

Stories

FROM

2050



***RADICAL, INSPIRING AND THOUGHT-PROVOKING NARRATIVES
AROUND CHALLENGES AND OPPORTUNITIES OF OUR FUTURES.***

Stories from 2050 – radical, inspiring and thought-provoking narratives around challenges and opportunities of our futures.



Foresight on Demand

Project Lead: Tanja Schindler

Project Team: Graciela Guadarrama Baena, Enric Bas, Radu Gheorghiu, Giovanna Giuffrè, Totti Könnölä, Jana Lingrún, Ullrich Lorenz, Matthias Weber



Leading Project Partner: 4strat GmbH based in Germany

Other partners of the consortium participating in this contract are:

- Institutul de Prospectiva based in Romania
- ISINNOVA based in Italy
- Insight Foresight Institute (IFI) based in Spain
- AIT Austrian Institute of Technology based in Austria

Editors: Tanja Schindler & Graciela Guadarrama Baena

Co-Editors: Nikos Kastrinos, Jürgen Wengel, Sarah Magill & Asad Ur Rahman

Cover Page by Johannes Fuchs

Editorial Design by Francisco Hueyatl León



This document has been prepared for the European Commission, however it reflects the views only of the authors, and the European Commission is not liable for any consequence stemming from the reuse of this publication.



Except otherwise noted, the reuse of this document is authorised under a Creative Commons Attribution 4.0 International (CC-BY 4.0) licence (<https://creativecommons.org/licenses/by/4.0/>). This means that reuse is allowed provided appropriate credit is given and any changes are indicated.

Stories FROM 2050

**- RADICAL, INSPIRING AND THOUGHT-PROVOKING
NARRATIVES AROUND CHALLENGES AND OPPORTUNITIES
OF OUR FUTURES.**

curated by:
Tanja Schindler and Graciela Guadarrama Baena

Stories

FROM

2050

Dedication

We dedicate this booklet to all the voices that haven't been heard and to all the stories that haven't been told.



ACKNOWLEDGEMENTS

We would like to acknowledge and thank everyone who was part of this project:

- Thank you for your participation in the workshops and co-creation sessions, as well as your contributors on the project website. We appreciate your time, thoughts and perspectives during the kick-off of the Future Rooms, as well as in the Story Design workshops.
- We would also like to extend our gratitude to our project team for participating in stakeholder and internal workshops and to all the final story writers who made these insights come to life.
- Thank you to the editors, designers, and proofreaders for bringing these stories together into this booklet.

→ All your contributions are being used to offset our environmental footprint!

Story writers donated a part of their compensation to our “plant a tree” initiative. Additionally, a portion of the project’s budget was donated for every story that was uploaded on the project platform. **Over the duration of the project, more than 1500 trees have been planted!**

THANK YOU:

Carla Alvial, Sarah Amsler, Vanessa Andreotti, Enric Bas, Monika Bielskyte, Lisa Ruth Brunner, Chris Butler, Octavia Cade, Tereza Cajkova, Domenico Cirrotti, Domenico Cirrotti, Marguerite Coetzee, GTDF Collective, Vincenzo Cunsolo, Ed Dammers, Dexter Dohererty, Yannick Dujardin, Azul Carolina Duque, Carolina Duque, Eva Eiling, Tracey Follows, Ruben Garcia, Radu Gheorghiu, Giovanna Giuffrè, Graciela Guadarrama Baena, Johanna Hoffman, Chiayu Hsu, Alessandro Imperatore, Khary Jackson, Francisco J. Jariego, Andy Jenkins, Daniel Kaplan, Totti Könnölä, Jana Lingrün, Ullrich Lorenz, Nicole Lott, Rachael Lowe, Chloe Luchs Tasse, Lin Lune, Patricia Lustig, Sarah Magill, Mario Mimoso, Elisa Nicolini, Ann Odell, Stefanie Ollenburg, Stefanie Ollenburg, Steeven Pedneault, Sandra Polo, Asad Ur Rahman, Tania Ramalho, Stella Reschke, Fernanda Rocha, Tanja Schindler, Angela Schindler-Daniels, Nicole Seredenko, Umar Sheraz, Namrata Arora Singh, Josiane Smith, Frank Spencer, Sharon Stein, Marie L. Storme, Igor Struyf, Rene Susa, Lisa Taylor, Nicole Thorpe, Daria V., Eric van Gennip, Shawn Van Sluys, Daria Vogel, Imogen Wade, Matthias Weber, Jeremy Wilken, Judy Wellfare.

TABLE OF CONTENTS

INTRODUCTION	9
Why we need more storytelling	10
The project “Stories from 2050”	11
Stories speak diversity about our futures	12
The development process of the stories	15
Nangun Wruk → Food & Agriculture	16
Fenice → Energy	18
Armonia → Climate	20
Pani → Ocean	22
Creative Airmed → Biodiversity	24
STORIES	26
Part 1: Food & Agriculture	28
Seeds of change by Lin Lune	29
Tomato Seed by Giovanna Giuffrè	32
Proximity by Nicole Seredenko	34
Firebreak by Chris Butler	36
A Dreamer in Arcadia by Umar Sheraz	40
Part 2: Oceans	43
Memories on the recovery of a Mediterranean fishing village and coastline by Totti Könnölä and Matthias Weber	44
Indicator Species by Octavia Cade	47
The Waters are waiting for you - by Rachael Lowe	49
Jara and the Gardens by Johanna Hoffman	52
Part 3: Climate Change	55
The Raccoons by Radu Gheorghiu	56
Bela Trust – Technology fixes it all by Ullrich Lorenz	59
Pollution by Alessandro Imperatore	61
Redacted by Khary Jackson	64
Part 4: Sustainability & Technology	67
MIT Technology Review April 1, 2050 by Ann Odell	68
Areas by Fernanda Rocha	73
The Foresighter Pledge by Sandra Martinez Polo	75
Humanity’s Leap by Frank Spencer	76
Part 5: Social Change	81
From a Book to Another by Enric Bas	82
Hunting Shadows by Marguerite Coetzee	86
Build and burn by Eric van Gennip	88
Generation Armonia: a day in the life of an ongoing mission by Tracey Follows	91

POSTSCRIPT

Protopian Futures by Monika Bielskyte and Mario Mimoso	93
URBAN FORAGING A dystopian scenario for the future of food in today's cities	95
Brave New Worlds with Leah Zaidi	97
The Credit Society by Chiayu Hsu	99
The New Religion by Chiayu Hsu	100
Sci-fi The Pure-blooded Elite by Chiayu Hsu	101
Cities are Materials Banks by Johanna Hoffman	102
Inside the first self-sustainable city on Mars by ABIBOO studio	103
EPILOGUE: What can EU R&I policy learn from stories from 2050?	104



INTRODUCTION

by Tanja Schindler &
Graciela Guadarrama Baena



There is a lot of enthusiasm for scenario narratives as means of exploring the future. The European Commission and the European Environment Agency (EEA) develop reference scenarios – reports about plausible futures. Such scenarios often reflect the opinions of today's elite - scientists, industrialists, business people, and policy-makers, underpinning strategies for achieving net-zero emissions, stopping the temperature rise of the planet, averting natural catastrophes, and learning how to live within the confines of planetary boundaries.

Yet, we know that the future is not that obedient to policy strategies. We know that there is rising uncertainty and instability in the global systems, be they economic, political or environmental and climatic, with vast consequences for local systems and ecosystems across the planet but above all for us - the global population. Hence, we set off to develop radical stories – stories that engage communities beyond established elites that may inspire a radical rethinking of future normative scenarios and contribute to more creative ways of understanding and pursuing sustainable futures.

An essential source of radical stories is the prospect of destroying the planet's life support systems through climate change and environmental degradation. In some stories, the Earth has already been abandoned. In others, humans have adapted to a more inhospitable planet. Another source of radical stories is the accumulation of new abilities in the hands of humans through technology.

In stories, such radical futuristic elements become meaningful through what it means to be human: feelings for the other, empathy, curiosity, or whole systems – transformed by the challenges of existence in radically alternative realities and the magic of infinite capabilities.

How unlikely are those futures? - we should ask ourselves. That our planet Earth is growing more inhospitable is considered as a certainty by many scientists. Further, the wonders of expanding human capacity are demonstrated every day for the benefit of humanity. For example, when developing new medicines or to the detriment of other species when we pursue industrial agriculture full of pesticides and harmful chemicals or even harming other humans when it is about weapons.

Why we need more storytelling

Stories and narratives are a powerful tool of Futures Literacy and Futures Thinking. In recent years, they have been fighting for attention next to scenarios and trend research within the Foresight discipline, and there is a good reason for it.

First, the future only exists in alternatives that need to be explored because their outcome depends on today's actions. Second, if we do not imagine our preferred future, we remain relatively powerless. The journey into the future can start in the present by observing trends and then extrapolating them as projections into the future to build scenarios. One of the drawbacks of this approach is that it builds on our current bias, assumptions, paradigms, and constraints and keeps us prisoners of our own rationality. Relying only on scenarios created from today's perspective gives a false sense of security and preparation for the future. However, many aspects of the future will always remain unforeseeable, unpredictable and uncertain.

That is why we need more storytelling. Stories offer our imagination an open space to go beyond the usual thinking. They are not meant to reflect reality but to encourage us to explore the unknown. They train our brains to imagine things that make us more resilient to surprising events of the future. They can wrap a highly complex or sensitive topic into a wand of fog that gets the message across without mentioning the elephant in the room. However, we might need to read a story twice to unravel the underlying novel assumptions that challenge our current mindset.

Stories are not made to give us clear and straightforward solutions but rather take us on a journey beyond our immediate context. They draw us into worlds of imagination that broaden our thinking and open our mindsets so that we can find new solutions in the present. They help us imagine different, sometimes frightening, but also promising futures, and enable us to think about a world we want to live in and which we want to avoid; to make decisions that foster a positive future by acting today. With this booklet and its diverse stories, we want to encourage you to be open when reading **these different, challenging, and sometimes awkward, crazy stories. We hope it inspires you to tell more inclusive, diverse, plural, and positive stories yourself. Make our futures happen!**



The project “Stories from 2050”

‘Stories from 2050’ is an exploratory project with the primary goal to enable its readers and policy-makers to imagine futures beyond the usual thinking. Through a series of participatory futures workshops and an open engagement platform at www.storiesfrom2050.com, we aimed to collect what activist communities, stakeholders, and citizens think, feel and say about our shared futures, with a focus on sustainability opportunities and challenges associated with the European Green Deal. The project aims to develop challenging stories that depict drivers of change, future challenges, consequences of failure and low-likelihood, high-impact 'wild card' events and present them in a form that will ease their use in policy-making processes.

The first set of stories was developed during a six-month process where we invited individuals and communities from all over the world to imagine alternative futures of 2050. Therefore, we made a jump into 2050, unfolding a narrative of a fictional Space Mission. We've told the participants that our Earth had become uninhabitable and sent them on a journey to explore new planets. We defined those planets with particular terrains based on the elements of nature such as 'Earth', 'Fire', 'Air', 'Water' and 'Life' (knowing that life is an extension of the term 'elements'). With a guided process, we've let participants imagine the systems and worldviews existing on those planets.

From this first input, the project team created the Enriched Planet Narratives (see below). They were the guiding stories for the second workshop series, which were split into two parts. The first one was an expert session focusing on the transitional state between today and 2050. For the second one, we took a community-based approach of imagining fictional characters that would live on the imagined planets, and participants had to describe how they interacted with each other. To complete the stories, the project team then selected professional and creative story-writers who used the storylines built by the community as a source of inspiration. However, each writer had the freedom to interpret them and create their own version. The results of this process are the stories in this booklet. Moreover, the detailed approach of the complete development process and outputs of all workshops can be viewed here: <https://explore.storiesfrom2050.com>



Stories speak diversity about our futures

Adding up to 21 stories, the narratives in this booklet were built on ideas by people from all around the world: some experts in the field and some purely engaged citizens with a story to tell. **Stories from 2050** range from plausible sci-fi stories of the future to fictional fairy tales that provoke abstract thinking. Some stories are hopeful; others are concerning. They are going to stimulate your thinking by providing different perspectives and layers of understanding. If you read a story once, you might not fully comprehend it, but you will be able to unfold all of its layers through deep reflection.

This booklet is split into five parts, each containing a series of stories inspired by the five different planets. Each planet is structured by one central theme that is relevant to further considerations of the impacts of the European Green Deal: **Food & Agriculture, Oceans, Climate Change, Social Change and Sustainability & Technology**. These themes arose organically throughout the whole process, and the stories were curated around their core essences. We would summarise these essences as follows.

Food and agriculture practices come with the burden of equal food distribution, eliminating world hunger, and sustainable food production methods, including urban farming, localisation, and laboratory meat production. These processes include concepts such as zero waste management, circular economy, and a significant mindset shift leading towards food sharing and distribution with the idea of making food a common good accessible for everyone. The future also holds risks: we see biodiversity globally shrinking. The only way to protect some species could be seed banks for plants and animals - storing their DNA to revive them once their survival conditions have been improved. To recover lost spaces due to increased natural disasters such as wildfires, droughts, or flooding, we might have to return to our roots and learn from indigenous communities how to become balanced with nature and enable the environment to recover. We need a new relationship with nature, and therefore we must increase the education of sustainable production and the revival of soils.

Oceans function as an important cooling system on Earth and work as a climatic thermostat. Our oceans both create and face severe consequences of climate change, including loss of oxygen, sea-level rising, increasing temperatures, and biodiversity loss. Besides polluting the oceans with plastic, chemicals, and by-products of farming and fertilisation, commercial fishing has dramatically depleted existing fish stock, not only harming individual species but the entire ecosystem. Water and the seas have always provided tranquillity and a revitalisation space for human beings. However, with the rise in pollution and fewer rehabilitation spaces, mental health issues may continue to

increase. Hence, it is our responsibility to protect fish stocks and increase global collaboration to protect the oceans - perhaps even by making them a common good, with legal representation to protect them from any harm or undertakings disrupting the ecosystem. Otherwise, we may be forced to significantly and constantly change our environments and adapt. Due to rising sea levels, cities may need to become a network of floating housing areas and platforms. Consequently, water transportation could become the most effective way to move around.

With our damaged oceans, **Climate Change** continues to be on the rise. In addition, increased air pollution over the last decades has put us on a path of no return. One solution seems to be to use technology for good, by filtering the excess carbon dioxide out of the atmosphere, for example. Additionally, the rise of biotechnology, together with a new relationship with nature and a sustainable way of living, producing, consuming and recycling, has the potential to provide Earth the time it needs to recover. However, if we continue to use technology to harm the environment further, the only chance for survival will indeed be to escape to outer space and search for a new habitable planet, leaving most of Earth's species, including humanity, condemned to be left behind and die. An option not welcomed even by those visiting or dwelling in outer space.

Social Change and a massive mindset shift towards a global community that respects nature, has empathy for diverse cultures and generations, and builds bridges against the current phenomenon of societal polarisation and inter-generational conflict may help us thrive on this planet with all remaining living species on it, including humanity. The disconnection from nature may be one of the leading causes of mental health issues, increasing stress levels, and higher suicidal rates. We should take this as a warning sign; our planet may survive after recovering from humankind's exploitation, but most of us cannot live without it. Once we understand the urgent need to protect this planet, we can channel all our energy, maybe by using the competitive drive we unleash so often during our beloved sports events. And use this power to change our future for the better; we may jointly establish climate equilibrium.

We live in the Anthropocene, the geological age where humans have the most significant impact and influence on climate, the environment, and the entire planet. Biodiversity on Earth is shrinking at a frightening pace. The extinction of animal species caused by human activity may lead to the next wave of mass extinction since the disappearance of the dinosaurs. No wonder space travel has always fascinated humankind, therefore fictional space travel was used in this process to question whether it is one - possible and second - desirable, to leave Earth behind and disrupt another planet. Furthermore, space travel fantasies and aspirations are linked to the quest for knowledge and exploration, encouraging participants to go beyond their usual thinking and leave current barriers and obstacles behind.

Humans seek advanced **technologies** and explore the concepts of Singularity and Transhumanism to adapt to these challenges rapidly. Mainly because we still see human extinction as the biggest threat. The alternatives hint towards massive mindset shifts; re-connection with nature by removing humans from the centre of our imaginative universe. If transhumanism is meant to increase people's empathy for each other and nature, or enable us to communicate with animals and nature itself, maybe there is hope. We need to create more awareness of the things we might lose by showing what we could gain - imagining together a world we want to live in, so there is no need for a planet B because we were able to save and create a **sustainable life** on planet A, our home.



The development process of the stories

The following Enriched Planet Narratives were written after the first series of workshops and served as inspiration during the Storyline Workshops with our project experts and community members. This was the starting point for the stories showcased below to come to life. The five planets were in turn prompted by elements in nature such as Earth, Fire, Water, Air and Life (with 'life' being an extension of the used term 'elements'). Each planet also has a focus on sustainability topics addressed within the European Green Deal.

- **Nangun Wruk** based on the element 'Earth', focuses on the topic 'Food & Agriculture'
- **Fenice** based on the element 'Fire', focuses on the topic 'Energy'
- **Armonia** based on the element 'Air', focuses on the topic 'Climate'
- **Pani** based on the element 'Water', focuses on the topic 'Oceans'
- **Creative Airmed** based on the "element" 'Life', focuses on the topic 'Biodiversity'

→ View the entire co-creation process and workshop design here:

explore.storiesfrom2050.com

Nangun Wruk (Food & Agriculture)

PLANET NANGUN WRUK

Planet Nangun wruk can be described as the better Earth. The atmosphere on the planet seems to swallow sound; it is soothing, calm and safe. Although the general surface of this planet looks dry, there is lots of underground water. Pockets of oasis thwart the drought and provide soil of mud where food is produced. There is a collaborative mindset. Wrukies are looking out for each other. Overall, it seems they could preserve some resources as they live now quietly and modestly and in unison with nature. They are part of the ecosystem and are ethically conscious of what they decide to consume. Food production is focused on zero-waste, and agriculture is balanced with small forests and desert areas. Nature is getting a chance to recover.

Blockchain data is tracking the use of the resources, and an algorithm reminds the population when to slow down and when to stop producing. All-natural resources are communal; for example, it is illegal to eat fish whenever they want. There is a tracking system of the fish population living in underground lakes. As a consequence, Wrukies follow mostly a vegetarian diet with a few exceptions during community holidays. There are gatherings every weekend where they drink rice wine and play music. Self-sufficient townships are all connected with each other, and a competition on which area uses the least resources arose. New crops, fruits and vegetables with equal nutrition value have been developed artificially, the daily intake of food is measured and adjusted to personal needs. Their credit system evaluates the environmental impact; each town's budget depends on that.

Everybody is appreciated on this planet, and the population's skills are used to their best potential. There is a social support system amongst each profession, and it is not about the money you earn but rather on the value you provide to society. Wrukies are learning from spending time outside and observing nature.

#01
EARTH

Their children learn the relationship with nature before any other skill; to preserve nature, plants and animals for generations to come. Although there seems to be no law enforcement, the habitants live up to ethical rules. Their purpose is to build resilience and leave as little footprint as possible.

However, it has not always been like that. They were times where Wrukies had to focus on pure survival. During those times, when the planet was drying out and before discovering the underground waters, they learned that only if they are truly a community they will find a way to survive with the little resources they had. Only when they valued each community member equally and counted on their knowledge and different skills, they learned to survive. Their collective knowledge built new shelters embedded with nature, which provided the beginning of it all, allowing for the oasis to grow. After the underground water was discovered, they built a recycling system enabling them to use water for multiple purposes, for washing and agriculture, before filtering it and releasing it back to the ground.

Fenice (Energy)

PLANET FENICE

Fenice is a place where energy is overabundant and needs constant adaptation from the inhabitants to find new ways of using energy without getting burned. There is no effort on creating the energy but rather how to contain in or transform it into something else. Most of the energy is coming from the sun, warming up the planet so strongly that wildfires continue to burst out on unpredictable areas. Where the fire rules, there is destruction, but afterwards, the soil is full of nutrients and life returns. This place can be overwhelming; its inhabitants have very little control over it.

Fenicians adapted by using a modified body-armor made from a new form of mercury to survive the heat. Some have lost body parts due to fire or heavy work, but they upgraded their bodies with stronger technology. They do not see themselves as Cyborgs like others would describe them, but rather, they see themselves as an enhanced species. The Fenicians, on the other hand, live underground.

Fenice has another challenge; due to the constant fires, a new, more robust species have evolved; they are called Parajeevees. They occupy the brains of Fenicians and take over their bodies, turning them into creatures from ancient times. Due to the destruction caused by the fire, the Parajeevees are pushed to become intermittent nomads who follow the death zones that soon become impermanent hyper-fertile areas. They are a species that survives with very little water. However, once they are overly hydrated, they dissolve into a powder, fertilizing the soil – it seems like thirst is a disease. Both species seem to be on an opposite evolution timeline, and the question remains, who will adapt better to this deadly planet? Due to the constant emerging fires, the population stays in equilibrium. You could call it a system of 'reversed entropy' – Fenicians feed the soil until the fire burns it down.

#02 FIRE

Advanced technology can turn the firestorms into energy stored through an endless underground pipe system, which combusts the fumes and converts heat into energy. The priority is, however, to conserve the water via heat dissipation. The outside of the underground pipes works like a refrigerator using heat dissipation to condensate, collect and store water.

Next to the underground pipes are the Fenicians housing which provides shelter from the overground fire. Water is holy and not exclusively used to drink, as it serves as a coolant for the underground tunnel system. The food is stored in cooler places deep underground, whereas the cooking happens close to the surface, providing the perfect cooking temperatures for fish and chicken. However, this feast only happens after the fire bursts move on, celebrating the soil's rebirth above. Fenicians live in small communities, follow rituals of mutual care, of reparation; they have been through so much. There is no hierarchical representation of each group but instead fractal decisions from the ground up. Due to the tiny groups living together, roles are very fluid with no set family structures. Everyone cares about each other, and love is mutual.

Armonia (Climate)

PLANET ARMONIA

Armonians value justice, equality and transparency; they live in an egalitarian society, very balanced with nature as they are a closed group made of multiple species. They are also a non-violent society that is reflective and not competitive. They have collective visions of what success is and what isn't. Their traditions are constantly being reinvented!

One of the unique things about Armonia is the use they have given to biomimicry; they have used this concept as a way of life and to innovate in many different ways, in the vehicles they design and the way they manage resources, the way they communicate with each other. There are hydrogen vehicles shaped like clouds that transport mostly goods from community to community; they use deeply adaptive tech, which is always morphing and responsive. These are hidden sensors that work discreetly with nature and provide real-time data. No tech is wasteful, and every single component is reconstitutable, as is the case with almost everything they create in here. They call it the Bio-economy. Sometimes you see these strange-looking floating vehicles that are like clouds, they filter the air, so the air is always clear. One can also see small ecosystems bubbles like islands that host a particular type of plant species in the distance.

In Armonia there are no seasons as we know them; this place is like no other. It's inconceivable how the surface and what is an underground blend so well, yet they are like two different worlds. Corals are visible on the surface, and they look like trees. Underneath, these coral trees connect with others, all over, forming a network of diverse and magical creatures, fully interconnected, almost like a nutrients system. Everyone in Armonia contributes to a balanced system. Its inhabitants are not interested in growth or "profit" but in resilience and sustainability. It's a blockchain-based economy, and their currency, creativity - Armonians "pay" with their creative input and is usually utilized to meet their basic needs and improve the system. Interestingly, one receives various benefits if what they do promotes harmony; consequently, if what is created is stress, one may get taxed. In Armonia, the rights of all species are preserved, as they all assemble regularly. How they make sense of things and how they operate is by voluntary contributions by which responsibilities are distributed. And everyone is indirectly encouraged to be good and do what makes them happy because if it adds harmony, one gets more benefits!

#03
AIR

Pani (Ocean)

PLANET PANI

Pani is peaceful and calming; its ecosystem is in close harmony with its inhabitants. The water here is in constant cycles of use and reuse. Life freely shares abundance with others while retaining its pristine nature. Due to the density of the fluid atmosphere, noise is filtered in Pani, which allows its inhabitants to enjoy the flow sense of music customized to the soundtrack of their life journeys they have fed a strong dependence, no nature no life.

In Pani, circular is everything. They follow the principles of Circular Economy and Ubuntu to live together nicely. The water on the surface is beautiful, and so is under it. This is due to Panis hard work to keep a good balance in the planetary systems. Panis lives in line with the idea of "commons", respect for one another; here, there is no room for guilt. Throughout the years, they have co-created a Manifesto to define the guiding principles on Pani, but this needs to be respected by the different communities. This is possible as they follow the co-creation of governance structures, Circular Leadership based on innovative governance.

Although Pani is usually quite tranquil, sometimes there are big waves caused by underwater volcanoes. The waves are strong, powerful and can become very destructive. The wave power, together with solar energy, provides Pani with energy. If the power of the volcanos is not harnessed quick enough, it can be catastrophic. That is why Panis say that all resources in their home are in constant motion.

There is an important role for biosciences and technology, rather than mechanical or electronic. Panis have developed nano-fluid-ecosystems that create immune tools, hydro-drones, and their one and only metamorphosis. This is a special and unique characteristic of Panis, and it's enabled by biomedical technology. It allows them to breathe underwater when needed and deal with the rough energy flow.

#04
WATER

The inhabitants evolved and adapted to the challenging, ever-changing surroundings. Likewise, they live in floating villages. Despite how advanced they are and their passion for hi-tech, they prefer to be in naturally grown structures and would rather use natural materials that fit better with the environment. The wave power factories are working as a dam sheltering the villages, but they also get drifted over the ocean due to the massive energy.

Panis love fish; they have an interesting relationship with them, some are used as food, and others provide a new form of transportation. By planting oxygen bubbles through exhalation into the ocean and via the underground currents, this airhole enables a steady and dry float across the sea beds. The fishery is controlled by AI, a bio-sensing-agriculture program that helps keep everyone and everything in balance, avoiding overproduction or overuse. There is no currency use, but bartering and giving favours the local trading systems, only across long-distance exchanges a record system tracks the value exchange.

Creative Airmed (Biodiversity)

PLANET CREATIVE AIRMED

Airmeds live by the ethic 'use only what you need'. The artificial concept of 'needs and wants' does not exist here, which is why ecosystems continue to thrive and maintain their capacity to provide important functions for all. Due to this, all means of life can be shared. This sharing economy also means that there is no tendency to hoard anything as there is no concept of 'value' as we know it. The entire economy is designed around having access to the means of life rather than owning them. For this reason, one can simply use a good for its utility when needed without having to possess it.

Intelligent feedback is used to ascertain any risks of a possible overshoot, depletion, or contamination. In the case of identifying a tendency or behaviour that is not sustainable, the system automatically determines a sustainable alternative. Advanced open-source technologies are used to communicate via a telepathic technology that is inbuilt in all creatures and planetary forms like some sort of bionic enhancement that are shared at a species level. Thanks to this, it is possible to communicate at both micro and macro levels without using words but rather by sharing feelings and sensations in a "six-sense" kind of way. This advanced form of communication virtually eliminates any potential for misunderstanding as the language is not subject to interpretation any longer. On Creative Airmed communication forms a planetary mind. The inhabitants understand their dependency on the environment, which is why they live in a symbiotic relationship with it. While being a technologically advanced civilization, Airmeds' primary concern is to continue improving their harmonious existence with nature. Eco-villages are ubiquitous, as well as smaller pockets of inhabitants. Existence in this organic, toxins-free environment has allowed the lifespan of the inhabitants to extend substantially.

#05

LIFE

Airmeds live in holacracy; hierarchies have been replaced by collaborative groups concerned with planetary stewardship and advancement of knowledge. Due to the shared economy and the absence of trade and related gaming strategies, the society enjoys high levels of trust, tolerance and cohesion. Every single inhabitant is recognized as a unique individual and a valued member contributing to the diversity of Airmed society. Nature is represented in decisions that impact all; decisions are made collectively through embedded neural networks, global awareness and participatory democracy.

Creative Airmed is in constant change; everyone here has a gift, something to share and learn as part of their collective exploration and co-creation, making it such a kinetic and inclusive planet. Besides, pink trees and flying purple jellyfish are everywhere!



Stories



Part 1

Food &
Agriculture

Part 1: Food & Agriculture

- 1 Seeds of Change by Lin Lune
- 2 Tomato Seed by Giovanna Giuffrè
- 3 Proximity by Nicole Seredenko
- 4 Firebreak by Chris Butler
- 5 A Dreamer in Arcadia by Umar Sheraz



Seeds of change by Lin Lune

2021, ETH Zürich Seed Bank

Cynthia Yu walks through rows and rows of shelving, a cuboid beehive with drawers the size of index cards, and whispers Latin taxonomy. She knows that she does not know how many species go extinct every day, and she knows that her unborn child will be named something special.

2030, ETH Zürich Seed Bank

"Hey Cynthia, you should take the day off. Everyone's seen the news."

Cynthia sheepishly glanced at the entrance of the community garden.

"You *have* seen-" Cas began and then put away his phone. "Oh. And them too."

A child hesitantly rounded the corner, clutching a packet of vacuum-sealed seeds with a tearful expression.

"Yup," Cynthia said matter-of-factly. "Waterwheel, this is Cas. He's planting heirloom seeds right now, stuff you'll never see in the supermarket."

Cas crouched down and added, "this variety of carrot here was first grown in Asia, and it's purple! When one seed bank gets in trouble, we all help out and share our seeds. Nothing is lost."

Cynthia chuckled at her child gravitating towards a sprouting plot. "I didn't name you after an endangered plant so you can cry about it."

2038, Zürich

Waterwheel woke up to a cacophony of notifications and was flashed back to their childhood when a seed bank was looted in a conflict, and their mom's phone rang for days. Waterwheel dived into their feed.

A slightly famous local tree was regionally trending because the tree had been cut down just five hours ago when the city was sleeping--but the internet was awake and noticed an abrupt decapitation in the tree's digital sensorium. Waterwheel had gained a small but loyal following because of their citizen science project that tracked the tree's metabolism, and now the outraged community boosted them to fame.



Angry people shared their photos of the tree and chestnut birthday cakes. Waterwheel had personally roasted its chestnuts every fall.

As Waterwheel read on, it became clear that their project was the main reason why the tree was marked for removal. The data had gained scientific attention when the tree was injured by construction last year, and the three years of healthy metabolism followed by eight months of deterioration made a tragic metaphor when visualized as a wave graph.

Now with the ghost of the tree growing online in open source, Waterwheel consulted their mom to take advantage of the sudden fame. They would mourn by taking action.

2044, aboard the *Blauer Himmel*

"...is something we humans understand at a subconscious level. I was lucky to grow up around plants, but anyone can understand that the trees speak through data; *why are my roots compressed by flat boulders? Why have I been cut with iron?* When you personally *feel* the Bäckeranlage Chestnut's melody get weaker and weaker and disappear overnight with not even a chance to react, well, people burst into tears. It is not some numbers on a graph anymore; it is real. It *affects* you. It *unites* you, and you do not destroy that which is beautiful."

Waterwheel finished their talk and adjusted their XR setup for Q&A.

The wind-powered passenger and cargo ship slowly but surely made its way across the Atlantic.

In the last five years, Waterwheel has helped build a grassland in a harbour, a swamp in a city, lived on a giant sequoia for months, planted a wall of endangered dragon blood saplings in the path of war, and left enough sensors on all of those plants so a global audience can don an XR suit and be immersed in the beauty of interactive visualized data.

Half an hour later, Waterwheel was discussing with an audience member about an experimental graveyard garden, part science and part art, that can track every molecule as a body returned to nature.

2047, Buckingham Palace

Waterwheel stared at a bright yellow flower, likely non-native, definitely cultivated, and could not recall its name. Instead of letting their botany app identify it and then continuing the inspection of the Queen's final resting place--Waterwheel's grave garden design firm had scored the proposal to carry out the Queen's will of letting her death be meaningful for the environment--they stared at the flower and watched it slowly close up as the sunlight grew warmer.

Somewhere in a part of their mind not occupied with XR art or fear of ecosystem collapse, Waterwheel realized they were burnt out, by all things, on working with plants. They had saved countless trees from destruction by turning biological data into a story, but they had neglected to measure their own stress levels.

They pinged an assistant and told her to distribute all their other projects to the junior designers. Waterwheel would end their career on a high note and was sure their audience could empathize with them because they were already empathizing with plants.

2050, Swiss Alps

Specks of diverse alpine flowers dot a meadow as Waterwheel walks a dirt path with a scientific drone. They've settled in a rural farming commune that's part of a self-sufficient Europe spanning co-op network, living a slow life in a village of mostly young people that also feel the same.

Every now and then, they tamper down the instinct to get involved with the board of directors.

The dairy sheep and goats, all native breeds well suited to the rough alpine ecosystem, also exist as data points in the village network, an internet of life that was synonymous with art nowadays. Waterwheel was credited as a driving force of the humanization of big data, giving voice to plants and nature and making long-term life more valuable than short-term exploitation.

The commune's infrastructure was subsidized by the government, and everything else is either from fellow co-ops, like the mushroom farm and the internet of life network, or rarely bought with money earned from selling artisanal cheese.

Waterwheel advises and spectates at her firm now and is not familiar with the new DNA computing techniques that make up the bulk of their farm sensors, but it's alright. When they use the community XR lab to view the farm's own sensorium, it's not an overstimulating carnival of rainforest or a heavy weight on one's chest like thousand-year-old trees. The long sleep and short wakes of alpine flowers are just as unique and resilient.





Tomato Seed

by Giovanna Giuffrè

It's the 26th of May 2050. Today is my birthday. My son wanted to celebrate my birthday at a famous restaurant on the moon. He wanted to fly us to the moon in his new airbus. But I refused by saying that I would like to celebrate my birthday at our house. Now the party has ended, and I am sitting on my terrace. The sight of many vegetables and fruits growing on my balcony, bees are flying from plants in the surrounding buildings, and flowers as far as my eye can reach is magnificent. I cannot stop smiling, thinking back on how different my city has become: technologically advanced yet climate-friendly. It was not always like this, global warming had us all living in fear.

It all started many years ago when I was in my 20s. The year was 2020, and the COVID-19 pandemic had shaken up the world. Now, that story is just a few pages in your textbook, but we are going through something we were not prepared for at the time - a true health crisis. We were losing loved ones without being able to say goodbye. We were afraid of contact, fearful of closed spaces, afraid of travelling. People feared each other. They felt loneliness and loss. And an economic crisis flung wide open the door to social distress. In a crisis, it's common to look for a scapegoat, the sinner, the plague spreader. This time was no different. People started to blame the Chinese, the pharma companies, the young, the elderly, even the joggers.

For my part, I lost my job and blamed myself. I started going to the nearby park. There was something sacred in the richness of nature while humans were tangled in the fear of the end of the world. It was at that moment that I first grasped the intrinsic value of nature. Suddenly, I felt I was doing too little to help nature, to protect and restore it. So I planted a tomato. It was a small step, but it was the start of something. Two months later, it died—what a waste of time, money, and patience. I realised I needed a little help and I called on my friend Francesca.

She had given up her consultancy work to become a beekeeper. A keen participant in urban community action, she knew why my tomato died, as well as many other things. I learned 'all you need to know' about nurturing a vegetable garden on my terrace through hours of video call meetings. Hint: it is not just about water. There's the culture of the soil, the time of seeding, the attention to the sun and the protection against the wind – not to mention a myriad of insects that you should know about. Francesca also suggested me reading some books related to agroecology. It was a revelation: not only did I have food growing on my terrace, but I was enjoying this new fatigue of learning how nature works. And I took to social media to spread the word. I started a campaign on doing something small and accessible to take care of nature. I was not expecting to become an influencer or to start a revolution. But probably the timing was right: the recovery plan with its green promises was there, companies were willing to follow new directions, and citizens

were looking for a change. It wasn't painless, but plant back better! My urban garden and Francesca's suggestions got millions of views in just a handful of months. After endorsing a few celebrities, I started to see tomato plants sprouting in nearby buildings. Maybe because it was a good excuse to speak to neighbours again, but the city landscape began to change in the next couple of years. Policies followed: urban lots for gardening became normal, not the exception. Incentives were given for vertical farming, community actions, green activities and ensured a green space in each neighbourhood. Most importantly, the experience of growing a few vegetables triggered citizens' curiosity around the food supply chain. Many started questioning where the food came from and how it was produced – searching for products harmless to the environment and their health. The citizens' curiosity and new interest changed the market rules; after all, eating is a political act. Finally, in 2040, social and environmental values sneaked into the globalisation laws.

It was a slow, deep, sweet revolution—created by a tomato seed—that build-up the landscape I am part of today.





Proximity

by Nicole Seredenko

Each morning of the school week started the same way. Father Jim Mitchell and Harriett Baker walked to school together, a twenty-minute walk that was shortened by cutting through the farmer's market. At a quarter before seven, every Wednesday, the local makers and growers were still setting up their stands for the day ahead.

"Have you ever tried the honey from one of those stands? It's remarkable," Fr. Jim said.

"I never have. And why is it remarkable?"

"Well, these beekeepers make the honey in their backyard - they must only be two miles away from the school. I brought some to Sunday dinner at the soup kitchen. Besides the taste, I found the proximity remarkable. Straight to the table of people who needed it."

"Proximity," Harriett repeated. "Jim, have you ever heard of vertical farming?"

"Of course," He said. "Only read about it in the papers, really. That type of technology is beyond me. How did it come to mind?"

"Proximity," She said with a shrug. "It's a way to grow local produce, in any space you can."

"Surely big grocery chains only experiment with that sort of thing."

"I could experiment with it in the classroom," She said with a small shrug, then a devious smirk came to her lips. "My biology class could become a lot more interesting."

"What would be the purpose of it? For mere pleasure?" He asked.

"You liked the honey because you could take it straight to the people who needed it," She said. "What if our students could take even more food to those people who need it? That they grow themselves?"

"I would be amazed," He said. "But I'm sure the people who need a meal on Sunday evenings would simply be grateful."

It started with a simple idea, posed to the sixteen students in her morning biology class. She read suspicion from some, unwaivered enthusiasm from others, and a few silent members. They poked holes in the strategy. They doubted whether it would go beyond

the growth of a few basil leaves for taste, but a handful of students decided to try, if only to entertain their favourite teachers' curiosities.

The Farm for Father Mitchell, as the students named it, started in the back of the biology classroom, on repurposed shelves and LED lights. Father Mitchell made his requests to Harriett, who fed them back to her students - basil to start, yes, but then also spinach, romaine, and cucumber. Space ran out in the back of the classroom, so home-grown vegetables bled into emptied closets. Then on top of desks. Then the classroom itself. Soon Fr. Mitchell did not need to feed requests, so he picked the produce himself between theology lessons and soup kitchen preparations. Plates were filled on Sunday nights, then baskets were filled for people to take with them for the week.

The farm overflowed out of the classroom, by the students' will. Some built their own at home, nestled in a kitchen crevice or on a bookshelf. And Harriett Baker's students nourished the fruit of future biology students, who fed its expansion. A journalist requested a tour when Mrs. Baker retired. A supermarket manager followed. People marvelled at a self-sufficient microcosm of the world, but many did not yet dare to try it for themselves.

But students from other schools took to their own vertical farming projects, and Father Mitchell took the idea to other parishes. These farms were nestled in urban corners, sustaining those who were in need of them.

Eventually, bigger spaces were needed to meet community demands - abandoned warehouses and buildings that could not be put to better use. Local communities no longer needed to spend on transporting large sums of foreign produce, and farmer's markets were filled with students selling products that were once part of a mere experiment. When supermarkets needed to cut costs and meet higher goals for a better world, they came to them.

Vertical farming flourished, from charitable work for a single community to crafting self-sustaining communities. Sustenance now came from proximity. In the years to come, however, many would begin to take part in the joy of proximity.



Firebreak

by Chris Butler

Firebreak, 2025 by Chris Butler

“Hey, Jerry, how have you been? It’s great to see you are still open.” I looked up from the glassware I was wiping water spots off.

“Dan, I haven’t seen you for a few weeks. How have you been with, you know, all of the limitations?” I threw the rag over my shoulder and braced for yet another sad story.

“It’s been fine. I can’t complain. We went wholly into this reset. Hell of a time for you to start a BBQ joint, though. How is your leg?” The reminder made my knee tense up in the brace, which then shot pain up my back. I’m pretty sure he could see my wince.

“It still hurts,” not going to avoid it with the facial expression I just pulled. “It is good to be doing something again, though. I’m running low on the meat we use, so I’m going to focus more on the sides. Still getting everything from Jack’s farm since it is the only one I’m allowed to buy from now.”

I could tell the tactical plans I was making were depressing as hell to Dan based on his grimace.

“It seems like you are adapting at least.” Dan frowned, and his eyes darted around the restaurant.

“Yeah, you could say that. I kinda think about this like a firebreak. Before I had to quit the department voluntarily, we would use them all the time. It is where you run ahead of the fire and set a smaller fire you can control. Clear the area, so it doesn’t feed the larger system.” I could feel the old heat in my face.

“Thing is, we never did it as well as the indigenous populations, as the Miwoks did here in Northern California. They thought about doing it before there was a huge fire. They did it everywhere, not just in the places that land was worthless. We know that fire is coming for the entire world now. It is time to take action.”

“You are probably right. I just hope they don’t have to invent a new term for what comes after the ‘very extreme drought’ later this year. I hope the wildfires aren’t as bad.”

“Here is to hope... what can I get you today? I have a bit of brisket left..”

(Real) adjustment, 2035

“I’ve got to get more sides of beef this time. The guests are starting to get pissed off, Jack. They get so little.” I kicked a bit of dirt in front of me as politely as I could.

“Your restaurant is never going to survive in this if you take that attitude. You know that your ancestor credits are low right now. Beef isn’t cheap. This last year was bad for supply. Even though this farm can only service restaurants within a hundred miles, we had more head die from exposure than before.” He was right.

“Vat grown beef?” I wondered partially to myself.

“Jerry, I’m a farmer, not a lab tech. Can’t teach this old dog new tricks. My grandson says my way is to just keep providing high priced, real beef to people until I retire. It isn’t that far away. Not looking forward to the reduced meals though with the credits I’d operate on.”

He left me with an option after negotiating our contract for this year: “have you thought about talking with Valentina? She is over in Bodega Bay with the modified mushrooms. They are adapted to the saltwater and grow pretty beefy.”

Walking back to my car was especially hot this February. The gravel crunched under my old steel-toed boots. Maybe there was a way to sell this.

“Call Morel Imperative and head home”, I announced to my car and shut the door. I immediately rolled down the windows and got moving for some air. My new Apple Watch adjusted to the recent heat and started cooling my inner wrist. It made some difference, even if it was all psychological.

“Leaving for home and calling”, my car responded. The only sound was the rushing of air past my ears.

“Valentina.”

“Hey Valentina, it’s Jerry from the Phoenix BBQ in Sonoma. How are you doing today?”

“Great! I’ve been to your spot. Great ribs. What can I help you with? Want to make an order?”

“Yeah, that was the thing. I’m just not sold on them. How do I get people to accept this?” I could hear myself borderline whining.

“Here’s the thing: you can’t afford to only sell beef right now. The world can’t either. What is most important is that we find ways through this, together.”



She continued after waiting for me to object, “honestly, I don’t think my business is going to last for another ten years or so. The technology is going to get there soon enough for vat-grown so it can be available to more people, like yourself.”

“You should be asking yourself: how do I get to the next thing. And the thing after that. If we don’t do that, we don’t address these little issues like getting people to buy mushroom-based hamburgers; we won’t survive as a species. That is why we did the ‘limiting.’ That’s why we are where we are now.”

My mind wandered. What would my grandchildren’s children think? How would my ancestor bill be presented to them in my death? Why were we doing any of this?

“It’s like an escape fire,” I muttered.

There was a pause. She finally said, “what?”

“Sorry, zoned out there. We need to take some action now to save ourselves from the fire. OK, I’ll buy a few cases to start, but I want your help. How long could I smoke one of these before it falls apart?”

(More) balanced, 2050

“Sofia, great you could start today, I need someone with your micro-credential, and we are very short-staffed in front of the house on the weekends.”

I threw a fairly new hemp apron back to the trainee.

“Let’s head up to the front. As you will see, walking from the garbage to the front is like going back in time. Even though it looks like some type of fancy chemical plant back here for processing the trash, it still stinks to high heaven midday. In the hundred-plus heat, all of the juices on the ground get real bad.” I opened the door and waited for the trainee to walk inside.

“Maybe it didn’t stink as bad when the weather was hotter. I think it was because we had to wear masks for the fires. I’m fine with it stinking again if that means it isn’t as hot as before.”

I walked ahead and turned around, opening my arms to both sides. “Now back here are the standards: synthesizers, grow tanks, and printers. Through this door, you get to the grills and prep areas.” I walked at a hurried pace so I could get back to adding wood chips to the smoker.

“We arrive here: the least technical part of the job. The one that actually requires you to talk to people: the chalkboard.” I picked up a piece of charcoal and wrote the day’s date.

After putting it back down, I clapped my hands together to remove the black dust left on my fingers.

“There is a bin in the host stand with more of this charcoal. If you run out, let me know, and next time I’m north, I’ll grab some more from the clear zone.”

“Are you allowed up there?” Sofia seemed a bit concerned it was something illegal.

“Yeah, I used to be a firefighter. I know the department up there. They don’t mind me grabbing some of the old trees that have been burned. They only really stopped people going up there during the evacuations.”

She didn’t seem so convinced, so I continued: “Now that most people are gone, it is OK. There isn’t anything else to steal up there. No one is going to live there again until the weather doesn’t cause so many wildfires. That’s probably at least 20 years. At least it isn’t more than a few decades.”

“Let’s get back to the kitchen. I could use your eyes on the synthesizer. It looks like we need to take some action on the new software update. And then the grow tank. I’m worried we are about to get a full bloom in the beef one if we don’t adjust.”





A Dreamer in Arcadia

by Umar Sheraz

Nadia yawned as she started poring over her journal and began to think of how to piece together her daily journal. As an anthropologist working on a comparative analysis of food resources and conflict, she had spent the last three months on NANGUN WRUK on an Intergalactic scholarship. She had specifically been chosen as she had been a champion of communal harmony and a believer in change being slow, measured and carefully thought about before being implemented. Her past three months on the planet had been an eye opener to the alternative ways of co-existing and communal harmony and she was wondering how to translate some of these learnings to planet Earth.

In the morning, Nadia had witnessed a community meeting which was summoned because Plearn was stealing rations from somebody else, due to drought. For her, this experience was memorable as there was a calm sense of community togetherness as a resolution to all problems. The matter was resolved amicably with a rationing of resources, without anyone being hungry. But her Aye Caramba moment was the sharing of technology between the complainer and the respondent, without any legal hassles. Her mind wandered over to Earth, where she would be resuming her lengthy legal battle over genetically altered legumes and their Intellectual property rights. Oh, how she wished that conflicts would be similarly resolved amicably and cheaply, in one meeting?

On the way back from the community meeting, Nadia stopped for a moment to gaze at the small fields of Darshin, an indigenous crop and main staple food of NANGUN WRUK. The philosophy was that less was more and only sow as much as is required. She had envisioned scenarios of zero-wastage of food but this planet was its living embodiment. Every part of the Darshin crop is utilized, eaten and then recycled as nutrients for the next crop cycle. A vegetarian diet is observed, so water wastage is avoided. Nadia's idea of in-vitro meat was shunned by the locals as they did not want a divide of 'haves and have-nots' in their midst.

As Nadia trekked back towards her residence, she glimpsed at the beeper on her watch indicating her daily calorie intake, fresh air and mandatory outdoor living time and the number of communications she had made with other inhabitants. This health-onomics and lifestyle form the glue which brings the whole planetary community together. Eat well, live well is the mantra. The pursuit of unhampered growth, unabashed profit making and unethical practices is a distant dream. Nadia wonders what would happen if capitalism found its way to this planet.

As she jotted down her final thoughts to end her report and file it, she started thinking about how to put ideas to practice. To begin with, it was important that this does not just

become one more best-case study that gets shelved. Instead, she had started thinking about dissemination, engagement and communication with various relevant and non-relevant stakeholders, including her V-log which had high numbers of followers. Also it was hard to unremember how communal meetings were used to resolve thorny issues amicably and these techniques could be used to resolve the issues of planet Earth. Finally, the technology for the commons, could be used to remove the differences of the 'haves and have-nots' and create an equitable future where nobody had to sleep with a hungry stomach. As she finished the journal, a siren for the mandatory lights-off blared across the premises. 6 hours of rest was mandatory for healthy and positive living and perhaps that was another lesson to be learnt and logged.





Part 2: Oceans

Part 2: Oceans

- 6 Memories on the recovery of a Mediterranean fishing village and coastline by Totti Könnölä and Matthias Weber
- 7 Indicator Species by Octavia Cade
- 8 The Waters are Waiting for You by Rachael Lowe
- 9 Jara and the Gardens by Johanna Hoffman



Memories on the recovery of a Mediterranean fishing village and coastline

by Totti Könnölä and Matthias Weber

Francesco is once again on his terrace and letting his mind drift along with the sea view. After retiring from the European Commission in 2045, he moved back to the Italian village where he grew up. He has something important to tell Salvatore, his old schoolmate who never left the town but followed the family tradition as a fisherman. Francesco delves quickly into his old memories of the collapse of fish stocks, the *establishment of a local marine protected area (MPA) and the more recent boom of kelp permaculture farming and tourism*.

In the mid-2020s, fish stocks collapsed, and Salvatore, among other fishers, had difficulty earning a living for his family. Satellite-based high-tech systems were introduced to monitor the fish stocks. Still, the technological upgrading was of little help to the underlying problems of over-fishing. Alternative economic opportunities were scarce. The regional government was slow, and European funding for new regional development initiatives disappeared in the pockets of intermediaries, investors and politicians.

Francesco still remembers vividly the surprise call of Salvatore asking for help and inviting him onto the boat to witness the scant catch in his nets when returning home from the sea. At the time, Francesco was working for the economic development office of the regional government. Up to this day, his words to Salvatore remain crystal clear in his mind: “Complain to the central government and organise among yourselves, the fishermen, to defend your future. There is little I can do from where I am.”

Time passed, and Francesco moved to Brussels in the late 2020s to pick up a new job at the European Commission. He almost forgot the issue until he came across the representative of Spain who told him about the enormous economic success of a marine protected area in Catalonia in the areas of Islas Medas. The long-term protection of fish stock and marine life had created an attractive diving destination and tourism business and a remarkably positive impact on the neighbouring fishing zones with increased supplies.

With enthusiasm, he connected with the Spaniards and brought them to discussions with the local authorities of his hometown. However, at first, the encounters lead to no support for replicating such an experience. The fishermen felt that while the Marine protected area

(MPA) could create benefits in the long run, it would not provide enough for their families in the immediate future.

Despite the drawback, Francesco kept on thinking of the success in Islas Medas and continued to urge his hometown people, including Salvatore, to find a solution together. In one of his routine meetings in Brussels, he met with a consortium of impact investors, who were familiar with other similar promising initiatives and accepting reasonable payback periods of investment. With the help of Francesco, the impact investors began talks with hometown representatives which led to the development of the MPA and diverse new economic activities jointly with local stakeholders. After the initial euphoria from receiving the new investments, the commitment of the locals to implementing initiatives started to wane. New actions were too slow in generating returns. Many abandoned the project and even lobbied for dismantling the MPA. Only a few locals witnessed tangible benefits in diving centres and tourism support, while most, especially the full-time fishermen, continued to struggle to put food on the table.

Keeping the faith, Francesco and local enthusiasts started seeking support from international spheres. The project was found to be aligned with the work of a recently established combined working group of FAO and UNEP, which brought invaluable broader institutional support and guidance. The local coalition learned about vertical permaculture kelp forests and new international funding opportunities. The newfound initiatives expanded, diversifying local community activities in the MPA and its surroundings. Francesco advised the regional government to co-design with stakeholders a programme for the fishermen and other interested parties. The diverse and sustainable programme was celebrated widely in the community thanks to the excellent uptake of kelp permaculture forests and MPA management with various activities to increase economic development and parallel the fish stock recovery.

The programme offered new avenues also for Salvatore, Francesco’s fisherman friend. While he could observe a gradual increase in their fish catches, he spent much more time at sea showing divers and other tourists the richness of marine wildlife. And while this has never been his passion, he collaborated with a cousin of his who specialised in kelp farming and moved into industrial kelp food processing and delivery. As he was also part of the environmental monitoring team in the MPA, his upgraded boat was equipped with the latest monitoring technology and connected to the satellite that served as a data collection unit for all the monitoring boats. Life changed a lot for Salvatore and the other fishermen. Still, they preserved at least part of their culture, traditions and lifestyle while expanding into new ventures.

While the initial MPA created a sanctuary for many fish, it was not until kelp farming started offering excellent environmental conditions that the fish stocks truly recovered. With time, kelp farming also initiated a whole new local industry with a portfolio of food, pharmaceutical and textile products. Also, the MPA was gradually extended stepwise across several jurisdictions to comprise larger stretches along the coast. In 2050, it raises some 50



miles out to the sea or even further in the vicinity of some local islands.

Francesco comes back from his memories as he hears the voice of Salvatore. The old friends share a big hug. After some good laughs, Francesco starts explaining the invitation from the FAO/UNEP working group to come and present the lessons learned from the recovery of their fishing village and coastline. After some discussion, Francesco and Salvatore agree to go together to the meeting and submit their case as an example for other regions to learn about the sustainable management of common resources. Hopefully, their insights will help others to accelerate the change processes they need. There are plenty of good ideas, but as Francesco and Salvatore have experienced, managing change takes a lot of time, courage and patience.



Indicator species by Octavia Cade

There were too many otters to name. Niall had named them as a child, the few he had managed to see; they were better than the friends he didn't have at the school he didn't go to and the home he didn't want to go back to. As a young man, he'd forgotten the names he had given them, and the river was a place of temptation and absence, somewhere he'd had to be fished out of when it all got too much, and for many years after that, he'd avoided it. Careful in his footsteps, careful in his medication, and the latter helped, but the former didn't. He was too cut off, spent too much time looking down as if concrete and paving stones would make sense of his life, would map some sort of route out of depression and into health.

The first time he went to sit by the river after, he remembered the taste of river water in his mouth. A muddy taste, and not unpleasant. Thinner than he might have thought. The riverbank was bare, mostly, and the water was brown, mostly, and he sat and watched and hoped for movement because that would mean he was watching something other than the memories of himself.

Across the river, he remembered, had been a holt, and it was the first experience of the river that didn't involve shame that he could recall. There had been a holt and a slide, and an otter, once, in a city where he had not thought to see otters or not many of them.

He watched, and there was nothing, and he walked, and there was nothing, just the vertical stretch of city up above him, and he might have called it looming if it weren't so indifferent to life. It took him a week of walking to remember that otters were more active at night and another week to find one, a small, sleek presence hanging on in a place inhospitable to it, and Niall felt admiration for it, a small, yearning seed of kinship.

Mental health, so he had been told – by pamphlets and doctors and counsellors, by academic reading and the distant, hurtful recollections of childhood – improved with access to nature.

Perhaps by helping the otters, he could help himself. Perhaps it was possible for them to be so connected, instead of isolated creatures wary of crowds and being seen.

Otters, glossy, sinuous predators, could only thrive in numbers if the food web beneath them was stable and well-filled. They were an indicator species: a measure of health and riparian life. There had been so few of them when Niall was a child. He'd wandered the banks of the river, of all the city's rivers, and he'd pretended there were more otters than there were because if there were more otters, then there was more everything, and he lived in a better world than he did, one greener and more hopeful.



Water, he thought, should be more than a reminder of emptiness and a temptation to drown. It should be a place of planting, because if the riverbanks were leafy, pleasant places, they offered stability, too, and bulwarks against erosion. It should be a place of clarity because water, when clear enough, could be seen through, seen ahead, and obstacles more easily navigated. It should be a home for the creatures that lived in and beside it, who came to drink there and feed there and play there because then it was a welcome rather than a reason to turn away.

He'd started with the planting, on his own, in an out of the way corner that was mostly rubbish and broken bottles, an ugly place for a man who felt ugliness all the way through him. He didn't ask permission. He didn't think he should have to, and besides, he was afraid of other people and their judgement.

Looking back, he thinks he shouldn't have been. They were strangers who came to help him, at first. Half an hour here, a borrowed tool there, and it occurred to him that he was not the only one who felt cut off inside, who felt small and ugly and alone, and who wanted to live in a place full of life so that they could feel connected to that life. And then there were more people, and more, and more plants and more insects and more fish, more birds. More otters. Over the years, so many of them, and the people who had worked on the river went away, some of them, to work on city walls and city streets and little city corners of concrete misery and pigeons, because pigeons were all that could survive there, and they made the city a greener place, a river place, full of parks and wetlands and so many otters Niall could hardly name them all.

It didn't cure him. He still took his medication, still had appointments with counsellors and health workers. His illness persisted, but it wasn't all of him, and it was less than before.



The Waters are waiting for you

by Rachael Lowe

She is leading us with some speed. The light when it strikes her body refracts a rainbow that is whizzing with the speed we are travelling. Tadpole is in her wake, creating his morning song. The music emanating from him is exalted! I feel puffed up with pride, behind him, pulsing to his beats. Can life really feel this good?

Aers ripples to a stop. We're here, in a dry and oxygenated undercurrent atop the seabed. She turns to face us, readying herself for the call. She finds me with her eyes. "We call on you, the waters, our friend. We are you, you are us. You give us safe passage and all that we need for life. We thank you." Softly, she continues. "We have still to learn. Teach us. We have been greedy, taking from you for no reason other than to further our misguided inquisitiveness. It is because we yearn for knowledge, but we have been doing so at your expense. We have been against you, you who are alive, and we forgot..."

Hearing her words, I examine myself for guilt or any sense of self-recrimination. It is because of me, Leherm, that we are here, at the edge of the life-giving world we knew. It was my misguided inquisitiveness that caused the waters to sour, the fish stocks to decline, our pristine skydome to thin, and our sun star to leak in dangerous radiation levels. I'd found blueprints for a smelter to build solid structures for the optimisation of harnessing the atmospheric tides and gravity waves from the mesosphere to generate energy for Pani, just as we do with the oceanic tides and waver power. I plundered mineral resources and sea-coal beneath the seabeds and in the underwater volcanoes, sea kelp too, but the excessive plundering took us to the brink.

"... we are communing with you, the waters, as one body, wild after a volcanic eruption and you are gathered as one force moving across seabeds for miles, travelling at your greatest strength. We are you in your watery body now, to learn who you are, to learn how we can live side by side with you." Aers' voice lulls me back, and I see my fellow Panis in meditation. I meditate too, becoming one with the wild heart of the ocean.

When we re-surface, I go directly to the launch to ride the cosmic dolphins to the outer rim of the old skydome and the nerve centre of our new skydome, to the centre of innovation. We were sent on a mission by the Pani Council to innovate economic, social and biotechnologies for increased harmony and adaptive resilience. They chose me as chief innovator, even though it was me who placed our world at peril. And this morning in oneness with the wild aspect of the ocean, I believe I cracked a breakthrough formula



on the harnessing of oceanic wave and mesospheric tidal energies to providing enduring protection from the harmful radiation of our sun star, cooling our atmosphere and tempering the weather systems. At the factory, I will work with my key assistant Sable, a previous Pani Councillor and one of the Andromedans who came to live with the Panis to teach us about living in harmony with nature. I'm awkward with people, and she understands science and gives voice to it for the others. We will do very well today!

~

"Lehrehm, I, I'm glad to bump into you. I want to tell you something. And how was your day at the factory?" Aers recovers from colliding with me in the stream way. We dry ourselves on the village boundary that is floating calmly on the ocean, the magenta of the setting sun giving her face a rosy blush. Excitedly I say, "We've cracked it! And ..."

"That's great L. Really really great. I have news. It's not easy to say, so I will just say it. I am going to Earth in the next migration". I hear the words, but I cannot understand them. "I know this is a shock to you, but you will understand. I know it." She takes my hand, and I look at our hands webbed together. "I want you to stay. Or, or, I go with you," I tell her. She removes her hand, "I know". And she's gone. I think I hate her for it.

~

"The land arose from the ocean and formed islands and continents. Teeming with organic life and creatures of every size and colour, the land provided for every living thing. The Earth's oceans were abundant with ...", as S-Blob began winding down his oratory, reminding us of his time on Earth and that our volcanoes on Pani will soon rise into great islands, I saw Aers move to his side, the night stars luminous behind her.

Every night we gather, listening to S-Blob's stories of Earth and Pani history. He gives us knowledge and hope. He is an inspiration to us, for he had been so lost and has now found his place with us in this new skydome, helping us to navigate our corrective course, a new home for all Panis to soon migrate to.

Aers addresses us all now. I find myself holding my breath. "I love you," she says. "And you all know I have been only half happy here. But, I now have direction. Communing with the waters has shown me my path," She pauses, and I exhale slowly. "I am migrating to Earth. My purpose is to assist the Earthlings in their attempt to correct their course, to help them create their manifesto for harmony if they desire my help in that matter. You have been great teachers to me, and now I know what to do with all I've learned."

How can I love her even more than I love her at this moment? I rise to show her that my love for her is alive, and a hand on my elbow detains me. It is my Andromedan assistant, Sable. She rises, and by her side, I wait, confused. Sable makes an announcement, "Lehrehm, here at my side, has been appointed to the Pani Council to serve us. We ack-

nowledge him. As in due course, we all serve on the Council; we will all be acknowledged. For now, let us celebrate Lehrehm's appointment and Aers' destiny."

My heart swells, feeling full of love for myself, for Aers, and so sad at the same time. Aers is moving closer to me as fellow Panis greet us, congratulating us. My heart is pounding, and suddenly she is standing before me. Greeting each other as Panis do, forehead to forehead, embossing each other with love and respect, I cup her face in my hands. Feeling moisture on her cheeks, I move to embrace her, but she slips from me, gone.





Jara and the Gardens

by Johanna Hoffman

*[*an extended version of this story is available online on the project platform](#)* 

The lift clicked to WD, and Jara stepped onto the water dock. Lights from the concrete ceiling glinted off the buoy number signs. She walked the dock to buoy #15 and her rusting green canoe. Other people were into using hoverboats and personal drones to get around, but not her. She liked to take her time moving through the city, through any landscape really. It gave her more chances to look around.

Jara sat at the stern and pushed off the dock, plunging her paddle into the water. A motor was there for when her arms got tired, but she ignored it for now. The strain on her arms felt good. She'd been inside all day. Moving her body had been the whole point of coming out. As the shade of the water dock gave way to midday sun, her upper lip grew slick with sweat.

The city still had its dry parts. Down here though, in the old financial district, it was all canals and waterways. Many of the buildings were over two hundred years old. When sea levels spiked in the 2050s, lots of developers had just filled in the first few floors with concrete, creating thicker foundations and floodable structures. With the heavy historic preservation restrictions on the area, it was easier and cheaper than building the new floating buildings constructed in other parts of town.

Jara steered towards the edges of the waterway where the mangroves grew. They were planted decades ago, part of a city-coordinated effort to improve air quality and reinforce the coastline. The groves farther offshore were designed as storm surge buffers, but doubled as fisheries and tree farms too. Over time, they'd even become go-to tourist spots. You could spend the day fishing or swimming or lounging at the floating bars. Some people liked to scuba dive the reefs growing off the underwater power lines that funneled electricity from the tidal turbines off the bay's edge. Back in the more developed parts of the city, mangroves were for keeping temperatures cooler, creating habitats for fish and insects, and keeping air quality levels controlled.

She veered right down a side canal. It was narrow, and the wake from her canoe slapped against the edges of the buildings. Racks of green lines ringed the brick facades, reminding Jara that it was low tide. A good time to harvest saltweed. She should head over to the Wetland Gardens and get some greens for dinner. The glasswort and saltwater potatoes were exploding this time of year. And she hadn't been to the Gardens in a long time. Not since her dad died, anyways.

The Gardens had always been their place, ever since he took her there for the first time when she was six. Jara still remembered the day. The Wetland Gardens had community

workdays twice a month, and everyone who was a member had to show. Jara had been asking more and more questions about where their dinner greens were coming from – did the food delivery drones give birth to lettuce babies on their flights over? Or did they stop off first at Grandad and Nana's window-sill garden beds? When the questions persisted after a month, her dad decided she was ready for a workday.

That was thirty years ago. Seas were lower then, and the Wetland Gardens extended farther into the bay. Rows of saltgrass and seaweed shifted into lettuces and cucumbers and beets farther inland. "This all used to be streets and warehouses and commercial buildings, Jara," her dad told her after they moored their inflatable at the lower level entrance and pushed through the garden gates. "But when I was a teen, the city decided to invest in greener edges."

Wetland areas and floodable open spaces could serve multiple purposes, he explained. They could buffer against inundation and act as community gardens at the same time. They could be fish nurseries, like the Wetland Gardens were, or playfields and pleasure parks. The mangrove forests north and west of the city were green edges. The barrier islands where they went for beach days and sunsets were too. They were alternatives to hard sea walls, he said, alternatives that gave the city benefits beyond protection.

As he signed them in at the member stand and got tools from the shed – shovel for him, hand trowel for her – he pointed out remnants of the old urban grid. The rebar sculpture behind the check-in stand was made from an old fishing pier. The circular culvert top beneath her right foot was where the old sewer systems used to run underground. Her father had been an architect and loved to trace the details of how the city had changed over time. His rambling mostly bored her, but she stayed next to him as he prattled on that day, bent over a bed of tomatoes and pulling weeds from the ground. Jara tried to help, but the sun was shot and made her so tired that she eventually fell asleep on the ground by his feet.

Smiling at the memory. Jara set her paddle on her knees and dipped her hand over the side of the canoe. The water was cool against the afternoon heat. She twirled her palm along the surface, letting the liquid swirl around the base of her fingers, wondering what other places that water had been and the kinds of people it had touched along the way.

An illustration of a coastal landscape. In the foreground, there are several stylized coral reefs in shades of red and orange. In the middle ground, there are two large, dome-shaped structures with horizontal stripes, possibly huts or beehives. A person is walking on a path between them. In the background, there are more domes and a body of water. At the bottom, two people are walking on a path. The overall style is flat and modern.

Part 3: Climate

Part 3: Climate Change

- 10 The Raccoons by Radu Gheorghiu
- 11 Bela Trust – Technology fixes it all by Ullrich Lorenz
- 12 Pollution by Alessandro Imperatore
- 13 Redacted by Khary Jackson



The Raccoons

by Radu Gheorghiu

When Keiron, the ‘wonder of post-circular architecture,’ burned to the ground in 2041, apparently due to a fire that first engulfed the vast sequoia forest in its 54th fold, the continental government gave up. The weather was going to remain insufferable.

A private initiative, coordinated by billionaire Ms Bloom, promised to take up the lead. By mobilising over 100 trillion euros from different sources, mixing investment funds and crowdsourcing, the ARCA initiative (from the Romanian translation of the Ark) delivers ‘climate as a service’ to the wealthiest cities and sometimes private domains. The ‘seasoned areas’, as they are called, not without envy, by the less lucky, pay up to ten per cent of their annual revenue in exchange for balanced weather, delivered by ‘precision geo-engineering’.

As most of the profits are invested in green areas in developing countries, “What’s not to like,” they claim. Of course, many do not like it, from the ecologists who warn about the uncertain effects of local geo-engineering to those preoccupied with massive accumulation of power to the naturalists who blame, well, the unnatural intervention. Loved and hated, Ms Bloom makes the headlines every day and even minor gestures, like opening an umbrella in the sun during a press conference, affect the stock markets.

The story’s main character is not Bloom herself, but a lonely farmer of the 2050s called Esiod. He manages his fleet of picking robots on a medium-sized berries farm outside a seasoned area. Perdisio, one of the first ARCAs, had launched in ’42, back when they still served Asdemos and even attracted tourists.

Esiod spends his days repairing and enhancing the animal-like autonomous robots, capable even of emotion recognition, an extra feature he has added for rather playful reasons. The swarm of robots work primarily at night when the wind is strong, and wireless energy is much cheaper. He recently bought spare parts from which he adapted night vision to the robots. He needs to cut costs, given that his business is on the verge of going bankrupt.

We see him in the evenings watching the strange harmony of the fleet of robots, heading towards the semi-deserted plantation hills when the strong winds blow.

However, as we deduce from his sporadic talk with his neighbour’s family - also burdened by costs - the robots don’t seem to have the same productivity at night. Esiod is, in fact, keen to investigate, as he suspects his neighbour of sabotage.

One night he puts on the ‘bio invisibility cloak’, which does not make him invisible, but blurs his presence and tricks the bio-detectors. When he wears the cloak, the robots do not recognise him; otherwise, they would change their behaviour in his company, as they are programmed to do.

In the moonlight, he follows the robots to a point where they leave their regular work area. He heads towards the noise, and what he sees is not the neighbour but the robots playing with a nursery of raccoons. They use a strange language, mostly gestures and sound, an endearing, albeit uneasy symbiosis. ‘Du mécanique plaqué sur du vivant’ he remembers a young woman’s voice from the past, quoting Bergson’s definition of laughter, only to tease him each time he slipped on the robot parts lying all over the bar floor.

On his way back home, he feels relieved about his neighbour’s innocence, but he realises that the raccoons belong to the seasoned area, from which they cannot escape, allegedly, given the plasma walls of the city.

The following night, he embarks on his investigation again and observes the racoons manipulating his emotionally receptive robots. The animals are trying to attract the robots into a windy underground tunnel. ‘They got so used to the smart, responsive environment of the city that they started learning to control it!’, he thinks.

He follows them and discovers a large cement structure, which pulls him behind the city plasma wall.

Esiod realises that the seasoned area is not contained but absorbing air from the neighbouring regions. The bigger question he poses-‘where does the air go?’.

He ventures into the underground world - populated by modest-looking workers - only to discover that the structure is a radial one, hosting at its centre the iconic tower of the Perdisio - an abandoned prototype of a space elevator.

Esiod, a techie as always, manages to enter the forbidden areas. He is in awe: The whole structure filters clean air from outside the area and pushes the city’s residual polluted air into the stratosphere. ‘Hah! Bloom playing all mother saviour, look at you discretely destroying our atmosphere!’.

The technical team of the tower is alerted, and after a short chase, he is caught and brought before Ms Bloom, who we now discover is the female presence from his memories. He blames her for her treacherous ambition and the increasing deterioration of the Earth’s atmosphere. She explains that she failed to reach reasonable levels of precision geo-engineering, but they used the money to improve their inventions further. Despite the ‘smart everything’ system they developed, the power needed to manage the complexity constantly increases. Perdisio will soon be the first ARCA area to lose its plasma walls, and probably the citizens will be dramatically affected by the shock.



He tries to persuade her to evacuate the city, but she refuses, as this would cause the collapse of the entire ARCA project. During their conversation, the situation already seems to get out of control – the tower walls are shaking.

He then suggests precisely that—to give up control and allow smart city objects to obey nature. He has learned that from the symbiosis of the racoons and the robots. It would naturally reduce complexity, he argues.

As the situation worsens, she finally agrees to him decentralising the ten million smart artefacts hosted by the city, allowing them to interact, restoring nature's will organically.

The tension in the building continues to increase for a while and then gradually diminishes. The tunnel wind grows weaker while the plasma wall becomes permeable. The city and the external environment get connected. The robots and the racoons are playing in the mild breeze.



Bela Trust – Technology fixes it all by Ullrich Lorenz

It's January 1, 2050, and the world is celebrating the achievement of “Net Zero Carbon Emission.” The environment is clean, with greenery everywhere. The Sun is shining clear like never before. People travel in the most advanced flying cars and airbuses, yet there is no emission of harmful gases. The journey to net zero has been really painful, but it has paid off. Among many contributors, Bela has been the most prominent.

Bela believes in technology; she always did. She also enjoys being out in the forest, of course, as nature helps her find the tranquillity to think about new inventions and make decisions. She was more inclined to call herself an “inventor” and “visionist” rather than an “environmentalist.” But she still cared. It was no surprise then that she founded her own company after studying technology and informatics.

Today, she leads a global solar energy and air purification company. She still remembers, like it was yesterday, the time when she was working for the weeks-all day and night-in the Innovation Lab, thinking about new applications of the micro-turbator that she had developed during her PhD research. “This new technology might be the breakthrough for cleaning the atmosphere,” she had thought to herself. It could filter different substances from the air. Although this did not seem novel at first, she soon realized that in a test air funnel, various gaseous components of the air stick more or less closer to the surface area of the tube; and this with nearly no energetic effort. For example, carbon dioxide has a higher concentration near the surface than the middle of that small airstream. At the same time, other pollutants were concentrated in different areas above this micro-surface. This discovery must be useful somehow.

Nobody seemed to listen or show any interest, but there was no regulation preventing her from trying. Her vision was big: technology will be the solution.

“Let's use innovative ideas to solve our environmental problems. We live in the Anthropocene, so we as humans have to fix what we have done. Nature is beautiful, and ecosystems are important, but we also have a technosphere, through which I can support humanity. While other companies are producing items that might pollute the environment, I will produce gadgets to save the environment”, she thought to herself, and a big smile spread across her face. Then a doubt appeared. Solving all these challenges was still a long way off. Would she take the right path, or would she hit a dead end? When she realized that this new micro-turbator idea could separate different gaseous fractions from the air, the challenge remained: how could this concept be used?



After weeks of intensive research came the breakthrough. The advanced version of the micro-turbator was a revolutionary air filter system. It was now possible to distinguish one stream of pure air and several little streams of different fractions of gases, such as CO₂. Even small particulate matter is concentrated at different distances close to the surface and then filtered out quickly. Although the prototype worked, there was still no interest from any investors. Sometimes it felt like the whole world was against her, but the right time to introduce her new technology will come, she thought.

It was intensive work. Every day she worried about taking the financial risk of building her new business; until one day her prototype finally worked and ran well. She managed to capture more and more carbon dioxide from the air purely through the catalytic characteristics of her micro-turbator. It was brilliant. The highly concentrated carbon dioxide could even be condensed and compressed after passing the microtubes. A new low-energy method to remove carbon dioxide from the atmosphere was born. She posted it on social media, and suddenly, the general public and civil societies started demanding it to be used worldwide to reduce carbon emissions technically. All governments began manufacturing these devices, and within a few years the carbon cycle was so balanced that there was no further increase in atmospheric carbon dioxide. She always believed that technology could fix the problem of carbon emissions, and she proved it.



Pollution by Alessandro Imperatore

“This is the pilot Terence Mal speaking. It’s 6pm on May 21st of the year 2050, on the terrestrial calendar. I am about to start an emergency landing manoeuvre. One of the engines is damaged due to a collision with an asteroid. I will attempt a crash landing on a still unexplored planet that is part of the LAR galaxy. The instruments onboard indicate that the planet's climatic conditions appear to be favourable for life...”

Terence lay unconscious in the cockpit; the emergency landing had taken place on a large plain that appeared to be composed of a material similar to sand. Luckily, the ship had no significant damage despite the sudden impact. The air indicator inside the capsule indicated that there was still 40% autonomy left. Terence made no sign of returning to consciousness. Instead, something else had started to move. It had the shape of a sphere but was made of gaseous material; one could call it a globe of air. It was called Belor, a transparent globe but with opaque edges, a greyish colour that could float in any direction it preferred. It ended up inside the spacecraft accidentally. After such a terrible journey into space and in the absence of air, its kind, and its natural environment, it can think of only one thing: going outside. It found itself, unwittingly, on a planet very similar to the one it came from, and its amazement increased even more.

After having wandered around the deserted plain, it found a city where there were many other air globes. But they were different. They did not have the same greyish colour on their opaque edges but instead were purely transparent, similar to the ones Belor had already seen in crystal clear water or diamonds. This was an element highly sought after by humans. Belor decided to get closer, intrigued by everything it saw.

Suddenly, Belor was forced to stop by two much larger globes glowing with strange internal energy; it seemed like something dangerous! Belor was asked what it was and where it came from and was sad that their interaction was reduced to such limited conversation. It didn't understand what they meant, so instead of answering, it spontaneously asked what they were.

The two globes replied that they were guards and were protecting Arcadia, the city of air. They told Belor that it had been stopped because, despite looking like them, it was different. They were afraid that it was infected with an unknown and hazardous illness. Belor still did not understand and replied that everyone was equal on the planet it came from, the Earth.

The guards led it to the high consulate to meet the master globes. They wanted to hear its story. Belor told them about its planet, the creatures that populated it, how it lived, and

how it accidentally ended up there. It said that it had never thought that other planets besides Earth were inhabited by globes so different from itself.

The high consulate was appalled by Belor's tales; they had just learned that an entire planet was sick, that the way of life on it was flawed, and that the culprit seemed to be the strange figure that Belor had called "human", which had just arrived on their planet in a peculiar object. On reflection, Belor explained that, indeed, harmony did not seem to reign on planet Earth and that the elements and nature were in a state of permanent agitation. When he compared the globes of Earth with those of Arcadia, those on Earth now appeared sad and shabby.

The high consulate explained to Belor that this was the result of a sickness, that its grey colour indicated that its quality had been altered and that its air was no longer pure but contaminated. What Belor saw on Arcadia was the true shape of the air globes, that the air represented life, without which no organism can survive. They told it that no living organism would be so insane as to alter the life-giving air it breathes. They explained further how everything on their planet existed in harmony, governed by unknown laws as old as the universe itself. There were also living creatures on this planet, some more evolved (like humans on Earth), and they were structured as a society with cutting-edge technologies. However, they did not use this technology to repair the damage to the planet because the idea of this was absurd. The thought of causing damage to your own planet, your home, seemed unimaginable. Here, they lived in perfect harmony; everything was balanced. They also showed Belor how they had different globes, which had been produced by natural events such as the explosion of rocks. Belor smiled and said that, back home on Earth, this phenomenon was called a volcanic eruption. Although these explosions may temporarily contaminate the globes, shortly after, they would return to their purest form, thanks to the laws as old as the creation of the universe.

Belor explained that the humans who had landed on this planet could alter this balance by bringing what the globes of Arcadia had called "disease", such as strange factories and other harmful objects. At the same time, Belor explained some of these technologies used on Earth were capable of repairing damage by creating unique buildings, such as towers that could clean the air globes.

The high consulate said the best thing to do was not to remedy the damage but to make humans aware of how not to cause any more damage. If they had valued a culture based on respect for the forces of the universe, and if they had been able to pass this on to their descendants, they would have undoubtedly been able to live in harmony with nature as on Arcadia. If these humans were indeed intelligent enough to have built strange objects that could change the laws of nature, then they really could have lived much more than just well if they used that intelligence wisely. Belor, without even knowing why, felt relieved and hopeful; it was aware that this was the right path and knew that now there was a goal. It thanked the high consuls for sharing their knowledge with him and returned to the ship with an inner turmoil and excitement it had never felt in its entire life.

Terence was still asleep when Belor entered his nostrils and woke him up. Terence was suddenly awake, stunned and perplexed about what had happened. He felt something inside him had changed; he felt a new awareness, and he had concrete ideas and memories in his mind. But how? Where did they come from? What had happened? He didn't know; maybe he had a strange dream? The last thing he remembered was that he was looking for a new planet where conditions were favourable for sustaining human life. However, now he knew that this was not the path he wanted to take anymore. Now he knew what he had to do: he had to go home to Earth and heal it. He would do so by making humans aware of the possibilities to live a life in harmony with the elements and nature. Belor was smiling, and both of them, without knowing why, were strangely happy, happy to be soon back on their beloved home planet.





Redacted

by Khary Jackson

It was Day #4 on Planet Fenice. As usual, I was awake first. Shane, Morgan, Will, and Lila have always been night owls. Even here, underground, where you can't see the sun. Not without traversing the Fenician surface in one of their "miracle suits," as Lila called them. She isn't wrong, but I don't consider sound technology to be a miracle; it's just the 10,000th light bulb, to paraphrase Thomas Edison.

I probably had another hour to myself before the others were up and working, so I slipped out of our quarters and crossed the dirt road to what we labeled *Tunnel M*. The sound of water drops inside of the massive pipes, gentle and insistent, reminded me of the good days back home. I sat against the wall, watching in silence. This was our last day before leaving, after a tense conversation the night before that I could not shake. Today was the last chance to settle my mind.

On Day #1, we'd arrived in our solo mini-crafts, fortunate that they were so resilient to Fenice's surface heat. It was too dangerous, however, to step out in our suits. This might have been a very short trip were it not for Morgan leading us to a small opening a few miles south. Underground, we found an open area to land and climb out of our minis. Naturally, we were soon surrounded.

I tried to alert our homebase back on Earth, but our signal must have been lost underground. Will and Shane had their defense weapons out immediately. Lila waved them back and turned to me. "Well, Nikki...now's a good time to see if your app works, yeah?" I nodded. I whispered the access code, and each of our helmets briefly flashed green. The humanoid creatures surrounding us had been uttering a mix of hums and consonants that now, through our helmets, were translated into a rough form of English.

They wanted to know who we were, and if there were more of us, and something about a parasite. Lila calmly answered the first two questions, and her helmet translated her English into what seemed like their language. Likely, it was rough, but it just needed to be decipherable. Lila then asked what they meant about parasites, and their faces shifted into a different expression. We didn't have an app for nonverbal communication, so I went with my gut. "They seem relieved," I said to the others. "These parasites seem to be a big deal here." A few moments more, and everyone seemed less on edge. We were, temporarily, welcome.

Today, Day #4, we finally got to explore the surface. The firestorms had subsided, and the soil was rich. They provided us with suits that increasingly impressed me the more we learned about them. On the surface, approximately 15 miles from the lowest of the underground levels, there were tall metallic pillars strategically constructed all over. They

were made from the same mercury base as these suits. Morgan seemed to have the best understanding of how it all worked, but essentially the pillars were designed to alchemize the surface heat and fumes into energy and even water, directed to the underground pipes. Anyone who needed some of the energy was able to key the appropriate code at a pipe station near their home. It seemed like they had a communication system to make sure the energy was utilized equitably, so conflict was minimal. That in itself amazed me. In fact, I felt a sadness I couldn't voice right away. Their surface conditions were about as chaotic as ours back home, but the way they dealt with it, without even a social hierarchy to enforce things...wow. This world was special. Too special. Given that our communication with the homebase team was impossible until we returned to our ship, we opted to compile all of our observations onto files that we could transfer to them later. This also meant that until then, they could not hear what we discussed.

This morning, as I'd listened to the water in the pipes, I deliberated on what Lila and Shane asserted the night before. "You know what will happen," Shane had said. "They'll want this technology for Earth, no matter how they can get it." Lila added, "We all know how home got so bad. What indications do we have that we won't repeat it here? None of this is new to consider, but it's more real now that we've been here...seen how they live. We'll ruin them."

I had never been one to disobey orders. We were sent to find a second chance for humanity. We all agreed to that. Now Lila and Shane want to withhold crucial information at the risk of all our careers. Shane gazed at me gently. "Morgan and Will are already on board. Now it's just you, Nikki."

I asked about the parasites, apparently called Parajeevees. "Couldn't we help Fenice with the experiments if homebase knew? If it worked out, Parajeevees could replace their need for suits. They could actually see the sun for themselves." "Maybe," Shane said. "Or they could co-opt those experiments along with the tech. Either way, Fenicians will think every human is as careful as we've been. In a way, we're lying to them."

After our thanks and goodbyes, after landing our minis back onto our ship, homebase was eager for updates. I'd never felt so hollow. By the time it was my turn to speak, I'd redacted the key parts of the Fenicians' tech from our files. The information wasn't gone, just encrypted. Only able to be opened by one of us. I took a breath. "It was a promising trip," I said. "I hope one day, with care...we can come back."





Part 4: Sustainability & Technology

Part 4: Sustainability & Technology

- 14 MIT Technology Review | April 1, 2050 by Ann Odell
- 15 Aeras by Fernanda Rocha
- 16 The Foresighter Pledge by Sandra Martinez
- 17 Humanity's Leap by Frank Spencer



MIT Technology Review |

April 1, 2050

by Ann Ode11

Will a suspect, high-tech, centi-billion-nonagenarian, unstable genius lead us to a profound new relationship with...?

At 99, recluse Mike Evans is a transformed man not only through the wisdom of years but through a lifelong journey of invention and enterprise most recently punctuated by an individual *extraterrestrial encounter* like no other, ever.

Reporting this week confirms Evans has achieved neurological-level exchange with the verifiable 'unknown'.

Since founding his nascent space enterprise 48 years ago, whose mission touted establishing our earth-bound humanity as a spacefaring, multi-planet civilization -specifically by adding Mars to our conquest of the moon- Evans has sought to push boundaries and distinguish himself as a visionary provocateur at the nexus of colossal ideas, empire-building and positively aimed Universe denting.

With some hits and plenty of misses, including his \$5b starship reusable rocket collaboration with NASA, which successfully landed on the red planet in 2026 but -due to faulty instrumentation readings returned without completing any of the planned probes- Evans soldiered onward, enlisting big corporate and private donors to the tune of \$325b over 21 years to eventually declare victory in 2047. His team not only landed trained astronauts on Mars but successfully deployed the foundations of a surface-level workstation, over a 3-month period, the nucleolus of his next big vision steps to come. Although NASA is still a space partner, the required level of funding forced Evans's greenlighting of commercially focused initiatives, with strings attached, and thus a bumpy devolution of reputation, consistent throughout his life.

Even as a severely flawed person, some say wholly unfit, Mike Evans is still considered one of the greatest influencers of the new millennium, and his extensive thought leadership continues to ripple. His car company singularly shifted, at scale, the burgeoning US auto and residential energy industries to clean and regenerative, supercharging an entirely new economy in its wake, including governmental policy support, revamped value chains, infrastructure development, and plenty of new jobs.

His brain-computer interface company daringly advanced the notion of implants from

hearing loss and Parkinson's disease to recapturing memory loss, mitigating paralysis, and reducing insomnia by ultimately fusing humankind with artificial intelligence.

His new mobility company reduced the cost of underground tunneling to realize efficient transport infrastructure for people and commerce, although in some cases, the environment paid a very high price.

His satellite network exploited low orbit earth to deliver new 21C standards of internet service, unilaterally changing the night sky's appearance, and his space company inserted Mars into the everyday lexicon of an emerging global society -promoting the notion of travel beyond earth as a human imperative.

But as of last Wednesday, a new, very curious *wrinkle* has developed given *The Washington Post's* reveal of a secret informant providing the publisher with key details about the planet-pioneering juggernaut's latest inner workings and discoveries over the last year that have never been made public.

The undisclosed source, code name *Andromeda*, indicated that following stabilization of the Martian facility's infrastructure, extended sustainability operations, and reconnaissance equipment by last February, a manned exploratory probe traversed some two kilometers beyond base camp in a routine geological sample sweep, including two core tubes containing material up to 17 centimeters below the surface. Only 50 meters out from the compound upon their return, a spiraling pearlescent plume of vapor focused their attention, and upon close scrutiny, revealed what appeared to be three contiguous, unremarkable bulb-like shapes of organic matter, about 17 centimeters in circumference and indistinguishable in color from the surface aggregate.

Following the first month of rigorous and extensive in-lab testing, the space research cohort identified the densely biotic specimen as having some molecular compatibility with the earth's alkaline-acidic composition profile but also detected profound differentiation, pointing to its primary reliance on carbon dioxide intake while expelling oxygen. The Martian atmosphere is primarily composed of carbon dioxide (95%), molecular nitrogen (2.8%), and argon (2%).

Including the assembly of a contained environment replicating its reverse growth requirements, observers then watched the dismal gray matter develop over the next six months into a nebulous, vastly interconnected network, holographic in appearance. In addition, the initial brain-computer interface data feed indicated an abundance of gamma and theta waves consistent with humans, matched by an immense variety of other enigmatic activity yet to be decoded. At this early stage of discovery, *Andromeda* further explained that space analysts, along with the enlisted support of top neurologists at the Barrow Neurological Institute in Phoenix, had identified the organism with a medium to high-level intelligence capacity with more testing underway. All involved participants were under enhanced non-disclosure agreements, and all content was sequestered periodically.



As if none of these insights wasn't newsworthy enough, an even more radical inflection point transpired the morning of January 29th of this year. When, what the elder Evans perceived as, failure by technicians to neuro-link his brain directly to the organism, the fractious steward forced a more direct approach.

Against his entire senior advisement team's strong urging, Evans -then heavily under the influence of his son, and fifth wife - demanded to ingest the mysterious substance in its simplest and most immediately impactful form, by placing a quarter teaspoon of the flash-dried and finely ground fleshy, fibrous sampling under his tongue.

Monitored intensively with state-of-the-art, full body-brain MRI, sonography, and echocardiography, Evans endured an intensive period of unconsciousness approximately 30 minutes in, immediately followed by exaggerated brain wave activity, including similar graphic patterns as seen generated by the organism in earlier testing. Utilizing his most recent brain scan augmentation software, real-time 3D visualization of his entire experience was displayed on-screen for witnesses.

Through the course of impact, *Andromeda* provided *The Washington Post* with both a verbal accounting, as well as some of the digital images, ranging from black voids to quantum size light flickers to a nebulous, fibrous compound network with a similar DNA imprint to the specimen. The gauzy amorphous circuitry then evolved through a series of bizarre, unidentifiable creatures, each morphing into the other to again, a black screen, with only the faintest indecipherable outline -much vaguer than the resolution of the previous content. The emergence of the last image coincided with an extreme drop in Evans's blood pressure and paused pulse. As the team poised itself for advanced resuscitation with the means to target every human organ function -they sharply withdrew-prompted by the sound and sights of Evans's vitals vigorously back in rhythm.

Upon regaining consciousness, Evans appeared incredulous when told he had been out for only three hours, as his own perception was that of a lifetime and more. Evans accounted for everything the room had seen, in approximately the same order, adding in his own emotional perceptions. As for the image presented just before his vitals dipped, he indulged in a lingering, long pause, ostensibly at a loss for words. Although he claims to have actually seen the faintest gesture of something *with him*, he initially felt the strength of its presence transmitted through a distinctive, low-toned vibration -curiously in the exact off-set sync of his pulse.

The *visitor*, as he identified, moved around him, even through him, like a mission-driven vapor on reconnaissance -sensing, perceiving Evans's physical scope, as it found nothing impermeable, and as if it might be reporting back to its origins. This swirling ephemeral, light touch probe continued until culminating into what Evans described as his full envelopment within a dense cloud. At that point, he was airlifted -feeling weightless and in transport but unable to perceive anything about his circumstances or what might come next.

At this point, experiencing fear and agitation for the first time, he felt regret for potentially compromising his life for the effort -but no sooner had this negative registered, he was overcome by a sudden injection of warmth, first at the back of his head, moving over the top of his skull and settling between his eyes. The *glow*, as he expressed, continued its movement from the top of his spine down throughout his body, networking in a darting rhythm from its starting point, shooting outward-downward to what seemed like targeted pinpoints, each generating a capacious sense of calm, rejuvenation, and deep relaxation.

Evans described the overall feeling as inwardly liberating and expansive, at which point he instinctively closed his eyes, captivated by a sense of connection with the visitor and at the same time sensing the brightness of the space he was consumed by. He then described a *transmission* of content channeled throughout the brain and body that he was hard-pressed to recount in any detail. In general terms, he perceived it as a metaphysical vacillation in scale, experiencing smooth shifting between the very minute, as in quantum particle size, to the very vast, as in yottametric, colossal, galactic size.

At this point, Evans fell silent, reflective, and introspective.

Beyond follow-up with a full range of medical testing and careful analysis of his *in-experience* monitor readouts, along with his visualizations, nothing else is known regarding his current condition, as per the *TWP* account.

Is it any wonder that this eccentric mastermind now stands poised to connect us with an entirely new civilization light-years away through what might be described as an extremely tenuous and ephemeral portal? That such a controversial figure might lead us yet again into an extremely different kind of *space*, not just physically alternative but cognitively too? Potentially a new *inner-outer space* requires our suspension of belief regarding just about everything we think we know. A space teeming with uncertainty for sure, and potentially diverse mutant life, complex value systems, and seemingly ambiguous, even serendipitous, function and relationship.

What will be our response?

Based upon the *TWP* article, representatives of the Global Low Orbit Earth Counsel are scheduled to convene tomorrow to review the implications. They have requested a full debrief from his space company, as well as its NASA oversight committee. In addition, other behind the scenes press leaks to report several global corporations, including Apple, Amazon, Sinopec Group, and Saudi Aramco, will hold a round table early next week, while several high-profile citizen science groups, including Academy to the Stars, are already organizing rallies worldwide in an effort to persuade the powers that be to 'venture in peace'.



If there was ever a defining moment to characterize who we *Spaceship Earthlings* are, it's now.

And with the near end of Evans's live presence on our home planet, will we soon recall a courageous Transformative Leader, exceptional at bringing together diverse experts to drastically accelerate the development of innovations previously limited to academic labs for the greater good, or that of a Kook, whose potentially final peek into the future will be slammed shut by his successors fearing market-driven blowback due to its fantastical nature, his latest *inter-planetary encounter* relegated alongside the dusty coffers housing decades of UFO accounts, all because it's just too *out-there* to consider, too threatening to what we've already settled on, built for, invested in?

When asked for comment, Abebe Kanumba, the first-ever NASA trained African astronaut to command a lunar landing during the 2020's Artemis Program and the crew member who secured the mysterious matter at the outer limits of the preparatory Martian epicenter, was reminded of a quote by the previous century's prolific cosmologist and astrophysicist Carl Sagan:

'We can judge our progress by the courage of our questions and the depth of our answers, by our willingness to embrace the unknown, rather than our blind commitment to what makes us feel safe and secure.'



Aeras by **Fernanda Rocha**

It is the year 2050, and 9 years ago, the MASEA (Martian Space Exploration Association) discovered Aéras, a planet 2.4 times larger than Earth, located in the constellation Libra, about 21 light-years distant from Mars. Since its discovery, this super-earth has stolen the attention of space scientists for its ideal conditions for life: an orbit to its star of 110 Earth days and a temperature that oscillates between 37 and -12 degrees Celsius, in addition to the presence of aquifers.

During the first year of observation with the Galilei space telescope, the existence of animal and plant life was confirmed, which, thanks to the high amount of oxygen and gases in its atmosphere, has enormous sizes. Huge forests that rise more than 200 meters from the ground, vast lakes (since the presence of seas is nil, with 70% of the land surface) rich in minerals and provided with a completely unknown fauna; And what about the animal species, from an incredible variety of flying insects the size of a car, a species of winged reptiles that cross the skies without ever landing, to anthropomorphic beings that give evidence of living in an established society within caves, where, until that moment, it has not yet been possible to find out more about their behavior, level of development and intelligence.

Six years ago, an unmanned explorer probe was sent to this planet. Thanks to new discoveries in quantum laws, MASEA scientists have managed to break space-time and exceed the speed of light in inorganic objects, so the probe is already orbiting Aéras. Within days of contact, the probe sent a disturbing coded message. It was audio with beeps and static in a sequence that clearly described some type of communication, which, two years after receiving it, has not yet been deciphered.

From that moment on, NOVA TERRA, a manned exploration mission to Aéras, was launched. With a crew made up of the best space explorers from Earth and Mars, with the aim of colonizing this new super-earth, exploiting its resources and installing a biogenetics laboratory, and expanding a new human race developed in Aéras through modification and selection of genes that were capable of adapting to the conditions of this planet, just as we already did with Mars.

Today in 2050, one year after NOVA TERRA took off, the message received by the probe; it has finally been decoded. A quantum computer has managed to break a lock imposed by a complex mathematical equation derived from deconstructing the laws of space-time that we thought we understood; has brought audio to an unknown frequency spectrum that defies the laws of physics, which allows it to be perceived from within the nervous system itself. The message was still confusing, as it generated an almost indescribable



feeling that defies any semiotic system, but that by all the authorities by whom it was perceived was the same:

«We have found true freedom and transcendence, at the cost of our ancient planetary system and our predecessors. Don't infect our new mindset, or there will be consequences.»



The Foresighter Pledge by Sandra Martinez Polo

She is resting in the waiting room. She has nearly three tempus before departure. She looks through the diminished reality (DR) screen. She turns on the ReWild Channel to the self-immersive experience the Greenland Ecoduct, where genomic robonimals run through an endless AI-forest that provides clean hydrogen that saved humans after nearly 30 years (or what's left) to survival. It's the only way she can relax while she drinks her favourite CBD smoothie.

Suddenly, the DR vanishes and a blue-sharp hologram of a bionic human being illuminates the space. A canned voice talks:

It's the year 2050. This means that my preferred future is a present. You're about to initiate an incredible journey. We'll meet soon, finally. You are a Foresighter, like me. You leave planet Earth, where the Apathics will remain. 30 years ago, I made my pledge to the future; there was no more to lose, yet so much to gain. COVID-19 global crisis ended in 2023. Those nations that decided to come back to old normal didn't survive. I met the Foresighters, my mentor community, those who helped me create an alternative future, that today starts to be real. I sold my properties near the beach...years after, in 2040 they will disappear due to extreme sea-level rise. I started to build my smart home, with its HomeOS based on 100% renewable solar and wind energy systems that would produce enough energy to feed my house, smart farm with AI trees, and autonomous taxi drones. I invested my capital in AgroTech, Space, Biotech and Green Tech. The first one provides us now with the food needed. The second makes your journey to Proxima b, a reality. Certainly, the greatest achievement in the Anthropocene Era, along with Bio Tech: We sent DNA of many species to ensure biodiversity on this planet ten years ago, with the purpose to develop themselves and recreate a green planet for life. All the efforts to capture, store and decrease CO2 did not succeed on time to save the Earth. Then, all the new ways to generate clean hydrogen, fusion power plants, Renewal Energy, zero carbon neutral gas, will develop on this new planet.

In a few tempus your Spaceship will depart. You escape from climate migrations, from extreme local weather, from constant neurohacks attacks....

The most optimistic scenarios are a reality.

Yet, another 50 years are needed to regenerate neurons and DNA in other biosystems....We still have time to see it, You still have time to feel it.

Based on Tech Trends extracted from 2021 Tech Trends Report of Future Today's Institut.





Humanity's Leap

by Frank Spencer

The Journey

There we were, just the three of us, strapped into a tin can that was about to leap light-years across the universe in just a matter of seconds. Below us, you could see the curvature of Mars, and through the left window you could make out Phobos in the distance. I remember thinking two things at that moment: how large swaths of Earth now resembled the barren Mars terrain, and that the next sight we would see - if the leap was a success - would be unlike anything we had ever experienced before. Yes, all data indicated that TOI 700 d - an Earth-sized world in the habitable zone of a hospitable star, just a short 100 light-years from here - might exhibit a few similarities to Earth before it was ravaged by the man-made homogenocene extinction and the resulting climate collapse. However, could any of those calculations or extrapolations really prepare us for how alien this new world might be?

As crew commander for this historic journey, I had the privilege of uttering our last words before our leap through the Einstein-Rosen Bridge. "Mars Transition Station, this is Commander Nova Pasterski of QuantumCraft 1. We've completed our final systems check and are ready to make the leap."

"Copy Commander, one minute until final countdown sequence."

My crewmates, Chief Engineer Jean Baudrillard Pesquet and Chief Scientist Shawna Pandya were both well aware of my love for the old Guardians of the Galaxy movies, so they knew I would be blasting one of my favourite songs prior to the jump, just like my hero Star-Lord would do in the films.

*"What you know about rollin' down in the deep?
When your brain goes numb, you can call that mental freeze."*

"Masked Wolf's Astronaut in the Ocean? Isn't that a bit on the nose?" said Shawna. "Maybe it is," I retorted with a snarky smile, "but it's one of my favorite old-school songs. And, besides, I think it pretty much describes exactly what the three of us are feeling right about now."

The voice of CAPCOM at Mars Transition Station broke through our conversation. "15 seconds to leap, good luck QuantumCraft 1." I nervously tightened my harness as I watched my crew members do the same. "5... 4... 3... 2... 1..."

A sudden jolt, a flash of blinding light, a high-pitched whine, my body was forced back into the seat, and suddenly... utter stillness and silence. The entire experience couldn't have lasted more than a few seconds. I loosened my harness to get a better view out of the front portal, and a wave of shock flooded my entire being. I was more confused than I had expected to be. The planet below us didn't look anything like the speculative renderings of TOI 700 d that we studied in our briefings. "Are you guys seeing this?" I practically shouted through the headset.

I'll never forget the look on Jean's face as he whispered in stunned disbelief. "That's... that's not TOI 700 d, that's... EARTH!"

The Transformation

It's now been two years since that fateful journey, an event that has completely changed the way many of us on Earth - *this Earth* - are thinking, learning, acting and creating. The mission was supposed to be all about us finding a new home, a strange but inviting planet where humanity would explore, inhabit, and thrive as we began multiplying our species across the universe. Instead, something found us. Most experts believe that what we experienced was akin to the theory of superposition in quantum mechanics, the idea that an object can exist in two places simultaneously. Scientists are still trying to determine exactly what happened in the leap, but the planet we visited was definitely Earth, albeit a very different Earth than the one I'm on right now.

During the mission, we set our rover down at the edge of the rainforest in what, on our version of Earth, is known as Brazil. The moment we stepped out of the craft, we all knew that something was very different, not just about this version of Earth - that was obvious - but about... us. We could hear, or should I say understand, that EVERYTHING was talking, communicating, interacting and cooperating with one another. It was instantly obvious that all life on the planet was intimately interconnected, that each part made up a larger living entity, a sentient world. It wasn't until we got back to Mars Transition Station and began extensive medical testing that they realized the leap to this parallel Earth had altered our DNA in order to instantaneously incorporate us into the ecosystem. In other words, this version of Earth genetically modified us through the planet's atmosphere, much like a bio-distributed vaccination fighting against any disconnected life form. We weren't just on a new Earth, we were an integral part of its very fabric. Now, the planet and the crew had become one.

The Gift

The connection we felt with all living things while we were on this new Earth, and the resulting surge of creativity, cooperation and consciousness was intoxicating. Once we returned to our Earth, it was a very different story. We've retained the genetic alteration that was gifted to us by this living planet, and it has taken some time to adjust to a world that is so detached. Here, we can still feel the connection, but we can also intensely feel



the separation - of minds, voices, purpose, and life. It's as if, being in this place of widespread dissociation, that we have both a superpower and a disease.

These days, Jean has immersed himself in ecological regenerative design, and Shawna is teaching deep meditative practices to school children. As for me, I knew what my mission had to be. It wasn't possible to pass on my genetic modification - at least not yet - but I could teach others how to communicate with the life that was all around them. At first, I created a tech start-up to work on a system for cataloging all of the different animal languages that soon became the popular hyper-digital community known as Animal Talk. I used a network of drones for recording animals in their natural habitats, and then fed the countless hours of video into a translation software to build a basic working knowledge of the multitudes of different languages and tribal dialects. Of course, I could understand these wonderful life forms in some deep and mysterious way, but the language courses we were building would help others to communicate with the world around them, even if they lacked the same level of connection that I was experiencing. I spent most of my time doing fieldwork with the core team from Animal Talk in places such as Tanzania, Thailand and the outback of Australia. At that point, we were well beyond cataloging languages; we were actually having in-depth conversations with the animals, and learning a great deal about how they viewed life, history and even humanity. A year later we published the best-seller *If I Could Talk Like The Animals*, and this text has already been used to redefine educational models, business practices, city development, biomimetic design, food production, you name it.

As it turns out, animals aren't just talking to one another, telling each other where to find food or how to build community. More importantly, they are talking directly to planet Earth. Mind you, they aren't having a conversation with the planet in the way that we have traditionally understood language or communication, but it's actually the most important conversation taking place in the entire world. Their languages all share subtle similarities to the frequencies that scientists had been observing throughout nature such as waves emanating from stars or water molecules changing shape in accordance to different sounds. After many hours of research, we were finally able to catalogue the basic tones that different species were using to communicate with the "voices" coming from the trees, the oceans and the planet itself. All of this work was done so that I could help others understand the depth of connection we have to all living things, but the ultimate message didn't surprise me. Just as I had first experienced during our monumental leap to another world, or maybe to another time, I could hear them telling each other how to sync up, how to live in harmony. The animals are telling the planet what they need for maximum sustainability, resilience and growth, and the Earth is telling the myriad species the same thing. And this is where humanity had its biggest revelation. Not only can we talk to the animals, but we can learn how to speak the language of mother Earth as well. Once we have everyone speaking that language, we're going to shift from living ON Earth to living in harmony WITH the Earth. And when this happens, we will hold the key to eradicating poverty, climate change, resource depletion, and many of our big world problems. It's going to change the way we govern. It's going to change the way we

approach physical and mental health. It's going to change the way we learn, the way we consume, and the values we hold. Soon, the greatest personal and collective shortcoming will be defined as the inability to speak, to hear, and to understand the diverse but unified language of Earth.

By the way, we did try to send another team of astronauts back to the parallel Earth that we discovered. Instead, they arrived at TOI 700 d. We've found life on that strange new world. Maybe now, we won't take it for granted.





Part
5:
Social Change

Part 5: Social Change

- 18 From a Book to Another by Enric Bas
- 19 Hunting Shadows by Marguerite Coetzee
- 20 Build and Burn by Eric van Gennip
- 21 Generation Armonia by Tracey Follows



From a Book to Another

by Enric Bas

*“Walks on his own with thoughts he can't help thinking.
Future's above, but in the past, he's slow and sinking.”
 (“Nothingman”. Pearl Jam, 1994)*

In 2050, a final year study course in Tennessee (USA) is proposed to secondary students finishing their studies in a local school in Xábia: a remote, small and beautiful Mediterranean coastal town that from the 1960s to the 2020s had been one of the favourite spots for wealthy families-mainly from Northern Europe-worldwide. Xábia was a hotspot for the rich when Spain was part of the former European Union, giving rise to the current three supranational entities: Mediterráneos, The Federation of Baltic and Hanseatic States and the Eastern Europe Bloc. The students' destination is the charming city of Nashville, the country's music capital, and since 2028, the administrative capital of the United States of America since Washington DC went underwater (almost 70 years earlier than it was expected in the worst climate projections).

The group of students is international, although all are residents of Xábia. They are led by José Gasset-a Spanish teaching bioinformatics- and Mae Maslow, an Asian/American journalist and anthropologist, raised in Tampa but now living in Xábia as formal mentors. The aim of the exchange visit is “knowing other cultures”, even though this is an already very heterogeneous group of students attending the same school and classes daily.

Paradoxically, they are disconnected from each other from a cultural point of view: like other coastal towns in southern Europe, the descendants of the former 20th Century foreign residents that initially settled in Xábia still live in their bubbles the ancient English community, the German community, the Norwegian community...each of them living according to their own rules and traditions, and mainly using their own language. All of them have been-for almost 100 years-living in the same town, but entirely apart from the Xábia local community-which remains a bubble in itself since the 1960s. They coexist in time and space but rarely meet, and indeed, they are not part of a community with shared values and visions.

A brand new company arranges flights from Greece called “Ithaca Tours”, famous for having developed a technology that makes possible small electric planes that cover long distances, using an AI-based system to maximize the efficiency of low-weight batteries by being “empathetic” with nature: adapting in real-time the flight characteristics (route, altitude, speed, etc..) to the different environmental variables and contingencies affecting the flight, like wind streams, atmosphere temperature, etcetera. The captain in charge of the plane, Noah Antonia Pessoa, is an experienced pilot. She is a half-human half cyborg who reached her fame as the ace of the top squad known as MAD-Mediterráneos Army

of Drones during the seven-day war with The Federation of Baltic and Hanseatic States in 2035. This war definitively broke the remaining European Union (the Eastern Europe Bloc already left in 2030, ten years after the UK-the Brexit-) in two.

The flight was taking its expected course until a strange and unexpected hurricane forced the group to land on a lost and uninhabited island called Pico. Pico is a part of a former Portuguese Island of the Azores archipelago, now almost underwater. Since the terrible floods that devastated the North Hemisphere during the decade of 2020s (Germany in 2021, UK and Netherlands in 2022, Spain and Italy in 2023, Canada and USA in 2028, etc), just after the starting of the Covid-19 pandemic, nature seems to have rebelled against man. And sudden, unexpected floods, hurricanes, earthquakes, are now the order of the day. The collapsing of the environment and nature-including the consecutive series of pandemics starting in 2019 that last until today-lead to the collapse of the economy, which, in turn, lead to increasing instability and finally, the political failure and the breaking of the European Union (as we knew it); but this is other another story.

Despite the expertise of Captain Noah, with the terrible shaking and fast decompression experienced during the landing, most of the food provisions the group carried are lost. Synthetic foods were designed structurally far more resistant to physical alterations and contingencies than the “natural”/organic ones, but the damage affected the organoleptic-and-mainly-nutritional properties were lost turning most of the food useless. The groceries that survived the landing are flawed and limited, and rationing is imposed. The restriction doesn't help the group. And nobody-including the mentors and the crew-is familiar with agriculture and livestock management except Pep, the only local from Xábia in the group of 20 students. Pep is a bright student passionate about Biology who won in 2049 a TIF-Tesla International Fellowship to visit the Manhattan Underwater Natural Park in former NYC. He aspires to explore and know the world, but at the same time, he is intimately linked to his roots and culture since he grew up with his grandparents (his parents died due to a solar storm in a long-distance flight when he was four y.o.) in Xabia ´s countryside. His family have been farmers in Xabia for generations and his grandfather, Antonio, taught him the basics of agriculture since Pep was a kid.

After a few days of contacting the Iberian authorities (Portugal and Spain became Iberia), the group leaders, Prof. Gasset, Mrs Maslow and Captain Noah, realize that solid storms in the area will make a rescue mission impossible for a long time. So they agreed about the need to prepare for the winter. Autumn and spring don't exist anymore, so there are only two seasons, and they are increasingly difficult to distinguish due to unpredictable and sudden changes in temperature. Fortunately, all the group are wearing i-Nike smart suits and can use the airship as shelter, so the main problem-at least in the short term-is keeping safe and producing food.

Captain Noah, the authority in charge of the flight security, decides to divide the group according to their strengths after interviewing all the students. Her experience and expertise in managing diverse groups in dangerous situations-like the seven days war-has made her develop a unique sense for doing the right thing to survive. But the tensions in the group



do not take long to appear. After a couple of weeks, a big part of the group don't agree about Pep being in charge of the farming planning and giving instructions-which are taken as orders-to other stronger-but-not-so-smart (or just without the needed know-how on agriculture to take this role) students. Pep is the only Xabia's local, so it's a minority in the group-where other ethnic/cultural subgroups are much greater-, permanently have been excluded from the main groups, and this doesn't help the group trust him.

They reject Captain Noah's authority to decide who is doing what and claim for the whole group voting the allocation of roles. While being at a crossroad (either prioritize "democracy" or "knowledge" in the management of the crisis, assuming all the side effects of making a decision, whatever it may be), Prof. Gasset is afraid of a mass rebellion and asks Mrs Maslow for help. She is an anthropologist with a long experience teaching worldwide. The question is how to manage a situation that is a consequence of a generalized lack of empathy and sense of community, and how to prevent it from leading to a misunderstanding of the problem that could threaten the group's survival. Cultural bias, prejudices, preconceptions, apriorism are affecting the effective management of the crisis. There is an urgent need to find a way for the students to prioritize the community above themselves. They also need to value differences instead of fake ground equality, and learn to respect it and take advantage of it through mutual learning.

Finally, Mae (Mrs Maslow) finds the inspiration in her hand luggage: a present for her eldest son she bought in an old library in Barcelona, a few days before departing with the group from Xabia. It's a 1st edition-of 1920-of a book called "The Papalagi" ("the strangers" in Samoan), which she used to teach when she was a teacher in Brisbane. It contains descriptions of European life and culture supposedly as seen through the eyes of a Samoan chief named Tuiavii-which could be taken as a metaphor about the social construction of reality, about reality-and the way we see ourselves and each other-as an induced perception.

The anthropologist suggests to the group to temporarily stop all the productive activities (the stock makes it possible for a while) to play a game: during a week, from Monday to Saturday, in the mornings she will read out loud the book-chapter by chapter-to the whole audience, who will stand together. In the afternoon, each student will go on their own, nude and alone, around the island and think about themselves as Pico natives, trying to look the rest of the group "from the outside" while keeping themselves as pure and naïve as possible-as if they were the Samoans of the book. And taking the daily reading as a reference, they must individually identify what seems strange to their eyes about the group's behaviour, not judging it but just describing how different or weird it is for them. Additionally, they must identify at least one main strength for every group member, like: "what personal strength has X that I have not but I could learn". Each of them has to write their thoughts in a paper every evening for six days before going to sleep. And, at the end of the process, they have to deliver the scripts anonymously. All the students accepted the challenge.

After six days of the experiment, in the early morning of the 7th day, Mae collected all the anonymous scripts, randomly distributing them among the group members. Captain

Noah and Prof. Gasset are with them. Now every student must read to the audience the assigned script without knowing who the author is. From dawn to dusk, for more than 12 hours, the silent crowd attends the exposition respectfully. During the process, script after script, an internal change brews within the audience some laugh, smile, and cry. It's a cathartic process. Everyone is having a "try walking in my shoes", a "mirror" lesson from another pal, through the voice of a third one. At the end of the day, they've got 20 different interpretations of the book, from the group as a whole and themselves as individuals, one vision for each partner. Then they had to challenge their mindsets about the value of diversity, the importance of the environment, the critical role of contextualization in priority setting, and the transformative power of a community based on the individual transformation. A challenge needed to reach empathy, have to say, since all the collective transformations-including the development of a shared vision about the future for a community-start at the intimate level.

The silence in the crowd at the end of this collective catharsis was such that it was thunderous. The knowing glances were evident, the hugs even more. The crisis was finally seen as an opportunity for survival. They learned from each other and themselves. That night was for many the very first one they slept well since the landing in Pico.

The day after, a brave new world emerged for them.

And the rest is (future-you can complete it as you prefer) history.

P.d.: The group decided to collectively share their experience in a book called "Vitalogy"-the study of life in Greek-in 2070. It became the best seller of the 21st Century and the inspiration for the original script of "边干边学" ("Learning by Doing")-a Chinese movie directed by the Brazilian twin artists Joao & Anna Kramer Da Souza and awarded with 5 Golden Cows in the 2075 Bollywood Awards.



Hunting Shadows

by Marguerite Coetzee

It was the day of The Feast. When the last burning ember died after a season of firestorms, much of the planet was scorched. At the time, the only life that could be found was underground. Fenicians were emerging from their hidden homes after having sought shelter from the flames above. As was customary, this particular cycle's gatherers were retrieving food from storage while self-elected hunters prepared themselves for The Ritual.

Over generations, extensive measures had been put in place to ensure that the blazing sun passed through transparent glass or reflected off the shiny metal – whether structures, tools, or armour, it all contained and adapted light. Most people lived out their lives underground; the risk for them was too great on the surface. It had long been believed that there exists in the shadows a parasite. It was clear when someone's mind had been occupied by this parasite; the light in their eyes went dim, and shadows danced across their face. The Forgotten, as they were known, were sent to live in the darkness where no shadows could be cast onto others.

Argo had volunteered to be a hunter. She had often been told that she carried the traits required for a successful hunt; to be curious, inventive, and dynamic. Like all Fenicians, Argo knew not from whence she came. She had no lineage, no connection, no legacy. She only knew the stories she was told, of times, people, and places gone by. Like all Fenicians, she was destined for a life of mining. Buried deep in the charcoal mines were little orbs of energy.

An orb, almost like a small self-contained sphere of fire, provided the same kind of energy a lightning bolt would - if lightning could be captured and stored. Unlike solar power, these orbs did not require panels to generate energy or battery capacity to save energy. They were regenerative energy microcosms. They were highly sought after by the planet Nangun Wruk who used them to power their blockchain. What made the orbs so appealing – apart from their intricate energy ecosystems – was that it required no burning of coal, no absorption of solar, no vast land for wind, no mechanisation of water, and no nuclear waste. However, the origins of the orb remain a mystery, ancient wisdom that was lost when the last original elder on the planet died.

After The Great Conflict between the five planets, many moons ago, there lingered a divide between them. As part of the Fenician ceremonies, during The Feast, a peace offering would be made to Airmed, the life planet, in the form of a plant. Not just any plant - the first plant that grows after the fires. Believed to instil properties of rejuvenation and revitalisation when ingested by the Airmed leader, it is a symbol of renewal, hope, and peace. The relationship with the water planet, Pani, was beyond repair. Panis feared the extinguishing properties of fire and were reluctant to trust the Fenicians. To honour Armonia, the air planet, the gatherers scout the above-ground for any remnants of a sacred plant. This

would be burned in The Ritual and the smoke inhaled by the hunters. This was so that the ancestors of the air may protect and guide them on their hunt.

Argo was given a mug of tea. The brew was made from a variant of *fynbos*, one of the only plant species from the original Earth planet that not only withstood the fires but built resilience because of it. The tea gave the hunters strength and courage. Argo selected a torch. The hunters were given strict instructions to only light their torches if they were to hear the whispers of parasites. They were also told to travel in groups – pairs at least. Parasites entered the mind through loneliness; being alone was forbidden for this reason.

Argo was in a group of three: herself, Nyx, and Ereb. How unfortunate, thought Argo to herself. Of course, she would be partnered with two people who were inseparably in love; their life-forces were burning for one another. Was she loved? Wondered Argo. They were allocated a journey-line. It was to be completed by dawn. When the sun rises, the shadows elongate across the surface, and it would be too dangerous for them to return.

Several hours into the journey, they had not happened upon any parasites. Argo wished her pack would quieten. They had been whispering to one another endlessly. Their breath carried fleeting words and muffled the silence of the night. “You go on ahead”, said Argo, “I need to adjust my armour to fit more comfortably.” Nyx and Ereb gave each other a nervous glance. How bright the light shone in their eyes, thought Argo. Nyx nodded, and Ereb shrugged. They walked on, too absorbed to reason.

Argo looked around and saw a small sliver of silver glistening on the ground. Water. She licked the dust and ash from her lips. How parched she felt. Thirst truly is a disease, she thought. All the great teachings warned of the temptations of water, of what lurked beneath. But how consuming her thirst was. Argo could see only her silhouette reflected in the water. The darkness had already absorbed Nyx and Ereb; they would not know what she was about to do.

Placing her torch next to the small pool, she leaned over to drink. Peering into the depths, she could not believe what she saw: an orb! Instinctively she removed the armour around her arm. Immediately the radiating heat around her seeped into her skin. She dipped her fingers into the boiling water. So sure was Argo that she could touch the orb if she simply reached out a little more. Further and further, she stretched until her face glided through the liquid threshold. The armour too heavy for her to balance toppled her over. Into the water she fell. So fixated on the orb was she that she had not noticed her body now fully submerged. “Closer”, came a whisper. Argo's face lit up in a brilliant white light, her eyes like two small orbs. “Closer.” Argo's finger touched the orb. Shadows danced across her face. The light dimmed. Forgotten.



Build and burn

by Eric van Gennip

I
As darkness falls, the first footsteps of the Parajeevees tribe enter the Death Zone. A soft yellow glow of three distant moons balms the surface and the burned ashes covering it. The soil suffered from a firestorm once more. Devouring all life, human, animal and vegetation. The fire doesn't care. The fire always wins.

Princess Jaaleet steps from her carrier and starts aesthetically waving her arms and hips. Her rituals of dances and holy water help nature to restore. Yesterday she spotted a change in the atmosphere. Bright imminent flashes and a loud and evil hiss. Her people cheered and chanted, falling into each other's arms. The food was long gone, and the earth dried out. All the mobile energy storages for communication and transportation went empty. But the fire brings new energy. The only option for the nomadic tribe was to embark on another journey in hopes of finding wildfire, new energy, and new life. Growing out of the ashes on the fertile volcanic land. A rebirth. Bringing new supplies and a new home for a while.

Still, Jaaleet isn't able to dance the tension away. In any new place, a fire, a grenade or an unexpected encounter could pop up with the underground living Fenicians—any minute on any day. On the way to the Death Zone, general Taaleeb investigates the smoking soil closely for Fenician signs of life: caves or parts of pipes that help to constrain the energy overload of the fire, sun and geothermal heat. And especially for water reservoirs. Water is scarce. Collecting and conserving it is a crucial need for each form of life. Finding the water of others means instant war. Taaleeb nods towards the princess – everything seems clear. And so she follows. The Parajeevees don't have the strength for another war yet. First, this fruitful piece of ground must become theirs.

II
'Hush!' Romao puts his finger towards Joao's mouth. He gently strokes the wall. It trembles. The earth trembles! 'They're here.' Joao drops his head. It's now up to the two friends: reveal the position of their enemies above and start a war. Or keep quiet and go away. The worst thing about this decision: it truly doesn't matter. Living on planet Fenice is like living on planet Fear. Whether it is the threat of the firestorms, the lack of water, or the Parajeevees. In the end, it's all the same.

But Romao has a plan. Joao can see it in his eyes. Slowly he raises his head towards his friend and touches his shoulder. 'What are you doing?' He whispers a bit too loud. 'You've heard my stories about princess Jaaleet,' Romao replies. 'Even though she's an alien, she is astounding...' Romao gazes in the distance. He met the princess once when they

both searched an oasis for fruits. They had eye contact. They froze; until she nodded and walked on. Romao never exposed her presence; as did she. Instead, ever since, the two had only one goal: meeting each other again.

This stupid guy! Joao can't believe it. 'Come with me! Just walk away.' Romao wasn't born a Fenician. For some years, young men of other planets travelled to Fenice on space missions. Other evolved species of what were once human beings were always attracted to this red planet so close to the sun, with all its fire and energy. They were granted to import tons of energy and high tech energy devices in exchange for help to survive. The dangerous, unpredictable wildfires and the war against alien nomads Parajeevees were the perfect learning school: the young soldiers fought aside the Fenicians learning how it feels, the stupidity of war and the lethal forces of nature. It made them cherish their lives: building their own planets as safe homes for their loved ones.

The space missions ended after several flights were caught in fires or by Parajeevees. Romao stayed. Not knowing what to do with his life, surviving each day and focus fascinated him. This time, for the first time, he has a goal. Meeting the princess again. And perhaps start a new equilibrium of peace and love. 'Friend,' Joao tries to bring him back to his senses. 'You shouldn't have big goals like that. The fire always wins. Since the beginning of time, our species have been at war, each wanting the planet for its own. That's nature: every species wants to grow and eventually be the greatest. You can't stop that.' Romao winks at Joao. 'Let's see about that.' He climbs through the hole and runs into the dark.

Joao shakes his head and immediately jumps in his electric cart. He races off through the pipes and tunnels, which connect the Fenician cities. On his way back to his smart grid surrounded city, he thinks about Romao's words. Fenicians live in compact underground cities, where everybody forms a family—sharing all there is and helping each other out in these difficult circumstances. It hits him: it actually is love that keeps them going.

'We found the Parajeevees!' He screams as he enters town. 'They have Romao in the above world. Who is ready to get him back?' Naturally, all of the city fighters gather, clipping up their mercury armour with their technically enhanced body parts. They have technically modified limbs for more strength – they consider themselves stronger than any other kind of human being. Tested by the most monstrous fires and heath, they indeed are the toughest.

III
The Bedouin tents of the Parajeevees are set up brotherly next to each other, and the men are already ploughing the ground. Everything seems calm, but Jaaleet is restless. She senses something's going to happen. Carefully she steps out of her tent, looking in the room of the general, her main guardian. General Taaleeb sleeps. Although it's contrary to everything she's ever been taught, she is somehow determined to go outside for a stroll. Invisible forces draw her towards a certain rock. When she reaches it and sits down, Romao takes his chance.



'Princess, hush, it is me.' He whispers as he appears by her side. Jaaleet freezes, once again, not showing any trace of movement or emotions. 'We've met before in the oasis. And I hopelessly fell in love with you. I'm prepared to die only to know if you feel the same way.' Romao chokes. Even in his eventful life, this truly is the scariest moment. To love or to die. When he looks up, Jaaleet doesn't have to say anything. Her lovely eyes already show how she's drowning in his wonderful thoughts. 'But how can this be? There's no way we can get together. Not in this war,' Jaaleet mourns.

'This war,' Romao says, 'What are we fighting for? This constant fight for possession. Eventually, it is not about possessions, fertile land or even water. It's fear that arises from the urge of having control. If there's one thing we should have learned in this amazing and terrifying place, it is that there is no control. The fire always wins. Everything is temporary. We only build and burn.' Jaaleet agrees. 'But how can we convince our people not to fight each other for the water but to share it? To find new solutions for problems and bundle our knowledge?'

A tremendous explosion on the other side of the nomad village draws their attention. 'Joao,' Romao sighs. They look at each other, realising the war is continuing right next to them. Jaaleet rises and helps Romao to get up. Without speaking a word, they walk towards the battlefield. Towards imminent bright flashes and a loud and evil hiss. Hand in hand. Unarmed.



Generation Armonia: a day in the life of an ongoing mission

by Tracey Follows

As I drifted into land on Armonia, I could feel the breeze whisper something to me as it brushed along my neck and ears, and I shivered. I could smell something completely new, I don't even know how to describe it, but it was something like mint, an ancient herb that used to flourish on Earth but now only existed in the memories of the older generations of Earthlings. Or was it just the smell of very thin, very pure air? Whatever it was, it was heady. It was also cold. And I could feel the tears start to form in my eyes, the water smarted, but I wiped it away. I could see what looked like a wild garden stretching out in front of me, as far as my stinging eyes could see.

I slid off the cotton wool cloud that I had arrived on. And when my feet touched the ground, I bounced back as if I were walking on a trampoline. It was hard to regain my balance as I stumbled around like a newborn foal and finally bobbed along the grass walkway that had been trampled underfoot by something rather large. Whatever it was, the footprints impressed on me that it had six feet, so presumably six legs. I wondered what it might be. And how fast it might be able to run.

I heard the crack of a branch behind me - it was deafening in the thin air. And as I floated around in what felt like zero gravity, I came face to face with a tiny being with a silky smooth, transparent skin. It had a concave chest and huge bulbous eyes. "Don't worry", he whispered as the words formed like rings of fog from his lips. "that's the indigenous Armonian Falcon-Bear, they're not dangerous, but they do get hungry". I wasn't sure what to make of that! But I was prepared for the strange spoken language of the Armonians. Armonians, you see, are said to be voiceless. I could now see - and hear - that myth was true. Over time, Armonians had lost the ability to make a sound using their voice box, so when they spoke, they emitted what seemed to be a smoke ring or a series of misty shapes, making out the spelling of words rather than the sounds. It meant that their communication was slower than ours, more deliberate and well-thought through. When they 'speak', they mean every word they say - that's the effect of living in such thin air.

That kind of slow, deliberate language that has to be seen and interpreted rather than heard, rendered the planet almost silent. But more than that, it made for more harmonious communication across the whole species and, in between species, too. The young misshapen boy who had appeared then quietly led me to a white building on the edge of the forest. We battled through the undergrowth and I could feel myself gasping for air. My

head started to swoon a little and I was grateful to reach our destination, and sit down for a little while.

I had been summoned to Armonia to mediate the tension that had recently and uncharacteristically emerged between the two generations living here. It had already been explained to me in the briefing that only two generations now existed on Armonia: young and small, slightly-built children who lived to about 13 years of age; and the elderly who were tall, stringy and survived into adulthood, living until about 200 years. What had happened on this planet was a genetic divergence. The young, short, small generation were those born with underdeveloped lungs, who struggled to grow and live beyond their teen years. The elderly were those who genetically inherited strong, healthy lungs and they just went on forever, or so it seemed.

The two generations had lived alongside each other for decades but lately there was growing tension. The young and short-lived were starting to become resentful. Not because they knew they were to live a shorter life but because they knew that the Respira plant, when grown, harvested, and fermented, could produce the medicine required to repair these young and underdeveloped lungs. But the elders had not been nurturing the Respira plant and had allowed it to dwindle away. They knew that the plant gave off a scent that affected their epigenetics and rendered the duration of their lives to about the same as a human being, around 80 years old. As the plant looked to be heading to extinction, so would the young generation. Meanwhile, these elders would live on for two centuries or more.

Though it was not in the elders' interest to nurture this plant particularly, it was time to redress the balance, and that was what I was here to do. It would be a challenge as there is no word for 'sacrifice' in the Armonian language. There had never been any use for it. Inhabitants had always lived harmoniously alongside each other within their beautiful aerated environment. But things had changed, and now the elders would have to sacrifice something to prevent the early deaths of the young.

I manifested my holographic laboratory and showed the small boy named Aasha the Respira plant. His eyes widened even more, and his greyish, ghoulish skin appeared to flush pink. I immediately understood that this was something he had been dreaming of, as he whispered the fog-word 'hope' into the air, and it hovered between us. "I have to get to work," I said, "we have no time to lose", and I started towards the air-house laboratory in which I was to carry out my important work.

And as I reached the reflective door, the sun bounced off it, startling me. I could see the reflection of the other Earthlings in my team arriving on their clouds. Here was the backup. "Right", I commanded, as I looked at the gleaming face of young Aasha, "let's get to work".



The visuals and short stories in this section came through what we call the project platform which you can access here: storiesfrom2050.com. The platform serves as a space where people from all over the world come together to share and discuss their alternative perspectives on the future; including various disciplines. Some of these fall under the discipline of Speculative Design or Speculative Futures and are meant to make the reader think differently about our futures on Earth.

The imagery and short stories are coming from the fields of Design, Futurism and the Arts. In the curation of this booklet they appeared relevant and were added here because these are fields that generally inspire “out of the box” thinking and help us imagine different, radical, and more inclusive futures. From these stories we would like you to take away the critical perspectives, which are often ignored. Finally, we would encourage you to share your thoughts, and access these posts in the project platform so your views can be part of our collective futures too.

● [Protopian futures by Monika Bielskyte & Mario Mimoso](#)

● [Urban Foraging by Mario Mimoso](#)

● [Brave New Worlds by Leah Zaidi](#)

● [Short stories by Chiayu Hsu:
The Credit Society
The New Religion
Sci-fi The Pure-blooded Elite](#)

● [Cities are Materials Banks by Johanna Hoffman](#)

● [Inside the first self-sustainable city on Mars by ABIBOO studio](#)

→ To view all the projects in full, go to the project platform by following the interactive link storiesfrom2050.com.



Protopian Futures by Monika Bielskyte and Mario Mimoso

The aim of these visuals below was to depict a more inclusive future world, far from the worn-out western scenario and eschewing the oppressive patriarchal western culture lens, where BIPOC people representative of diverse cultural backgrounds and gender expressions have a central role. One of our main goals was to challenge ageism, ableism, homophobia, transphobia, and the resulting erasures in Sci-Fi concept design. Hence, our characters are strong, powerful women and non-binary people. Our depictions focus on care, radical tenderness, and celebration of life rather than violence, conflict, and isolation like traditional Sci-Fi.



Image by Bielskyte, Monika, Mimoso, Mario via <https://www.behance.net/gallery/103218949/Protopian-World-Designs-w-Monika-Bielskyte>

The key thing was to show that bleeding edge technology can also be used for purposes other than warfare and surveillance, but rather as a form of self-expression, art, or to help both humans and the planet we inhabit. Instead, we wanted to encourage people to connect technology with tattoos, fashion, music, parades, and dances. Prosthetics that are not militarised but rather enhance our human and artistic abilities, and drones that are not meant to surveil citizens but interact both with humans and genetically modified and improved bioluminescent plant life in the city. The bodies of our characters are adorned with animated tattoos and wearable devices that do not encode the workings of a police state but are the extensions of their selfhood, cultural and gender expressions.



Image by Bielskyte, Monika, Mimoso, Mario via <https://www.behance.net/gallery/103218949/Protopian-World-Designs-w-Monika-Bielskyte>



URBAN FORAGING | A dystopian scenario for the future of food in today's cities

A project by Sharp & Sour.

Economic inequality, the exponential growth of population, our disconnection from the source of our food, and the rapid expansion of cities will only get worse. So what if these issues extended to a point where the only source of food available was the one that grows within the city limits?



Image by Sharp and Sour, via <https://www.sharpandsour.com/urban-foraging/>

For this speculative piece, we asked ourselves what it would be like to source our own food from our urban surroundings, from the city we live in. In order to do so, we went all

over Barcelona and picked whatever food we found there, to cook finally three dystopian recipes with those ingredients.

We went deep into the city of Barcelona, looking for sources of protein, fibre, or vitamins. We collected plants, seeds, flowers, and even mushrooms that we carefully washed and processed in different ways to make the most out of them.



Image by Sharp and Sour, via <https://www.sharpandsour.com/urban-foraging/>

It was a complex process of sourcing and researching. Ingredients not only had to be edible but also cooked in a way that would make the most out of them and enhance their inherent properties and benefits. We discovered that acorns need to be leached in order to get rid of the tannins and that grounded carob seeds were used in times of scarcity as a substitute for chocolate.



Brave New Worlds with Leah Zaidi

“Have you dreamt of other worlds? Another time, another place perhaps...universes of the mind so unlike our own. Is it because you grew tired of this one? Many of us have, at some point in our lives, asked if there is a time or place better than the one we find ourselves in — that this cannot be all that there is or the best that we can do.” - Leah Zaidi

But what if we stop seeking escape and start seeking change? What if we could learn from those who build the worlds we escape to, in order to create a better one for ourselves? There may be many possible worlds we prefer more than this one - worlds in which our systems are sustainable, and in which we are collectively better off.



→ Watch: <https://www.youtube.com/watch?v=cnYXaScAHYs>

The Credit Society by Chiayu Hsu

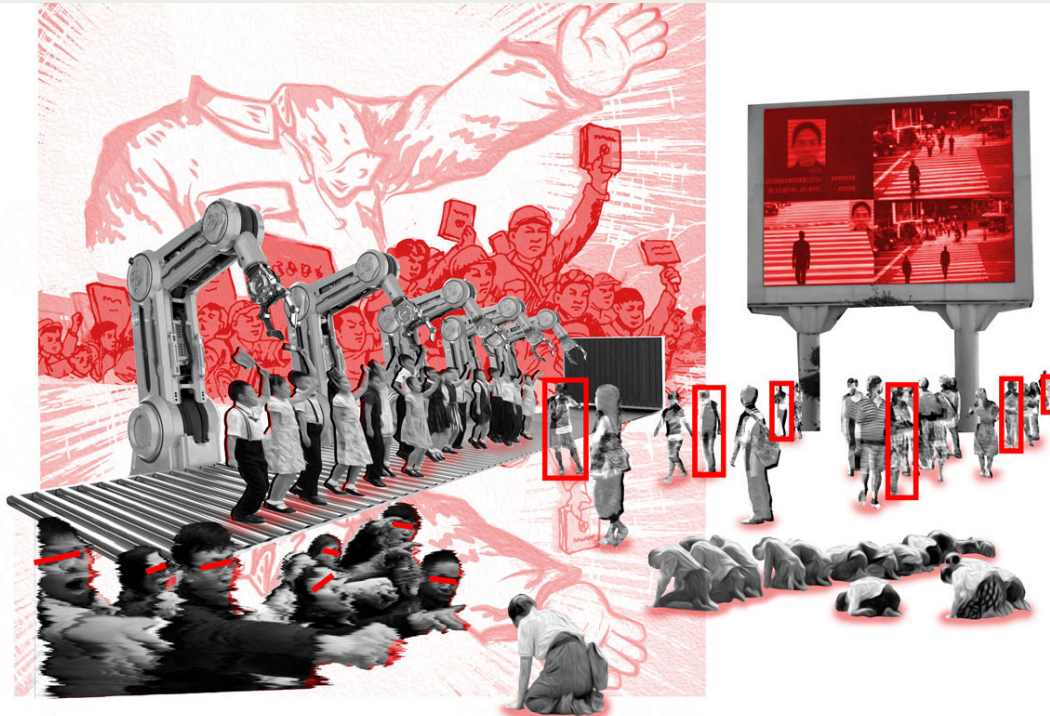


Image by Chiayu Hsu, Creepy future, via <https://medium.com/the-creepy-future/memo-1-the-credit-society-962aa280d9e0>

Ever since Social Credit became fully implemented, the concept of domestic trading has been revolutionized. We now trade our digital footprints, privacy, and for some people, dignity in exchange for convenience, recognition, and safety. It changed the social order as well. Those who had social status and wealth now need to strengthen their third power, hence the Social Credit black markets and Social Credit laundries. Those who had no social status nor wealth now get the chance to climb up the societal food chain by playing 'model citizens'- not only well-behaving oneself, but helping the society to 'correct the un-ethicality', hence the 'social activists' or the 'moral vigilantes.'

The New Religion by Chiayu Hsu

Ever since the capacity of machines exceeded that of human beings, the only activity left for humans was inventions. The arts, philosophy, and religion, those innate talents which humans have practiced for thousands of years, are the last capacities which the machine will assume.

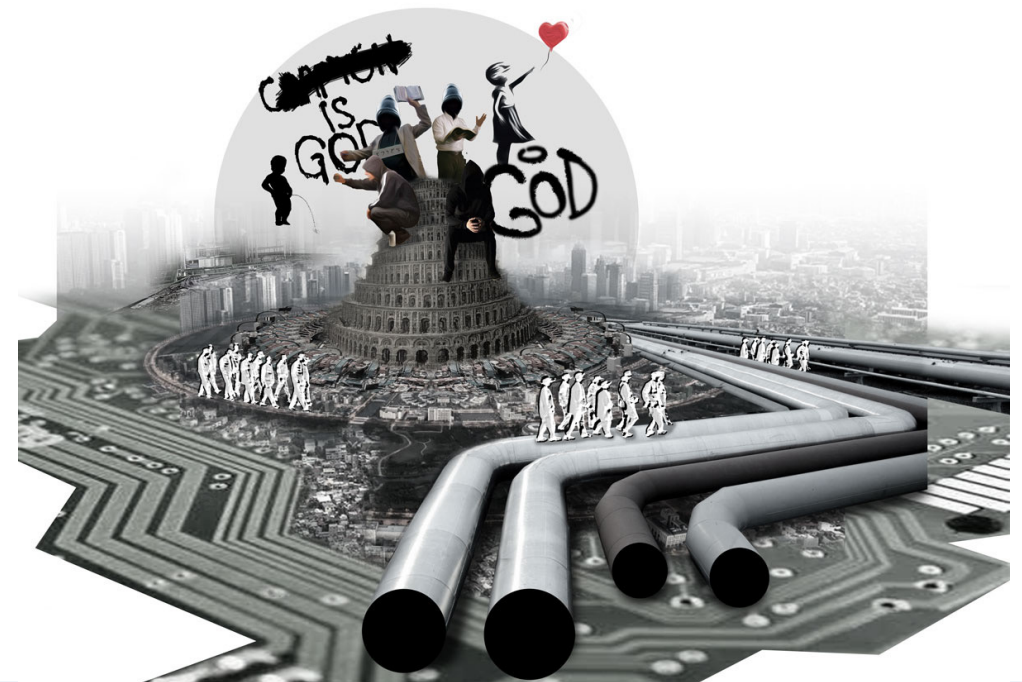


Image by Chiayu Hsu, Creepy future, via <https://medium.com/the-creepy-future/the-new-religion-f689269594d6>

Artists, novelists, philosophers, and theologians are now the most privileged members of society. They have assumed control of all religions. People and machines would wander around like lost sheep if they did not have the higher wisdom of artificial consciousness to rely on and lead them. The most gifted humans are well taken care of at the core of the city centre, nurtured by the grand machine. Surrounding the city centre is the inner ring, where machines and inferior humans work together to translate, develop and refine the details of the wisdom generated at the centre. They then pass them to the outer ring, which is run and inhabited by the rest of the machines.



Sci-fi The Pure-blooded Elite by Chiayu Hsu

The **virus mutation** kept outpacing medical advances and humans had to live alongside the ever-evolving disease. Cities went into lockdown from time to time. **Health code** applied worldwide and became the new visa. People now take different drugs constantly to ease new symptoms. The abuse of chemicals brought physical malfunctions or even genetic disorders. Some nations resorted to the more extreme measure- genetic modification- to prevent generational extinction. **The pandora's box had been opened.** They promised an ultra-immune generation, but what occurred was more and more deformed human shapes, the most obvious side-effect of all, especially in poorer regions. In a world where almost everyone has been more or less altered biochemically or genetically, it's considered a great privilege to stay intact, to remain 'pure-blooded'. One needed

to remain entirely isolated from society, being protected all the time, or avoid every socialization with others to stay uninfected. **Only the richest of the rich could afford this social segregation,** and their intact human genome represents the highest social status, granting access to all levels of rights, including, ironically, health-code-free traveling.

The world couldn't be more divided. The protected, sheltered, isolated elites and the exposed, infected, hybrid, deformed class, living together, exploiting the last riotous delight on the planet.

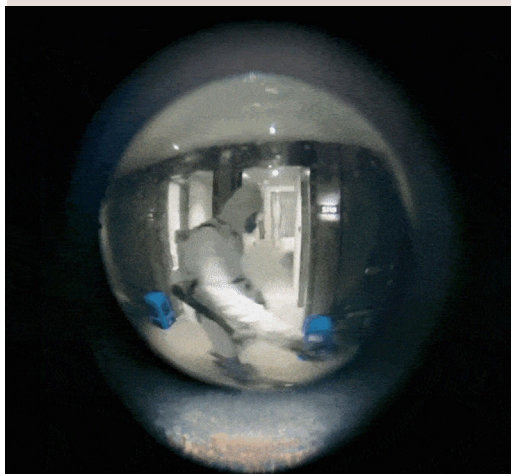


Image by Chiayu Hsu, Creepy future, via <https://medium.com/the-creepy-future/memo-4-the-pure-blooded-elite-1e43252f5628>



Cities are Materials Banks by Johanna Hoffman

We zoom in on a material bank in the western sector of a city on the edge of the sea. It's a storefront on a back alley, stories of offices and apartments rising above and keeping the sunlight low on the street where you're waiting to go inside. The year is 2070, half a century since a chain of pandemics hit the globe. There was coronavirus, a return of norovirus that mutated into something new, and on and on until people started to forget the names bc they didn't want to remember. Physical supply chains have shut down in the years since, localized for security purposes and pushing economies of reuse to the forefront all over the world. Urban centers triple down on eliminating waste these days, on prioritizing continual re-use of resources. Now, nearly all goods, services, and systems consumed by a city's citizens are fabricated and disseminated within the city itself. Waste treatment sites are resource reclamation centers, where water, nutrients, and compost are all extracted, treated, and funneled back for use again. Cities are material banks, with all items, streams, and products are cataloged and organized for re-processing when no longer needed for their original purposes. Fabrication labs, powered by 3D printers and digital scanners, are integrated into each community, providing the tools needed to repurpose materials with speed and easy access onsite. Back to the material bank. The door opens as we approach, and your augmented vision kicks in, showing you the streams of items available inside. Copper wire, sandstone grit, plasma screens, wood genetically modified so as to be translucent. All materials these days are made with DNA embedded inside. Printed on synthetic strands constructed through chemical processes and converted from binary to DNA code, they mark each piece of the city – the surface of the street, the windows in the walls, the pipe overhead – with an identifier to track it over the course of its life. Within each piece of each thing, coiled in its smallest part, is a strain of information printed when it was made, with all the ways that it might be used compressed inside. The things that have shaped it – the person who formed it first, the material it merged with last, the arguments that happened to the people who used to live alongside it – all that is stored in its DNA. Plugin and you can listen to these histories, to all the things that came before, to all the things that are programmed to be. Connecting to these histories, the way the materials have been repurposed and changed over time has made you see your city in a different way. Like most people you know, you adhere to the idea of 'designing to disappear,' to the idea that cities are made to grow and change over time, that what you make of the spaces you call home are part of a bigger, longer story.





Inside the first self-sustainable city on Mars by ABIBOO studio

Ready for humans in 2100

Construction of the city of Nüwa could start in 2054 and will see 250,000 people live inside the rock of a steep cliff. Freeze my body, melt me in 80 years, and send me to Mars. Architecture studio ABIBOO has revealed its plans to create the first self-sustainable city on the Red Planet, which is set to be ready for residents in 2100. The city will be called Nüwa and will be located at Tempe Mensa on one of the Martian cliffs. Its position inside a rock on the steep cliff will protect its residents from radiation and meteorites (cool!) while still giving them access to indirect sunlight. ABIBOO's plan is to design Nüwa to be self-sustainable. At first, it will have to rely on supplies and capital investment from Earth, but the hope is that it will eventually be able to grow using local resources only. Those living on Mars will work and live in 'Macro Buildings' – excavations inside the rock linked together by a network of tunnels, trains, and buses – while 'Green Domes' will offer artificial park-like space. At the top of the cliff is the 'Mesa', where manufacturing, energy generation, and food production will take place – crops will provide 50 percent of residents' diet, with microalgae making up the rest.



→ More information: <https://abiboo.com/projects/nuwa/>



Image by Rojas, Gonzalo, via <https://abiboo.com/projects/nuwa/>

A decorative graphic consisting of several colored circles (blue, brown, red, light blue, green) arranged in a cluster to the left of the word 'Epilogue'.

Epilogue

EPILOGUE: What can EU R&I policy learn from Stories from 2050?

by Nikos Kastrinos & Jürgen Mengel

When we started with this project, we had an idea that it should be different. It should open the door for unusual, radical thinking, out of the box, across borders, and beyond fringes. We encouraged participants to capture radical thinking about the future, whether it comes from political and artistic movements, literature or corporate advertising. And we encouraged the participants to build stories that combine life and imagination, technology and society.

The relationship between science fiction and technological developments is well-explored (Miles 1993, Wright 2008). From Jules Vern to Isaac Asimov, science fiction writers captured the imagination of people and ended up writing about things that later came to happen. The history of technology is full of old designs, untenable at the time of their first conception that come to be developed by later generations. Da Vinci's machines¹, the space elevator², artificial photosynthesis³, molten salt nuclear reactors⁴ are but some such examples that have inspired generations of engineers as well as artists and writers to push the limits of what is doable and reach for the untenable.

But how can R&I policy benefit from stimulating people's imagination? One of the foundational ideas of R&I policy is the dilemma of control (Collingridge 1980). The idea is that when a technology is young its effects are unforeseeable, and by the time its effects become foreseeable, it is too late to do anything about them. Collingridge (1980) uses the example of the motor car to show how impossible it was for the first designers and producers of motor-cars to predict what the motor car had in-store for future cities. How impossible it would have been for any regulator at the time to control these effects, which resulted from billions of autonomous decisions of all kinds of individuals.

¹ [Leonardo da Vinci: Machines - LRMA](#),

² [Space elevator - Wikipedia](#)

³ [Artificial photosynthesis - Wikipedia](#)

⁴ [Molten salt reactor - Wikipedia](#)

How does R&I policy relate to the Collingridge dilemma? Without too much simplification, we can distinguish between three schools of thought. The first one considers only the functional and social effects of a technology desired by its sponsors. It is broadly inspired by the Manhattan project and the first landing on the moon, and argues that science, if given a clear brief and infinite resources, it is known to deliver. This is the rationale behind mission oriented R&I policies (Ergas 1987, Mazzucato 2018), and is really unimpressed by the dilemma of control. The policy problem is “to get the directionality right”. The second school of thought places emphasis on “systems innovation” (Edquist 1997, Edwards 2003). In this school of thought, the directionality needs not only to include science but also the whole system of innovation (Freeman 1995, Lundvall 1992) including for example considerations of desirability of particular technologies and socio-technical pathways (Geels et al 2016). In this school of thought, the key question is how to govern a system in which the present and future desirability of technology is decided upon systemically, taking everyone’s needs and desires into account (Stirling 2006). The dilemma of control is very relevant, but not very significant in the broader governance problem, which is preoccupied by the need to regulate without constraining innovation. The third school of thought argues that there is an urgent need to take the dilemma of control seriously and to develop systems of Responsible Research and Innovation (Ribeiro et al 2018, Stirling and Genus 2018, Von Schomberg 2019). It broadly argues that it is increasingly the case that the production of technology and knowledge, and the effects of its use happen in different loci and concern different communities (Schot 2003). These communities create their own narratives – stories – about the benefits and pitfalls of producing and using the technologies. Responsible research and innovation is about ensuring that those narratives are as truthful as can be, to the intentions of producers and users and to the state of knowledge about side-effects.

All three schools of thought contribute greatly to shaping today’s EU R&I policy. First, the policy has been manifestly inspired by the first landing on the moon⁵, and has emphasized the importance of mission orientation and directionality, in an effort to ensure that EU R&I delivers targeted impact. A lot of that intended impact has to do with the planetary emergency, the existential threat of climate change and the biodiversity crisis, which are driving the European Green Deal. Here it is understood that R&I policy cannot deliver on its own: systems innovation is required. The question is what system, which innovation, and what narrative?

There is one prevailing narrative, in which we transition almost magically through technology into a world, where our adaptation efforts protect us from natural disasters and our mitigation efforts stop climate change at its tracks. We all live long-healthy lifespans in comfortable cities surrounded by idyllic countryside, thanks to the efforts of enlightened public authorities and corporate champions across the world. On aggregate, this requires electrification, renewable energy, progress in medical sciences, and improvements in agriculture and nature protection and so on, and as technology delivers such “requirements”, this scenario will unfold⁶.

⁵. See [Proposals for Europe’s bold 10-year R&I missions officially handed to Commissioner Gabriel | Horizon: the EU Research & Innovation magazine | European Commission \(horizon-magazine.eu\)](#)

⁶. COM (2018) 773 - A Clean Planet for all - A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy

None of the writers in this collection of stories went for this narrative, partly because it is not radical in policy terms, but also because, just like Collingridge (1980) illustrated, such a future requires the confluence of a vast sequence of low probability events and countless decisions to go in the same direction. Will we really all have long life-spans or on average? Will the earth’s climate stabilize when climate change stops or will it change in different directions? Seeking radical storylines, the participants in this study found it easy to adopt the view that survival will depend on our ability to start again – even on another planet.

Even though most narratives in the stories do not start from seeing the planetary crisis as a result of lack of technology, there is a great deal of technological innovation and gadgetry in the radical stories written in this project. Strange analytical devices, new sensory capabilities like a “new Apple Watch”, which adjusted to a recent heat and started cooling the inner wrist, instruments of communication, urban farming and tools for doing what people do are often augmented. Nobody believes that people’s ways and capacity for doing things will not improve on route to 2050. Some stories also describe practices of social organization, education, learning and science as well as scientific infrastructures that will be essential in a sustainable future, seed banks and banks of other genetic material, data banks and so on. Many stories build on successful bottom-up initiatives and social innovation, which include elements of citizen science as well as high-technology. Citizens “track the metabolism of trees” via advanced sensors” and see “eating as a political act” and participate in high-profile citizen science groups such as the “Academy to the Stars”. Human curiosity, the motor of science and research, is a value in all stories.

Whether such innovations require R&I policy intervention to materialize is debatable. Some analysts point out the importance of government science for many of the waves of innovations that have been brought by industry (Mazzucato 2013). Others emphasize the importance of private initiative and competitive markets (Manzi 2012). Yet others emphasize the importance of diversity in innovation ecosystems where in different institutional settings and systems of innovation, the public and private sectors play different roles (Asplund et al 2021). When thinking about “transformative R&I policy” (Borunsky et al 2020), these diverse institutional settings and roles are the prime level at which desired policy effects are defined. But let’s assume for a second that Europe’s transformative R&I policy succeeds and our technological prowess multiplies. Will the transformation save the planet from the climate change and biodiversity crisis? Or are we heading for a truly challenging disaster armed with potent AI and very able to harvest energy from nature? Like in the story “Redacted” on planet fire, where the Fenicians wear “miracle suits” and metallic pillars strategically constructed all over to alchemize the surface heat and fumes into energy and even water.

It is important to realize here that we value technological prowess and innovation enormously, and so do the authors of the stories from 2050. However, in many alternative narratives the source of the existential problems, the ones that create extreme and radical scenarios, is not to be found in the lack of innovation. The source of the problem seems to be more associated with the view that in nature there are predators and food, victors and victims, and if you are not one you are the other. It is this viscerally primal view of existence that leads to the disregard for other beings, nature and the planet,

which leads to the destruction. And in many stories it is human ingenuity and technical prowess that enables the characters to survive and thrive in very challenging alternative worlds.

One key characteristic of flourishing in alternative challenging worlds is the ability to empathise with much more than one's tribe, one's nation or one's species. The ability to establish communication paths and relationships that go far beyond the need to eat and procreate, compete, submit and govern. Interspecies understanding and communication is one of those old technological challenges that have been inspiring scientists, engineers and artists for decades if not for millennia⁷. The stories throw a new light to this very old pursuit and to the need for it. As human ingenuity and technical prowess are limitless, we can have hope that if science is given a clear brief, freedom and appropriate resources it can deliver, even some ability to "listen" to the metabolisms of plants as some stories assume.

The enlightenment was a victory of knowledge and reason over superstition and fear. It created the momentum for the Anthropocene. The new epoch requires a new global conscience that is based on empathy and on our ability to understand, communicate and empathise with other beings animate and inanimate. This conscience requires heightened curiosity, an appreciation of, and a concern with, the preservation of what has been, the care and the survival of the other and the conditions of that survival. The stories from 2050 provide us with snippets of what it could be and what it could take. We hope that they inspire politicians, citizens and scientists, older and younger people to be adventurous, curious, entrepreneurial and to do the right thing.

⁷. Some level of communication with animals has been part of agricultural life for ever, but recently science has embarked in efforts to reach different levels of communication with animals e.g. see [To Communicate With Apes, We Must Do It On Their Terms | NOVA | PBS](#); and to begin to understand communication in plants ([Plant communication - Wikipedia](#))



References

References

- Asplund, F, J Björk, M Magnusson, AJ Patrick, (2021) “The genesis of public-private innovation ecosystems: Bias and challenges”, *Technological Forecasting and Social Change*, 162, <https://doi.org/10.1016/j.techfore.2020.120378>.
- Borunsky, L, A Correia, S Delauré, R Martino, R Rakic, J Ravetet (2020) Making R&I transformative: Evidence in support of the new European Research Area Communication, Luxembourg, OPOCE,
- Collingdrige, D (1980) *The Social Control of Technology*, New York: St. Martin's Press; London: Pinterl
- Edwards, P N (2003) “Infrastructure and Modernity: Scales of Force, Time, and Social Organization in the History of Sociotechnical Systems” in by T J. Misa, P Brey and A Feenberg (eds) *Modernity and Technology*, Cambridge, MA: MIT Press, pp. 185-225.
- Edquist, C/ ed (1997) *Systems of Innovation: technologies, institutions and organization*, London: Pinter
- Ergas, H (1987) “The importance of Technology Policy”, in P Dasgupta and P Stoneman / eds *Economic Policy and Technological Performance*, Cambridge University Press pp 51-96
- Freeman, C (1995) The ‘National System of Innovation’ in historical perspective, *Cambridge Journal of Economics*, Volume 19, Issue 1, February 1995, Pages 5–24, <https://doi.org/10.1093/oxfordjournals.cje.a035309>
- Geels, F W, F Kern, G Fuchs, N Hinderer, G Kungl, J Mylan, M Neukirch, S Wassermann, (2016) “The enactment of socio-technical transition pathways: A reformulated typology and a comparative multi-level analysis of the German and UK low-carbon electricity transitions (1990–2014)” *Research Policy*, 45: 4 pp 896-913, <https://doi.org/10.1016/j.respol.2016.01.015>.
- Genus,, A and A Stirling,(2018) Collingridge and the dilemma of control: Towards responsible and accountable innovation, *Research Policy*, Volume 47, Issue 1, Pages 61-69
- Lundvall, B.A. (1992) *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning*. London: Pinter
- Manzi, J (2012) *Uncontrolled: The Surprising Payoff of Trial-and-Error for Business, Politics, and Society*, New York: Basic Books
- Mazzucato, M (2013) *The Entrepreneurial State: Debunking public vs. private sector myths*, London: Demos
- Mazzucato, M (2018) “Mission-oriented innovation policies: challenges and opportunities”, *Industrial and Corporate Change*, 27: 5, pp 803–815, <https://doi.org/10.1093/icc/dty034>
- Miles, I (1993) 'Stranger than fiction. How important is science fiction for futures studies?', *Futures*, 25: 3, pp. 315-321. [https://doi.org/10.1016/0016-3287\(93\)90139-K](https://doi.org/10.1016/0016-3287(93)90139-K)

Ribeiro,,B, L Bengtsson, P Benneworth, S Bühner, E Castro-Martínez, M Hansen, K Jarmai, R Lindner, J Olmos-Peñuela, C Ott & P Shapira (2018) Introducing the dilemma of societal alignment for inclusive and responsible research and innovation, *Journal of Responsible Innovation*, 5:3, 316-331,

Stirling, A.(2006) Precaution, foresight and sustainability, reflection and reflexivity in the governance of science and technology. In: Voß, J.-P., Bauknecht, D., Kemp, R. (Eds.), *Reflexive Governance for Sustainable Development*. Edward Elgar, Cheltenham, pp. 225–271.

Von Schomberg, R and J Hankins (2019) *International Handbook on Responsible Innovation: A Global Resource*, Edward Elgar Publishers, Cheltenham UK and Northampton, Mass, USA

Wright, D (2008) Alternative futures: Aml scenarios and Minority Report. *Futures* 40(5): 473-488.

Tree Certificate



Stories from 2050

4strat GmbH
has donated 1560 trees
to the children and youth initiative Plant-for-the-Planet.

The donated trees help us children of Plant-for-the-Planet to fight for a better climate and a better future.

Thank you!



Urkunden-Nr. : 0 0 0 0 1 5 4 6 0 2 2 F 4 C

Certificate-No.: 0 0 0 0 2 3 6 0 2 1 9 C 9 0



The certificate is only valid with the corresponding certificate number.



Stories FROM 2050

- RADICAL, INSPIRING AND THOUGHT-PROVOKING
NARRATIVES TO BETTER UNDERSTAND THE CHALLENGES
AND OPPORTUNITIES OF OUR FUTURES.

edited and curated by:
Tanja Schindler and Graciela Guadarrama Baena
