the rise.



**IGNORING THESE EXTRA-FINANCIAL CONSIDERATIONS WILL DESTROY VALUE**

<sup>42</sup>. <https://www.reuters.com/world/us/yellen-warns-climate-change-could-trigger-asset-value-losses-harming-us-economy-2023-03-07/>



**THE ENERGY TRANSITION OFFERS A COMPETITIVE ADVANTAGE**

The GFANZ initiative is an interesting example. On the sidelines of COP26, most of the world's major banks signed the Glasgow Financial Alliance for Net Zero initiative with the aim of achieving net zero in two-thirds of their assets by 2050. Given the current composition of the banks' balance sheets, this suggests that the cost of financing non-net zero assets through the banking system would need to rise very rapidly to have a chance of attaining such an objective. The equivalent initiative for asset management is called AMNZ (Asset Management Net Zero) and will be signed by 308 asset managers, who manage \$59 trillion or approximately half of the world's managed assets.

The amount of investment needed to fund the transition to a sustainable model is so great that if these investments are well executed, they will trigger strong growth in a world of increasingly weak growth. The example of the energy transition is particularly interesting. As well as addressing the climate issue, the energy transition offers a competitive advantage in a context of deglobalisation. The need to repatriate the means of industrial production to the countries where consumers are located entails mass investment, as well as an increase in salary costs. Investing in energy-efficient buildings, means of production, supply chains and vehicles will allow companies to stay competitive. It is clear, therefore, that the energy transition is more than just a nice-to-have gimmick to "greenwash"

communication. It is a crucial competitive advantage that grants a licence to operate. Without it, companies will lose their competitiveness and financial profitability. What's more, the energy transition creates jobs and is a factor in energy sovereignty for governments. The energy transition will attract massive flows of investment, making it a strong growth megatrend.

In the relative short term, performance on extra-financial metrics could give companies a valuation premium. As well as generating strong growth, sectors that enable resilience to be created in the economy are likely to receive better valuations.

The conviction that extra-financial metrics generate financial value explains the systematic inclusion of these metrics in every investment decision we make. But beyond extra-financial considerations, the human dimension remains vital to our activities and to the creation of economic value. Indeed, **the return of more local ecosystems in this megatrend of seeking resilience rather than efficiency is likely to lead to outperformance by investors who have remained close to their counterparts.** This is what Tikehau Capital

strives to do by investing solely in the countries where we have a local presence in the form of investment and monitoring teams who are integrated into local ecosystems. Moreover, in the private debt business, recent crises such as the COVID-19 pandemic have shown that close, ongoing dialogue with the issuer leads to greater support for the company in its economic cycle than investment in intermediated debt traded on a market, where no dialogue with the issuer is possible. As a final example, in our real estate activities, direct dialogue with tenants of the assets in which we have invested allows us to predict cycles and maintain a high occupation rate of the properties, as well as a high rent collection rate. **In other words, human relationships create financial value and we believe that they will become all the more relevant during the current phase of deglobalisation.**

This exercise also reinforces the importance of defining and calibrating these metrics to ensure that capital is appropriately allocated and the bubbles and value traps that we saw in the 2000s are avoided. For example, with the manufacturing of photovoltaic infrastructure. Traditional measures of growth and risk are no longer valid, as they fail to consider the impact of the destruction of value brought about by exploiting labour and finite resources. Reality has caught up with the refusal to consider new measures: **the over-optimisation enabled by the**

**continuous decline of interest rates and globalisation increases margins but undermines the system and heightens risk, threatening to destroy more value than the system creates. The COVID-19 crisis is evidence of this and sounds a warning bell: climate change and the social instability triggered by it will erode even more value if we do not find new metrics by which to measure companies' performance.**

It is vital that the right extra-financial indicators are now reflected in the economic equation, from GDP to accounting standards to metrics for measuring and compensating companies' performance. Placing economic value on the production of waste, depletion of resources and pollution caused by our system is absolutely crucial. In a remarkable Danish documentary on the issue<sup>43</sup>, Klaus Lackner, founder of the Center for Negative Carbon Emissions, explains that if the impact of the economy on nature, waste and emissions is valued correctly, governments and local authorities could compel companies to take action with messages such as: "if you don't do it, the state will do it for you and send you the bill".

<sup>43</sup>. Solutions – Rethinking the world  
<https://www.youtube.com/watch?v=z8CpIZKbn2I> (Private video)

In an article in the Financial Times<sup>44</sup>, George Serafeim, a professor at Harvard University, notes that **performance metrics that exclude companies' environmental, employment or product impact result in poor outcomes for staff, customers and the environment. One of the implications of this is that employees are often treated as expenses to be managed rather than as sources of innovation and growth to be invested in.** It is important that performance is redefined to include societal considerations such as quality of employment, payment of tax liabilities and marketing products of genuine benefit to customers. To do this, we must have the means to measure the impact of companies on society, convert this impact into monetary terms and include it in financial statements. As well as the owners of capital or shareholders, other stakeholders will need to be involved in designing assessment instruments if this goal is to be achieved. The concepts of aggregate portfolio risk, risk-adjusted returns and risk-return optimisation, which were developed in the 20th century, have allowed investors to optimise returns for a given level of risk. **By taking social and environmental impacts into consideration, new risk-return-impact optimisation tools can be developed and a new efficient frontier for our economy can be identified.** This will require the necessary capital flows to be redirected to the transition towards a more sustainable model. This trend creates spaces for strong growth in a

less optimised world in which the creation of resilience is synonymous with weaker growth.

By restoring the link with the living world in industrial and agricultural processes, our way of life and our culture, we can enable the development of some very interesting technologies. In truth, these technologies are nothing new, as the re-emergence of these concepts reminds us that traditional societies with a connection with the living world already held this knowledge. Once again, the combination of knowledge passed down through the generations and modern science suggests that there is hope for a model that is sustainable but also generates economic value. The French-German television channel Arte released a documentary about the practical applications of the Gaia hypothesis<sup>45</sup>. Taiwanese architect Arthur Wang uses waste materials from making buildings and furniture and explains that this technique was used in the Roman Forum, where walls made from construction waste and clad in decorative marble have been discovered. These walls made from waste have stood for 2,000 years. The documentary also refers to the biomimicry techniques inspired by the way in which nature

<sup>44</sup>. Companies must include environmental and social performance measures – George Serafeim – Financial Times, 24 February 2020  
– <https://www.ft.com/content/0c282a0c-3c36-11ea-a01a-bae547046735>

<sup>45</sup>. L'hypothèse Gaïa : et si la terre tournait rond ? (The Gaia hypothesis: what if the Earth were round?) YouTube, 2022

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**INTENSIVE MONOCULTURE IMPOVERISHES THE SOIL, SO IT IS NOT NECESSARILY THE MOST APPROPRIATE RESPONSE TO THE ISSUE OF POPULATION GROWTH**

handles problems of energy flows, thermal insulation or protection to create new materials that are not only sustainable but also renewable, unlike the materials produced to date.

The argument that our current model is the only one capable of providing sustenance and material comfort to 10 billion humans on the planet is becoming increasingly invalid. **The fact that this argument persists can be explained by the desire of a particular section of the population to preserve their privileges and to maintain their position as the main beneficiaries of the unequal distribution of economic value created by this exponential growth model.** Techniques for waste recycling, circular economy and production of goods using living materials, as well as new agricultural techniques, show that a sustainable model, albeit one in which growth would be weaker, could serve the planet's population well. Soil experts Lydia and Claude Bourguignon<sup>46</sup> point out that current agricultural yields are not enough to allow 10 billion people to be adequately nourished by 2100. What yields are we talking about exactly? The use of pesticides, chemical fertilisers and water helps produce larger fruit and vegetables because they are full of water. This causes their market value to rise. But these products contain fewer nutrients

and are less nourishing to those who consume them. Intensive monoculture impoverishes the soil, so it is not necessarily the most appropriate response to the issue of population growth. It is certainly possible to eat less but better. Perhaps the argument that the world cannot do without intensive monoculture is no more than a way for corporations in the sector to protect their large profits. It may also allow us to avoid stepping out of our comfort zone and unlearning everything that we have learned for decades, despite the accelerating soil depletion that is inevitably leading to the collapse of the system. Regenerative agriculture is part of the solution, but for it to be adopted on a large scale, we must challenge many of the certainties we have been bombarded with from supporters of intensive monoculture since World War II to meet the needs for food production to nourish the population and, today, most likely for economic reasons. In this regard, it is reassuring to see large groups such as Unilever investing in regenerative agriculture in an effort to reverse the failings of intensive monoculture.

<sup>46</sup>. Thinkerview – Les sols à l'agonie, peut-on encore les sauver ? (Dying soils, can they still be saved?) Lydia and Claude Bourguignon, February 2023

## Conclusion

**M**ost people who read this letter will have been fortunate enough to receive a family, academic or religious education. This education has instilled in us not only the principles of living in society, but also our prejudices and certainties, although it is difficult to admit that we know nothing... or not very much. But learning, through education or observation, to admit that we know nothing reinforces the effects of experience. These effects are further increased by our relationship with the living world and by our interactions with other humans and the natural world. It is this freedom provided by connection with the living that we have sought to explore in this letter, as it appears likely to hold the solution to the development of a more sustainable economic model.

Although ancestral practices continue to be discredited by mainstream culture, something is beginning to shift. These concepts cannot be empirically proven or explained through the laws of materialistic science, so they have been stigmatised and viewed as fantasies of the under-developed. **In seeking universality, science itself plunges materialism into crisis. The materialism needed for capitalist theory to flourish (humans are biological machines) removes all intuition from the scientific process. But paradoxically, the scientific progress brought about by normative,**

“

**PAYING ATTENTION TO DETAIL PRESERVES OUR COGNITIVE ABILITIES**

**materialistic culture lends increasing credibility to practices based on intuition...** Progress in quantum physics and neuroscience, as well as the recent discoveries of exoplanets using the James Webb telescope, have injected life back into the hypothesis that materialism cannot explain everything. The possibility of discovering this 'something else' that cannot be explained by materialism or the laws of contemporary physics may allow the merits of the link with the living world so clearly understood by cultures based on experience and intuition to be reinstated. **In addition to Western science based on calculations and measurements, the return of intuition and observation may be part of the solution for a more sustainable model.** Our knowledge and comfort do not absolve us from paying attention to detail, as it is this very attention to detail that allows us to challenge our beliefs and shift from comfortable servitude to total freedom. What's more, paying attention to detail preserves our cognitive abilities (which are dulled by technology and comfort) and creates economic value. **Setting aside our prejudices, our conditioning and our fear of "the Other" and the unknown to observe the world lets us consider the possibility of overcoming obstacles such as the risk of self-destruction.**

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**IT IS DIFFICULT TO ADMIT THAT WE KNOW NOTHING**



# Epilogue

**“ALL TRUTH PASSES THROUGH THREE STAGES. FIRST, IT IS RIDICULED. SECOND, IT IS VIOLENTLY OPPOSED. THIRD, IT IS ACCEPTED AS BEING SELF-EVIDENT.”**  
ARTHUR SCHOPENHAUER

**S**o, should we be afraid to state that adopting a more sustainable growth model will entail weaker economic growth? The publication of this letter and the two previous instalments shows that we do not think so, and that we must not only admit this fact but also embrace it. Why? On the one hand, because the likely collapse of the current model will lead to far greater financial losses compared to adopting a sustainable model in the relatively short term. On the other, because “repairing” our lifestyle through the adoption of a sustainable model will lead to strong growth as a result of the scale of investment needed to rebuild this resilience.

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This is the end of our triptych on economic development, climate change and the human factor. These three letters are perhaps the most important we have published to date. Their content may be surprising, but it is sincere, and it reflects our vision as investors. Far from being naive and utopian (in our eyes at least), we believe that these letters are entirely consistent with our mission to generate economic value for our investors. Indeed, they let us look to the future with optimism.

Consumer society flatters our egos with the purpose of enslaving them. The material comfort that is exchanged for servitude pushes many populations to consent to it. This is why it is so difficult to step out of our comfort zone and admit that the current model is leading us to a dead end. Renouncing self-deception requires an immense effort and leads to discomfort. A scene from the film *The Matrix* by Lana and Lilly Wachowski symbolises the dilemma between comfortable servitude and uncomfortable freedom<sup>47</sup>: in it, one of the characters asks the machine to send him back into the Matrix and erase his memory. In his new life, he wishes to be rich in order to live a comfortable life, even if this comfort is no more than an illusion and is only obtained in exchange for the ultimate servitude. Of course, this

<sup>47</sup>. The Matrix, 1999 – <https://www.youtube.com/watch?v=4YbMqcQK0k4>

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**THESE THREE LETTERS ARE PERHAPS THE MOST IMPORTANT WE HAVE PUBLISHED TO DATE**

science-fiction film has nothing to do with the purpose of this letter, but the scene in question summarises the difficult choice imposed upon us quite effectively: to bury our heads in the sand by accepting servitude and risking collapse or to face our fears, prejudices and assumptions to maintain control over our fate amid an uncomfortable freedom. Humanism has placed humans at the centre of the universe, legitimising the superiority of human laws over the laws of nature. Through climate change, nature has shown us that Hubert Reeves was right when he said: “We’re at war with nature. If we win, we’re lost.” **For too long, we have overlooked the presence of other beings.** Western modernity is underpinned by four centuries of schemes that allow us to ignore other lifeforms and their ecosystems.

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**Rather than a human crisis or a crisis of living beings, the current environmental crisis represents a crisis in our link with the living world. “First and foremost, it’s a spectacular crisis in our productive relations with living environments, visible in the extractivist and financialised frenzy of the dominant political economy. But it’s also a crisis in our collective and existential relations, in our connections and affiliations with living beings”<sup>48</sup>.** By destroying informal ties, solidarity, non-economic relationships, mutual aid and inclusivity, economic development encourages individualism and the metastasis of the ego. The ego is overvalued by an imbalance between the masculine and the feminine in our system of Western thought. **In order to see clearly, we must set our egos aside. Humans are not the centre of the universe; we are a living species that has been around for several million years on a microscopic speck in a universe that is 13.5 billion years old. Is this not evidence enough that humility and endless gratitude are more appropriate sentiments than arrogance and egotism?** Reconnecting with the living world is the only solution if we are to overcome the risk of self-destruction and transition towards a more sustainable model. Human after all...

<sup>48</sup>. Ways of Being Alive – Baptiste Morizot, 2020



# What funding do we need to regenerate the living world?

by Maximilien Rouer

Biologist at Paris Cité University and AgroParisTech engineer, head of regenerative economy at AXA Climate

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While the lives we lead have been granted to us through the simple act of being born, they nevertheless remain the outcome of a series of unlikely events. In fact, nowadays very few astrophysicists dare to speculate on the possibility of life forms as developed as they are on Earth existing elsewhere in the Universe. The lives we enjoy depend on the existence and continuation of an ecosystem capable of providing the resources needed for survival, including air, water, food and suitable temperatures. Evidence tells us that this system is currently on the brink of collapse. Human beings must now act to recover it.

### LET'S REWIND A LITTLE: THE EARTH IS ALIVE

It all began with the appearance of *homo sapiens*, who originated less than 300,000 years ago. Several million individuals survived by hunting and gathering until agriculture was invented 11,000 years ago. Agriculture then allowed the world's population to reach 200 million by around 2,000 years ago. The prevailing view notwithstanding, climate stabilisation played a more significant role than human ingenuity in bringing about the Neolithic revolution. It is a known fact that the human body

remains at 37°C from birth to death, despite the hardships of life and external variations in temperature (to a certain extent). This characteristic of the human body is called homeostasis. Likewise, since the Neolithic period, climate stabilisation has been operating in very much the same way as our bodies' homeostatic equilibrium, a concept popularised by James Lovelock in his "Gaia Hypothesis".

For 800,000 years before the Neolithic period, there were long glacial periods when the Earth's temperature averaged 7°C, then subsequent waves of global warming at 15°C. Human development was limited as a result of the ice ages. What followed was the continuation of life, as though all plants and living organisms in general had maintained a stable climate through self-regulating development. The balancing of these fluxes on Earth is similar to the homeostasis in our bodies. Indeed, the process of photosynthesis – which emits fluxes of CO<sub>2</sub> and water into the atmosphere – became regular, so much so that the plant yield was less than 2% was produced. It is thanks to this stable climate and average temperature of 15°C on Earth that humanity has been able to develop over the past 12,000 years. As though the Earth itself were alive.

### PHOTOSYNTHESIS: A VITAL PROCESS

Since the genesis of photosynthesis 3.8 billion years ago, the process has considerably depleted the CO<sub>2</sub> in the atmosphere: ten quadrillion tonnes of plant fossils have been entombed in sedimentary rocks in the form of kerogen (kerogen is the chemical precursor to gas, then oil, and finally coal). The Earth was clearly far too hot for mammals to handle. For example, after the dinosaurs disappeared 50 million years ago, the average temperature on Earth was 30°C (compared to 15°C since the Neolithic period, which is represented as 0 on the y-axis in the diagram below). Plants therefore made the atmosphere habitable for humans. Their fossilisation allowed for the CO<sub>2</sub> that was in the atmosphere to be continuously extracted.

Human beings have been consuming fossil fuels such as coal, oil and gas since the Industrial Revolution, and by doing so are recreating the climatic conditions that were ideal for dinosaurs, but

unbearable for mammals. At the same time, humans are destroying biodiversity both on land and in the sea with an extinction rate that is between eight and 100 times too high; in what has been referred to as a sixth mass extinction. It can be likened to hitting the accelerator in a car on the edge of a cliff, while also cutting the brake cable. It also exacerbates the consequences of both climate change and the destruction of the living world. This led Paul J. Crutzen and Eugene F. Stoermer to devise the notion of the Anthropocene in 2000 to illustrate the change in humans' status on Earth. From simple inhabitants, human beings have become a major contributor to geological change. However, the future is still unwritten: technically, we have the means to slow down (consume fewer fossil fuels until we reach "net zero"), to reverse (restabilise the climate by rebalancing the CO<sub>2</sub> in the atmosphere, first via plants and then human developments) and to brake harder (breathe life back into plants and the living world).

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## THE EARTH IS HURLING TOWARDS A 'HOTHOUSE' STATE THAT HAS NOT BEEN SEEN FOR 50 MILLION YEARS

Climate map showing the past 66 million years of Earth's history. The next 300 years could be unlike anything humans have ever seen.

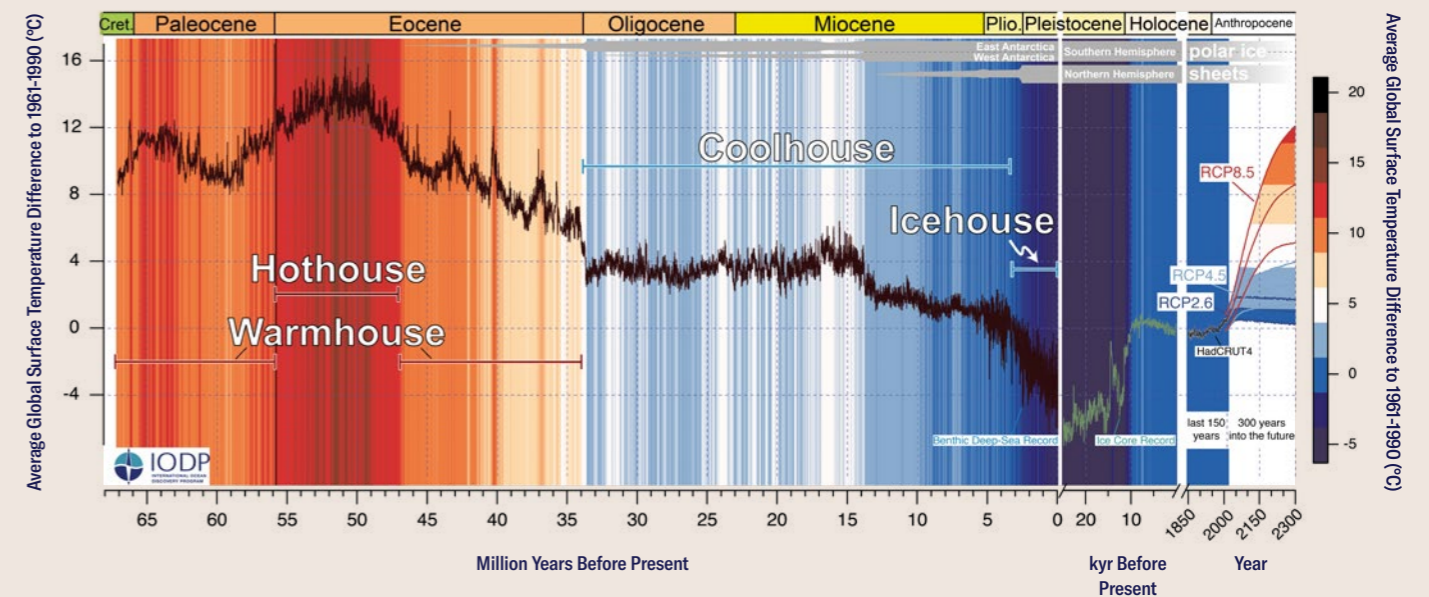
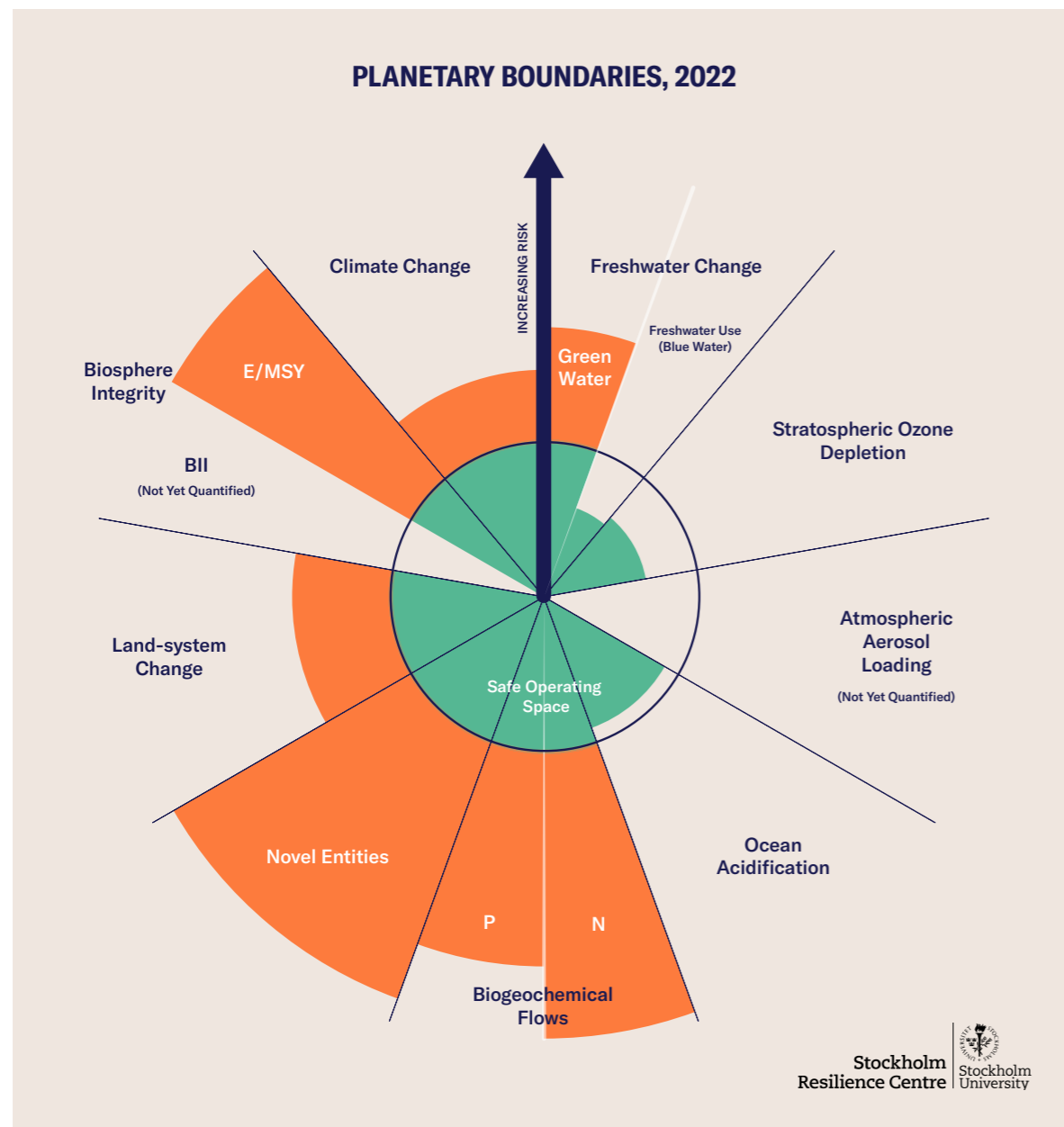


Image credit: Westerhold et al., CENOGRID.

**THE PROBLEM IS REVERSIBLE**

To gauge the Anthropocene, the notion of planetary boundaries as developed by Johan Rockström at the Stockholm Resilience Centre is today's point of reference, and has been since 2009. At the end of 2022, six of the nine boundaries had already been exceeded. The dynamic of destruction of the living world on a global scale is accelerating, and is fuelled by a volume-based economic model. Businesses and

companies are based on models associated with growth in sales, volumes and the materials extracted and sold, while completely failing to take into account the consequences on ecosystems. To use another analogy, it is like playing Russian roulette. For Bruno Latour, the question is therefore: "Why, since the 1980s, has an entire civilisation (our own) faced with an existential threat that it is perfectly aware of, not reacted?"



The good news is that this dynamic can be reversed if we stop consuming resources – both fossil and non-fossil fuels – and if we invest massively in regenerating the conditions for life on Earth. Regenerating requires us to respect some key principles of the living world so that living beings can develop their own resilience and a certain level of robustness in the face of ongoing climate change. This means putting an end to human arrogance towards the living world – on which we are totally dependent – and abandoning the model of volume-based growth, which in turn will allow us to significantly reduce our impact on planetary boundaries and finally regenerate both a stable climate and the living world. Is all that really possible?

**THE CAUSES ARE WELL KNOWN**

**On an individual level, very few people who are diagnosed with cancer do not change their lifestyle.** Most adopt the positive behaviours recommended by their doctor to survive. Based on this observation, and using it as an analogy, oncologist Karl-Henrik Robèrt founded "The Natural Step" in 1987, an NGO that aims to look beyond the symptoms of the environmental crisis and treat its causes – just as medicine was beginning to do to treat cancer. To measure the progression of the environmental disease worldwide, Mathis Wackernagel devised the Ecological Footprint in 1997, an indicator that tracks human impacts on natural resources and the "ecological services" provided by nature. According to this indicator, which is used by the WWF each year, we reached a tipping point in 1976: from this moment onwards, the rate of destruction of the living world has been exceeding its capacity to regenerate<sup>49</sup>.

**On a collective level, humanity has not yet had to face such an existential crisis. We are not aware of our vulnerability, which calls into question just how prepared countries and the governments of the world are.** The annual UN Conferences of the Parties (COP) and private organisations and commitments with countless acronyms have increased since the 2015 Paris Agreement (COP21). While an agreement has more or less been reached on the

diagnosis, thanks in particular to the work of the IPCC (Intergovernmental Panel on Climate Change) and the IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services), action plans either remain insufficient or simply do not exist. In fact, most of them communicate a great deal but do very little about "net zero", the initiative to reduce the fluxes of greenhouse gases and other pollutants accumulated over the past 150 years by 2030 or 2050. But the existing stocks are all too often ignored: currently, we emit 40,000mt of annual fluxes of CO<sub>2</sub>, compared with 700,000mt of CO<sub>2</sub> stocks. In light of these figures, how can we solve this problem at a low cost?

**THE POSITIVE ECONOMY IS A KEY STEP**

Dealing with fluxes through a net reduction in the impacts that businesses have, by means of the circular economy for example, is a necessary but insufficient collective response. To limit how vulnerable our civilisation is and especially the effects of climate change, we must also address the 45% increase since 1850 in greenhouse gas stocks in the atmosphere, as well as the destruction of 75% of natural habitats through land artificialisation, pollution, cultivation or desertification. Dealing with these stocks requires companies to take action beyond net zero. It is a matter of aiming for economic activity that restocks greenhouse gases on a net annual basis, restores natural habitats, cleans and decontaminates water and soil, etc. This is where the question of regenerating the living world comes in, in order to guarantee a stable economic system.

In 2005, I came up with the positive (or restoration) economy, i.e., an economy that uses its products and services to achieve these positive results for the sake of ecosystems<sup>50</sup>. In 2017, Paul Hawken's book Drawdown (see: Ed. Penguin), which would later become Project Drawdown, reinforces this

<sup>49</sup>. see: [https://www.wwf.org.uk/sites/default/files/2022-10/lpr\\_2022\\_full\\_report.pdf](https://www.wwf.org.uk/sites/default/files/2022-10/lpr_2022_full_report.pdf)  
<sup>50</sup>. see: Réparer la planète: La révolution de l'économie positive (Fixing the Planet: The Positive Economy Revolution), Ed. JC Lattès

vision on a scientific basis. There are 70 scientists who state that reversing the global warming curve by 2045 is feasible. A trillion dollars needs to be invested in order to boost fuel efficiency initiatives and find science-based solutions to climate change. And that is just the beginning. These

approaches are limited by the cost of the solutions, which is proportional to the impact they have. This is why, in the case of companies that do not have a link with the living world, any investment to compensate for their residual emissions would quickly exceed their profit several times over.

**DIAGRAM SHOWING THE EVOLUTION OF A SYSTEM (COMPANY, ORGANISATION, ECOSYSTEM)**

A typical company in 2023 is at the bottom of the diagram. ESG promises steer it towards the middle. The actions needed to maintain civilisation draw it towards the top.

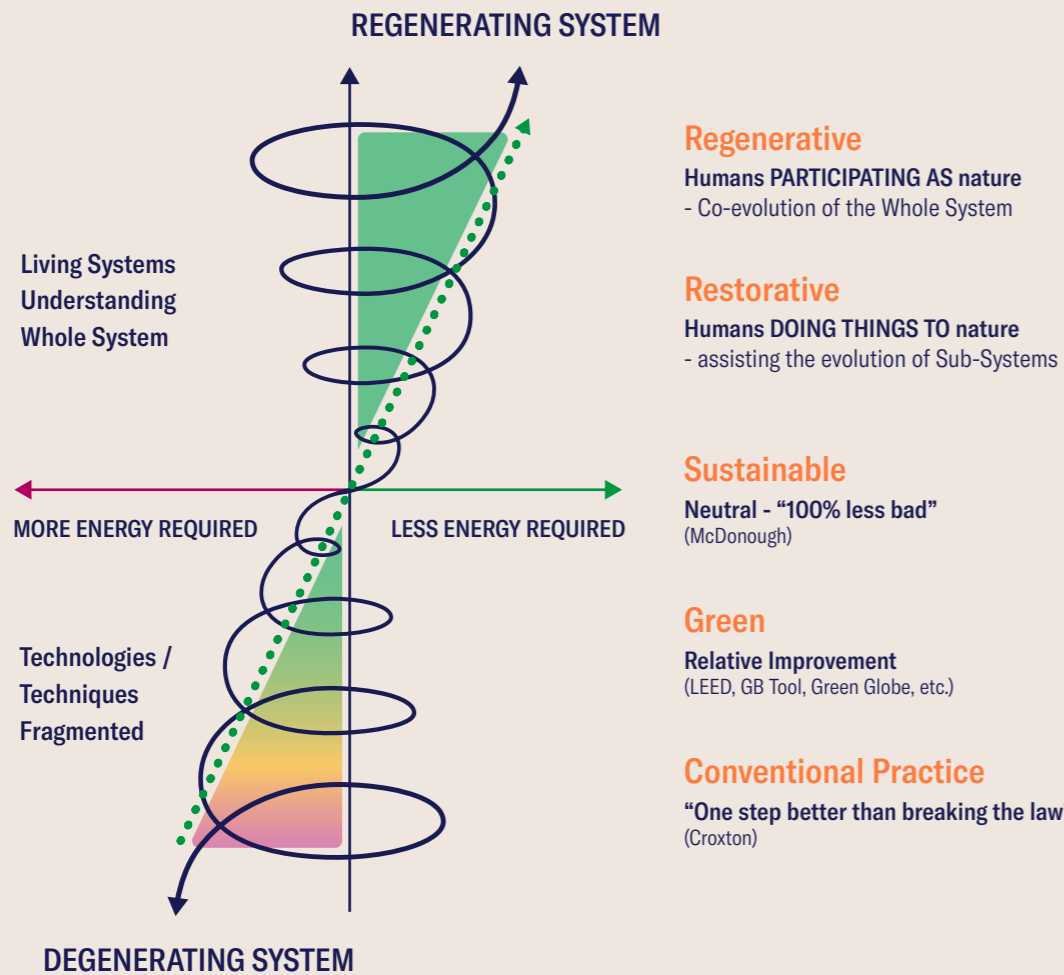


Image credit: Bill Reed, Regenesys Group

**THE REGENERATIVE ECONOMY WILL BE FINANCED BY A CROSS-SECTOR APPROACH**

The regenerative economy (the upper part of the diagram above) is based on climate and biodiversity regeneration being self-maintained by living organisms. Of course, start-up costs are still borne by companies, but they then pass the baton on to ecosystems to scale up and maintain this regeneration. For example, in terms of forests, the cost would be to minimise clearcutting and to ensure that a variety of endemic species adapted to the future climate of the areas are planted. And then we let nature do its work... before occasionally removing trees “at the right time” for a specific commercial use (timber, wood fuel, etc.). As regards agricultural land, the cost would be to protect crops with hedges and solar panels, to restore water using hillside reservoirs, to practise inter-cropping and cover cropping, and to treat deep soils with microorganisms and animal manure. In both cases, the issue of funding arises, since these two sectors are not profitable enough to self-finance their own transformation.

Regeneration seems technically feasible for a forest or for agriculture, but what about economic sectors, the majority of which do not have a direct link with the living world? Reconnecting human beings and our businesses with nature is an essential step. How can this be done? Extended Producer Responsibilities (EPR) are para-fiscal policy approaches, devised in the 1980s by the OECD (the Organisation for Economic Co-operation and Development, which is made up of the 30 richest countries in the world) and based on the principle of extended producer responsibility, in which a producer’s responsibility for a product is extended to the post-consumer stage of a product’s life cycle. Examples in France include Citeo (formerly Eco-Emballages) for household waste and the community directive DEEE for waste electrical and electronic equipment, along with a further 12 cross-sector EPR projects. The most replicable solution would therefore be to set up an EPR between rich sectors that do not have a link with the living world (chemicals, construction, transport, etc.) and the agricultural and forestry sectors, with the former paying for the latter. This step forms the basis of the essential action required to regenerate the living world.



**Maximilien Rouer** is head of regenerative economy at AXA Climate. An AgroParisTech engineer and cell biologist, his entrepreneurial endeavours since 2000 have focussed on the development of climate change solutions.

Appendix

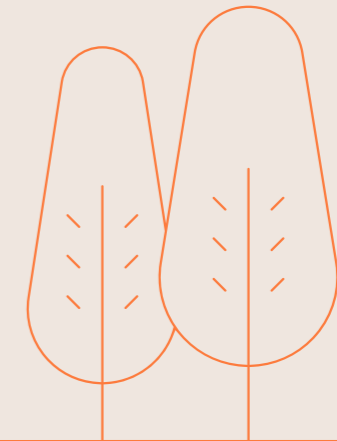
# The Trees

(TRANSLATED FROM THE FRENCH POEM *LES ARBRES*)

*Speaking in their slang, men call ears “leaves”  
as if they believed trees to be familiar with music,  
but the green tongue of trees is a far older slang  
Who can possibly know what they say of humans  
the trees speak Tree  
just as children speak Child*

*When a child of woman and man  
speaks directly to a tree  
the tree responds  
the child listens  
Later in life, the child  
discusses arboriculture  
with his teachers and parents*

*He no longer hears the trees’ voice  
their song drifts away on the wind  
but sometimes, a little girl  
cries out in distress  
in a square of reinforced concrete  
lacklustre grass and contaminated earth*



*Is it, oh is it  
the tragedy of abandonment  
that has me crying out for help  
or the fear that you have forgotten me  
tree of my youth  
my true youth*

*In the oasis of memory  
a spring has just burst forth  
is it to make me cry  
I was so happy amid the crowd  
the green crowd in the forest  
plagued by the fear of getting lost  
and the fear of being found*

*Never forget your little friend  
trees of my forest.*

Jacques Prévert

MAY 2023

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