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With the confidence of Harold GUILLEMIN

# In Osmosis

*At the heart of the infinitely precious*

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Translated from French by Valérie Graziani

## PREFACE

## *Resonances*

Cultivating the freedom to invent one's life,  
The only essential compass guiding my existence.

Just like the Sun was the star I followed when setting off from the Canadian confines  
of Resolute Bay to reach the North Pole.

On an expedition for discovering the southern and northern hemispheres,  
I searched for solitude.  
There are those things that transcend you.

I took care to cherish my desires and fulfill my ideas.  
Desire is a fire that never completely gets extinguished.  
It's up to us to always rekindle those flames.

I've learnt patience, moving slowly and nourishing perseverance.  
I've fled the mundane to draw near the divine and distill the exceptional.  
I wanted to live with talent a life of freedom, without limiting myself.

This book is the testimony of journeys of exception,  
Composed like a bouquet of burgeoning solutions.

Words have the ability to raise awareness.  
Page by page, chanted professions of faith,  
Testimonies of initiatory adventures,  
Enter into resonance.

Hemmed with light,  
Adorned with prescience,  
These powerful and precious reflections,  
Lined with marvelous possibilities,  
Act like odes to life and to the love of the living.

Invent your life! Follow the path of your dreams and your desires.

Be the fully committed explorers of your time,  
To become the inspired actors of tomorrow's world.

JEAN-LOUIS ÉTIENNE  
*Polar explorer, planet defender, doctor*

*All interviews were conducted between October 2022 and August 2023.*

## INTERVIEWS





**Water**





*It's an exhilarating wave  
That calls for change.  
Explorers of modern times  
Discover areas untouched by human life,*

*On the water, below the water,  
From the ice of the poles  
To the abyssal confines.*



# In the snow kingdom

## *Interview with Heïdi Sevestre*

**I**t's from Longyearbyen, the most northerly town in the world at the heart of the frozen Arctic Ocean, that Heïdi Sevestre answers our questions. An immaculate white blanket covers this little capital of the Island of Spitsbergen, situated in the archipelago of Svalbard.

Heïdi Sevestre is a French doctor in glaciology and an explorer who works with the Arctic Council. In 2022, she received the Shackleton medal<sup>1</sup> for her commitment to the protection of the polar regions. Heïdi Sevestre has regularly led expeditions and strives to make scientific discoveries more accessible.

This is an interview with someone who wishes to make action against climate change irresistible.





## Heidi Sevestre

*“Our future is directly and intimately linked to the future of the ice regions.”*

***What do you feel when you’re in the middle of the ice, in the great white regions?***

There’s something very addictive about these landscapes. I’ve been coming here since 2008, first for my Erasmus year and then, for my doctorate. Nowadays, I give lectures at the university.

***You often quote Jean-Baptiste Charcot (1867-1936), an officer in the French navy and pioneer of the great polar ex-***

***peditions, to talk about your love of the great white regions.***

Yes. He often asked this question: *“Where does this strange attraction for the polar regions come from? It seems so powerful and persistent that after having come back, all moral and physical exhaustion is quickly forgotten, and you immediately dream of going back there...”* I adhere completely. We often refer to it here as the Arctic bug. Once is enough to be smitten and return here time after time again. It’s almost compulsive.

### ***Why is that?***

These regions of snow and ice belong to the few places in the world where you can fully experience the force and power of nature, and where the rest appears superficial. Here, mankind can get back to the essential and take his/her place. I recall a French filmmaker I invited here last year and who was completely overwhelmed by the trip.

We've forgotten the power of nature. 70% of our soft water reserves are in the snow and ice! We've forgotten the importance of cooperating with nature and protecting it. Otherwise, it'll make us pay dearly no matter which infrastructures have been employed or technologies invented. If nature wants to sweep us away, it'll sweep us away. The Polar regions are the best example. You should see what storms are like in these regions.

***You often refer to the island of Spitsbergen as if it were the epicenter of climate change. Indeed, the Svalbard archipelago, where the island is situated, is warming up 6 times faster than the rest of the planet. Why?***

That's mainly linked to the ice floe. As its name implies, an archipelago is surrounded by water. The Arctic is above all an Ocean with its lands, more or less inhabited. The ice floe, formed by the freezing of the sea water, dictates everything. It's present all year round, but advances more in winter and retreats more in summer. That's what we call ice-floe breathing.

So, Spitsbergen Island is now at a turning point in its existence. A few decades ago, the archipelago was surrounded by sea ice for a large part of the year. Now that it has a seasonal character, so the ice floe is located mostly to the north of the archipelago. In the Arctic its surface area has decreased by 40% in the last 40 years – that's colossal. It's a surface area comparable to Kazakhstan, the 9<sup>th</sup> biggest country on Earth, or 4.5 times the size of France.

### ***Why is the role of the ice floe so important?***

The ice floe stabilizes the climate. Like a white blanket, the ice floe is one of the largest natural mirrors held by the Earth. Contrary to the dark surfaces that absorb the heat of the sun, the ice floe reflects 90% of the sun's rays and allows the Arctic to remain cold. These natural mirrors are essential for Earth. But as the polar ice cap diminishes, the water from the Arctic Sea ice absorbs more and more of the sun's heat, thereby accelerating the melting of ice and the rising ocean levels. Today, the ice floe is disappearing because of human activities and its disappearance is causing the Arctic to warm up. What happens in the Arctic isn't limited to the Arctic. The retreat of Arctic Sea ice is bringing about a growing number of extreme weather conditions (heatwaves, droughts, late or early frosts). Today, all snow and ice regions are being threatened by human activities. The French Alps, with their snow and glaciers, are warming twice as fast as

the rest of France.

***You work for the Arctic Council, but you're keeping a close eye on what's happening in Antarctica. On that continent, The Antarctic peninsula is a famous place for researchers, with numerous work zones on the ice shelves. The A & B Larsen ice shelves – the least far south of the continent – have disintegrated. The C Larsen, situated further south, is still there, although it counts among some of the largest icebergs on Earth. Why is this so dramatic?***

Our future will be dictated by the future of these ice barriers or ice shelves. These floating structures are extensions of glaciers which are in fact fed by the flow from glaciers and precipitations. These ice shelves are gigantic – some are half the size of France! They stabilize the Antarctic polar ice cap, controlling the quantity of ice lost by Antarctica to the Austral Ocean. This stabilization is crucial because Antarctica contains enough ice to increase sea levels by 58 meters.

***Let's not forget that Antarctica, 23 times the size of France, is composed of 98% of this famous ice cap under which there's a continent with its mountains and volcanoes. This ice cap can measure 4 kms thick with an average thickness of 2.3 kms and it's stabilized by the ice shelves.***

Absolutely. The problem is that the ice shelves are very sensitive to changes in

air and water temperatures. 75% of the Antarctic coasts are connected to the Ice shelf. As you said before, the most northern ice shelves of the peninsula have disintegrated. I was speaking recently to colleagues who'd just returned from Larsen C; unfortunately, they confirmed that it's being eroded on all sides. All signals are red. In fact, a record has sadly just been broken – the smallest surface area ever recorded in the Arctic and Antarctica has been reached. Antarctica also has an ice floe that expands in winter and retreats in summer.

For a very long time, we scientists believed wrongly that Antarctica would be immunized because of its gigantic surface area; that this white continent would be impervious to climate change and protected by the ocean currents surrounding it. The truth of the matter is that Antarctica is catching up on the Arctic.

***The disintegration of the ice floe means that new regions are becoming accessible, thereby opening up possibilities for exploring completely new depths.***

That's quite true! That brings to the fore territories that haven't seen sunlight for a very long time. A lot of efforts are being made to discover the species that live in those territories and how their ecosystems will react to climate change. These subglacial marine ecosystems have been little touched by anthropisation, something rare that's almost now nonexistent on the planet.

***Why is the research in Antarctica done mainly on the peninsula?***

For two reasons. On the one hand, it's the most accessible part of the continent. On the other hand, for historical reasons – the peninsula was one of the first places explored by Man. Rapidly, countries began to build their bases there, notably the British, the Argentinians and the Chileans. The peninsula was easily accessible by plane from Ushuaia (Tierra del Fuego, Argentina) and Punta Arenas (Chile). The different bases permit to make a stopover before going onto the geographical South Pole base. Not to mention that this peninsula is considered as being tropical Antarctica! It's the least cold and inhospitable place. Today, the continent's developing very quickly. France has two bases there – Dumont d'Urville on Adélie Land and the station of Concordia<sup>2</sup>, located in the Australian Antarctic Territory, which it shares with Italy.

***As a glaciologist you say you have no good news to announce.***

It's a total emergency. With the rising seas, the population movements over the next few years will reach dizzying heights. Millions of inhabitants in coastal areas will be impacted as well as economic activities, resources, agricultural lands etc.

I don't have any good news because I'm aware of the urgency of the situation – our future is directly and intimately linked to the future of the ice regions. We have our backs to the wall, nearly at the point

of no return, that famous tipping point that we're always talking about. The temperature thresholds beyond which Humanity will lose control have never been so close. We know that the Arctic ice floe has already crossed the tipping point. In the next 7 years we risk having summers with no ice floe in the Arctic – it's just a question of time. Nevertheless, I try to remain positive. A more desirable future will come out of deep changes in our society and our economy. It's fabulous to be living in a period where we can literally save Humanity! The challenge is immense.

***As a member of the Arctic Council, you take part in international meetings and recommendations to governments.***

Yes indeed. It's crucial to communicate with governments all over the world. I haven't forgotten the expeditions on the ground; I strive to highlight the findings of scientists and help share their knowledge. They have to realize the important impetus they can give, outside of their publications.

***What's preventing the scientific message from getting through?***

What the IPCC is doing must be the source of our actions, but we need to go further in terms of communication. The scientists must work with local and regional authorities as well as the private sector, which is one of the greatest levers. We have to stop thinking in silo. Let's work together! Com-

munication must be more humane. Scientists have an important role to play. If the scientific message isn't visible, it can't exist.

***What structures would you think of setting up?***

Any effort that's made to increase the visibility of science is important. I wish to continue in that direction by using the tools available to raise awareness among young and old, businesses and communities. I continue my expeditions in the field whilst giving as much time as possible to educating on climate change, whether it be in existing structures or in launching my own initiatives.

***You're a member of the Explorers Club. What's the purpose of that club?***

This is a club that brings together explorers who contribute and share knowledge about unfamiliar regions of the Earth that are very difficult to reach. We are several thousand members. In the near future, I'm going to devote my work to the study of tropical glaciers - along the Equator, on Kilimanjaro and in Colombia. Unlike the polar regions, I know very little about these places. This network avoids me from thinking in silo, promotes knowledge and motivates getting into action.

***Imagine if tomorrow you were at the head of the Ministry for Transition - what would be the first symbolic measure you'd put in place?***

My number one pet cause - and I always

come back to that - would be education, raising awareness. I often hear scientists say they've been communicating on that for 30 years. Yet, when I give lectures, I'm often asked what has to be done. We're kidding ourselves when we think that our members of parliament, the general public, businesses, communities have a lot of knowledge. We need a Marshall plan for education and scientific communication. Obviously, we wouldn't talk to French communities about the glaciers in Svalbard. Citizens have to understand how their everyday life is being impacted and what keys we can give them to take action.

***“Never cease to marvel at the wonders of nature.”***

***In April 2021, you organized an all-female expedition to Svalbard, Climate Sentinels, with the goal of studying the concentration of black carbon on the snow. You also showed a new side to Polar region science, especially using social media.***

Yes, this expedition really bowled me over. There were four of us and we crossed 450 kilometers on skis over a period of 5 weeks between two scientific bases. We chose the month of April because there's daylight 24 hours a day, and this month is historically considered as being mild with stable high pressure and temperatures of between -10 and -12 degrees. In fact, we had a com-



pletely different experience. The temperatures were warm for the region (up to +5 degrees) with very frequent freak storms. Our meteorologist friends confirmed later that it was a first. The conditions were extremely demanding. We even resorted to burying ourselves in the snow so we wouldn't lose our tents. Despite the difficulties, I've never worked with such a sympathetic and caring team. Ego never had its place, and I'm convinced that's the reason we were able to get to the end of that expedition. We'd set off together and we had to finish together. As for black carbon, it's the residue left by the pollution from fossil fuels, which come from petrochemical factories, coal heating, thermal vehicles etc. These dark traces are visible everywhere and concentrate on the snow and polar ice sheet where they accelerate the melting process. The Arctic, by losing its immaculate white covering can no longer "function" properly. Here in Svalbard there's very little industrial activity, yet the archipelago recuperates a lot of black carbon particles from all over the globe. These small particles are so tiny that they can travel thousands of kilometers. In my opinion, the IMO (International Maritime Organization) should toughen its demands, especially concerning the Arctic and Antarctica. There's already a lot of tourism in Antarctica, but these territories tolerate no pollution.

***More and more ships seem to be congratulating themselves on the fact***

***that they're running on liquid gas. What's your view on this fuel?***

GNL is indeed used by a lot of new icebreakers with most of them being hybrid. But we scientists have been quite clear – it's a fossil fuel. I'm aware that it isn't easy for an icebreaker to find a source of energy with less impact on the environment. Some ships are turning to GNL, others to nuclear energy, especially the Russians. Nevertheless, numerous other fuels are emerging in the maritime sector, whether it be wind power, green hydrogen, green ammoniac, and I'm pleased with that! Businesses are writing success stories - they now must become irresistible.

***What are your sources of inspiration?***

Camille Etienne and Thomas Wagner with their media Bon Pote. They've succeeded in highlighting science, in relying on it, in federating and in motivating action. It's really exciting.

***What's Humanity lacking to look towards a better future?***

Wonder. Yesterday after a day of meetings, I entered a glacier not far from here. There aren't many places on Earth where you can do that safely. So there, you find yourself at the heart of a castle of ice, where everything's sparkling and suddenly you can hear new sounds that are inaudible elsewhere! The frozen environment calls on all your senses and allows you to experience wonder.

***What words would you leave to future generations?***

Without nature, there is no economy, no industry, no political system. Nothing can be done on a planet where nature has died. Wonder allows us to reconnect with nature, to understand it, to work with it and to protect it. Therefore, I'd write: Never cease to marvel at the wonders of nature.



***Interview conducted March 1, 2023.***

<sup>1</sup> *The Shackleton Medal is a prize, awarded annually to the individual who, in the eyes of the judges, has done the most to protect the polar regions.*

<sup>2</sup> *Concordia station is one of only 3 stations implanted inside the Antarctica continent. It's an important place for the seismic and geomagnetic observation networks of the planet.*





# A man of the sea

## *Interview with Jacques Rougerie*

**I**nhabiting the sea is a *raison d'être*.

*“Despite the appearances and my elegant green suit, I am a sea mammal.”* Jacques Rougerie said these words, full of peculiarity, in his investiture speech at the French Académie des Beaux-Arts in 2009. Inherently inspired by masterpieces by Leonardo Da Vinci and Jules Verne, fully committed to the heritage of Commandant Cousteau, Jacques Rougerie dedicates his life to underwater and space architecture, which he imagines is bio-inspired. “The Silent World”, a documentary film co-directed by Commandant Cousteau and Louis Malle in 1956, resonated in Jacques Rougerie like a shockwave. At 11, he already knew he would dedicate his life to exploring the oceans. 21 years later, in 1977, he launched Galathée, his first underwater “house”, before crossing the Atlantic Ocean in his transparent hull Aquaspace. Later on, he participated in breaking the record by being under the sea for 69 days in the United States. It was during the first decade of this century that he launched what would become his most famous project, the SeaOrbiter, an up-and-coming underwater exploration vessel. 2009 was the year of his recognition. He entered the French Institute by becoming a Member of the Académie des Beaux-Arts. That same year, he started the Fondation Jacques Rougerie, and with it a competition to help daring and disruptive architectural projects focused on climate, Ocean and space.

We met with this genius, considered one of the most visionary architects of our time.





## Jacques Rougerie

*“We have to blend dream and lucidity. There is no life without hope.”*

***You’ve lived a few times in underwater houses for long periods of time. What connection do you feel to the underwater world?***

Some kind of overwhelming pride, wrapped up in immense humility. Just like what an astronaut would experience, living an aquatic moment is a very unique and rare opportunity. An astronaut or an aquanaut – I actually use the word “merien” to talk about an inhabitant living underwater – lives the dream of a lifetime. But we can’t

forget that one’s mental health is being put to the test, and has to adapt to extreme situations. You know why you are here and accept all risks. These experiences, shared with others, are pure joy. Teams are organised in systems and then become tribes. I spend time with astronauts in France, the US, in Russia: they are united and very close. Well, imagination creates new codes... Being able to participate in the exploration of a new world is exhilarating! There are two very distinct philosophies,

approaches. On one side, you have life at the surface of the sea with seafarers and there is life underwater or outer space. These two universes require living in three dimensions. On Earth, you are never in three dimensions, or only if you are an extremely talented dancer, and you stay up in the air for a split second. The mindset of a sailor is very different from a merien's living in another universe. The life of a merien requires living in a pressurized underwater house. It's like you're a bird and you got out of your perched home!

***It's like separating one's animal state from his human state.***

Exactly. And because of that, you can't give the same view, same philosophy or the same imagination as before. This type of experience changes all the data. Each human being has been given sensors which, since its birth, balance its way of moving, directions... all of which have adapted to very complex situations, but only for Earth. In three dimensions, sensors are shaken, and have to readapt. And this is where the genius of nature lies: human beings adapt very quickly to new situations, even if they have never lived them, ever, in the History of mankind.

***Can this merien state also be obtained during a "simple" scuba diving?***

No, scuba diving usually lasts 1 to an hour and a half... There is no continuity, only a brutal psychological and physiological rupture: you very quickly go back to your

earthling or sailor universe.

When you live underwater, you are in saturation mode for 24 to 26 hours. You start to experience being in perfect osmosis with the environment, you live with the animals. If you are not a hunter – and I'm not – you start to see the animals accepting your presence in their natural habitat. They're very curious!

If you just scuba dive, octopuses flee. But when you live underwater, it's very different. Octopuses seek contact. Sea creatures are very capable to make the difference between a diver saturation diving, and one that lives by their side. If you are an artist, life in three dimensions enables you to apprehend, think and interpret art differently. Ask Jean-Loup Chrétien on how he plays the organ in space, or Thomas Pesquet on how he plays the saxophone in space! Human senses are very differently enhanced.

***You've participated in the realization of the Eurohab lunar module prototype, which was by the way the winner and then supported by the Fondation Jacques Rougerie. Eurohab will become the training grounds for astronauts, to prepare them to go back to the Moon. You do say that we have to continue to create strong links between space and the undersea world, as they have so much in common.***

Definitely. Space and the Ocean also are fabulous knowledge treasures and I have been working to blend these universes to-

gether for the last years. As an architect, I accompany the laureates of Eurolabs, which was a collaboration work by both the CNES (Centre National d'Etudes Spatiales – National Centre for Space Studies) and the ESA (European Space Agency). Eurohab was part of last year's Universal Exposition in Dubai. Right now, this lunar refuge is being used as a simulator. Thomas Pesquet dreams of going back to the moon by 2030!

***Between all your numerous projects, which one is your favourite?***

It's like asking me which was my favourite dive? (*Hesitations*)

Maybe the Fondation Jacques Rougerie, because its purpose is transmission. It has to help young people to believe in their future and their adventures. With all these international contests, the aim is to inspire new callings and force more action between humans and their environment. We have more than 11000 candidates from 150 countries. The Foundation also organizes many conferences and exhibitions all around the world.

Of course, my dream is also to see the fulfilment of SeaOrbiter of Eurohab and the "Cité des Mériens", the futuristic floating university dedicated to oceanography and open to researchers and students from all over the world, particularly those who come from countries that don't have a maritime "border". This project, which was by the way offered by UNESCO, is being built as a strong symbol for all the people

of the world. It is massive; we will definitely need a lot of generous State support.

***What is your point of belief of the political progress when it comes to the blue economy?***

Thanks to MRE<sup>1</sup>, pharmacology, biotechnologies, a blue economy that is respectful of the Ocean is starting to be developed. Building an international city, like the "Cité des Meriens" makes a lot of sense, philosophically, economically, legally and geopolitically. The Ocean is the common good of Humanity. It's such an obvious statement! The One Ocean Summit in Brest in February 2022 started to address this issue. The Third UN Ocean Conference, organized by France and Costa Rica will be held in Nice in 2025. The United Nations have to absolutely reach an agreement stating the Ocean is the common good of humanity.

***You started to draw the SeaOrbiter, like a giant seahorse vessel, explorer of the oceans, at the beginning of this century. After a few years left aside, the ship-owner CMA CGM<sup>2</sup> revived your project in 2022. What is the purpose of the SeaOrbiter and how will this giant observatory be designed?***

SeaOrbiter is an international station for the underwater world, just like the ISS is for Space. It's a 57m vertical vessel – a 27m above surface section and a 30m submersible section. It will be autonomous, semi-submersible, so its concep-

tion will enable it to drift alongside the ocean current and it should also produce its own necessary energy to function with a 340m<sup>2</sup> solar panel system. We've also organised bio fuel and two propellers, to help manoeuvre and modify its trajectory if necessary. Aboard the vessel, around 20 scientists will work on 12 levels.

***You presented a model of the SeaOrbiter in 2022 at the Once Ocean Summit, at Olivier Poivre d'Arvor's request. He is the ambassador for the Poles and Maritime Issues. On which seas is it destined to be on?***

Seven SeaOrbiters should be built. First, some will be in the Mediterranean Sea, then the Gulf Stream, South Atlantic, Indian Ocean and then finally in the Pacific, especially in the Hawaii area. We will explore the ocean trenches! These floating laboratories will create a world bank data, at humanity's disposal. Because it will be drifting deep in the waters, the SeaOrbiter will enable scientists to know the temperatures of the water continuously, but also its salinity, migration of biodiversity, without ever having to resurface.

***How will you explore the abyss, this world of unknown creatures, where there is no light?***

Two submarines will be available within each SeaOrbiter. If they are lived in, these submarines will be able to go as deep as 1000m, maybe even 1200m. And with no one onboard, remotely controlled and

equipped with an AUV<sup>3</sup> system, they will be able to go further down to... 10000m!

***Do you have a deadline?***

We are constantly communicating with CMA CGM. The hull of the SeaOrbiter should be built in 2025. The indoor layout will follow. We are hoping for a launch in 2026!

***What are the similarities between space and the underwater world?***

An extreme and confined habitat requires a strong mind and a formidable determination. Like said before, the underwater world in 3D is as close as you can get to space. An underwater training centre was built so the astronauts doing long haul space flights can train in: this is the American programme NEEMO (NASA Extreme Environment Mission Operations)<sup>4</sup>, equipped with an underwater house, where I am training (myself). NEEMO is led by the aquanaut Bill Todd, SeaOrbiter's technical and operations director. The ISS station is very similar to the future SeaOrbiter station when it comes to everyday life and their movements (humans and objects).

Furthermore, the teams at the station will have to be provided with very quick medical care if needed. Telemedicine has made a lot of progress. NASA and Bill Todd's NEEMO programmes realise medical and surgical experiments, so they know what to do during future long haul space flights to Mars. These trials enable the development

of robotic tools. In water, you need very powerful robotics to carry out telemedicine in a decompression chamber. Space brings new light on technologies for the underwater world, and the underwater world brings new technological keys for space.

***We owe our knowledge of the Ocean more to space rather than to ocean research. Why?***

Satellites offer an immense quality data of the sea. IFREMER (French Research Institute for Exploitation of the Sea) is very close to the CNES (National Centre for Space Studies). The SeaOrbiter is part of a generation of new exploration vessels that links these two universes. I really think in all humility, that this is the machine that links space and underwater world best.

***Leonardo Da Vinci's work shaped your dreams and visions. Which masterpieces inspire you the most?***

There are so many... Probably his research in biomimetics, bio-inspiration. Just look at it... He already talked about "Nature being the master of true genius" to his students! He said this extraordinary phrase 500 years ago, something we are just starting to grasp now... "Learn from Nature: that is where our future lies". Whether it was in music, engineering, fluid mechanics, or medicine, he was observing nature, studying its genius, got interested in its logic, its way of adapting to complex situations. He took a particular interest,

among other things, in birds and how they were flying. Leonardo da Vinci left us such an extraordinary well of knowledge and imagination. His masterpieces opened up the doors of what is possible!

***How do you perceive these times we live in?***

I'm sure we are in the early stages of a new era. We are the witnesses of a shift to a new world in which the referents aren't the same anymore. New chapters of thoughts are beginning and so is scientific knowledge with them. We live in a world full of doubts but we cannot fall into pessimism or doom-mongering. We have to blend dream and lucidity. Without dreams, humans can't move forward. You know, a lot of young people want to work to make great things... but they're being told all the time that it's over, there's no more hope, that won't help them stay strong! We have to be amazed, but not in struck dumb way. Mankind created extraordinary things. And yes, there will always be problems to solve, that's life, but we need hope. There is no life without hope.

***Imagine you become the Minister for Transition. What would be the first measure you'd put in place?***

Education is one of our greatest treasures. It opens up the mind, increases freedom and widens our comprehension of the world. If I was Minister, it would be my biggest project. Young people have to understand environmental issues in their



entirety and think of solutions to rebalance them. Unfortunately, not everyone has access to education. I've travelled all round the world and I can tell you I've met starving people and they've touched me. And I can tell it bothers me in my everyday life. When a child is born, it has to eat and a roof over its head. So honestly, it bothers me, it's impossible for me not to think about it. I don't do miserabilism, but we have to be aware of how lucky we are.

*“Education should give art the place it deserves.”*

***How do you continue to teach?***

I don't work as a professor anymore in France, but I still continue conferences, seminars in architecture schools, like the National Superior School of Architecture of Strasbourg and Paris Val-de-Seine. But I'm still a professor in China! I'm happy to continue to bring young minds towards investigation issues, therefore bringing a new humanist breath and new positivity. You know, I'm not a revolutionary, from either political side of the fence. I'm a nuanced person, I'm all for balance. There isn't one truth, life is so complex that there isn't just one truth, whether it's in cultures or religions.

Human genius has created amazing things; unfortunately, humanity didn't become aware quickly enough of the environmental catastrophes it caused. I'm convinced

human genius can re-establish all this, but we need hope! And again, without imagination, there is no solution.

***How would you define yourself?***

I'm a fragile person, like everyone else. Even those who fight in wars are; there is frailty in all of it. A human being is a fragile being, in essence. Fragility is very obvious when you want to learn and understand. It's a dominating characteristic in artists. It's what makes them beautiful. We can't live without artists and education should give art the importance it deserves. Musicians, writers, poets, they're the salt of life and beauty!

You know, my 'speech' was the same 20 years ago. But then, people thought I was weak. It's actually a gift!

I see myself as a pragmatic dreamer. I'm proud of that. As a child, hearing left and right I was a dreamer, I ended up being ashamed of it. But now, if you refer to me as a dreamer, it's the best compliment you could give me. I hope I can continue to dream for the rest of my life. It's what keeps you alive. You need dreams, passions, love; this is where humanity's salvation lies. Dreaming for the sake of dreaming is of no interest to me. What I'm interested in, is the dream, and the realisation of that dream.

***Do you write your dreams in a notebook? They could be an incredible source of inspiration!***

I've never done this! You've given me a

very simple idea, I had never thought of doing that! I often dream that I can fly. It can be in a town, in the countryside, by the sea, at sunrise or sunset. In this dream, like a bird flapping its wings, I run, go forward and in a second, my body shifts, and I take off.

My architectural creations are inspired by my daydreams. Just like the Cultural and Scientific Centre Te Fare Natura, inaugurated in Polynesia on the island of Moorea. This creation is the witness of my philosophy and my respect for ancestral cultures, with a conscious modern and futuristic twist.

***The raison d'être of your architecture firm is "invent – transform – impact". Which word would you like to leave to future generations?***

Believe in your destiny by making your dreams come true. Don't ever give up!



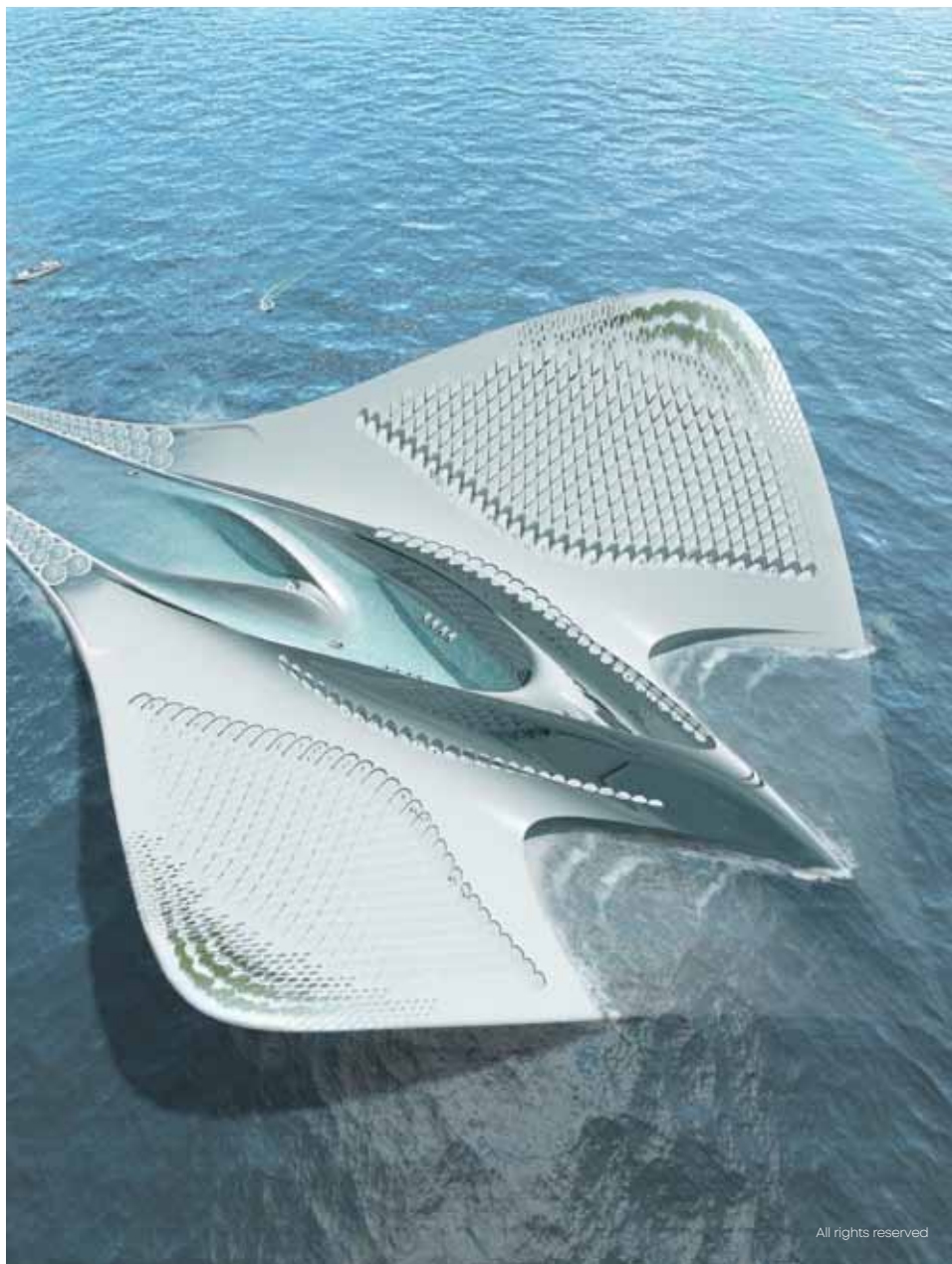
***Interview conducted March 2, 2023.***

<sup>1</sup>MRE marine renewable energy

<sup>2</sup>This maritime shipping company and general maritime company is a French containership owner, whose international head office is in Marseille, France.

<sup>3</sup>Autonomous Underwater Vehicle

<sup>4</sup>NEEMO (NASA Extreme Environment Mission Operations) is a NASA mission that isolated groups of scientists in an enclosed environment in order to study their behaviour when challenged in the same way as a crew in space, isolated from Earth for a long period of time.



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# At the heart of the ice, find freedom

## *Interview with Alban Michon*

**A**lban Michon tells us readily that he never feels as free as when he's a prisoner of the ice. French polar explorer, a specialist in extreme diving, particularly under-ice and underground diving, he's a witness who brings back pictures of a world that will have disappeared in a few decades. Alban Michon is currently preparing a unique and pioneering expedition, *Biodysseus*, which should start out at the end of 2025.

This expedition, in which he's going to live for 6 months under the Arctic ice floe, will probably mark a milestone in the History of scientific and technological research.

Our meeting with a bi-aquanaut who's been in love with diving since the age of 11.



## Alban Michon

*“We need to find the time to live, to learn how to be bored. Boredom is beautiful. I love boredom because it allows us to find ourselves, and even sometimes to be creative. Boredom is a value that has been lost.”*

***“Where does this strange attraction for the polar regions come from? It seems so powerful and persistent that after having come back, all moral and physical exhaustion is quickly forgotten, and you immediately dream of going back there...” How does this quote from Jean-Baptiste Charcot, a French navy officer and pioneer of great polar expeditions (1867-1936), inspire you?***

I adhere completely! The polar world is like a magnet for me: I've been several times in the North Pole, in the Arctic and in Antarctica. Some people think, quite wrongly, that I love the cold. But no! What

I really love is the polar universe and the story told by those regions.

***Where do you feel the most comfortable and at home?***

I feel good on the ice floe, I feel good under the water, I feel good everywhere! The silence, the play of the lights, the colors, the ice crystals... are absolutely marvelous. Paradoxically, a quiet and poetic world reigns under the water. We encounter jelly-fish, sea-angels (a kind of transparent butterfly), whales, seals or even walruses. It's an extreme universe, with a water temperature of minus 1.6 degrees, and yet it's full of colors. However, we must never for-



get that it's not home for us.

***Tell us about your most beautiful encounters?***

I was lucky enough to come across a Greenland shark and to swim with a polar bear... we actually looked at each other straight in the eyes! It was magical. I must repeat, it's not home to us, we are only guests, and we must show respect for the living creatures of those lands.

***What different types of diving do you do?***

Most often, it's sea-diving. Then, there's diving under the ice sheet, which could be the ice floe or a frozen lake. Finally, underground diving which is often done at the starting point of sources, the same ones that turn into streams and rivers. They're underground water springs. The immersed caves where we move are like mazes and can be very deep.

***What's the role of an explorer in 2023?***

I'd be tempted to say – but it's my own view – that exploration today is a profession that strives to understand the world and the human being better. In fact, I consider that my role as an explorer is to take with me those whose professions don't normally involve extreme environments. When Ernest Shackleton set off to discover Antarctica at the beginning of the 20th century, he had a team of scientists, geographers and photographers on board his

vessel who consequently provided a better understanding of the unknown regions of the planet. It's still the same in 2023 – even if we no longer have new territories to discover, there's still a lot to understand and monitor in the world.

***You've taken part in numerous expeditions. The Northwest Passage of Canada, the geographical North Pole, Greenland... you've brought back pictures of a world that will have disappeared in a few decades.***

I'm not naturally a pessimistic person; neither am I someone who makes people feel guilty. On the other hand, I am very realistic. The scientists, along with the GIEC reports, all agree that the Arctic ice floe will have almost completely disappeared in a few years. The Arctic Ocean will become an open sea in summer.

I'm an explorer, I bring back information and pictures that still make people dream, because the world is still beautiful. And I'm convinced that it'll still be beautiful, although different, in 30 or 40 years. Humanity won't have any other alternative but to adapt and find new solutions. I totally assume my position as a realist and an optimist once the evolution of the world is taken into account, and we're not in denial. I'm fed-up with people who constantly preach negativity, up to a point where new words need to be invented like “eco-anxious”- that doesn't provide any practical support and kills all hope for those who are the most fragile.

***In 2018, you set off alone for the Northwest Passage for 62 days during the winter to explore the hidden side of the ice floe and to bring back plankton for DNA studies. Why?***

Plankton represents the base of the food chain. As there's less and less ice, more and more boats are sailing in the cold seas. Is the plankton polluted? How is it developing? These questions are likely of no significance to most people; but they remain essential for humanity. The explorer is a witness who brings back information. However, that doesn't make him a scientist – he's only a worker for science.

If we want to understand the world, we need to know how it develops everywhere on the planet. We've had regular data, about the weather, about the climate for 60 – 70 years, minute by minute with hygrometry, wind direction, temperatures... But on the scale of the 4.5 billion year old planet, that's insignificant! Despite the presence of satellites, despite the presence of ocean buoys, despite the presence of scientific stations, certain places remain extremely difficult to reach.

For example, in the 1980s, scientists observed in Antarctica that a hole caused by CFC (chlorofluorocarbon) gases had formed in the ozone layer. They then alerted the politicians. In 1987, around 24 countries signed the Montreal Protocol forbidding these gases – but it then took 30 years for the ozone layer hole to repair itself... it takes a long time to obtain results. You know, scientists work over long pe-

riods. The translation of a scientific work, or a scientific protocol, can take decades.

***You're preparing a new challenge, a world first – living under the Arctic ice floe, in the polar darkness and the coldest waters on the planet, with your team in a sort of ISS underwater laboratory called Biodysseus. You intend to set off around the end of 2025. What answers are you looking for?***

With Biodysseus, we wish to serve science by having a team of scientists and engineers live at the heart of the climatic reactor with the help of new cutting-edge technology. We'll be 4 bi-aquanauts confined in a submarine habitat, 24 meters long by 2.3m wide. It's a shared research platform rather like a laboratory equipped with spatial technology. Our work aims to make these technologies apply in the future to houses and buildings to make them more self-sufficient and sustainable. We'll concentrate on research and technological development for the recycling of water, air, energy and waste in extreme conditions. France doesn't have much money for scientific hubs, which is why I want to pool the resources of this hub.

***“We always find a host of reasons why we shouldn't make our dreams come true.”***

We have different ideas about where we

want to position Biodysseus. All will be constructed in line with the scientists' requests. Biodysseus will be accessible to people with little diving experience. Of course, a little knowledge is needed, but you don't have to be a seasoned diver to be able to live in the heart of the climatic reactor – and that is a strong point.

On board, we'll be able to test the miniaturized prototypes taken from laboratories in degraded modes of operation. Some prototypes may even be sent to the ISS. Biodysseus positions itself between labs that are masters of their technologies and the world of space. Thereby, we can move things forward at minimum cost. Finally, we're going to lead some clinical studies, as well as scientific studies on the polar environment so as to gather information and analyze its evolution and its impact on the planet.

***Indeed, the future of the ice pack completely conditions the future of humanity and biodiversity in general.***

Yes, and that's why we talk about a climatic reactor. What's happening in the Arctic has an influence over the entire planet – the increase in sea levels, the change in ocean currents, the acidification of the oceans, the melting of glaciers... for example, the Maldives may well disappear.

***A control center will be built above Biodysseus. It will survey the underwater lab and will also be equipped with a lunar module. To what degree***

***do you also intend to prepare space missions?***

Yes, the control center will be the prototype of a lunar habitat. A crew made up of safety personnel and doctors will live in this base, ready to intervene in case of an emergency. This base will become more and more self-sufficient as the years go by. The Marseilles company Spartan Space is currently working on it. Stations like Biodysseus and its surface base are very useful for technological companies. The testing of prototypes and materials in extreme environments with katabatic winds of 200kph and outside temperatures of down to minus 60 degrees, gives them credibility! If the tests work in these conditions, that means they will likely work on the Moon. What interests me in spatial research is technological development. We use one part of the spatial research for satellites, for anticipating climatic catastrophes and following pollution; in telecommunications – a part of things linked to spatial research is in our cell phones! We don't realize how important it is.

Biodysseus, for instance, will have a photo-bioreactor filled with micro-algae. These micro-algae, like forests, capture the CO<sub>2</sub> and provide oxygen. Up to now, only rats in Spain have breathed with the help of this photo-bioreactor. If that works correctly, we'll be the first human beings to live with a photo-bioreactor and to breathe with micro-algae. In time, this technology may have its place in future spaceships going to Mars... or quite simply in the Paris Metro

where it would help to limit air pollution efficiently.

***Imagine if tomorrow you were at the head of the Ministry for Ecological Transition, what would be the first symbolic measure that you would put in place?***

I wouldn't like to be in the place of members of government. One has to have political courage, which is what I was saying earlier in connection with the Montreal Protocol... the results are only visible 30 years later. And courage is definitely what they're lacking today.

We tend to want everything immediately, as if the effects of forbidding something today could be already measured tomorrow... Decisions must be taken now, but after, it's a question of generations. If I had to make a decision tomorrow, I'd work on a law which obliges all new buildings and individual houses to have a system of recuperation of wastewater from showers, dishwashers, washing machines etc. Men landed on the Moon in 1969, so we should be capable of recuperating the shower water and re-using it in the toilets. 6 liters of soft drinking water is used each time we go to the toilet, and the population of France is 68 million.

***Have you been consulted by the government?***

No. Today, people like Jean-Louis Etienne or Bertrand Piccard are the references. Maybe, but only after Biodysseus, I will

have acquired a certain form of credibility. But, if you need reassurance, I'm quite happy as I am!

***As well as your scientific exploration missions, you've also set up an exploration school in Tignes. The adventures that you propose to your students are very attractive.***

Yes, between the parts of building projects, adventure, exploration and then, the sharing of resources (books, discussions, films), it's very rich! And then, there are methods that need to be explained. There's a core trunk of adventure. 60% of the program is the same for everyone. Whether you need to raise 5,000€ or 200,000€, you're going to need a presentation file for your project. At my school in Tignes, I'm an advisor, a guide. People contact me and I give them a challenge. I show them that they are extraordinary and have the abilities to rise to challenges... something they haven't always been told. I like to give keys to people with dreams.

I believe in science, in technology that will help us to consume less, and of course, in education and pedagogy. The last two are the key factors, because it's only when you've understood something that you can act on it.

***What kind of relation do you have with the long term?***

Humanity is lacking in patience and perseverance. With just a telephone, you can have everything, and immediately. You

feel like eating a pizza, you press a button; you want to meet a girl or boy this evening, you press a button... it's the opposite of what life is about. We've forgotten what the long term is. Imagining and designing Boudysseus has been extremely complicated, you can't begin to imagine what it's like to build such a project... but it's not because it's complicated that we should be frightened of taking it on. If we want to change our lifestyle, let's do that. If certain things don't suit us, let's change them, because it'll likely be too late tomorrow! We always find a host of reasons why we shouldn't make our dreams come true. We

need to find the time to live; to learn how to be bored. Boredom is beautiful. I love boredom because it allows us to find ourselves, and even sometimes to be creative. Boredom is a value that has been lost.

***What words would you leave to future generations?***

Make use of difficulties, they're experiences. I don't believe in failure, but in experience. The difficulties of today will be the anecdotes of tomorrow.



*Interview conducted May 10, 2023.*







# Under The Pole's 2030 objective – Discovering marine animal forests

*Interview with  
Emmanuelle Périé-Bardout*

Emmanuelle Périé-Bardout is at the head of a mission that should last... a decade. For more than 10 years now, she and her husband have been sailing the seas on board their exploration vessel, the Why.

Co-founders and directors of Under The Pole, an exploration program combining scientific research and raising awareness for a better knowledge of the Ocean, they set off with their two children Robin and Tom on different exploration expeditions that will surely mark the 2020s.

In association with the CNRS (French National Scientific Research Centre), Under The Pole has launched an ocean exploration program called DEEPLIFE 2021-2030, endorsed as an official Decade of Ocean Science for Sustainable Development project by the United Nations.

We met with Emmanuelle who has just returned from a mission in Svalbard and who was busy preparing the future ones: The Canaries (winter 2022-23) and the Caribbean (spring 2023)!



## Emmanuelle Périé-Bardout

*“It’s often what we envisage that’s frightening, not the actual reality.”*

*As an explorer of Under The Pole, you make what’s invisible visible. With DEEPLIFE, you’re targeting a particular stratum of the Ocean, the famous mesophotic area. Why?*

Mesophotic comes from the Greek word « middle light ». This stratum is situated at a depth of between 30 and 200 meters. We’re studying the ecosystems in that area and particularly those that scientists refer to as marine animal forests which, like terrestrial forests, are a host of biodiversity.

*These animal forests hold a lot of mysteries. What are they exactly?*

Just like terrestrial forests, they have enough density and height to be considered as zones containing a high concentration of biodiversity. Because the flow can be modified inside the forest we can use the term microclimate – fish can find shelter there for their eggs, so they act as nurseries. The very first marine animal forest we found was in Longyearbyen, the best-known fjord in Svalbard!

Unlike vegetation that needs light, these forests are animals that develop in areas that are at a distance from the surface. According to scientists, these forests could serve as climatic shelters for different species and it's important to study them, because organisms at the surface are threatened by climate warming and water acidification. They've recently been classed as vulnerable habitat by the International Union for Conservation of Nature (IUCN).

***What did you learn during your expedition to the Arctic in spring 2022?***

We started from scratch, with no information whatsoever. After one month of diving each day in particularly difficult conditions we came upon an animal forest, a beautiful forest of hydroids that looked like branchy corals, classed as hydrozoans. We'll definitely return there one day. One of the goals of DEEPLIFE is to go back to the different areas that have been studied and to measure how these forests have developed over time.

***Unlike Svalbard, which was completely unknown to you, the Canaries must have seemed like a playground. Why and what was the objective of that mission?***

It's an ecological corridor, a passage for ctenophores. Lanzarote is the starting point of the corridor of the marine forests for black corals. One animal forest had already been clearly identified there – our aim was to describe and label it as well as studying

the potential connectivity between several forests. In the long term, this information should ensure a better knowledge of the mesophotic zone and facilitate its integration into measures taken for conservation. After the polar expedition to Svalbard in 2022 and the temperate zone of the Canaries this winter, we're heading for the tropical zone of the Caribbean between March and May 2023, an expedition that will entail working at a depth of 6 - 120 meters. Then in 2024, we're off for 6 months work in the Mediterranean!

***How does an organization like Under the Pole work in association with scientists?***

UTP has a scientific coordinator, Myrina Boulais, as well as two scientific directors from the CNRS, Laëtitia Hédouin and Lorenzo Bramanti. An international consortium of about forty scientists has drawn up protocols which we implement on each DEEPLIFE mission. After each expedition, the scientists receive and analyze our data. The scientific work is only recognized if there are publications. These in turn are only valuable if they are shared and made accessible to the decision-makers and the wider public. I often say that on the ground we are the hands and the eyes of science. Our onshore team in charge of communication and awareness is responsible for getting the results and findings of our missions out to the widest audience possible.

We are registered in the UN's Decade of

Ocean Science project and since 2022 have been members of the International Union for Conservation of Nature (IUCN). We work closely on questions related to climate issues with the Ocean & Climate platform which groups 90 French and international NGOs (particularly in the industrial and scientific sectors). They in turn must pass on the gathered information to the decision-makers. I believe in the power of collective action!

***Have you ever experienced a tipping point in your exploration career?***

On one occasion when we were diving with our capsule, I remember one night reading the latest GIEC (French inter-governmental group on climate change) report that had just been published. I discovered that 95% of corals could disappear by 2050 if humanity continued on its present track. These figures are hard and come from what we know now. The mesophotic zone offers some hope if we can act quickly to learn about it and protect it. In any case, we must slow down to reduce the pressure we're putting on nature.

***Why is it so essential to preserve the mesophotic zone?***

Can you just imagine the Amazon Forest razed to the ground? Well, it's the same. If a trawler damages the animal forest it will destroy an enormous wealth of ecosystems, which also serve as refuges for other threatened species at the surface.

These mesophotic zones are very deep

for a diver, but not really all that deep, considering the depth of the oceans. The ultimate goal of UTP is to distinguish and mark out the mesophotic coastlines and gradually plant the concept of depth in conservation projects.

The results of our mission in Polynesia show there's more coral diversity in the mesophotic zone at a depth of 40 to 60 meters than in the area near the surface! Also in Polynesia, the mesophotic corals are hardly impacted by coral bleaching, whereas the corals at the surface have a high rate of mortality. These results give hope, on the condition that we get a better knowledge of how ecosystems work and how to protect them.

***Could you describe a typical dive?***

With DEEPLIFE, our dives last about three and a half hours. Some can last longer, up to six and a half hours, when we have to dive deeper or spend more time at the bottom, like when we had to collect coral reef samples at 172 meters, the deepest-known dive so far. We use closed-circuit diving suits called « rebreathers » with gases composed of air, oxygen and helium, which allow us more time underwater and prevent narcosis. We also have underwater scooters which help accelerate the procedures and transport all the heavy material. Dives are very tiring, particularly because of the cold and dehydration. We never do more than one dive a day.

***How do you control your fear?***

You know, it's often what we envisage that's frightening, not the actual reality. Fear is important because it sends us signals that help to assess risks. It's not at all like panic, which just cripples you...

***Could you tell us about a poetic moment under the Ocean?***

One day, off the coast of Polynesia, while we were in the Capsule with the headlight regulated at minimum we came across a zooplankton, tiny little jellyfish as well as fluorescent worms that were dancing in front of the light-beam. Our two trumpet-fish (nicknamed Miles and Louis after Miles Davies and Louis Armstrong), that used to swim alongside the Capsule, immediately saw their chance to launch slash attacks and then return to lookout. Even though I was apprehensive about being underwater at nightfall the spectacle kept us spellbound until we fell asleep. As children, my husband and I both used to dream while watching the Cousteau team's documentaries. Today, we've managed to reconcile family life with our passion for scientific exploration. In our eyes, exploration takes on another meaning when it serves a cause greater than just adventure, namely science or awareness.

***The Ocean is a resilient milieu. A coral reef can regenerate itself relatively quickly, on average 7 years, which is completely different compared to the earth.***

The episodes of coral bleaching are beco-

ming more frequent. With the Capsule, one of our objectives was to film the birth of coral – we had identified that corals lay eggs but realized that there were actually very few in the end. During the bleaching episode, the corals used all their energy to survive and so most survivors no longer had enough energy to reproduce. A reef will of course recover after the bleaching episode... But, if there's an episode every two years, there's a limit to its resilience.

***Why has the subject of protecting the Ocean been so long in becoming a public debate?***

Because the Ocean is unknown and seems so far away. That indeed is our greatest challenge – making the invisible visible. With the goal of going out and meeting all kinds of people, Under the Pole has had a scenography trailer specially built to raise awareness about what's at stake in the Ocean. It'll be used to visit schools, companies, the general public and thereby "bring the sea to the land". For a long time now, the Ocean has been almost completely forgotten during negotiations on climate change. To improve knowledge of it and ensure its protection, we need everyone to work on it – scientists, activists, NGOs, artists etc.

We often hear that we must save the planet, but in fact it's ourselves that we have to save. Even if certain technologies seem interesting for doing that, they're not enough. We must slow down because we're living beyond our means. Returning

to essentials isn't a punishment. On board the yacht, we live very differently to our life on land – we need to calculate everything – the water, the energy etc. As for the children, they can only take 2 boxes of toys. But we don't feel frustrated. We're never as happy as when we're surrounded by nature or on the boat.

promised him to swim with whales. Looking into the eyes of a whale is something you can never forget. I really believe that the power of emotion can make us change how we look at the world and help us to protect the environment.



*Interview conducted October 18, 2022.*

*“I really believe that the power of emotion can make us change our perception of the world and help us protect the environment.”*

***At what stage of development is your future vessel, the Why Not?***

In the final design stage! We're trying to raise the funds but it's a big challenge.

The Why Not was designed for scientific exploration of the mesophotic zone and is equipped with a decompression chamber, the capacity to hold two capsules, on deck there's a semi-rigid boat for diving as well as a proper work area and laboratory. This equipment will offer a real added value in terms of safety and comfortable work conditions. To my knowledge, it's the first vessel of its kind in the world.

***What do your children think about your expeditions?***

They love this life just as they love getting back to land. They've passed half their lives on the boat! When Robin was 6, I









# A sailboard for a rudder

## *Interview with Antoine Albeau*

**A**ntoine Albeau challenges the sea. Even though he excels at surfing – he has surfed high waves of over 15 meters and notably, the famous Jaws (Hawaï) and Belharra (Basque Country, France) – but it's at windsurfing that he's reached the highest summits. Antoine Albeau, the most titled French sportsman in history across all sports, won his 26<sup>th</sup> windsurfing world title in April 2023.

It's in the sailing school of Peu Ragot beach in Couarde-sur-Mer on Ile de Ré (an island off the south-west of France where he grew up) that we met up with Antoine. Although in full preparation for the summer season, he welcomed us to his school which has become a local landmark, and shared his memories and hopes. We also heard about the latest on his environmental project Zephir, which is extremely dear to his heart.



## Antoine Albeau

*“I had the opportunity to do something I adored; but I seized that opportunity, I worked on it and nourished it.”*

***How did you get into this watersport?***

In 1970, my parents set up this sailing school. I was born in 1972 and the surfboard came out around 1975-76. My father was one of the first pioneers in France! In fact, I don't really know how he started. In any case, I was immersed in the sailing world. At that time, a whole generation had started windsurfing. Very soon, I wanted to become a professional sportsman. So, I seized the opportunity and I slogged. Five years ago, my wife Paola and I decided to

take over the school which now occupies us full-time! Here, you're in my little corner of paradise.

***Here you are a few years later with 26 sailboarding world titles to your credit. Last week, you even broke your own speed record, 43.43 knots per nautical mile (80.2kph over 1,852 meters). As the most titled French sportsman in history, what directions do we have to seek to get such incredible results?***

There's no secret! I did my seasons, one



after the other. It's true that at the beginning it wasn't all that hard to get into the Top10. But then, I had to aim for the Top 5 and next, the Top 3. Step by step, I got on the podium. It was one season after the next for 10 years and I think my worst place was second. But each year I managed to bring home one or two world titles. That's how my hobby became my profession and today, it means I can travel and meet lots of people. Of course, I've given up the Slalom World Cup, but I'm still on the speed circuit. In fact, the last title I won a few months ago was world speed champion. As you said earlier, I also broke the world speed sailing record over a nautical mile last week in Leucate, with an average of more than 80kph over 1,852 meters. Over all these years I've also been working really hard in parallel with my partners to develop material.

*Exactly, you saw that there's very little R&D in the sector of speed. Yet, the weight and height of a rider has a huge influence on the speed. So, you co-created the Zephyr project with your associate Marc Amerigo, a project which develops and improves nautical equipment, but at the same time takes into account environmental and technical issues. To do that, you got together a team of experts from the sailing and competition world, as well as experts in aeronautics, space, AI and motion design. What objectives are you aiming at?*

Above all we're trying to beat the world sailing-boat speed record which currently stands at 65.45 knots, that's about 122kph. It's quite a far-off goal as I hold the record of 98kph, which means reaching 30kph more. It'd be an absolute record for sailing! In fact, as you said, we've got in contact with the best. Some companies in La Rochelle are beginning to get interested in us. Our objective is to innovate and manufacture environmentally-friendly equipment – we've already designed numerous elements. We want to avoid using non-recyclable resins as much as possible. We still use a huge amount of carbon and plastic in the sailing world – eco-friendly resins exist, so we're trying to get closer to that solution, and obviously, have that equipment made in France.

*Which equipment does the Zephyr project target?*

We've been working with Johnathan & Fletcher, a textiles research and development company, specialized in wingsuits. We've worked on their aerodynamic wingsuit and improved it. Mechanical calculations of fluids are extremely complex! Just recently we worked for 4 days in the wind-tunnel of St Cyr, west of Paris.

*How is the work in the wind-tunnel carried out?*

Working in a wind-tunnel permits to understand and reach top speed, stability, safety and energy efficiency. We have at our disposition flight and navigation simu-

lators, artificial intelligence tools, 3D calculation and onboard measurement tools, and even augmented reality devices and motion capture, straight out of the cinema world!

***What can the blowing trials prove?***

Literally, they permit you to sculpt the body! The aerodynamic phenomenon that's produced at high speed requires a choice of functionalities to improve the penetration of the air by the sportsperson. In this way, he/she will be less affected by fluctuating wind conditions. These elements are placed over and under the wingsuit... directly inspired by biomimetics and Formula1. An aerodynamic wingsuit improves speed, reduces the draw, increases stability, and promises comfort and safety. When we compete, we skim the surface of the water at top speed. We've also been working with students who've done quite a lot of careening for us. Nevertheless, the overall work that needs to be done for the sail and the board is colossal.

***Would it be possible in the long term to imagine that the techniques you're developing today could be adapted to other sports?***

Adaptable to other sports, why not! In absolute terms, we could imagine innovations adapted to anything that glides on water or in the air. But firstly, we'd like this

new material to become readily accessible to non-professional windsurfers. It'd allow them to reach speeds of 45 to 50 knots.

***“Eco-friendly resins exist, so we're trying to get closer to that solution.”***

***What are your sources of inspiration?***

Nature above all, even if it goes without saying that we're on a very touristic island. I love the summer season because year after year a lot of loyal customers and friends with their kids come back to see me. As for the winter season, it's just marvelous in stormy weather. An empty beach is a real inspiration for me.

***What words would you like to leave to future generations?***

Endeavour to do what you really love. Doing what you love deeply is one of the most marvelous things you can possibly do. Oh yes, it's a lot easier said than done. Personally, I had the opportunity to do something I adored; but I seized that opportunity, I worked on it, and I nourished it.



*Interview conducted June 20, 2023.*

<sup>1</sup> One nautical mile equals 1.852 kilometers.

<sup>2</sup> A suit that inflates with air to reduce the speed of fall when jumping from a plane or summit.







# In the wake of the Fresque Océane

*Interview with Alice Vitoux*

In her personal and professional life, Alice Vitoux swims in a bath of youth – the Ocean. Up to the point of dedicating her life to it. French founder and leading figure of the organization the Fresque Océane, co-founder of Climate Fresk, as well as being a public speaker, Alice has created a tsunami which shakes up our anthropocentric certainties. Because moving away from the prism of anthropocentrism is probably one of the greatest challenges for humanity. With la Fresque Océane, inspired by Climate Fresk, Alice sets out to make us understand the Ocean through the use of serious games. Organized in the form of workshops, this Fresco is accessible to anyone. A dive into a game that's out of the ordinary.



## Alice Vitoux

*“The Ocean is often categorized as being in the public domain or a common heritage of humanity. Yet, the Ocean belongs to no one.”*

***How would you define yourself?***

I like having my feet in water! I go surfing on a regular basis even though I've been a beginner for 25 years! I'm passionate and very committed to the preservation of the Ocean, whether it be in my private or professional life.

***Could you tell us about the main lines of your career?***

I've always been interested in subjects relating to biodiversity, but when there's a link with the sea, it doesn't have quite the same

resonance for me. Marine biodiversity, that really gets to my guts!

I think my passion for the sea started with the first film I saw at the cinema with my father, “The Big Blue”. I was 7 years old at the time and was living in the Beaujolais region, where I remained till the age of 18. I don't come from a sea-faring family.

In fact, I'd say my passion comes from a strong sense of frustration of not living beside the sea. We used to travel across Europe every year in a Volkswagen van – we also did a bit of boating, but lazing on

the beach definitely wasn't our thing! When I entered adult life, I put my taste for the sea and surf completely aside for about ten years. Except that your passions never really put you aside! I had obvious proof on my 35<sup>th</sup> birthday. After leading a professional life for 10 years, I wanted to reconnect with something that made sense to me – the Ocean. So, I changed direction. From since then, I've devoted all my time to it.

***Which people have inspired you?***

Isabelle Autissier, François Sarano, Guillaume Néry, Daniel Pauly, to name but a few! Also, the TV programs Thalassa which I've watched a lot.

***How did you manage your change of career?***

It all started on a world tour with my partner after I decided to take time out in my professional life - I was working with the French media company Canal+, a long way from the Ocean. During the trip, we went out to meet the locals and asked them to teach us one of their skills. It didn't matter if it was cookery, craft, sport – it was more of an excuse for us to go off the beaten track and not just reduce Peru to Machu Picchu, for example. Articles, videos, conferences and even a book were drawn from those experiences. It was no surprise when we returned from our world trip in 2016 that going back to my old job created a certain dissonance in me. So, I joined the governing body of Climate

Fresk (La Fresque du Climat) on its creation in 2018, as a co-founder and stayed there for two years. That was when I got involved in the Paris branch of Surfrider Foundation Europe and where I was really able to reconnect with my passion for the Ocean. I got involved in the office of their Paris branch and had opportunities to lead workshops, conferences, events around the preservation of the Ocean. Today, our organizations work in partnership and several employees at Surfrider are trained by Ocean Fresk, and then deployed out to companies, schools etc. Their network has a lot of clout so it's very inspiring to work with them!

***What's missing in the current discourse relating to environmental subjects?***

I really think we need to have a more systemic view of what's at stake in the Ocean. Pollution and plastic are subjects that are raised regularly, but they tend to occult the other issues and so, the other levers of action. That's why I wanted to create a game in the form of the Climate Fresk, because it gives a systemic vision of what's at stake in the preservation of the Ocean.

***Is the Fresque Océane based therefore on the same principles as the Climate Fresk?***

Yes. When we launched our first general assembly to set up the organization The Climate Fresk, there were ten of us. We did a round of the table to allow each

person to speak about the subjects that he/she wanted to work on. That's where I expressed my wish to create a format based on the Ocean. Other participative structures followed that – the biodiversity Fresco, the Digital Fresco, the Agricultural Fresco (Agri'Alim), the food Fresco, the new stories Fresco, the sexism Fresco...

***How are the themes selected and approved? Do you work with a scientific committee?***

Concerning the Fresque Océane, the data is taken from key scientific sources – the IPCC on subjects relating to the Ocean and climate; IFREMER (French Research Institute for Exploitation of the Sea) and the FAO on fishing and consumption of fish resources; IPBES on biodiversity or even ADEME (French Agency for Ecological Transition) on pollution. On top of that there's a facilitator's guide with comments on the sources and additional information. Updates are done annually by a work group in the association. But yes, we do actually have a project to work closely with a scientific committee.

***How is the group currently composed?***

There are about 100 facilitators spread out over France and a dozen other countries. It's made up of biologists, teachers, oceanographers, specialists in renewable energies etc. You could say we're our own scientific committee! Which is a good thing because the figures are constantly changing.

***What are the latest cards you've added to the game?***

One about pollution in saltwater intended for desalinization, so that we can talk about water resources and the subject of the water crisis which we are nearing. We've also put together a card about slavery on the high seas to highlight the societal impacts as well as the environmental ones. However, we've removed the card on electric fishing as this practice is forbidden in Europe, and our public is mainly European. It's been replaced by a card on longline fishing. This is a very common type of fishing which is little known, where long fishing lines with thousands of hooks are put into place.

***A new treaty for the protection of biodiversity in the high seas\* – a maritime domain representing 70% of the world's oceans – was adopted at a UN conference on March 4, 2023. Do you see this as a positive signal?***

Yes, this treaty certainly sends out a positive signal. It shows the growth in awareness of the numerous countries who came to the negotiation table. The aim of this treaty is to assure the protection of 30% of the oceans by 2030. But take note that this protection doesn't require a minimal level of protection. Moreover, remember that this is a "Treaty on the conservation and sustainable use of biodiversity in marine areas beyond national boundaries". We're talking therefore more about conservation rather than preservation – the goal is how

to manage our uses, not just to reduce them.

Behind this treaty, there are other issues at stake – those of social justice and fairness between nations, because resources and economies are very different from one country to another. Some have the means to exploit the resources in the high seas and draw the benefits, whereas others are unable to exploit them, but obviously wish to also reap some benefits.

***To move away from anthropocentrism is to shake up our certainties. How does that inspire you?***

The Ocean is often termed as being in the public domain or a common heritage of humanity. Yet, the Ocean belongs to no one. We don't live there. I confess being both shocked and troubled by those terms, even if obviously I understand the intention behind them. The Ocean is indeed the common heritage of humanity since it regulates the climate and permits all the species to live. Humanity is totally anthropocentric, evolving in a vision that is purely utilitarian. Even though humans are beginning to consider the Ocean more from a sustainable point of view, the question of exploitation is still present. That raises a question for me, even if a large part of the world population needs its fishing and economic resources. The aim isn't to turn the Ocean into a sanctuary and make it untouchable, but to find an even balance between the preservation of life and our activities. This can also be

said for the possessive adjectives that we continually use. We've been formatted to say, "our sea", "our planet". But they don't belong to us. We exploit them, but planet Earth does not belong to us.

***How do you approach the subject of anthropocentrism in the Fresque Océane?***

The Climate Fresk begins with human activities. With the Fresque Océane, I chose to put biodiversity at the center rather than the human being. In this way, the workshop talks about human activities moving around marine biodiversity, whether it be animal or vegetal. The skeleton of the Fresque Océane is represented by five factors causing decline in marine biodiversity mentioned by IPBES – the overexploitation of resources (overfishing), the destruction of habitats, climate change, pollution, and the development of invasive species. The workshop opens with an anthropocentric question "*What contributions does the Ocean bring to our lives?*" and then, makes us move underwater and dive into biodiversity and the factors causing its decline. At the end of the workshop, the participants realize all that the Ocean provides for us (food resources, water resources, areas for navigation...) and how much everything is upset by all our human activities.

***What forms do the workshops take and who are the people you are targeting?***

A workshop lasts half a day, so about 3

and a half hours. Around a hundred cards are proposed, with the following themes – The Ocean’s contributions, marine biodiversity, fishing and aquaculture, maritime industries, the links between climate and the Ocean, and finally pollution. We adapt our format and also offer a one hour derivative as well as online versions. We travel all over to provide workshops, but there’s one rule – we don’t take the plane and we use public transport whenever possible. Personally, I mainly travel to Brittany and the Paris region. The association facilitators regularly host workshops on a volunteer basis, in their own areas or online. We also organize remunerated workshops for territorial agencies and companies, that may or may not have a connection with the sea, and also in schools with a format adapted to juniors. We’ve just reached 100 facilitators! We’re also present in Belgium, Spain, New Caledonia, Tahiti, Martinique Island etc.

***Do the companies that invite you belong solely to the responsible company sector?***

There are two types of companies. Those that are already committed and wish to go further by implementing actions, and the others, that are less engaged but are feeling a change of attitude in society and in their employees. That’s where the role of the CSR (corporate social responsibility) teams is so important! The employees can then organize workgroups internally without these initiatives stemming necessarily

from those of the top management.

***How are you paid?***

All the facilitators of the association are volunteers. If they wish, they can also offer remunerated workshops on an independent or freelance basis. The facilitator then gives a part of that remuneration to the association to feed its funds. Furthermore, the people who wish to work with companies must engage in volunteer activity as well. The strength of a small structure is to be able to make each facilitator responsible.

***“Taking one’s time doesn’t mean being idle.”***

***What words would you leave to future generations?***

Take your time, open your eyes, and prefer activities that connect you more easily with nature. I know that taking time and slowing down is extremely difficult. I’m doing it little by little, which means deprogramming oneself. I’m the first to constantly follow what’s going on in the association and being online. To get away from that, my partner and I have started taking a break halfway through the day and going for a 30 minute walk each day, with no phone.

There are lots of ways to take time – take the time to look for a secondhand item rather than buying it immediately in the



store, take the time to cook, take the time to make your own household products, take the time to travel by train and discover new places etc. Taking one's time doesn't mean being idle.

And then, I'd say the key is to get involved in worthwhile causes, that's obviously where we're going to give our best. That gives hope, meaning and joy.

Action gives hope!



*Interview conducted July 19, 2023.*

*\* Ocean regions beyond national jurisdiction.*



# Weave human links, all over the Ocean

## *Interview with Roland Jourdain*

A subtle mix of blue, green and grey, just like the colour palette of the Ocean, glaz is his favourite colour.

Roland Jourdain is a multiple award-winning French navigator, double winner of the Route du Rhum Sailing Race, and a character with numerous talents.

In 2009, he founded Kairos with Sophie Vercelletto, a study office which develops responsible and high-performance biomaterials. In 2013, they decided to create Explore, an endowment fund, to help projects with positive impacts on the planet, financed by benefactors. The objective: accompany and support explorers who, like them, are trying to develop solutions to engage society on a virtuous path.

“Explore” gave its name to We Explore, a ship designed to open up to the world, with an itinerant think-tank onboard.



## Roland Jourdain

*“These huge spaces filled with absolutes, which we wrongly think are empty, are in fact filled with lives whose intelligence we haven’t yet grasped.”*

***“The open sea is one of those places where you feel you have to ask for permission to enter and say thank you when you leave”. Those are your words. Why have we forgotten that on land?***

You’re right... I was referring to the Vendée Globe. When you get to the southern Oceans, you quickly realise that as humans, we aren’t suited to that environment. I was very moved on reaching Cape Horn, but you start wishing for friendlier regions. There are journeys that make you humble and more aware of human fragility. You know, Nature offers a gift when it grants us access to a place that is not

ours. So we try to adapt, with technologies and technical clothing. These huge spaces filled with absolutes, which we wrongly think are empty, are in fact filled with lives whose intelligence we haven’t yet grasped.

***How do you feel when you look at the evolution of the planet?***

The planet is like a big ship whose crew numbers are growing, but whose resources in the hold are diminishing. Why go faster and faster if it’s to run into the wall? Some say we must save the Ocean at all costs... But that’s forgetting that the Ocean will survive very well without us. We have a nasty habit of putting ourselves

at the centre... I remember an article written by Pierre Mollo, a biologist friend and connoisseur of planktons, entitled “*Sardines eat chestnuts*”. Everything on the planet is linked, that’s what needs to be understood. Tomorrow’s challenges won’t be solved solely by technology. Obviously, I’m very happy to have an autopilot on my boat as well as a global positioning system, but there are a lot of expensive extras in maintenance, repairs, at a cost for the planet. Seriously... Don’t we sail out to sea to experience travel; to feel a form of communion with the elements?

***With your study office Kairos, you’re working on bio-sourced composite materials. Which ones are most promising?***

We’re convinced that fibres and resins of plant origin are tomorrow’s plastics, but all recyclable and biodegradable. We’re working a lot on flax fibres. In France, we’ve got farmers, tonnage, and the material. We have the best flax in the world! But 80% is exported to China to then be brought back here as clothing. It’s our responsibility to recreate local production, industrialisation, and expertise, since in France, especially near the shorelines, we have the best composite worksites in the world! Flax fibre is very robust and has a lot of mechanical characteristics that can be used for lots of different things. It’s been proving itself over thousands of years! Some mummies are still bandaged with flax fibres. Flax and hemp have also

been used for sails and ropes on thousands of ships throughout the centuries.

***Who do you work with to see your missions through?***

We work with a few different universities, such as South Brittany (France), Portsmouth and Cambridge, as well as numerous laboratories. For fundamental research, we’re fortunate to have some pioneers in Brittany, like Christophe Baley, professor at South Brittany University. With IFREMER (French Research Institute for Exploitation of the Sea), we built the Gwalaz, the first bio-composite trimaran in the world, 7.20m long, composed of flax fibre, cork, balsa and a resin made from 30% plant-based molecules. It was after this boat that we decided last year to build a bigger one, the We Explore.

***We’ll come back to that. But 10 years ago, before We Explore, you launched an endowment fund called Explore. Who does that target?***

Explore was created to support and accompany explorers of the 21<sup>st</sup> century because they’re the ones who’ll find the solutions to adapt and modify our way of life in the future. We showcase path-finding explorers who travel the world and commit themselves to discovering an infinite number of solutions to help us live well on a dying planet. Some expeditions come to mind: “Under the Pole”, led by Emmanuelle and Ghislain Bardout<sup>1</sup>, our modern-day Cousteaus who bring back

pictures of a world unknown to us; Simon Bernard<sup>2</sup> with “Plastic Odyssey”; Corentin de Chatelperron, who invented a world with the The Sea Nomad, a catamaran that’s an ambassador for low-technology, with its floating low-tech lab. And of course, Victor Rault’s Captain Darwin Project which follows on Charles Darwin’s path, thus raising awareness for the protection of biodiversity.

***So, this endowment fund gave life to We Explore, a boat made of biomaterials!***

Yes, this boat is the symbol of the 10-year journey with Explore. Even if we use it for open sea racing, it’s also the base for an itinerant think-tank. We Explore is founded on the three principals of our Explore endowment fund: experiment, cooperate and inspire. Experimentation makes us think, for example, about materials and different types of resin (from the 100% petroleum-sourced one to the 100% plant-based one), but also about recycling and composting. We Explore is a test bench, a proof of concept: most of the cooking at sea is done in a solar oven. We don’t have a cold storage system or a freezer. We adapt our food consumption and our habits with the aim of working in sober, but happy conditions. These experiments give us an in-depth analysis of a boat’s ecosystem, and from there we can draw the parallel with our lives on land. In the end, what’s really essential?

We’ve sailed with our fibre producers and

farmers on board, not only to have a larger vision of their trades and techniques around flax, but also to learn about their vision of agriculture, the sea, and what we can do together. We Explore offers a possibility for important and gratifying cooperation.

***You’ve recently worked on identifying sperm whales in the Mediterranean Sea. Can you tell us more about this epic journey?***

My team and I were lucky to have been surrounded by specialists who helped us mount a scientific mission, in collaboration with acousticians. With François and Veronique Sarano’s team, we saw, in early April, nine sperm whales, four of which were identified as being in the Pelagos Sanctuary, a Marine Protected Area off the coast of Toulon. It was so intense; we lived 24 hours a day with hydrophones in the water! I was nearly fluent in whale language at the end of the week! It makes me happy to take part in learning more about a place I’ve frequented for over 40 years! You know, sometimes in life, we think we’re better than others because we go faster. It sometimes happened to me during offshore races. It’s when I started slowing down that I discovered how ignorant we are of all the living species right under our feet.

The sperm whale in the Mediterranean doesn’t have the same social life as his sperm whale friend in the Indian Ocean. Are there 300 or 800 of them? How do

the males behave? We Explore continues what was initiated by Explore. We invite citizens on board several times a year so they can discover the underwater world, while we experiment rigorous scientific protocols. We take samples and then bring them back to biological stations, or to the Oceanopolis Aquarium in Brest (France). In the space of one day, we live a journey at the heart of the infinitely small.

*“We showcase path-finding explorers who travel the world and commit themselves to discovering an infinite number of solutions.”*

We also initiated with We Explore the Floating School to help promote an optimistic vision of change, at a time when shouting about eco-anxiety crises and a loss of meaning are all you hear. We had nine students, aged 20 - 26, who came on board with their trainers. It was a beautiful adventure, in partnership with ENSTA Brittany (The National Institute of Advanced Technologies of Brittany) and ISblue<sup>3</sup>. The aim was to integrate social and environmental issues into the heart of different subjects (biology, mathematics, oceanography, art) and transmit a new story.

***You were elected to the Regional Council of Brittany in 2015. What do you take with you from those 6 years experimenting with politics?***

As a person who loves adventuring into unknown areas, I went into politics with no political label. Just like Explore, I like to go off the beaten tracks. It was hard but interesting at the same time. I wouldn't say I managed to change a lot, but I did bring my own way of being and thinking. I touched on all the subjects we've just discussed. The Breton Region now offers numerous concrete activities today, including low-tech training courses.

***Some words for future generations?***

You need to stand back from the noisy generalities that are being thrown at us. They're boring and don't bring any joy. It's important to defuse all radicalisation, be it religious or environmental. I'm convinced that nothing can work if violence is involved. To the young people, I simply want to share this maxim, which I've made mine: "We spend our lifetime looking for the path to happiness, when happiness IS the path." That means marvelling at the here and now, finding purpose in all we do and finding a good reason to get up in the morning. I'm certain there's always one. And remember... we learn when walking.



***Interview conducted July 13, 2023.***

<sup>1</sup> See interview with Emmanuelle Périé-Bardout in this book.

<sup>2</sup> See interview with Simon Bernard in volume I "Time for Action – Towards Another Acceleration", FinX Editions, 2021.

<sup>3</sup> IS blue: Interdisciplinary college specialised in marine science and technology.





# Perseverance as only compass

## *Interview with Jean-Louis Étienne*

**I**n 1986, starting from Resolute Bay in the extreme North of Canada, he became the first man to reach the geographical North Pole solo, with the sun as his only compass, pulling his own sled, for 63 days. Three years later he left for Antarctica, this time with other explorers. This 6,300km long crossing of the White Continent with dog sleds over a period of seven months, went down in history.

Polar Jean-Louis Étienne, as he calls himself sometimes, is without a doubt one of the greatest explorers of all times. This man, who started out as a machinist, and then became a doctor of medicine, has dedicated most of his life to understanding the Ocean and fighting for its preservation.

Jean-Louis Étienne's goal is 2025, when his vertical polar exploration vessel, Polar POD, will be launched. The objective is to measure the rising temperatures of the Austral Ocean, the main carbon sink of the planet.

In a spiritually marked interview, we got a glimpse of the French explorer, a more unknown side, moving and unique but mottled with colour.



## Jean-Louis Étienne

*“Invent your own life! Follow the path of your dreams and your desires, even if that path is difficult. Be the committed explorers of your time and thereby, the actors of tomorrow’s world.”*

***Beyond your identity, beyond your occupations, who are you deep down?***

I try to be myself as much as possible and listen to my desires. What has guided my existence? I’ve always prioritised what I’ve really wanted to do!

***What kind of child were you?***

My first memory of wanting to explore goes back a long way. I was born in the countryside, I loved living outside, nature was my refuge. I was very shy and needed to be alone. At 14, I remember writing a

list of things I needed to go camping in the Pyrenees, alone and in winter! What had got into me, wanting to do such a thing in the dead of winter?

I’ve also always loved building. My first job was as a machinist! Only yesterday, I made a new shelf for my apartment. Tools inspire me. During my years in technical high school, I was a boarder and built a small jet engine! I spent all my time just thinking. My French grades were closer to sea level, in most cases less than 5 out of 20, being always off-subject. But I enjoyed the

train of thought behind the topics we studied. Reading's still very hard for me today because I'm highly dyslexic. Suddenly, when I'm reading, the story brings back memories and I just get outside the book, despite myself.

***You talk about your desires. What space do you give to your dreams?***

I don't remember any of my dreams while asleep. Once on a North Pole expedition, I was followed by a renowned sleep specialist, Professor Jouvét who taught at the University of Lyon. I had to fill out a sleep journal daily, according to weather conditions, temperatures, the difficulties encountered, fears etc. In the questionnaire, there was a column labelled Memory of Dreams where I only wrote zeros! Professor Jouvét used to remark that I was of no interest as a patient! (*laughs*)

Nevertheless, you encourage me to think about the notion of desire and dreams. You know, I've never limited myself to anything. I've always moved forward with my antennae out. I believe that a desire is structural and therefore within my reach. So, I dream about it as a lucid dream.

***Do you believe in God?***

Now that's a subject that could fill up a whole chapter. I had a catholic upbringing, and did all the communions, confirmations. But I haven't practised for a long time. As for the 10 Commandments, they're a sort of civic education. For most human beings, religion is an oasis of medi-

tation, an intimate devotion to a supreme being that we cherish, who guides us and on whom we depend for a better life on Earth and beyond. Yet, God is a hypothesis that theologians grasped to invent religions, each one advocating his own. Religious practices are often the political exploitation of a divinity to whom we give all powers. Can we really believe Allah would be a God capable of dictating slavery to the women of Afghanistan? Believer or not, we'd be wrong to deprive ourselves of the idea of God, of a spiritual caress, of that something that surpasses us, an intelligence beyond the Earth, but obviously disconnected from all religions.

*“We would be wrong to deprive ourselves of the idea of God, of a spiritual caress, something that surpasses us”.*

The mystery of life invites us to meditate. You know, we don't create life. When some mothers hear me say that they declare: “*Well, I've given life to children!*” Yes, in a way, but they were conceived from the union of a sperm and an egg ... which were already living cells. For centuries, from alchemists to modern-day biologists, we've been searching for the origin of life, some recreating the physical conditions of the big bang on the entire mineral constitution of living things. But at the bottom of a test tube...

a living cell has never appeared. We know how to create proteins, the pieces that build up the body, but not life itself. Life is born out of life. What was the initial spark? That's a huge mystery that amazes me and soothes me.

In "The Selfish Gene"<sup>1</sup>, the British professor and academician Richard Dawkins puts forth a theory that the genes we transmit to our descendants, which carry our genetic capital, are the only elements that outlive us.

I like this theory. Reproduction is encouraged beforehand, by something we can't grasp, called orgasm. Sexuality in every living being is an extraordinary organisation! Faced with this mystery of life, we would be wrong to deprive ourselves of the idea of God. What are we? Certainly not the kings of this world; but rather a body in the service of a genetic will, for the transmission of the species.

***Could you quote someone who particularly inspires you?***

The French writer and poet Christian Bobin wrote these words that I find very inspiring: "*There's a star set in heaven for each of us, far enough away so that our mistakes never tarnish it.*" I call this our celestial paradise. A place, within our reach where we can go, guided by our thoughts, by meditation, where we know we can find peace and look for forgiveness. Sometimes, I lie down on the grass and let myself be transported into a limitless space journey; where's the border, where does our universe stop,

do we live in a gigantic sphere, in a cube? What about beyond? The Earth, which is my home, has disappeared from the sky, nothing is left in the celestial mechanics. And each one of us? This exploration of the infinite surpasses us, brings me back to our human dimension, to more humility, to the mystery of our place in the universe.

***Do those same keys appease when you're in remote areas that are particularly inhospitable to human life?***

No. It's more in this world that I need them. When I go into the areas of extreme cold, it's my own personal approach. It's a commitment I've taken care to structure. When I encounter a problem, fear can kick in of course, but I'm hyper focussed on the action. In the North Pole, the thermometer showed -52 degrees in the tent, out of the wind; so, the real temperature, not the one you feel. I knew I was in difficulty, in hypothermia. I questioned my biological situation rather than anything else, notably by doing mental arithmetic. If you don't find 15 when you multiply 3x5, then you really are in difficulty.

***To come back to the notion of appeasement, it's true that we are caught up in our daily lives with our self-centred processes and preoccupations. All this leaves very little space for dreams, for wonder.***

Yes indeed. In fact, it's in this world that I need to find peace. The intensity of the present blinds us and brings about dialo-

gues and reactions that become harsher and harsher, closed, all fed by chronic dissatisfaction. I've always been nourished by environmental questions, but these days, I see how much these subjects have created division, with immediate demands and claims that can never be met. Carbon civilisation has been in place for the last century and a half, and it's not through the dividing element of violence that we'll find a way out. Numerous associations have apocalyptic names, engage in renunciation, and point to the end of the world. Humanity won't disappear just like that. One day, they might be accused of quitting, of guiding the world towards collective suicide. This world is getting paralysed and the lack of tolerance and openness to dialogue worries me. You only need one sentence heard clearly by a very marginal population connected to the Internet, and you've got a nation on fire.

I don't understand people who throw paint at masterpieces. For me, it's just a masquerade. During conferences, when people retort that the young people are right to protest because it's all about their future, I'm thunderstruck. What solutions are they proposing? The environmental questions of a planet with 8 billion humans are extremely complex ones that cannot be reduced to an "on and off" switch. Let's go back to Jean Jaurès's speech to the young people in 1903: *"The courage is to go to the ideal while understanding the real"*. We need to show there's a path to bring everyone together. It's true that we'll be at a climatic

dead end with catastrophic perspectives if we don't take the necessary measures immediately. And they do exist. What the world needs most are educational methods so that each one can immediately be as efficient as possible in his/her influential, personal, professional, political area.

***You say that ordinary everyday life can sometimes make ideas disappear, yet we must be careful not to let them go, because they're precious. At what moment did the idea of building Antarctica for the Far North, then Polar POD, a vertical vessel for the Furious Fifties of the South come to mind?***

Let's start at the beginning. There are 2 oceans that are very difficult to access. First, the Arctic Ocean. The North Pole is situated at the heart of a frozen ocean, covered by a sheet of ice called ice floe, which makes navigation extremely difficult and dangerous.

At the end of the 19<sup>th</sup> century, the Norwegian explorer Fridtjof Nansen understood that there is a Transpolar Drift Stream – the ice drifts from the Bering Strait across the North Pole and south towards Greenland. At that time, all the boats trying to explore the North Pole got crushed by the ice. In 1989, inspired by the Nansen's Fram, built to avoid being crushed by the floe, I had a schooner built called Antarctica; to study the Arctic Ocean, to understand it and to inform about the role it plays on the life and climate on Earth. The construction of the ship was extre-









mely complex. I had to borrow 5 million francs, nobody believed in the idea, least of all the banks and insurance companies. One summer, I was lucky to meet a friend who had become a mechanics professor at the SUPAERO<sup>2</sup>; we worked together all summer on the stress transfer to simulate crushing from the ice floe. That's how I managed to build Antarctica in 1989 and used it during 10 years of expeditions. That schooner showed its resistance to the sheer force of the ice floe experiencing the transpolar drift called Tara<sup>3</sup>.

The Arctic has been particularly affected by climate warming. The average temperature has risen by 4°C in 80 years whereas it had risen by an average of 1.5°C since the beginning of the industrial era 150 years ago. And this cold from the Far North will be lacking for climate balance: we've opened the door of the Earth's fridge.

***What about the Austral Ocean, the other ocean that's less well-known and harder to get to?***

The Austral Ocean surrounds Antarctica, the South Pole continent. We're talking about latitudes between the 50<sup>th</sup> and the 60<sup>th</sup> parallels. It's extremely windy, with the highest waves on Earth. Oceanographic campaigns are rare and take place in summertime. The entire scientific community agrees that we need in situ measurements taken over a long period. The technological progress seen in the Saildrone vehicles, Argo profiling floats,

satellites, and even instrumented animals, just isn't enough. The main question was, which type of vessel would provide the safe and comfortable conditions necessary for a stay on this ocean of storms, with its famous Furious Fifties?

I first imagined a huge buoy, 100m in diameter, big enough to float astride three wave systems which would insure its stability. The cabin was a central tube, guyed on all sides, at the top and the bottom. But the ship design office I worked with, Ship-ST, talked me out of it, saying the guy wires would gradually be torn off. However, we kept the idea of the central tube, and continued our research with the American FLIP, a vertical floating Platform built by the US Navy to listen to submarines in the Pacific Ocean during the Cold War. I moved my family to San Diego in California for two years, where I contacted the Scripps, owner of the FLIP. Built for military purposes, this unique vessel was of great interest to a lot of countries! They trusted me, and from there, I was able to obtain precious information which I passed on step by step to the naval design office Ship-ST in Lorient. That was the genesis of the design of the Polar POD which lasted 10 years. I was very happy during the time of that epic journey. It was so rich in major technological challenges, for the construction of such an innovative object that exists nowhere else!

***The Polar POD has been designed to navigate essentially by drifting with***

***the current. How do you move it away from potential icebergs?***

The Polar POD is 100m high with a draught of 75m and can't enter any port. It will be towed horizontally off the coast of South Africa and will tilt vertically by filling ballast tanks with seawater. It'll be pulled away by the Circumpolar current. Of course, it will be a learning process as it's an unparalleled vessel. If we had to move away from an iceberg, the Polar POD's trajectory can be altered by adjusting the orientation of the rigid sails, installed on bilateral wings.

***What are the main challenges that the Polar POD faces?***

It's obviously a technological challenge because the stability of the vessel needs to be assured on high seas. The trials with the model in the wave basin in IFREMER (French Research Institute for Exploitation of the Sea) in Brest and at Centrale Nantes engineering school revealed that it will be able to withstand its vertical stability due to the 75m draught, as it's mainly taken into deep waters. At the surface, the float is a trellis, composed of 3 steel tubes, and it facilitates the passage of waves to minimise their striking of the Polar POD. In other words, the Polar POD is porous to the swelling, unlike boats which are shaken with every wave. All that is the fruit of years of intelligent minds and calculations. In addition, the vessel needs to be autonomous: the engine being the Antarctic Circumpolar Current, the Polar POD will

drift like a satellite around the Antarctic Ocean, and the energy will be produced by 6 wind turbines installed on the bilateral wings. The Polar POD will be the 1<sup>st</sup> zero-emission oceanographic ship.

***How do you manage the financing of such a project?***

That's another challenge, and not the least. The French government, through the SGPI (the General Secretariat for Investments) is financing the construction of the Polar POD. I'm in charge of financing the expedition itself. It involves the organisation, the communication and the entire maritime logistics, be it for the Polar POD itself, for the supply ship *Persévérance*, or the scientists who'll be coming on board. I've also committed myself to the financing of some scientific instruments. It's a budget of 18 million euros: searching for funds is the biggest investment in terms of time and energy!

***Its launch is scheduled for 2025. What are you most looking forward to?***

The idea for the project began in 2010 and the departure of the Polar POD is scheduled for the end of 2025. We are hoping to go around Antarctica twice, as in two-round-the-world trips, which according to the simulations, should last three years. I can't wait for the precise moment when the Polar POD will tilt to become this "vertical vessel" that we've created. I'll no doubt be very moved.

When the Polar POD heads into the Cir-

cumpolar Current, I'll be 80 years old. My wish would be to do one rotation on each Ocean: the Indian, Pacific and Atlantic ones.

***You wish to realise an inventory of the marine fauna and flora in all seasons during these three years. Who will your studies be intended for?***

With neither a propulsion engine nor a generator, the Polar POD is a silent ship on which we intend to install hydrophones, which are underwater microphones. Since the acoustic signatures of numerous species are already known, we'll be able to make an inventory of the fauna using the sounds. The observations and data collected will be available as open source in the long run, for researchers, oceanographers, climatologists and biologists. 43 scientific institutions from 12 different countries are involved in this project!

***Why is decarbonising energy so urgent?***

The Earth is suffering from chronic fever – that's the doctor in me talking now. Its temperature has risen by 1.2°C, even 1.5°C in some places, and as we've already seen, by 4 degrees in the Arctic. Just compare that to the human body: you'd be passing from 37 to 38.5°C, so at the start of complications. This is where the Earth stands today. The problem is that the climatic machine has a colossal inertia. We are a carbon civilisation with 8 billion people. 85% of the energy we use comes from

fossil fuels (coal, gas and oil) and unfortunately, there are no immediate alternatives to stopping greenhouse gas emissions. Just some figures from last year, Mankind sent 40 billion tons of CO<sub>2</sub> into the sky. 45% is accumulated in the atmosphere, reinforcing the greenhouse effect and so, warming. 25% are absorbed by nature, by the green, chlorophyll pigment. All that's green recaptures the carbon dioxide in the air with the help of the sun, and that's what we call photosynthesis. 30% of the CO<sub>2</sub> is absorbed by the Ocean by the photosynthesis of the phytoplankton (origin of life in the Ocean) and by dissolution. The CO<sub>2</sub> dissolves better in cold water, which means that the Austral Ocean is the main oceanic carbon sink on Earth. This is the performance we are going to measure all year round with Polar POD. Let's not forget that on top of its capacities to regulate climate, the Ocean absorbs 93% of excess heat. And the expansion of surface waters, added to melting glaciers and the polar ice caps, generate the rise of the world's sea levels by an average 3.2 millimeters per year.

***What's the political situation in Antarctica? What about the marine protected areas?***

Up to now, there's only been the Ross Sea<sup>†</sup>, a deep bay of the Southern Ocean in Antarctica, which was declared a "marine protected area" on October 27<sup>th</sup> 2016 by the Convention on the Conservation of Antarctica Marine Living Resources



(CCAMLR). It's now one of the largest marine sanctuaries in the world, which means all human exploitation is forbidden there and notably fishing. We owe that to Barack Obama and his then Secretary of State John Kerry, who fiercely defended this wild area as one of the purest on the planet. Two other projects on marine protected areas around Antarctica have been under discussion for the last 10 years and have been backed by a lot of countries including France, the EU, Australia. But for these proposals to be accepted, the resolution has to be accepted unanimously by all the member countries of the Antarctic Treaty. Two countries are opposed, Russia and China. Yet, these subjects have been under negotiation for a long time. Obviously, we're talking here of diplomacy, and each subject is a card that has to be played.

Another important subject concerns the exploitation of potential resources in Antarctica, which are on stand-by for the moment. Former Prime Minister of France Michel Rocard was one of the driving forces, alongside Robert Hawke, the then Australian Prime Minister, of the non-ratification of the exploitation of resources in Antarctica, which means there's a moratorium until 2048. During a lecture by Michel Rocard to which he'd invited me, I asked him: "*Why, in a gesture of generosity, didn't you lift France's territorial claims to Adélie Land in Antarctica, which has zero value?*" Only 7 countries claim a piece of the pie chart that is Antarctica – claims that no

UN treaty has recognised! Michel Rocard answered, "*In diplomacy, you always need to keep a trump card close to hand.*" I understood then that when something is refused during a discussion between nations, it will become a force that may be exchanged later on. Opposition to setting up a marine protected area in Antarctica makes absolutely no sense; everyone knows perfectly well that fishing has to be protected in that area. Marine protected areas have to be created, and become nurseries where animals can go to reproduce, in peace. The refusal to accept that is quite simply a political argument.

***The supply ship of the Polar POD, the Persévérance, was built especially for this expedition. This mythical yacht that's going to accompany one the greatest and audacious Ocean explorations of modern times, is very wisely named.***

Very true indeed. The word "perseverance" has emerged gradually throughout my life. When a publisher asked me to write a book on my expeditions to the North Pole and the South Pole, it's the word "persevere" that emerged.<sup>5</sup> Perseverance is an important driving force, but a fragile one. It has to be constantly nourished. The temptation to abandon pops up when facing difficulty. How often I wanted to abandon everything when I was in the North Pole! I had to find a reason to keep going! You know, I even caught myself dreaming that I'd break a leg; come

back on a stretcher, like a hero. But I've always resisted the temptation to give up.

***What do you tell the young people you meet in the schools where you go to speak?***

I speak a lot about desire. When you've got a desire, a real, profound desire, it's precious. I tell them to cultivate that desire. And that means dedicating time, work, perseverance to it. Yes, you will be tempted to give up. Yes, some will tell you there's no point in going on. But that's forgetting that our strength is ourselves. That's what you have to cherish and grow to bear fruit.

***Which words would you leave to future generations?***

My parents always gave me the freedom to invent my life. That's the most precious thing there is.

Invent your life! Follow the path of your dreams and your desires, even if it's difficult. Be the committed explorers of your time so you can be the actors of tomorrow's world.



*Interview conducted August 31, 2023.*

<sup>1</sup> “*The Selfish Gene*”, by Richard Dawkins, Odile Jacob, 2003 (first published in 1976).

<sup>2</sup> ISAE-SUPAERO is the National Higher French Institute of Aeronautics and Space.

<sup>3</sup> Interview with Romain Troublé, General Director of the Tara Ocean Foundation, found in Tome I “*Time for Action – Towards Another Acceleration*”, FinX Editions, 2021.

<sup>4</sup> *The Ross Sea is a deep Bay of the Southern Ocean in Antarctica, between Victoria Land in the West and Mary Byrd Land on the East.*

<sup>5</sup> “*Perseverance*”, by Jean-Louis Étienne, 2016, Points.

















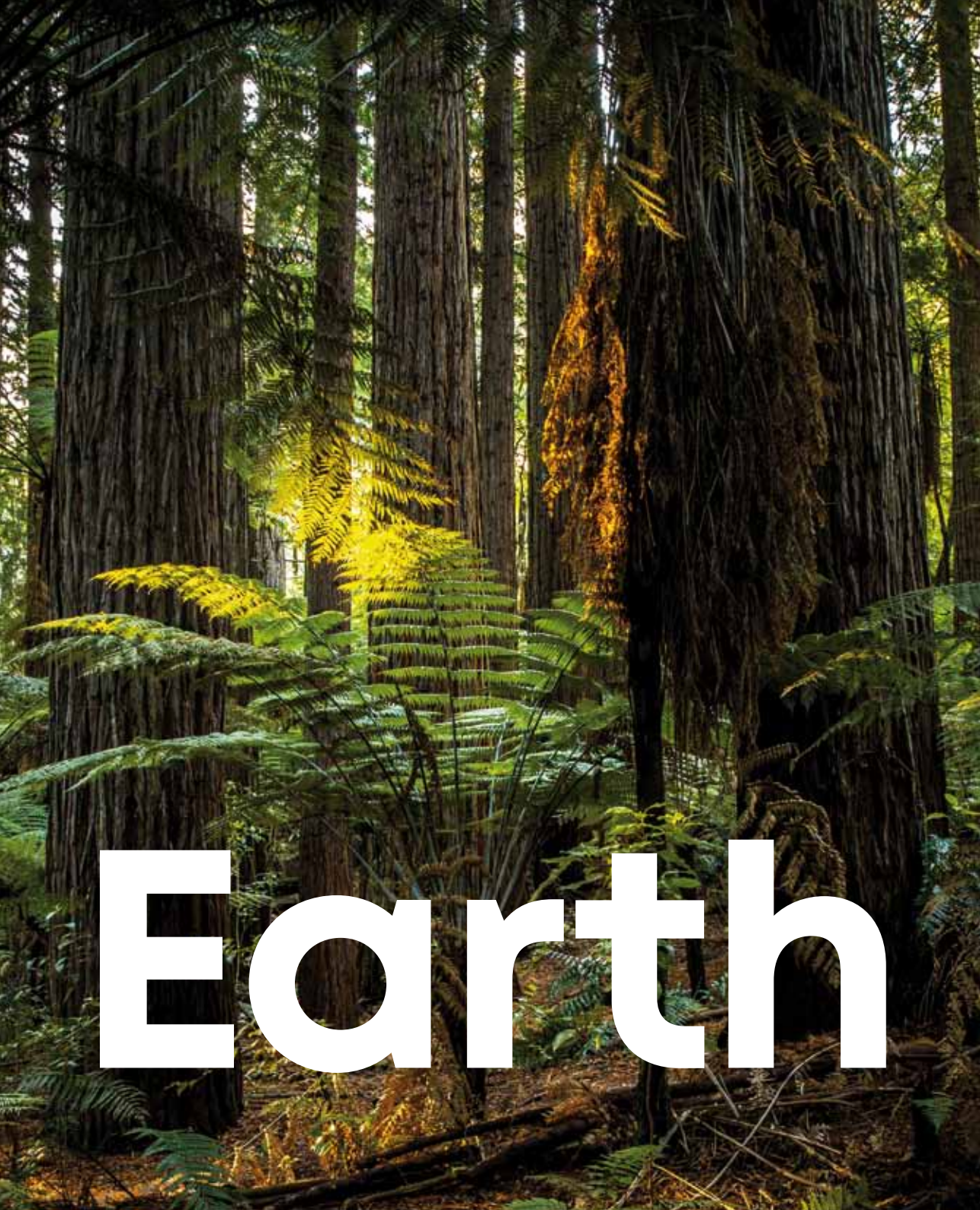












# Earth



*Humble they are,  
Nourished with Earth's humus,  
Men and women of science,*

*Lovers of biodiversity;  
How well they know  
Humanity stems from this living tissue.*





# A peace builder invested in the battle of the century

## *Interview with Jean Jouzel*

Jean Jouzel is an internationally renowned French climatologist, known for his research on climate change as well as being President of the French Society of Meteorology and Climate. In 1994, he was appointed to the IPCC and from 2002 – 2015 he was vice-chair of the working group centered on the physical bases of climate change. As director of research Emeritus at the CEA (The French Alternative Energies and Atomic Energy Commission), Jean Jouzel mostly worked on reconstitution of past climates, based on studies of the ice in Antarctica and Greenland.

He has received several awards: the CNRS Gold Medal (France's highest scientific distinction), the Vetlesen Prize (considered to be the Nobel Prize for Earth and Universe sciences); he was a board member of the IPCC when it was awarded the Nobel Peace Prize in 2007. He has been politically involved since leaving the scientific field, continually calling upon the decision-makers and wishing political bodies would fully play their part concerning the scientific truths that bother.



## Jean Jouzel

*“The 6<sup>th</sup> report of the Intergovernmental Panel on Climate Change (IPCC) contains certainties. We know what we have to do, but we’re not delivering.”*

***The first ever Climate Convention in 1992 already put forward guidelines on how to stabilise the greenhouse effect – in other words, the climate. A lot of research in the years 2000 showed that 2°C was a threshold not to be exceeded. You often talk about average global warming. Why?***

On continents, in France and Western Europe for instance, global warming is higher than the average global warming, simply because global warming is lower over the Oceans. The higher the average global warming, the more we have frequent and intense extremes: heat waves, droughts, torrential rains, floods etc. You then have migratory movements, food insecurity etc. On a global average, the planet has

warmed up by just over 1°C since I was a child. With just this degree and a bit, the climate has changed a lot in 50 years. In France, that corresponds to 1.7°C.

***On February 16, 2022, you submitted a report to the Ministry of Higher Education and Research entitled “Raising awareness and providing training in Higher Education on the issues of Ecological Transition and Sustainable Development”. A way of preaching to the executive power. What were you asking them to do?***

We did indeed make a recommendation backed up by figures to Frédérique Vidal, the minister at the time and it was continued by her successor, Sylvie Retailleau.

We proposed modules on ecological transition, for all establishments, public and private alike, and in all fields of study (journalism etc). We are starting to see Master graduates in scientific journalism, so it's going in the right direction! Teaching in the workplace, like you do at BaseX, needs to follow the same route.

On October 20<sup>th</sup> 2022, the day of the feedback and launch of this initiative in Bordeaux, the Minister, in line with our wishes, also proposed setting up workshops, and that's underway. One of them is dedicated to educational content and the framework of knowledge and expertise, another to the creation of a platform containing all the means of access to this transition, and the 3<sup>rd</sup> is for the commitment of students. I really hope we'll see some results at the start of the 2023 school year. Each student, at the end of his/her school career should be able to talk about all these subjects properly. It's one of the missions of higher education: raising awareness and providing training are written in the law.

***How do you make this subject more attractive?***

A certain amount of austerity will be the indispensable condition to having a better future, which will be necessarily more attractive. We really have to insist on that. The in-between phase is not so inviting. The deciders just need to refer to the proposals of citizens from the Citizens' Convention on Climate (2019-2020) to re-

kindle discussions. These texts are in line with the scientists' diagnoses. The problem is the gap between the objectives set out using the conclusions of the IPCC... and the realities? The propositions of the 150 citizens are relevant and ambitious, but they've been taken too lightly due to our deciders' lack of courage. Only 20% of the measures have been taken seriously. Gas emissions have hardly decreased between 2021 and 2022.

*“As the 1.5°C target will be next to impossible, I'm just wishing we'll be able to reach a limit on this side of 2°C.”*

***Which measures could be particularly relevant?***

In my opinion, some measures are very difficult to implement in real life, despite their common sense, such as the 110kph limit on the motorway. I've been hearing that nobody would accept such a measure, yet it's an example of austerity that holds many advantages. It's also very clear that the rise of gas emissions linked to mobility in France is largely due to the increasing use of SUVs. One citizen's proposition was to put a surtax on vehicles over 1.2 tons, but nothing came of it - the threshold is fixed at 1.8 tons. If the measure had gone through, 25% of heavy vehicles would have been taxed. Yet today, it's

only the case for 2%. I fear France won't reach its Paris Agreement objectives, even though the electrification of the car fleet is on the rise, which is a good sign. 20 years ago, the scientific community was forecasting a possible rise in temperatures of 4 to 5°C. Today, we're talking about 3°C by the end of the century, let's just say it's "not as bad".

***What's your take on the way the government considers the scientific community in France?***

The main role of scientists is to bring scientific elements into the debate, but they need to be heeded. It's clear to me that our elites have inadequate knowledge of the subject: they don't know what they are talking about when they talk about global warming or loss of biodiversity.

The ecological transition isn't only synonymous with climate related subjects; it's also about biodiversity and the way our societies function (employment, economic development, social, societal and cultural aspects etc). We're lucky to have a High Council for the Climate – implemented by the Macron government in 2018 – and the Citizens' Convention. The foundations are solid and structured, the ambitions are clearly stated in the texts. But the HCC is very critical of the government's policy: we know what we have to do, but we're not delivering.

***How can we help young people adapt more easily during the second***

***half of this century?***

Carbon neutrality must be achieved by 2050. Today, more than a hundred countries have signed up, in writing, to this objective. It's also on the agenda of the US and China, but for 2060.

From a scientific point of view, we could almost be satisfied that the job's been done! But it's not enough. The first report from the IPCC was released in 1990. All these reports are evidence. Then, the political decision-makers gather at the COPs. This structure has often been criticized for its inefficiency but without those organisations, climate scepticism would be much deeper and points of view more conflictual.

Of course, it's possible not to have faith in the scientific community. But this 6<sup>th</sup> report of the IPCC is very clear. It contains certainties.

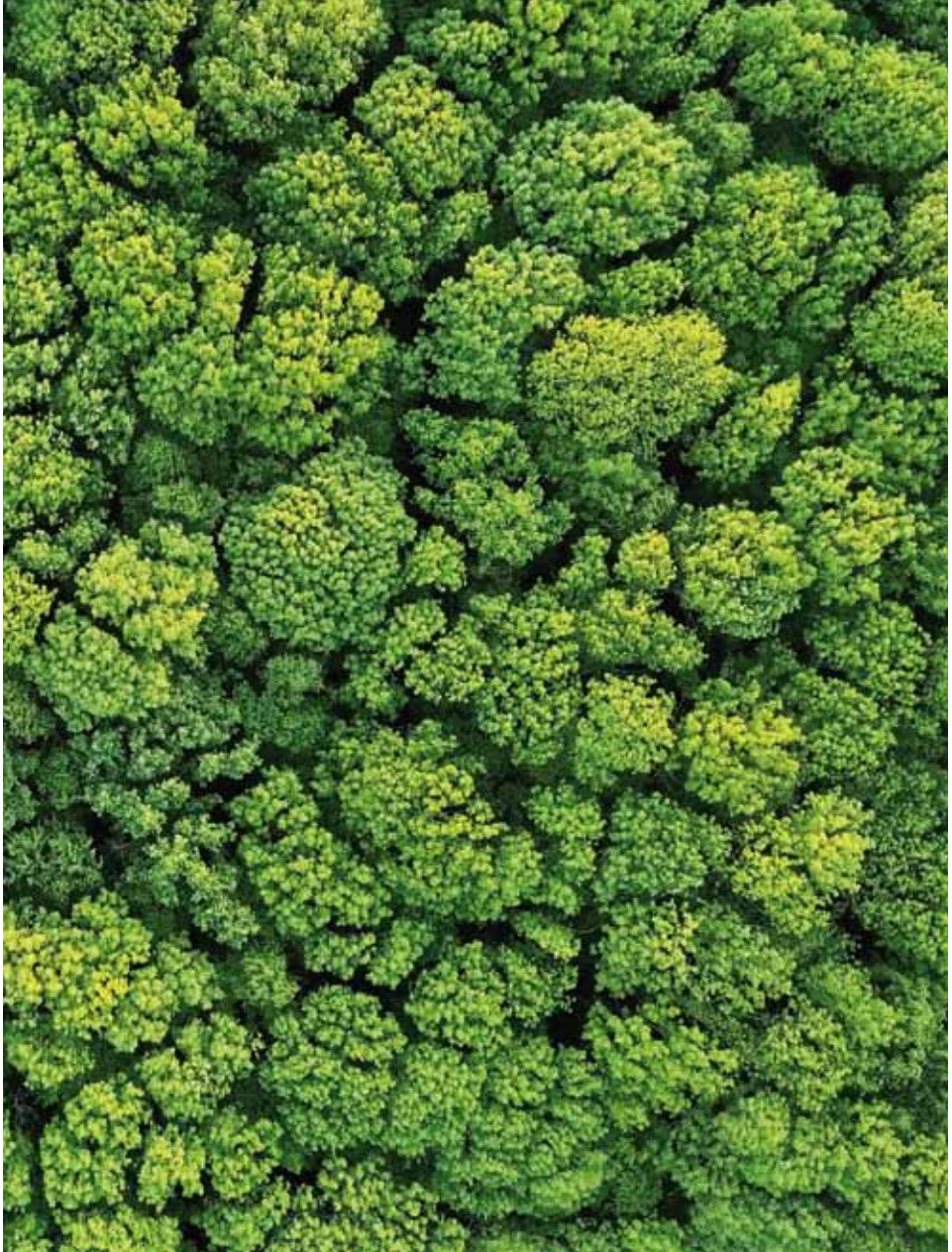
***Which words would you leave to future generations?***

As the 1.5°C target will be next to impossible, I'm just wishing we'll be able to reach a limit on the lower side of 2°C.



*Interview conducted January 11, 2023.*









# The human being, an animal species set apart

*Interview with Gilles Boeuf*

**H**is discourse is engaged, feminist... and rousing. A specialist in evolution, an endocrinologist, biologist and professor of Biology at the Sorbonne University, he was president of the great hall in the French National Museum of Natural History from 2009 to 2015. Gilles Boeuf is an inspiring animal. His wise statements, tinged with a careful balance, depict here an ode to women, as well as to the planet.

Indeed, some would say that if the Earth harbored more human beings like him... things would surely be quite different.



## Gilles Boeuf

*“Women should by essence be adulated. They’re the ones who transmit!”*

### AN ODE TO WOMEN

***Why does the human species show so little dignity to the other animals?***

The human species has three main faults. Firstly, its lack of foresight. If it possessed a genuine culture of impact, it would anticipate the long-term consequences of each of its actions. The second fault of the human species is arrogance, which is mainly masculine. Its third fault is greed. But these three faults can be rejected and fought against.

Homo sapiens has a conscience that allows him, among other things, to work and give himself titles. In 1735, the Swedish naturalist Carl von Linné, in his work *Systema Naturae*, classified the modern human species within the *Homo sapiens* one. The generic term “*Homo sapiens*” is a Latin name meaning “a man who knows”. Just think about that! It implies taking responsibilities! However, human beings don’t assume their responsibilities... I’m sometimes ashamed of being a male *Homo sapiens*.

***What is it that gives you that feeling of shame?***

I'm horrified by the behavior towards women on this planet. Try and find me a time in history when they haven't been mistreated.

The monotheistic religions have had dreadful impacts. Women have been exploited, beaten, just by the domination of one sex using the vilest arguments. Women should by essence be adulated. They're the ones who transmit! Take the subject of menstrual periods, for example. Who talks about young girls getting their periods? Nobody cares! Do parents explain to their sons what periods are? It's basic everyday life! Between the ages of 10 and 12, girls all get their periods and nobody cares. I find that extremely shocking. How could I possibly be proud of being a male Homo sapiens in those conditions?

I encourage my young female students not to take their husband's name when they marry, but to keep their maiden name!

Edgar Morin rightly said *"Each time humans resort to barbarity, who suffers first? - Women"*. Today, 75% of the humans living below the poverty line are women. Among the people who die in climatic catastrophes, 75% are women.

And, needless to remind you, human beings are doing a lot of harm to the planet. In our occidental territories, there's not one square meter that hasn't been modified by human activity – totally virgin areas no longer exist.

The Bismarck Sea, off the Papua-New

Guinea coastline, Is full of tyres and plastic bottles, even at a depth of 200 meters...

I observed an equally deplorable situation in the Mariana Trench which is the deepest oceanic trench of the terrestrial crust recorded up to now, with a depth of 11 kilometers. The shrimps living there actually contain pesticides!

It's the same in the Arctic Pole. While we were conducting studies on the melting of glaciers in the Svalbard, I remember studying a goose full of DDT, a product that's been forbidden for 50 years!

You and me, we're full of plastic. Humans even contaminate areas where they don't live. That's another reason why I'm ashamed of being a Homo sapiens.

***You teach in third-level engineering and medical institutions. Certain programs attract a majority of women, especially in the health sector. Why is that?***

Yes indeed... Three-quarters of the young women in my classes are following a medical program. Up to 90% make up the students in veterinary college, 75% in the French National College of Magistracy, 70% in the colleges of Agronomy. If women have easier access to those professions today, it's because - apart from their natural interest for "care" and their enormous capacities for intellectual activities and hard work - men have been leaving these careers for some time now... These professions are no longer as honorable as before. It's a terrible thing to say, but that's



my view. On the other hand, women only make up 18% of the students in engineering schools. The same percentage applies to airline pilots.

***You are part of the initiative “Men for women in science”, financed by the L’Oréal Foundation which has brought together 60 researchers heading the world’s top scientific institutions. A charter of commitment was submitted supporting gender diversity in science with equal opportunities for women and men.***

Indeed! And may I add that each year, the international Prize for Women in Science (the L’Oréal-UNESCO Foundation) is awarded to outstanding women scientists for their exceptional work. The world has been depriving itself of women’s intelligence and sensitivity, a dramatic situation. I’m going to give an opinion not easily founded on scientific evidence. I’m convinced that if women had had more access to the business world, we wouldn’t be where we are today. Half of the elephants and giraffes in the world have been killed over the last 40 years, and it’s not women who are responsible for that. 90% of prisoners in French prisons are young males, whilst harassment continues everywhere. When is all that going to change?

***Has the Covid lockdown proved that habits can’t be changed that quickly?***

Several women confided to me at the end

of the confinement period that in the event of another lockdown, they wouldn’t be confined again with their partners. In the case of couples where each one owned a business, it was inevitably the woman’s business that went bankrupt... because she was the one who always had the children on her lap. Even if times are changing, it’s still very often the woman who picks up the children from school or who prepares the evening meal.

However, I am the first to criticize myself. At the age of 30, I was absent at least 3 months per year. If my wife hadn’t been there, who could have brought up my two daughters? I’m quite aware that I’ve been much closer to my 3 grand-daughters than to my 2 daughters. Out of all the families I know, there are only two cases where the woman worked while the man stayed at home. I travelled extensively all over the world. At that time, we didn’t think about the carbon footprint. Airplanes weren’t invented for going to the Canaries every weekend; I take that on board too.

## ODE TO THE PLANET

***You’ve been president of CEEBIOS (French Center of studies and expertise in biomimicry), a professor at the Pierre and Marie Curie University, at the Sorbonne University, a member of the scientific council of the French Office for Biodiversity and for two years***

***a scientific advisor in the cabinet of Ségolène Royal, then Minister of state for the Environment, Energy and the Sea. Within which structure is it easiest to arouse awareness and change positions? And what can be done to make things move forward?***

It all depends on the position! Nowadays, I'm working a lot more with companies – L'Oréal, Saint-Gobain, Icade, Hermès, ENGIE, etc. It's true that these companies have money, but they are changing. To move forward, you need the freedom which can only be acquired if you depend neither on a system nor a person. You have to be the pilot. That's the path I've traced out for my life.

***What union of forces are required to change the world?***

An indispensable quartet is needed. You need science, politics, NGOs with citizens and companies of course. But above all, you need science, because it's not an opinion. We're weighed down by opinions, notably in the media.

***As a Regional councilor in New Aquitaine France, you're responsible for the movement One Health. What does that entail?***

One Health proposes a global approach to public health - vegetal, animal and environmental - on local, national and planetary scales.

I establish the links between medical, veterinary and ecological research, with

a particular attention dedicated to the large scale pathologies that are emerging and which are beginning to cause serious health issues, like Covid.

One Health came to life at the beginning of the 2000s with an initiative backed by the World Health Organization (WHO), the World Organization for Animal Health (OIE) and the United Nations.

At One Health, it's clear to see that all types of health are linked (that of animals, plants and the environment). Polluting human activities are contaminating the environment and are causing new health issues to emerge. Animal diseases are hitting the breeding activities, whilst these same animal diseases are becoming a source of infectious diseases in humans. It's vital that One Health becomes a political project with participative processes. At its level, the Region needs to organize a transformation of the political project into well-being for the citizens.

***With which partners do you work within the scientific community?***

Valérie Masson-Delmotte and Jean Jouzel are very good friends of mine! Valérie is a woman who's engaged and plays a political role as an elected member of a small town. An engineer by profession, she's been trampled on quite a lot. It's taken a long time for women to finally be listened to! It's also taken a long time for scientists to be finally listened to! Climate-sceptics have done so much lobbying, they've clamped down and slowed down the education



and awareness process. The reason why it took Jean Jouzel so long to be elected to the Academy of Science (in the science of the Universe section), is because the climate-sceptics had barred his entry for such a long time.

***Who are your masters of thought?***

In Social Sciences, Edgar Morin and Boris Cyrulnik. Among those who are no longer alive, I'd definitely choose Robert Barbault in Ecology – he was a specialist in biology of the populations. In Economics, I'd say Jacques Weber - he was an anthropologist and renowned economist, a specialist in biodiversity and management of natural resources. All these people have contributed enormously to my way of thinking.

***Do the educational system and scientific research in France suffer from a lack of interdisciplinary teaching?***

We work too much in silos. On one side we talk about the climate and on the other side, the living... whereas these are two eminently cross-cutting subjects!

***“Geography is fundamental: reading a landscape is ecology at its purest!”***

For instance, Marc-André Sélosse, the renowned biologist specialized in botany and mycology who's like a brother to me,

works on the earths. Personally, I specialize in the marine world... but that doesn't stop us from working together. The issues we address are intrinsically linked one to the other. Nature, in its globality, forms a one and same whole.

Geography has been “cut in two” – human geography and physical geography. The latter is in fact quaternary geology. The best quaternary geologists are geographers. Geography is fundamental: reading a landscape is ecology at its purest!

***What positive will we take from the Anthropocene?***

Well first of all, the Anthropocene isn't finished. But I do fear it'll finish badly. We're not that far off from a third world war with nuclear arms. There are madmen governing us who possess means of massive destruction. For the moment, the term Anthropocene has been rejected by the French higher-education college in geology (ENSG)<sup>2</sup>. And above all... one big question, when is the beginning of the Anthropocene?

***With the industrial era?***

No, we other scientists date the beginning of the Anthropocene from the bombing of Hiroshima. The term was invented in 2000 by the Dutch meteorologist and atmospheric chemist Paul Josef Crutzen, co-laureate of the Nobel Prize in chemistry in 1995. According to him, it was the industrial revolution – with the invention of the steam engine in 1784 - that marked

the beginning of the Anthropocene, where Man's influence on the terrestrial ecosystem became predominant.

However today, the scientific community rather tends to place the beginning of the Anthropocene from the moment when humans used massive means of destruction.

We mustn't forget that the Anthropocene is also the multiplication of human beings. The population of the planet in 1940 was 2 billion. We've just exceeded 8 billion in 2023. The number of human beings has been multiplied by 4 in 70 years. And of course, the Anthropocene is also the wasted resources. We're exceeding the renewal levels of the living.... everywhere.

### ***What's your view on collapsology?***

I am fiercely against "specialists" in collapsology and catastrophes. Humor is one of my favorite arguments. I'm not at all a fatalist and yet, I teach my students things that are very unpleasant for them to hear – but always with a smile! It's extremely complex... because we need to talk to them about their future. When you look at the forecasts about what the world will be like in 2040, you really don't want to be there. I've worked for a long time on evolution. Since the Earth started to turn and the living exists, no species has been able to adapt without change. And us? We still haven't changed!

### ***You're not in favor of veganism.***

***Why?***

I'm an endocrinologist<sup>1</sup>. The human being

needs animal proteins. To remain in good health, vegans must supplement their daily diet with vitamin B12 – a medicinal product. Which goes to prove that humans are basically omnivorous. Caution, I'm not at all in favor of an uncontrolled and excessive consumption of meat! Besides, the cessation of livestock farming would generate change in the landscapes. A field with animals is infinitely richer in organic matter than any other zone of intensive production of vegetables, or vines.

I keep 100 cows in a wooded area in the Pyrenees (the Massane forest). If I got rid of those 100 cows, I'd lose more than 60 species of beetles. It's a balance that should be nurtured and preserved, but obviously without chemicals like those used for deworming for example.

As for vegetarianism, it's an incoherent choice in my view. This diet allows you to eat eggs and milk although these foods are linked to animal reproduction. These new dietary habits induce new stakes. We're deeply modifying the ecosystems. Endocrine disrupters are a very serious problem, and we would need to put more thought into the use of various chemical products that finish up in the environment. I recently studied a fish which had a testicle and an ovary!

***Confucius once said, "We cannot adapt if we don't admit there are limits."***

Exactly... The problem today is that there is often no limit. Take transhumanists

for instance, they regard me as an enemy. There's absolutely no limit. And we really must fight against that. It's only by knowing one's limits that one can adapt. If I take the example of agriculture - we have to produce more and better, but without the use of artificial fertilizers and without increasing the agricultural surface areas. We must therefore produce a bigger quantity but on the same area. It's one of the biggest challenges of the century. The magic formula to do that is biomimicry, bio-inspiration, and mixed farming with shallow ploughing.

***What words would you leave to future generations?***

"I hope I'm mistaken, and the later you can read me, the better". I'm an incorrigible optimist. Even if the situation has become serious, I often say that it's too late for being pessimistic. I can't tell the young people that the situation is hopeless.

I don't have the right and I don't believe it. You know, human beings are very strange animals. They don't run fast, they don't jump high, they don't throw far, but they have proved that they have incredible willpower, determination. They can overcome giant challenges. The human being possesses sheer genius and is capable of accomplishing wonderful things.



*Interview conducted January 30, 2023.*

<sup>1</sup> A discipline in medicine which studies hormones.

<sup>2</sup> ENCG – a prestigious French higher-education college in geoscience.











# The echo of Jane Goodall's voice in France

## *Interview with Galitt Kenan*

Galitt Kenan is director of the Jane Goodall Institute of France, a global organization engaged in the protection of wildlife and the environment. Following the path of its founder, the British internationally recognized ethnologist, anthropologist and primatologist Jane Goodall, Galitt Kenan is staunchly involved in the protection of biodiversity, banking on education as a means to accelerate change.



## Galitt Kenan

*“Action provokes a result. The result inspires joy... and joy is an invitation to celebrate!”*

***What guides and inspires you, in your career and in your personal life?***

Curiosity and above all the Other, with a capital O. I first worked as a jurist before switching to strategic and financial consulting. That was when I understood that we can't be impervious to our environment. At that time, I was working in an organization that promoted the “always more”, where I realized it was just no longer me. I wanted to work for a better world. In

2003, I moved on to the world of NGOs, heading the Foundation Men of Word. I managed an extraordinary project where 100 rabbis and 100 imams were able to interact and initiate concrete projects. That interreligious dialogue, reaching out to others, completely changed my life.

I met up with Yann Arthus-Bertrand's team who at that time were starting work on the documentary “6 milliards d'Autres”<sup>1</sup>. That's how I joined the team GoodPlanet<sup>2</sup>

to take part in a project which promised to be gigantic! 5,000 interviews, 75 countries and 5 years of work... We traveled the world, asking the same 40 questions to men and women, to try and find out what united them and what divided them. That all became a book and a documentary film. It was when I decided to leave Goodplanet that Jane asked me to run the Jane Goodall Institute of France. In hindsight, it's as if the different jobs I'd done had followed a specific intellectual route! Today, I see Jane only four times a year on average but we're in regular contact. True to herself, she's always traveling, on the road, meeting others.

***How does the Jane Goodall Institute function?***

We take action in favor of people, the other animals and nature. The Institute relies solely on donations. We work with a network of young people (pupils, students...). Numerous schools contact us because they want to work with us. The American network is the most influential even if I'd say we do have a very strong impact in France. We organize campaigns to raise awareness about wild animal trafficking, the fight against programmed obsolescence or the importance of recycling mobile phones. We reach over a million people each year with our campaigns! We also work with corporate Foundations. For instance, we have a partnership with the Foundation Maisons du Monde to restore 500 hectares of coastal forests in Tan-

zania, which means planting 1.2 million trees. This involves creating awareness in the concerned villages, asking local authorities for their help, and providing training.

***What does your flagship educational program for the youth Roots & Shoots<sup>3</sup> consist of?***

It asks the following questions: What's been put in place around me for people, the other animals and nature? That allows young people to map out what's around them and to find what's missing, whether it concerns homeless people, isolated elderly people, refugees etc. A second question then comes to mind: Are we doing enough to help? If the answer is no, then it's time to take action. Yann Arthus-Bertrand hammers home a message which I totally adhere to – "Taking action brings happiness". Action provokes a result. The result inspires joy... and joy is an invitation to celebrate! So... let's take action locally! Over a million young people are involved, made aware of the 3 steps we promote – this holistic approach has always been at the heart of Jane's work.

***What is the Institute's greatest current challenge?***

Like each year, our challenge 2023 is to incite and help to take action, with hope and practicality.... And to continue the untiring work on the ground, which we started 46 years ago, with determination and impact.

With Roots & Shoots, we're launching the

first edition of a public-speaking competition on the subject of peace. The final will be held in May at the exhibition Change-Now in Paris. To reward the 3 finalists, we're going to propose one meeting with Jane Goodall, one with Matthieu Ricard and another one with Yann Arthus-Bertrand – the sort of inspirational encounters that can bring about a change in direction. The winner of the 1st prize will have the opportunity of writing an opinion column on peace, whilst the 3 finalists will be invited to the Institute Open Diplomacy<sup>4</sup> to give voice to their values of peace and the messages they wish to transmit to world leaders. Peace isn't only an abstract and remote philosophical principle, but rather the manner of being in one's daily life, of taking action, of speaking. The World Day of Peace is celebrated on September 21st at the initiative of the United Nations. In fact, Dr Jane Goodall is a messenger of peace for the UN!

***And for you, who's your messenger of peace?***

My mother. She takes care of everyone including those who are deprived – she's a role model.

***What symbolic measure would you put into place if you were the Minister for transition?***

I'd make sure that all governmental actions would have to take the SDG<sup>5</sup> into account to measure and justify the impact. This data should figure systematically on

all tender processes, invoices, actions. In the case of non-respect of the SDG, there should be an explanation as to why the decision to ignore them has been made. This intellectual effort would engage an awareness, a training and systemization process. We can't avoid that any longer.

***“Peace isn't just an abstract and remote philosophical principle, but rather the way we live, act and talk in our daily lives.”***

***What makes you happy?***

I love reading. You get wealthy by reading books! Otherwise of course, it's the long-term impact we're having in the field in Africa that makes me happy. It's wonderful to work with scientists who move forward efficiently and in harmony. Our communication could be better, but the work that's been done on the ground speaks louder than words! The Jane Goodall Institute community is extremely active. Jane likes to say that the French team of volunteers are “a bit mad, very efficient and really funny!”

***Which people inspire you?***

Paloma Moritz and Salomé Saqué are young journalists that I find very appropriate. Their questions make us challenge ourselves. I'm also thinking of Cyril Dion,

a longstanding friend for 25 years so full of generosity. Jane Goodall appeared in his documentary film *Animal*<sup>6</sup>, which went on to support the Jane Goodall Institute of France! And of course, there's Yann Arthus-Bertrand. It takes a lot of courage to carry that cause like a torch.

***What words would you leave to future generations?***

Ah! If the box was opened it would already be a good sign. I'd write that everything is possible and it's in your hands! Take action right now.



***Interview conducted February 13, 2023.***

<sup>1</sup> "6 billion Others, A project by Yann Arthus-Bertrand and the association GoodPlanet".

<sup>2</sup> Foundation created by Yann Arthus-Bertrand, French photographer, reporter, film director and environmental activist.

<sup>3</sup> *Roots & Shoots* is an environmental education program for young people, created in 1991. Today, 700,000 young people take part in the project, in 62 countries.

<sup>4</sup> *The Institute of Open Diplomacy*, a 1901 association recognized for the public good, is a think-tank dedicated to the study of lasting peace for future generations.

<sup>5</sup> SDG - Sustainable Development Goals. There are 17 goals put together by the member states of the UN for the agenda 2030 - a universal program for sustainable development.

<sup>6</sup> A documentary film made by Cyril Dion, French film director and environmental activist, in 2021.





# Reinventing agriculture: farms of a new generation

*Interview with Perrine Bulgheroni*

She created the famous Bec Hellouin organic farm (Normandy, France) 20 years ago. Perrine Bulgheroni gives us an unfiltered picture of the agricultural situation in France today. Hovering between her success, scepticism, and her dreams, we talk to one of those people who has changed the agricultural landscape in France.



## Perrine Bulgheroni

*“Nature is intelligent because it doesn’t create waste, it recycles everything. Everything that comes from Earth goes back to Earth.”*

***Where would you place your cursor on your hope gauge?***

Good question! The urgency is not today or tomorrow... it was yesterday. Paris has only three days of food in stock. I’m aware that the situation is catastrophic; that the problem of territorial food sovereignty is significant; that we are on the brink of different crises; and that we have to perpetuate the farming profession. You know, it’s not easy to start in the farming business; it’s not easy to keep it going either.

But we have to get out of the nihilism and the “what’s the point” way of thinking. Some people are moving forward! We can see a surge in awareness. More and more young urban farmers who wish to make the world a better place are starting their own adventures.

***What will the project you’re nurturing look like?***

I’d love to settle down on a large farm with ten or so different producers. Today,

a farm averages 120 hectares. I dream of a new type of farm in Normandy of about 80–120 hectares, with woodland and a stream running through, and with enough accommodation to house the producers. I hope to find such a place, but it shouldn't be too remote either. The idea is that this pilot project would be studied by scientists, then expanded and perpetuated. The essence of this model is to make it widely available. The aim is to produce food intensively whilst at the same time diminishing the environmental impact.

***How do you choose such a place?***

Wherever you are, even in the North, you need to first think about water; in second place, water; thirdly, water; in 4<sup>th</sup> place water, and then in 5<sup>th</sup> place, maybe energy. Between droughts and floods, the predictions for 2040 are clear. A lot of the western coasts of France will be underwater, making these lands unsuitable for farming... It'll be the same for riverbanks, like the Seine for instance, because of water movements. These are things we have to be aware of.

Also, this isn't a new type of agriculture; it's based on getting back to coherency. Innovations can also bloom in the low-tech areas (working methods, agronomic symbiosis of crops, reuse of waste by transforming it into resources). Nature is intelligent because it doesn't create waste, it recycles everything. Everything that comes from Earth goes back to Earth. That doesn't sound so bad, does it? It's

undoubtedly more complex because it requires more work and thought than ordering something online... but it's so much more satisfying! I believe this technique could regenerate the generations and motivate people with no agricultural background to join the force.

***What advice would you give to people who are starting out?***

In my opinion, it'd be crazy to start out alone. It is a vocation that involves having commitment and dedication, loving one's job. It's so demanding, physically, and intellectually, and it's time-consuming. Many are called but few are chosen.

Frankly, I don't see how we can succeed in perpetuating the farming profession, and produce enough food for the French population, if we don't train farmers properly. 48% of the active agricultural population will have retired by 2030. This means that in 7 years, agriculture will have lost practically half of its working force. And there aren't enough people replacing them each year to counter these losses.

Farmers are dying from solitude. They lack support, recognition, and solidarity. One farmer commits suicide every 2 days in France. Social links are essential to a person's happiness (neuroscientific and neurological studies have confirmed this). Community creates a fertile ground for ideas and that leads to new desires and initiatives. Not only are we losing our agricultural population, but we are not giving it the respect it's due. Paris has only

three days of food in stock... A society that doesn't respect or honour the people who feed it is not, in my opinion, getting things right.

*“48% of the active agricultural population will have retired by 2030. This means that in 7 years, agriculture will have lost practically half of its working force.”*

***What happens to the lands that are becoming vacant?***

The lands that become vacant usually end up enlarging other entities that we can't even call farms anymore. They're what we call "agribusinesses" (industrialized farms), not usually run by actual farmers, but run by property owners who subcontract agricultural service companies, without any close affinity with the land. Most of the time, it's the income off the land that's exported.

***Your model, the Bec Hellouin farm, has worked. Why?***

We've been through all the phases. The farm, located 45 minutes by car from Rouen and 1 hour from Caen measured 20 hectares. The market gardening area covered 7,000m<sup>2</sup> and 1,500m<sup>2</sup> were worked by hand.

At first, our production was sent to Paris

- the organic enthusiasts were urban dwellers. It was a daring gamble for us! The first AMAP (French Association for Maintaining Small Scale Family Farming) saved our lives because they guaranteed the sale of our production at a reasonable price. It gave us visibility in cash-flow and forecast, so we could calculate exactly what we needed to produce. The Parisian restaurants were our customers for 5 years. But in the end, we decided to focus locally within a 30km radius, to reduce our carbon footprint. We had a carbon footprint coming from the farm and all its activities, including the training courses we provided, because people sometimes had to travel long distances to attend them.

Even though it was fairly hard at the start to find markets we did benefit from the big hype of permaculture. Although we did find it astonishing to apply this ecosystemic intelligence to agriculture. But we embraced a movement that went hand in hand with societal expectations. Today, that demand is decreasing - the will is there, it doesn't yield sales.

***Permaculture, ecoculture, agroecology... There are a lot of words, which could lead to confusion.***

There are obviously far too many words, in as much as each word has its own meaning. It's so simple to understand that it gets hard to explain!

Permaculture is a conceptual system that looks at ecosystems in their natural state and tries to copy them. It's the transla-



tion of ecosystemic thought, the creation of systems that will become economically viable, environmentally sustainable and in which humans can thrive. It can be applied to a business, a school, a hospital, a sports club, but it can also apply to a system with human beings at the centre. Permaculture is intended for a wide panel of human activities.

Ecoculture denotes the agriculture that comes from permaculture. Growing crops should follow the example of nature.

Agroecology is a group of techniques inherent in agriculture which means you're going to plant trees in fields (agroforestry). These techniques generate production while still preserving the environment.

***At the Bec Hellouin farm, you've been welcoming school children, students and academics, there are also yoga and meditation courses, because ecology also involves observation and wonder. Would you like to continue with those ventures?***

Yes, but it takes a lot of time and energy. And we don't have much time. Even if we have multiple skills, it isn't possible to do everything. We need to take the quintessence of what we do best.

Look at the example of a forest: several subjects cooperate, each one trying to defend its own interest, while at the same time being conscious that if the global interest is satisfied, each subject will thrive in its individuality.

It's the same in a forest garden: the cherry

tree is bigger than the blackcurrant bush. Nevertheless, a guild will emerge, with the right bacteria and fungi, a root system, and this global energy is good for each one.

It should be the same in human ecosystems! The person who is clever at logistics should bring his/her expertise to the market gardening system for example. It would be a win-win situation for everyone. But our ego tends to keep us in our ivory towers. I'm convinced that commercial activity and logistics are outside our roles. We're here to produce. Those who have intelligent organisational skills should deal with the rest without smothering us with commissions, red tape, and all that that implies. I think we should rethink food distribution; some countries have managed to protect their small farms, notably Italy.

***Yes, we have a culture of working in silos!***

Exactly! Yet, we are realizing that it's not intellectually satisfying. We ask everything and anything of everyone, without respecting a person's rhythm and the ecosystemic logic. I believe in a future that will have to use a model of cooperation and pooling resources.

***Do you believe the Covid lockdown will become a historical landmark?***

Yes. During lockdown, a new panel of customers that we'd never seen before arrived on the scene - customers who wanted local produce and had the time to cook. It was in March-April-May 2020, exactly when

we market gardeners were starting the crops for the summer season. When the lockdown was lifted everyone disappeared. It's hard to analyse, even if we could probably deduce that Netflix had become the new Holy Grail and had replaced the basket of organic veggies. We did actually see a shift in the way family budgets prioritized other consumer products, like leisure activities, uberisation of food, particularly in towns. Organic product sales fell sharply from January 2021, even if consumers still prefer local products. Then, there's been the rise in raw materials to deal with. In our line of work, with such a precarious economy, the slightest change in prices from abroad makes life really difficult. It's even worse for supermarket sales. Luckily, our small structures don't rely on nitrogenous fertilizers.

***Do public authorities ever consult you?***

It happened to me once - an entity in charge of rolling out educational programmes in state agricultural schools. They wanted to include a module focused on permaculture in some of their courses, like the BPREA (a French vocational certificate in Agricultural management), a certifying course done by most future project farm managers. As for strategy and global vision, no, I've never been consulted. We are locked in a black and white system where group interests are opposed: on the one hand, you've got conventional farming, and on the other, our minor activity.

It is up to us as practising citizens and farmers, to show examples of initiatives that work well, without hiding the flaws. The main thing is to try!

***How do you live with ecoculture?***

I'm very flexible when it comes to interpreting the principles of permaculture. One principle says we have to use as little energy as possible, be it fossil, human etc. I consider it a shame not to use thermal or electrical equipment (a chainsaw, lawnmower) which enables us to go faster, suffer less and be competitive.

Nevertheless, we need to be mindful of anything that could become an attack on living species and try to be as carbon neutral as possible. But if that means the market farmer has a burn-out, that gets us nowhere! We need to find a balance; leave aside the dogmas that lead to unhelpful extremes. Some people need no help to put themselves under pressure. Thinking you're a hero with a logic of sacrifice serves no purpose.

In addition, disease and pests are a challenge for us all. If we understand the complexity of the ecosystem, we can understand that aphids and mildew are part of nature.

In a space that's cultivated under permaculture principles, I strive for a balance that's acceptable for me; that means that the slug can feed on some lettuce leaves, not on all of them. I have to understand why the slug is there. Attacks from pests will always exist because they're an inte-

gral part of the ecosystem. We must learn to weigh up the situation and make it acceptable, so we still have a harvest and therefore an income. Human activities tend to annihilate ecosystems that were there before them. Man needs to be humbler by admitting that an ecosystem preceded him and had already found its balance. Agriculture is in fact a metaphor of society. To function, an ecosystem needs to maintain balance. It takes about three years to implement a satisfactory balance. That doesn't mean there won't be any more diseases, but it does mean we know more about them and can anticipate them. It takes time to learn the trade and it's not easy when we have no perspective and are left to do it alone. This type of experience teaches humility.

***Some words for future generations?***

Hope and cooperation! Those are themes I live with. I also think that different crises offer an exceptional opportunity to change a model intelligently. The young people are daring, we see more and more young graduates trying out everything, be it manual or intellectual! They'll have the keys in hand to figure out the right direction.



*Interview conducted on June 15, 2023.*

An aerial photograph of a vast mountain range, likely the Alps, featuring numerous snow-covered peaks and a large, winding lake. The sky is a deep, clear blue, and the overall scene is captured from a high altitude, providing a panoramic view of the terrain. The word "Air" is superimposed in a large, white, sans-serif font across the lower-middle portion of the image.

# Air



*In a vivid breath,  
Their speeches are written and resonate,  
Like vibrant echoes.*



*Thinkers, philosophers, writers,  
They engage themselves in raising collective awareness,  
Upwind.*



# A certain idea of modernity

## *Interview with Dominique Bourg*

**D**ominique Bourg, philosopher, author<sup>1</sup>, Franco-Swiss politician, and former professor of environmental science at the University of Lausanne, offers us his opinion, with foresight and severity, about this new era that we are entering. A switchover in civilization, a concept of modernity, the individual carbon footprint... a short statement of political philosophy.



## Dominique Bourg

*“Planet Earth is shrinking. The Intergovernmental Panel on Climate Change (IPCC) informs about these risks from 2040.”*

***Let’s start this interview with an overview. According to you, why does Mankind, which is a dignified species, not consider the animal kingdom with more dignity?***

For historical reasons, even if we’re currently going through a switchover in our civilization. Modernity, a model of civilization that’s been handed down to us, first appeared between the end of the 15<sup>th</sup> century and the beginning of the 17<sup>th</sup>, just after the Wars of Religion. The discovery of the New World in 1492 destroyed the image that our ancestors had left us the

universe, thereby fragilizing our heritage. Modern science came into being during the second half of the 16<sup>th</sup> century. Since then, nature has been considered as a simple matter, having no sensitivity or intelligence, just like an aggregate of material particles. Rather as if God had absorbed all life – plants and animals were only machines; means at the disposition of human economies. It was still abstract and would only become concrete during the late decades of the 19<sup>th</sup> century. The gigantic slaughterhouses of Chicago were the first modern slaughterhouses, reflec-

ting the total mechanization and rationalization of animal treatment. From the 1860s, Chicago became the American capital of meat, producing alone 80% of the meat consumed in the US. Zootechnics treaties were developed and from there, industrial livestock agriculture. All that is modernity.

What we've just spoken about cannot be separated from a religious heritage, wherein each human being is made in the image of God and consequently rules over all other creatures living on the earth (Genesis 1. 26-28). If you follow this reasoning, only humans are worthy of respect. Medieval Occident became obsessed by these verses from Genesis and failed to remember those written elsewhere.

***You support full ecology measures. Could you explain this concept?***

Planet Earth is shrinking. The IPCC (Intergovernmental panel on climate change) assesses and informs about these risks from 2040. All this because of warming – humid warming, droughts, increase in sea levels, wildfires and other expressions of climatic disruption. It's frightening to realize that we've already decided to reduce the habitability of the planet with our flux of matter and energy, conditioning our level of wealth. According to the IPCC, 10% of the wealthiest countries emit between 37 and 45% of world gases; 50% of the poorest only emit between 13 and 15%. It's therefore impossible to separate social inequalities from environmental inequalities

ties - they're two sides of the same coin.

***Do you think that the implementation of a carbon account for each individual could be beneficial?***

Certainly! I went even further by proposing a card with fixed quotas on ecological charging units (ECU), in other words the ecological footprint. It would concern our purchases, making a distinction between yearly purchases and those of a lifetime. Believe me, it would dissuade a lot of people from buying tomatoes produced in automatically heated glasshouses... and distributed by plane. I'm convinced that many would rather enjoy permaculturally grown tomatoes, economical in terms of ECU, even if they cost more due to the extra labor involved. This egalitarian carbon account would take the form of a chip card to collect data on everyday expenses – excluding professional activity – and would be increased according to the number of children.

***Have you already submitted this idea to government bodies?***

It isn't a new idea. Unfortunately, it hasn't mustered up much enthusiasm. We're governed by people who stagnate in their economic references and for whom climate change is just ideology.

***Will it be possible to achieve carbon neutrality by 2050?***

In 2022, France was supposed to reduce its carbon emissions by 4%. In actual fact,

they were only down 1%. The nearer we get to the deadline, the more politicians make promises that they know they won't be able to keep. However, things are changing, if only very slowly.

*“It isn't possible to separate social inequalities and environmental inequalities; they're two sides of the same coin.”*

***How do you see the way our society works?***

Let me first remind you that a democracy must fulfill two conditions to function properly.

First of all, a common and reliable information base is necessary. Today, there are innumerable sources, with variable quality. Think back to the Covid period when some claimed that the government was totalitarian; that vaccines were systematically dangerous! This is the consequence of the fragmentation of information sources, with business niches giving out outrageous information. With the arrival of Tiktok images have started to replace texts. Do you realize that 16% of young French people think that the earth is flat, a proportion that reaches 29% among regular users of Tiktok<sup>21</sup>? Studies show that there's been a collapse in IQ in the last 15 years, even if it's true to say that measuring

IQ boils down to a biased measurement of intelligence. ChatGPT is now taking over... Which makes me ask the question – Will we need a mental fitness program? Just like the body, intelligence is developed by exercise. Knowledge is being lost, in a world which is particularly complicated and violent.

Secondly, in order to run smoothly, a democracy must work at reducing inequalities. However, since the neo-liberal wave of the 1980s, they've escalated. Today, it's not a question of separatism from the poorest, but indeed a separatism from the wealthiest. In my view, we've kept the appearance of a democracy, but we've damaged the conditions that made it work properly. In these conditions, facing up to environmental questions is difficult.

***What positive developments can you analyze?***

I spoke before of the switchover in civilization with the birth of Modernity. The idea we have of knowledge has changed a lot. Our reference guides are no longer the same. The way we look at society has changed; gender problems in young people illustrates that we're in a period of switchover. The relations between human beings are no longer the same. The subject of gender is at the heart of a change in society. Observe the reactionary dictators like Xi Jinping, Poutine, Erdoğan, Bolsonaro, Trump, etc. They all base their doctrine on the patriarch. In opposition,



observe the youth who are fighting for the conservation of the environment, or for human rights. Iranians, Afghans, Amerindians, environmental activists, the leaders of these movements are nearly always women! Brazil has about 200 Amerindian peoples. 10%, that's to say about 20 of them, are already headed by women.

Lastly, the empathy of the human being for animal suffering has become significant, just like the consideration for the vegetal. Sensitivity develops with the increase of knowledge! The second half of the 20<sup>th</sup> century was a real scientific saga concerning the discoveries on animal intelligence! For the last 15-20 years, it's the same for vegetal biology. We're watching the birth of rights for nature. It's fascinating!

***What's your opinion of veganism?***

Veganism is a trick of reason. I wouldn't support it if it became a normal social standard but I'm not against it on the level of the individual, that's a question of moral choice. Nevertheless, I consider that the modern trend of veganism is widening the gap within nature between what's worthy and what's not worthy. If we take as a reference our patho-centered ethic, only the subject that's suffering is

worthy of our moral attention. However, that introduces into nature, at the heart of life itself, a break which really makes no sense at all and which goes, in fact, against nature. Suppressing all forms of livestock breeding would be the same as extracting human beings from the food chain that makes up the ecosystems. The characteristic of the living is that life feeds itself. Obviously, that's not to say we shouldn't feel compassion for animals that are suffering. In my opinion, only permacultural animal breeding is acceptable because it favors good relations between the different animal species, of which we are a part.

***What words would you leave for future generations?***

Never give up hope!



*Interview conducted February 8, 2023.*

<sup>1</sup> "Retour sur Terre, 35 propositions", Dominique Bourg, Gauthier Chapelle, Johann Chapoutot, Philippe Desbrosses, Xavier Ricard Lanata, Sophie Swaton, Pablo Servigne, Éditions Puf, June 2020.

<sup>2</sup> An IFOP survey done among 2003 young people representing French society aged 11-24, at the end of 2022.



# A champion of solution-based journalism

## *Interview with Gilles Vanderpooten*

Gilles Vanderpooten is one of those people who networks solutions... and then grows them. A writer and journalist, he's also managing director of the NGO "Reporters d'Espoirs" (Reporters of Hope), which has initiated solution-based journalism in France, and highlights the commitments of those who work in the general interest. Linked to this, Gilles Vanderpooten founded the semestrial magazine Reporters d'Espoirs. Convinced that his profession should be partly reinvented, he is one of today's leading figures in *constructive journalism*<sup>1</sup>.



## Gilles Vanderpooten

*“Constructive journalism reflects on the complexity of the real situation – the problems and solutions, the difficulties and the resilience.”*

***When did you begin to take an interest in environmental issues?***

I grew up in the countryside with no real concerns, until I was 17. My parents were farmers and we lived far from the hustle and bustle. Paradoxically, my interest in environmental issues began later when I started business school in Nantes. It was then that I got the idea of setting up a student association in my school, because I realized that the issue of sustainable development was becoming ever more present and that few associations were raising awareness of the stakes. That was in 2005. In 2006, the association's first action was the launch of Eidos, a film festival dedicated to the subject of sustainable development.

***You became very interested in studies done by psychiatrists, neurolo-***

***gists, psychologists and sociologists to find keys on how to realize your wish to promote a journalism of hope. Why?***

By continually being exposed to news that only shows the shortfalls, we risk feeling out of our depth with no means of redressing the situation. The harshness of the world may therefore cause suffering and provoke a sense of helplessness! This kind of process annihilates our capacity to project into the future. Serge Tisseron, for instance, is a psychiatrist and expert in media, AI and robotics. He's a leading figure in the decoding of messages that are presented, and their impacts on us. Elsewhere, a lot of American and Northern European publications have applied the prism of psychology to the media. I remember a particular meeting with a Danish journalist, Cathrine Gyldensted, a pioneer in

*constructive journalism*<sup>1</sup> in Denmark. It was she who made the connection between positive psychology and giving information. In the course of her work, Cathrine interviewed homeless people, and realized that by enriching her narrative; by asking other questions – ones that showed consideration for the person, that gave him/her an active role – she was able to delve deeper and reveal a less well-known side to the public. Finding themselves in a relationship of trust, the homeless people confided more easily. In that way, the journalist gave her readers the possibility of better projecting themselves and becoming actors. Moving from information to action isn't easy, in fact it's very hard to measure. Nonetheless, seeing examples of very concrete initiatives does help motivate action. That's what we call solution-based journalism, which is concerned equally by the solutions and the questions. Are there people who are getting into action; businesses, associations who are tackling the issues; and what are the results on people's lives?

***In 2020, you co-wrote a book “Imagine tomorrow's world”, prefaced by Eric Fottorino<sup>2</sup>. Your message of hope has been distributed in schools. Tell us about that.***

With journalists from the Reporters of Hope network, I give presentations to students and newsrooms all over France, as part of our “Reporters of Hope tour”. We speak about our work – on the way

the media deals with issues on climate and social innovation – and then enrich it with their contributions. In France, we're lucky to have a diversified journalistic palette which is innovating in terms of citizen participation, digital developments, and editorial lines. It isn't fair to say that the media all say the same thing, a criticism we hear very often... So, we collect the good practices and publicize them, from regional to national editorial offices, from one media to another.

One preconceived idea says that only catastrophes and scandals generate sales – one British saying even states “*If it bleeds, it leads*”. That's no longer true today. Constructive information enriches an editorial line, helps promote the loyalty of its public and generates, under certain conditions, successful audience ratings.

***Do you think it's necessary to be a militant to deal with subjects related to climate change?***

I think we first need to understand and integrate scientific and technical elements. Journalists are mostly versed in social and human sciences, which would explain why they've been finding it difficult until recently to talk about these subjects. The first ones to have tackled that question may have been considered as militants, simply because they were preparing new ground. Nowadays, all points of view are being expressed – some journalists claim they're providing a cold analysis; others call themselves activists because they be-

lieve it's impossible not to commit yourself when you understand the real scale of the problem. Each one is free to engage as he/she wishes or can, depending on his ethics and the editorial policy of his service. In my view, gaining knowledge and honesty are the essential aims.

***Can a multinational be compatible with climate?***

By definition, a multinational is implanted in several countries and strives to multiply exchanges which in turn need transport which then, generates pollution. Spontaneously I'd be tempted to say no. Especially as the term often refers to oil, gas and coal companies who emit the most CO<sub>2</sub>. Let's not restrict ourselves to thinking backwards because there are multinationals in a lot of different sectors. Could they be considered as being more efficient than a stack of small organizations? In the same way as they generate economies of scale, could they, through their processes and centralized makeup, be more efficient in terms of energy uses and CO<sub>2</sub> emissions? We could imagine that glocalized multinationals on faraway continents can optimize their CO<sub>2</sub> emissions because they operate factories locally and thereby reduce the need for container ships. I don't know if this reasoning is tenable, but I'm eager to read comparative studies on the subject. From a media point of view, the climate emergency has been increasingly brought to the fore in the last 3 - 4 years by activists and the phenomenon that is

Greta Thunberg. The big companies are keeping quieter – either because they just aren't credible or because they choose to refrain from communicating for fear of being labelled with greenwashing... It's quite difficult to identify the initiatives in the large companies that are going in the right direction, and to measure if they're substantial or anecdotal. Also, a lot of journalists are interested in the efforts being made by SME and associations, in scientists, in the messages being presented by activists. That's much easier and less risky. But that means we're being less thorough. Because things are happening and advances are being made in other areas – new materials, a circular economy, a reduction in negative impacts. We tend to create ambivalence. We need to decouple growth and pressure on resources, to reduce carbon emissions, but we can't totally do without industry... Therefore, it's in our best interest to make it become compatible with the climate!

For instance, we need to insulate our accommodation. A multinational like Saint-Gobain, a French beacon created 350 years ago by Colbert, is extremely useful in helping us do that : it has the expertise, knows how to produce efficiently at lowest costs and how to get supplies of raw materials... Alstrom is working on the hydrogen train, Saint-Gobain on finding alternative materials to sand for producing glass – since it was found that sand's becoming a rare resource, something the R & D centers are aware of! Are we being



objective or unfair when we criticize the slow pace forward of some large companies? We should be proud to have this kind of economic heritage. That obviously doesn't prevent us from being demanding; from pushing them to their limits; from wishing that progress would go faster, and further!

***Are small structures the only ones capable of being more responsible?***

A priori, "Small is beautiful" – small structures are more easily traceable and it's easier for them to change or to start out responsibly... also, it's simpler to understand them, to evaluate their impact and even praise them if they're seen to aim for excellence – for example, Jeans 1083 made in France, Yuka, The Armor group, Phenix have had high media coverage because they tick several boxes grouping the social and environmental; they have a story to tell or have charismatic leaders. They know how to communicate, share their doubts and launch projects that are often daring. That said, bigger-sized structures can have an even greater leverage – it's interesting to note the announcement by the bank Credit Mutuel to devote 15% of its net results to serve the public interests, or that engineers at SEB worked for 10 years on making their electrical appliances repairable and training thousands of repairmen.

Is it better to transform 15% of a big structure or 100% of a small one? Should we expect a myriad of local initiatives,

very efficient from a CO2 point of view, to appear and gradually replace the "too big to fail" ones? Are very large industries capable of changing their model and producing as much using fewer resources? Is green hydrogen possible? It's hard to answer that today. Experiments are multiplying but the scale of their spread is still too small. The method employed by solution-based journalism aims to embrace the complexity of the world and decode it... But admittedly, we don't have all the data on hand! Since subjectivity is our plight, the most important thing for a journalist is to be honest – "from where my knowledge and research stands, this is what I can say".

***In 2008, you launched the Tour de France for sustainable development, a journey to meet people who are building a more solidarity-based economy. That gave life to the publication of an eponymous book<sup>3</sup> co-written by you and prefaced by Edgar Morin. What's become of the companies you followed?***

Léa Nature, the French organic company comes to mind as it's a great example of a SME that's grown to an intermediate-sized business. It created an endowment fund, which should progressively recuperate control of its capital, with the aim of financing associations engaged in alternative agricultural models.

There's also Enercoop – even though this energy cooperative has been encountering financial problems, like all the renewable

energies sector where businesses are indexed on the global evolution of energy prices.

Another one, the biogas buses in Lille – they were run as part of an experiment but have since become generalized with between 100 and 400 vehicles. The city produces 30% of the energy needed from organic waste collected locally.

Edgar Morin, who was working on his book “La Voie”(The way) at the time, said he was interested in citing these types of initiative to illustrate his views.

*“By being continually exposed to news that only points to the shortfalls, we risk feeling helpless with no means of taking action.”*

***If you could leave some words to future generations, what would they be?***

“Get involved”<sup>4</sup>, taken from the title of a book I had the chance of co-writing with Stéphane Hessel twelve years ago, and

which has been read by 250,000 people in 17 languages. Let’s get involved whenever we want, whether it be in the environment, in entrepreneurship or in creativity. Take initiatives, be capable of saying “Yes”, and not only “No”, get enthusiastic about a cause, not just indignant, invest in a project, play your part in bringing society forward by leading a concrete initiative – I believe all that is satisfying and potentially worthwhile. And while doing it, try to federate people, without considering yourself as holding the absolute truth, by standing back from your personal commitment, and showing a sense of cheer and humor. That’s what made me think of Stéphane Hessel, who escaped twice from concentration camps, who used poetry to resist psychologically, who got involved in numerous causes. Although he had his convictions shaped by adversity and encounters, he was open to having them challenged, and made a point of using optimism to guide him through life.

***Interview conducted February 23, 2023.***

<sup>1</sup> Solution-based journalism, or constructive journalism or impact journalism

<sup>2</sup> French writer and journalist, former director of the French newspaper *Le Monde*

<sup>3</sup> Co-authors: Bertrand Guillier, Hélène Roy & Gilles Vanderpooten, *Editions Alternatives*, September 2010

<sup>4</sup> “Engagez-vous” (Get involved): Stéphane Hessel, interviews with Gilles Vanderpooten, *Éditions L’Aube* 2011

Book re-edited in 2023 with illustrations to mark the 10<sup>th</sup> anniversary of Stéphane Hessel’s death.







# Learning to unlearn

## *Interview with Victoria Guillomon*

**O**n the other side of the screens.... on the side of life! Victoria Guillomon decided to leave the paths riddled by conventions after a life-changing trip to India. She was then 18. Today, aged 24, she wants to impact the world in her own way, through books, conferences, with her podcast New Eye (Nouvel Œil) as well as concerts. Victoria Guillomon takes and offers a path towards simplicity for all generations.



## Victoria Guillomon

*“To succeed in life is to succeed in remaining faithful to one’s deepest desires. That’s one possible definition of freedom.”*

***You are putting your print on the world in your own way by dedicating your time to one mission: awakening everyone’s dream, especially those whose lives are dormant because of screens. With your podcast New Eye, you go out to meet inspiring people. You’ve also written a book called “What you don’t learn at school”. The path you’ve taken is an ode to life. Could you tell us more about these life choices?***

The backbone of all my projects is the wish to make people become more conscious

and trigger the will to learn. It was hard for me to even think of having a permanent work contract, which I saw as a prison. So, I looked for other possibilities, like writing. I’m now writing my second book which will be published at the end of the summer. Apart from writing, I believe in the importance of transmission by interviewing people every week on my podcast New Eye. And because raising awareness plays a really important role, I give lectures in higher education institutions. My trip to India at the age of 18 shattered years of certainties. I remember seeing



children who had nothing, yet whose smiles were pure and sincere. In our societies, faces are too often pale and lifeless.

***You also give art a central place in your life.***

I sure do. I give concerts where I perform texts I write, there again, to make people more conscious through art. I'm accompanied by a pianist and a dancer. I talk about life. I really feel a sense of fulfilment within this artistic trio.

***What's your relationship with social media?***

Huh, very complex. I'll answer that one carefully. Social media are wonderful tools to drive change. With their help, I can affirm my commitment, communicate on my different projects, and raise awareness. It's also thanks to them that sustainable development's acquiring a bigger place every day in the public debate, thereby changing mentalities faster.

On the other hand, social media are also sources of perdition and alienation. I'm trying to regulate my use and have deleted Instagram. When I want to publish a post, which I rarely do, I download the app again just to upload it, and then delete it again. I don't turn my phone on early in the morning. This time's dedicated to writing my second book, between 7:00 and 9:00 am. In the evenings, I try to turn my phone off at around 9.30pm, but it's very hard. And I try to have phoneless Sundays as much as possible.

***Like most human beings, you grew up with the idea that our lives are built around conditions. Have you got rid of all the conditions that dictated your life?***

It's the work of a lifetime... In my old world, my closets were full. In my old world, I was very conscious of how people would look at me. It takes a lifetime to learn how to decondition oneself. It takes a lifetime to learn how to unlearn.

***What's your definition of "how to succeed in life"?***

To succeed in life is to succeed in remaining faithful to one's deepest desires. That's one possible definition of freedom.

***"The less you know who you are and the more you want to exist." This quote is by the French writer and speaker, Laurent Gounelle. So, I'm asking you the question, Victoria, who are you?***

It's hard to answer that question! I'm hyperactive and deeply in love with life. I'm interested in everything, which isn't that easy to deal with. The reason I created my own podcast New Eye was because I wanted to meet other people, to be interested, to learn and to testify. In fact, just what a journalist does!

***If you were Minister for Education and Youth, what would you start with? What's your biggest worry for the future?***

We really have to tackle the climate debate. It seems to me that personal development is vital to feel good in oneself, with others and the planet. I'd put self knowledge lessons in school books, starting from an early age. How can we be good to the planet if we are not good to ourselves? In recent years, I've made sure I take care of the being rather than "what we have or what we do".

*“Never forget that the immensity of the world can be found in little things.”*

***What does money mean to you?***

Once again, I'll answer carefully, because money helps us live. However, always wanting more is a trap. I see money as a means and not an end. A lot of beliefs around money are deeply anchored in us. Insecurity can frighten, like a professional life with a temporary contract. A lot of people choose to conform because they're afraid of the unknown. Fear creates blockages. And the longer blockages remain, the bigger they get. I can see myself in

Satish Kumar's\* vision. He's a peace activist who used to be a monk and who leads a simple life. He gives us his keys for life in this world.

***In one of your TedTalks, you finished with this lovely sentence: “Diplomas are useless when faced with someone who is inhabited by life”. What words would you leave to future generations?***

Never forget that the immensity of the world can be found in little things. I'm convinced that being in awe will save us. Let's take time to observe, really take in the immensity and the grandeur of everyday life, let's stop thinking that all has been learned. The sunrise in the morning and the moon at night... are just magical.



***Interview conducted April 26, 2023.***

*\*Satish Kumar (born in 1936) is an Indian British activist, writer and pacifist. Now living in England, he is the founder of the international center for ecological studies. He insists that respect for nature must be at the heart of all political and social debate.*





Fire



*A fragile and precious jewel,  
The Earth, stardust,  
Moves within a vertiginous interstellar space.*



*Architects of peace,  
With a spark that is theirs,  
Work to follow the stars.*



# Surfing on the swell of change with 1% for the Planet

*Interview with Kate Williams*

Helping to make philanthropy more accessible worldwide and encouraging companies to donate 1% of their annual revenues to an association or NGO working for the environment and supporting them in their efforts. This is the aim of 1% for the Planet, an NGO co-founded in 2002 by Yvon Chouinard, CEO of Patagonia, who has put this into practice in his company.

Kate Williams has been CEO since 2015 and pursues her mission: to increase environmental philanthropy and, consequently, to raise the impact on the ground of actions carried out by associations through facilitating their fund-raising.



## Kate Williams

*“Simple actions, done repetitively, in community and over time, can create an incredible ground swell of change.”*

### ***How would you define yourself?***

A believer in our human collective potential! Someone also who's on a learning journey. Driven by optimism and curiosity, I'm interested in how people can come together to drive change. Since I was 18, I've always been very interested in *“How do you make change happen?”*. *How do you align people to take the steps and keep taking the steps?*” This is super fascinating!

### ***What are your inspirations?***

Nature! Getting out on trails, outdoors, sometimes alone, sometimes with other people, gives so much strength. And I also get a lot of energy from people who are concerned about driving change. 1% for the Planet is a hope factory! The way we are successful is not just by earning more profit, it's by creating the wealth of a healthy thriving planet. It's incredibly rechar-

ging and rewarding to see that.

***What are the prerequisites to enter 1% for the Planet?***

Essentially, there are no prerequisites. We engage members of all sizes in philanthropy. We help them expand the scope of impact that they can create.

Every business has an impact, and every business has the power to have a positive impact by investing in a non-profit sector. For companies, they implement by giving 1% of their total annual turnover, each year, to environmental non-profit partners. We have pre-revenue startups who pay their dues to us, thereby becoming part of the network, and they grow from there. We have billion-dollar companies. And we have everything in between!

In all, they represent 60 different industries, no more than 10% of our network is in one industry; it is a very diverse network. By taking the step and becoming part of a very dynamic community of other committed givers, a lot of change can happen.

***How do you decide where the money goes?***

It's a combination, driven by members' interests, strategy, and needs. We organize our environmental partners into 4 impact areas: rights to nature, economics, resilient communities, and conservation and restoration. What kind of problem metrics are you trying to solve? Which solutions are you trying to create? Which stories are you trying to tell? What's the type of rela-

tionship you want to have with an environmental partner? For lots of our members, this first year is a kind of revelation.

***Which country is the most represented?***

57% of the membership is outside the US. The US is still the biggest country in terms of members, but most of the membership remains outside of the US.

Today, 1% for the Planet has over 3,500 member companies in 49 countries. In Europe, France is the country with the most members - 700 to date! We've seen a lot of growth in the UK, Western Europe generally, Australia, and Japan.

***You've been the CEO for 8 years already. What are the biggest challenges that you overcame?***

It's a high energy network! Our biggest success is that we've gathered half a billion US dollars... in 20 years. We are accelerating that rate of growth. Our goal is to reach a billion US dollars.

Our organization is quite small relative to that scale of giving! We continue to build the credibility of our certification model and I'm pleased to see that our brand is respected. We very confidently represent a credible opportunity. Of course, we're not saving the world, but we really believe that simple actions, done repetitively in habits, in community and over time, can create an incredible ground swell of change. It's very easy to get paralyzed when you're trying to figure out if you can find the

perfect solution. It's a learning journey. It's the accumulation of small actions that create big numbers! Some people say "1% is not that much". But 1% of revenues is substantial!

*“Choose the path of action as opposed to the non-path of paralysis!”*

***You're developing a new program, the Planet Impact Fund. Can you tell us more?***

We're partnering with the National Philanthropic Trust. Donors can make donations of any size. Every year, the fund generates returns by investing for positive impact. We take 10% and then invest it or donate it to environmental non-profit organizations.

***Do you make actions with the government?***

We don't have direct interactions at the government level, but still... governments, companies and NGOs are the 3 big sectors that can change. As far as we're concerned, we try to focus on what we're able to do: build connections.

***If you had to give one message to the future generations, what would you say?***

Choose the path of action as opposed to the non-path of paralysis! Focus on progress, not perfection, more specifically take a small action, instead of trying to figure out what the perfect action is. Whatever you can do, don't get paralyzed in seeking the perfect step or action! And think of how you could do that in a community.

Being part of driving change is hard, but everything is easier when you do it with other people, having fun and bringing joy. The goal is to keep doing positive work. As humans, we need to be connected to each other, we need to be lifted by joy, we need to feel hope.



*Interview conducted July 6, 2023.*









# A changemaker warmer than the climate

*Interview with Arthur Auboeuf*

**R**emember his name. Arthur Auboeuf is the conductor of a revolutionary citizens movement and co-founder with five friends of Team for the Planet (TFTP), a company holding with a mission. TFTP invests in the fight against climate change in France and abroad. At the end of December 2022, TFTP launched a crazy bet on social media: to reach a threshold of 100,000 shareholders before midnight, December 31. It was a resounding success. The objective is now to raise one billion euros to roll out 100 innovations fighting against climate-warming, on a world-scale.



## Arthur Auboeuf

*“There’s one idea I’d fight body and soul for – helping the human race to realize that we’re all intrinsically part of nature.”*

***Humanity often tends to behave as if Earth didn’t exist and had limitless resources. The liberty to act is often opposed to the sobriety imposed. Article 4 of the Declaration of Human Rights and Citizens 1789 says « Liberty consists of doing anything that does not harm others». Do you think a carbon quota for each individual should be put into place?***

I’ll give you Arthur’s point of view because it’s not easy to engage the Team’s. The deprivation of liberty that Mankind will experience if we put aside the growing climate problem will be much greater than

the small deprivations that we need to apply to respect the Paris Agreement. The question is indeed freedom. A world with temperatures of 50 degrees, where there isn’t enough food to feed everyone, where pandemics rage – we’ve had a little taste of that – isn’t a free world, but a world that’s full of deprivations.

***It’s also a question of individual responsibility...***

Imagine this. You arrive on a desert island with 10 other people, and you have a monthly ration of 10 kilograms of food. Could we talk about freedom if one or two

individuals decided to steal everything in the first few days?

I don't think quotas and carbon credits are that badly perceived. Remember the Covid period when a lot of people thought it'd be impossible to impose the wearing of masks! From the day measures are taken we will learn to change our ways. There are lots of things that we don't have the right to do, but we've already learnt how to regulate ourselves. We often tend to be outraged by new schemes, but if they can help to create a better society, to protect each of us, to set out limits that prevent people from causing harm to others, then I'm all for it.

***How does the economic world view a structure like TFTP?***

TFTP is not a typical structure in the world of economics, in other words, the guarantee of a return on investment, the possibility of getting out when you want, the short-term x7 promised by doubtful ads on cryptocurrency videos, etc. Most economists find that very hard to understand and don't therefore look at the other side. However, some public authorities and district councils have invested with us. But mostly, it's visionary investors and pioneers who've jumped on board.

***If you were Minister for environmental change, what would you start by doing?***

The government is in an extremely complex position and has to continually

confront contradictory instructions. (*Pause for thought*).

Easy answers like insulation of buildings, development of public transport and « gentle mobility » come to mind. But there's one idea I'd fight body and soul for – helping the human race to realize that we're all intrinsically part of nature. I'd create a sort of one-year mandatory military service, located in the midst of nature to observe its beauty, to understand its fragility, to respect it, and to become aware of the importance of other living creatures.

***Have you presented this idea to the government?***

No! I've just thought about it now. I'm convinced that it would take only two or three generations to radically change opinions.

***How does your idea of climate dividend function?***

It's about a system to measure the contribution to decarbonization in the world. It's virtuous and is situated at the opposite end of the scale to carbon credit, which prevents compensation of greenhouse gas effects.

At Team, we invest in a common fund dedicated to innovative projects that combat climate warming on a world scale. Every year, each shareholder knows – depending on what he/she has invested – the number of tons of non-produced or captured CO<sub>2</sub>, so actually avoided. One climate dividend helps to avoid one ton of CO<sub>2</sub>.

This dividend was initiated by us in collaboration with the UN and French organizations like ADEME, Net Zero initiatives, Carbone 4. We then gathered a group of about 50 experts to work on this project.

***What makes this climate dividend a new idea?***

Today, no indicator exists to put a monetary value on decarbonization. There are only indicators that punish – “You’ve polluted, so you have to pay to compensate”. It often boils down to greenwashing because you can’t compensate for pollution. At Team, people invest to obtain a climate dividend.

**“Wonder is the most powerful energy!**

*Never lose your power of wonder. It’s very simple, very powerful and so necessary.”*

***What good will the Anthropocene be remembered for?***

*(Laughs)* Lots of things, fortunately! We can « develop society » like never before, in a spirit of otherness, and organize it without focusing on our differences. Man has succeeded in creating systems of trust to work together, even if there are different interests at stake. We could dwell on the negative sides of globalization, but the big human family of Man has managed to

get together and work on projects. That’s beautiful and remarkable. After all, we did manage to ward off a global pandemic in 2 years! That’s unprecedented. When we need to collaborate for the common good, we can! Of course, the planet is still rife with conflicts. But Mankind does tend to move towards conciliation and global understanding – even if that’ll certainly be tested in future crises.

Moreover, a fraction of Mankind is interested in and is acquiring a better understanding of other living creatures, especially the animals and trees. During the Middle-Ages, the tree was a trunk that was there to be cut for firewood. Nowadays, people are considering the tree as a living thing. I’m optimistic about our capacity to mellow and thereby to sow and above all, to grow in harmony.

***We’re developing new areas of awareness!***

Mankind is becoming more and more receptive to sensitivity, to harmony. Each new generation is more lenient and respectful than the former. We dream more and we ask ourselves the right questions! By giving sense its rightful place, we place ourselves in a logic of protection and conservation. There’ll be crises and new situations, but I believe in the long run that we can change from commonly exploiting the earth... to being its guardians.

***What do you think about collapseology?***



It's complex. Once again, I'll put myself in Arthur's shoes. It's useful for some people to push their reflection on collapse farther, because it's already happening. The human anthropic principle is such that we tend towards the desirable. Walt Disney said, "*If you dream about it, you can do it*". However, collaspology doesn't help us dream! Collaspsology triggers a click for the insiders – but we need to propose dreams that create desire and bring people together. If you don't associate it with that in mind, you generate reactions that are in direct opposition to what should be done. For example, some will want to take full advantage of resources while they're still available whereas others may develop climate-skeptical reactions.

***What message would you leave to future generations?***

I owe my favorite quotation to the British writer Gilbert Keith Chesterton "*The world will never starve for want of wonder; but only for want of wonder*". Wonder is indeed the most powerful energy! I'd write on that paper "*Never cease to be amazed*". It's very simple but very powerful.



*Interview conducted February 7, 2023.*



# On the road to new adventures

## *Interview with Frédéric Mazzella*

**F**rédéric Mazzella is an extraordinary businessman. Founder of BlaBlaCar, he took up the challenge of reinventing individual mobility. This world leading network is present in 22 countries and ranked top French unicorn<sup>1</sup> estimated at €2bn. It employs 700 people worldwide and groups 100 million users.

Moved by the desire to create more bridges between businesses and good impact projects, Frédéric Mazzella and four other co-founders set up Captain Cause in September 2020. This platform allows companies to give pre-financed donations to their clients, partners and associates while still supporting the association of their choice. The announced objective is ambitious: to distribute €1bn to associations over the next five years.

Frédéric Mazzella is also vice-president of the organization France Digitale, the largest association for start-ups in Europe.



## Frédéric Mazzella

*“Above all, we need to pool resources. Nothing can be achieved alone.”*

***You say you’re fascinated by what doesn’t yet exist. How would you define yourself?***

Basically, I’m an entrepreneur. I love to reflect on different and intelligent ways to provide solutions for practical problems.

***How can one succeed in finding the best people for a company?***

Recruiting people who are complementary is paramount. Otherwise, you risk lacking in diversity, in every sense of the word. It’s important to be surrounded by

able and enthusiastic people who share the same vision. Recruitment should be based on potential, motivation and creativity! And of course, success is knowing how to federate people and motivate them to work together on a project. Nothing can be done alone. You can have a solid vision, a wonderful project, but still fail to federate.

***What’s your opinion of the luck factor in the success of a company?***

You’ve got to grasp an opportunity when it

comes – stretch out your arms to it. First, it's a question of choice. Next, it's what you do with your choices. In my view, life's neither random nor deterministic. We have a role to play with luck.

*“BlaBlaCar<sup>1</sup> prevents the emission of 1,600,000 tons of CO<sub>2</sub>. That's more than the total emitted by Paris traffic each year.”*

***What are your sources of inspiration?***

In my book “Mission BlaBlaCar”<sup>2</sup> I included a huge number of quotations, ranging from Victor Hugo to Bono via Einstein. I particularly like this quotation from Einstein, “The definition of insanity is doing the same thing over and over and expecting different results.” I can guarantee that helps you get on with things! A sentence, this time from Victor Hugo, has also marked me: “Nothing is more powerful than an idea whose time has come.” Everything's there. An idea needs to find a suitable context to release all its power; it can be either brilliant or totally out of phase, depending on if it's presented at the right moment! I came on the scene in 2004 with BlaBlaCar – which was slightly too early. Better too early than too late, okay, but in hindsight, I was 3 or 4 years too far ahead. Car-pooling only star-

ted to develop when the Internet became totally available, when mobile phones became widespread; then it started to become an obvious solution.

***What are your main challenges in the years to come?***

With BlaBlaCar, we're doing our best to offer users a multimode experience – that's to say, they can book a car-pool and a bus for the same journey. And that's nearly the case in all the countries where we operate, that's currently 22! We're also hoping to soon include the train in France. As things stand, BlaBlaCar prevents the emission of 1,600,000 tons of CO<sub>2</sub>. That's more than the total emitted by Paris road-traffic each year.

I'm also very involved with Captain Cause, a project that I recently launched with some young talented co-founders, and which I'd been thinking about for several years. We've managed to federate nearly a dozen people around this idea. We finance good impact projects by using company means and involving business communities, in other words the clients and associates. Already 150 companies have backed us, among which are big groups like Engie, Orange or M6, but also younger brands like Omie or Respire! The concept works very well because it's a win-win for everyone, and it reinforces companies' responsibility.

***What activity sectors do you particularly support with Captain Cause?***

We have an open and pragmatic approach. There are 3 categories among the projects we support: environment, social issues and health. In this adventure, it's the companies who choose to engage with their communities and back projects, to reward associates or clients, or to reinforce actions.

***What place do you allow for intuition, which is abstract and intangible, when making strategic choices?***

Before I can answer that question, we must first define intuition. In my case, I know I'm a highly analytical person who arrives at a conclusion, rather than a person who uses intuition.

Both procedures produce the same force of action. But I think that developing a conviction leads to the development of a very strong capacity for action; a conviction

is obtained following a thorough analysis of different elements. Conviction helps us choose a particular direction with the certainty that it's the right one, which isn't exactly the case for intuition, at least from my point of view. Conviction is more pragmatic than intuition. Some people may say I had an intuition, whereas in fact, I analyzed all the elements in hand before charging forward.

***Which word would you leave to future generations?***

Confidence. Confidence in the human being. That's the only way we can build and look far into the future.



*Interview conducted July 31, 2023.*

<sup>1</sup> French ranking of start-ups valued at over €1bn, but not quoted on the stock exchange.

<sup>2</sup> "Mission BlaBlaCar, Les coulisses de la création d'un phénomène Eyrolles", 2022.







## AFTERWORD

## *The Ocean, Mother Sea*

If the history of the Earth were written in a book of 1,000 pages, the history of Homo Sapiens from his appearance up to the present day would only take up a few lines, right at the bottom of the very last page.

This book is an invitation to rethink our place within the living world.  
To move away from anthropocentrism is to shake up our certainties.  
It might be here, the solution to our ills..

Humans have had the audacity to believe they are masters of all.  
Whereas, in the mysterious adventure that is life, they are neither owners nor masters of anything.

Source of life and of survival from time immemorial,  
the Ocean has been the great clockmaker of the adventure of life.  
Fragile, it vibrates in coherence with the wisdom of nature  
and in harmony with innumerable instrumentalists.

In its emanations, the Ocean sets the tone for the climate. The largest source of life on the planet, it covers 71% of its surface and represents 97% of the water on Earth.  
As the greatest carbon sink, it's the beauty that makes the salt of life. Water is present in the cells of each plant and each living creature.  
We are nature. We are the Ocean. Infinitely precious, it compels us.

In the great dance of the living, human beings stand out neither by their strength, nor their size, nor their resistance, but by their reason and their capacity of imagination.  
We have the power to dream, so let us cultivate the imaginary.

Guided by an unwavering will to participate in the conservation of Nature to which we belong, we hereby make the wish for a sweeter world.

Let us be peacemakers in the great symphony of the living, directed by the Ocean, the conductor and virtuoso composer of scores that date back thousands of years.







TOWARDS ANOTHER FUTURE,  
INSPIRED BY NATURE

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Thank you to the FinX team, who is also working for a better world by proposing a means of nautical mobility which respects biodiversity.

Many thanks to Heike Röttger, FinX's faithful graphic designer, who did the graphic creation.

And last but not least, sincere thanks to you, dear readers! If you've followed us up to here, it's because you are also convinced, just like us, that a new world is possible.

Let's continue inventing it - together!

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## GRAPHIC DESIGN

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Printed in France on recycled paper.  
Cover printed on paper from sustainably managed forests.

Palettes of humanity.  
Manifold, vibrant and unique.

Conceived to inspire and prove that a new world is possible,  
this book brings together portraits of personalities dedicated for change,  
who have made their lives paths of hope and respect,  
which will most certainly be backed up by new adventures.

*This book is an initiative proposed by BaseX, the think-tank of FinX.  
It's a logical continuation of "Time for action, towards another acceleration", published in 2021.*