

# Science fiction prototyping **sustainable futures**



Image: Kirsten Zirngibi/Xprize

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Technology, Power and the future of  
Humanity  
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Stockholm  
University

Stockholm Resilience Centre  
Sustainability Science for Biosphere Stewardship


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Institute  
OF ECOLOGICAL ECONOMICS



KUNGL.  
VETENSKAPS  
AKADEMIEN  
THE ROYAL SWEDISH ACADEMY OF SCIENCES



# Navigation

- 
- An illustration of a person standing on a circular, light-colored platform in the middle of a dark blue ocean. The platform is divided into several sections by dark lines. The water around the platform is filled with many small, dark fish. The scene is lit with a greenish-blue glow, and there are some red light sources visible on the platform and in the water.
- A brief introduction to scenarios
  - Welcome to the Anthropocene Ocean
  - The prototypes - 'Radical Ocean Futures'
  - Key takeaways
  - 15 minute break
  - Prototyping the future exercise





# A brief history of **scenarios**

Image: Simon Stålenhag



# Why multiple alternative futures?

- The future doesn't exist. We make it and shape it by our actions and choices today.
- Today is a VUCA (volatility, uncertainty, complexity & ambiguity) world, which can feel 'scary', but it can also be inspiring and empowering to realise that sometimes small changes can have big effects.
- Futures Thinking can be a powerful approach to unlock complex problems in an increasingly uncertain world – it's a way of thinking about what's possible more deeply, honestly and strategically.
- Foresight is the capacity to anticipate and plan for possible futures. The ultimate purpose of strategic foresight is to make better, more informed decisions in the present; to help not repeat mistakes; to spot challenges and opportunities early, and to help redesign and innovate with a vision of how things can be different, more positive and better in the future.
- Exploring alternative futures also helps us become aware of our own assumptions. And where we might need to change.



# What is a **Scenario**?

“a coherent, internally consistent and plausible description of a potential future trajectory of a system” – Oteros-Rozas et al. (2015)



# Introducing the **Anthropocene Ocean**





## **Anthropocene**

**Relating to or denoting the current geological age, viewed as the period during which human activity has become the dominant influence on climate and the environment.**



**“Humans have  
changed the way the  
world works. Now we  
have to change the  
way we think about it,  
too”**

***- The Economist***

# nature

THE INTERNATIONAL WEEKLY JOURNAL OF SCIENCE

## THE HUMAN EPOCH

Defining the Anthropocene PAGES 144 & 171

CONFLICT RESOLUTION

### BUILDING BRIDGES

Long-standing disputes  
can be fixed — in theory

PAGE 148

LINGUISTICS

### SCIENTIFICALLY SPEAKING

How English became the  
academic lingua franca

PAGE 154

RISK MANAGEMENT

### TAKING IT PERSONALLY

Model the growing  
interconnectivity of risk

PAGE 151

NATURE.COM/NATURE

12 March 2015

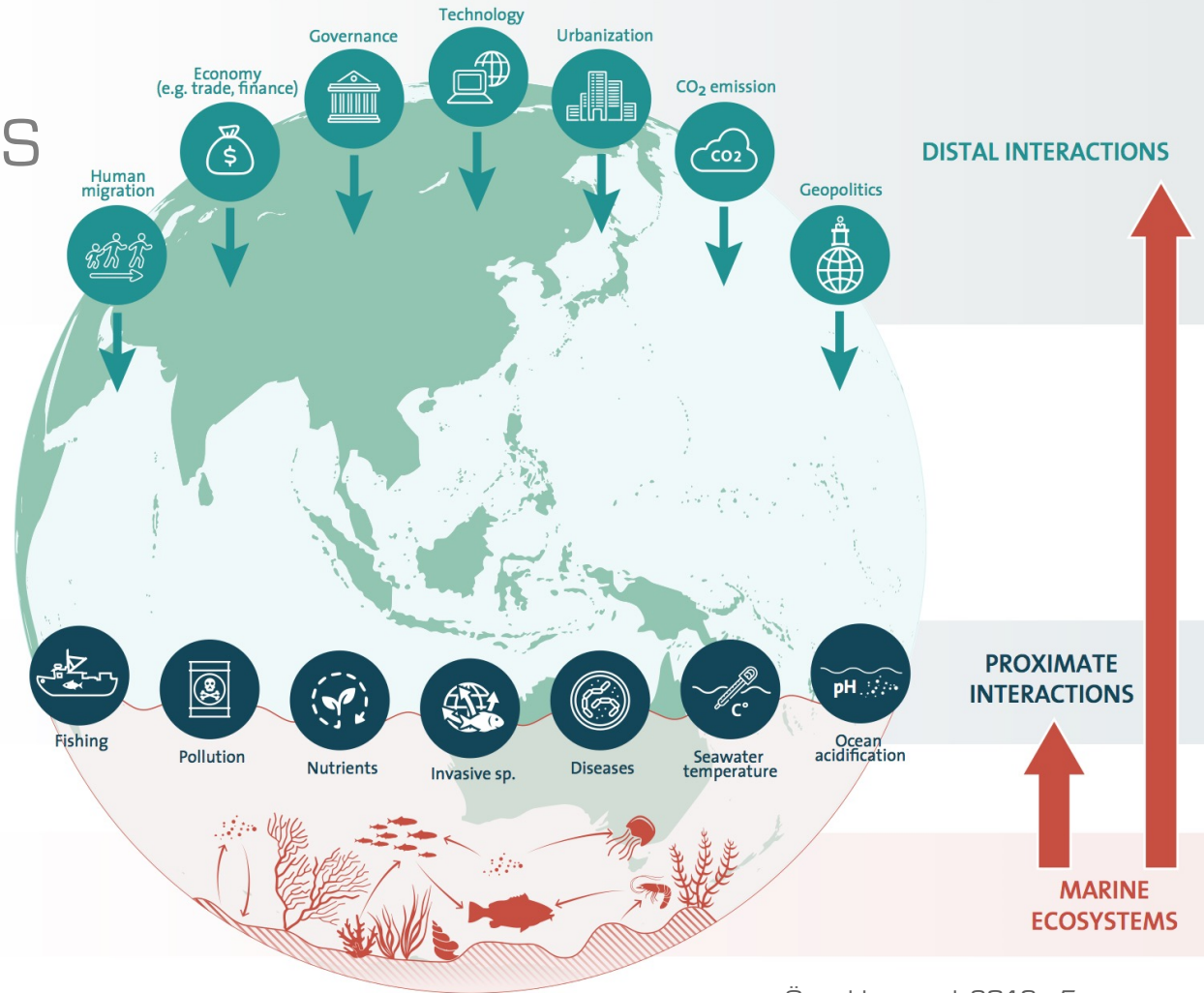


... TO CORPORATIONS

### OVERARCHING GOAL

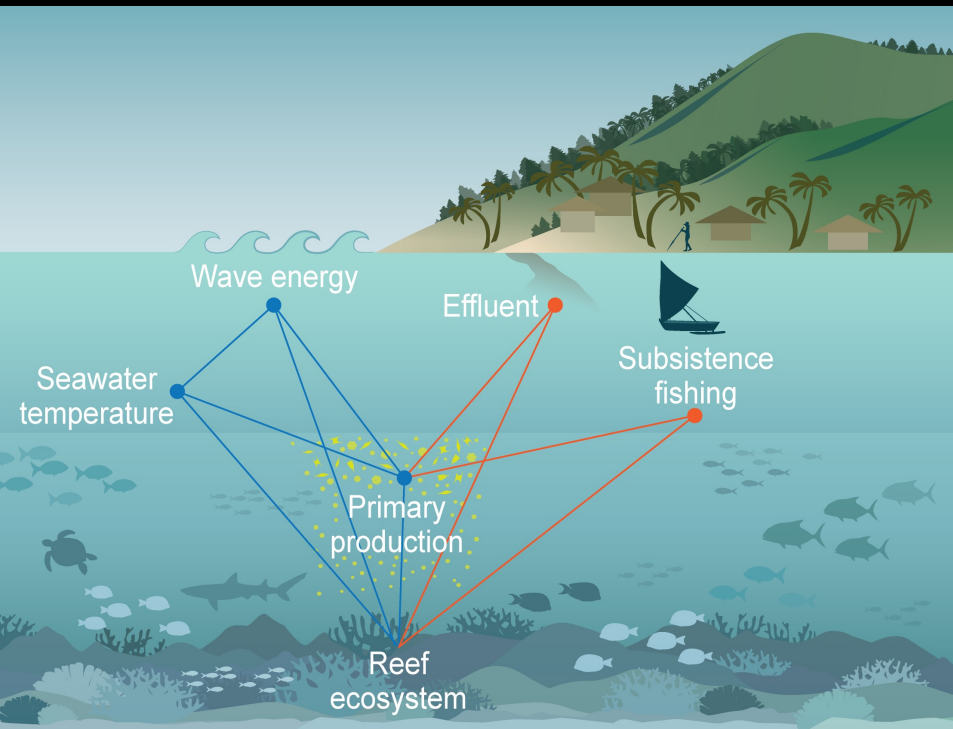
Describing and analyzing what the Anthropocene means for the ocean, what it entails for how we study marine systems and, essentially, what can be done to improve sustainability.

FROM CORALS ...

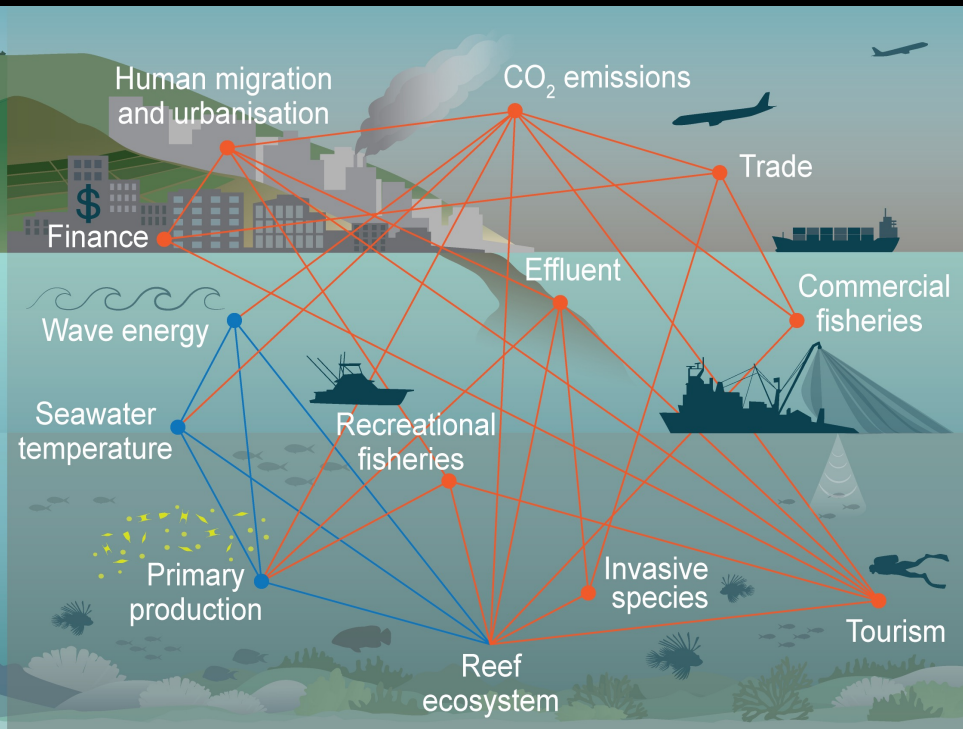




## Pre-Anthropocene



## Anthropocene Ocean





Home > Technology

Google

# LIVE SCIENCE

NEWS TECH HEALTH

Live Science > Tech

## Underwater Ocean Turbines: A New Spin on Clean Energy?

by Tanya Lewis, Staff Writer

August 5, 2014 09:09am ET

Post

### A new frontier for diamond mining: The ocean

### Deep-sea Metal Could Help Build Our Green Energy Future

Marine

Monday, March 5th,

### Is Hiding on the Ocean

6K 134 73

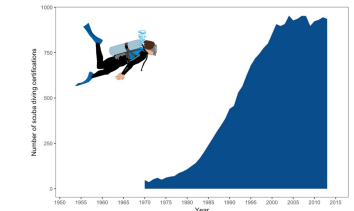
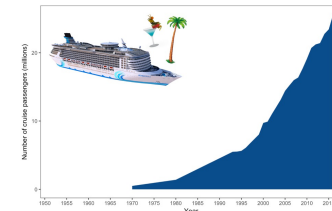
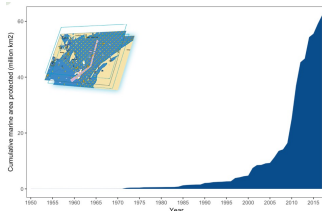
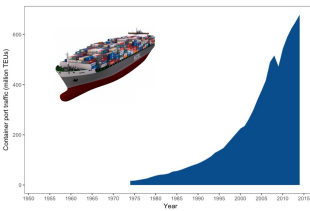
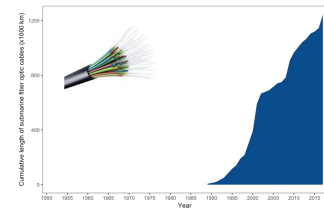
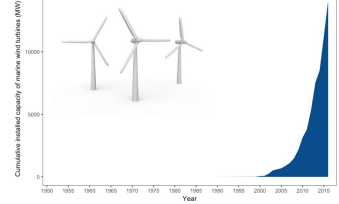
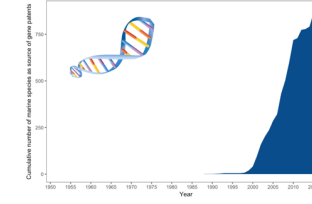
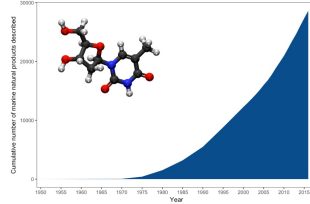
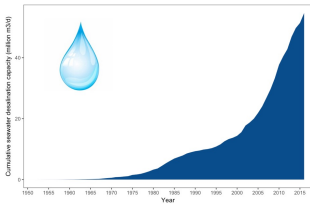
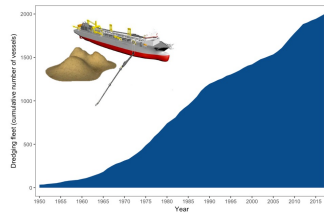
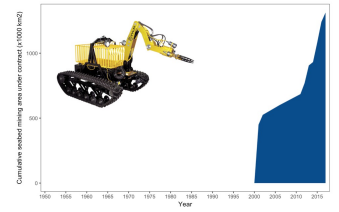
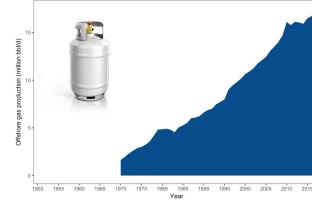
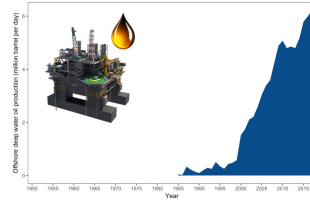
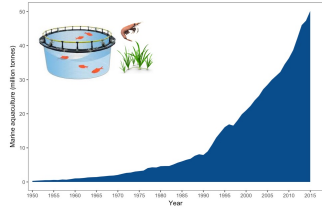
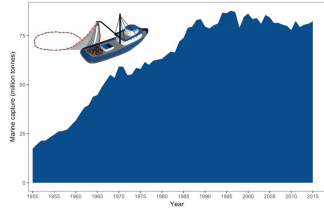


### Oil and Gas Benefits the and the Environment



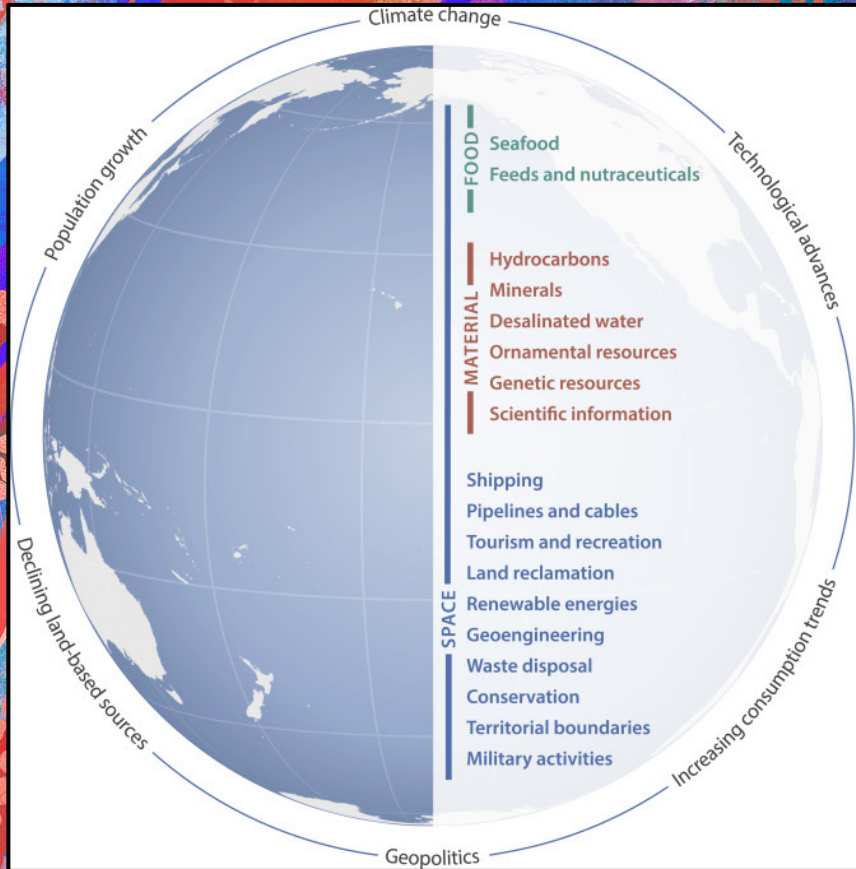
# The Blue Acceleration

Jouffray et al. (2020) The Blue Acceleration: The Trajectory of Human Expansion into the Ocean, *One Earth*, 2(1), 43-54.



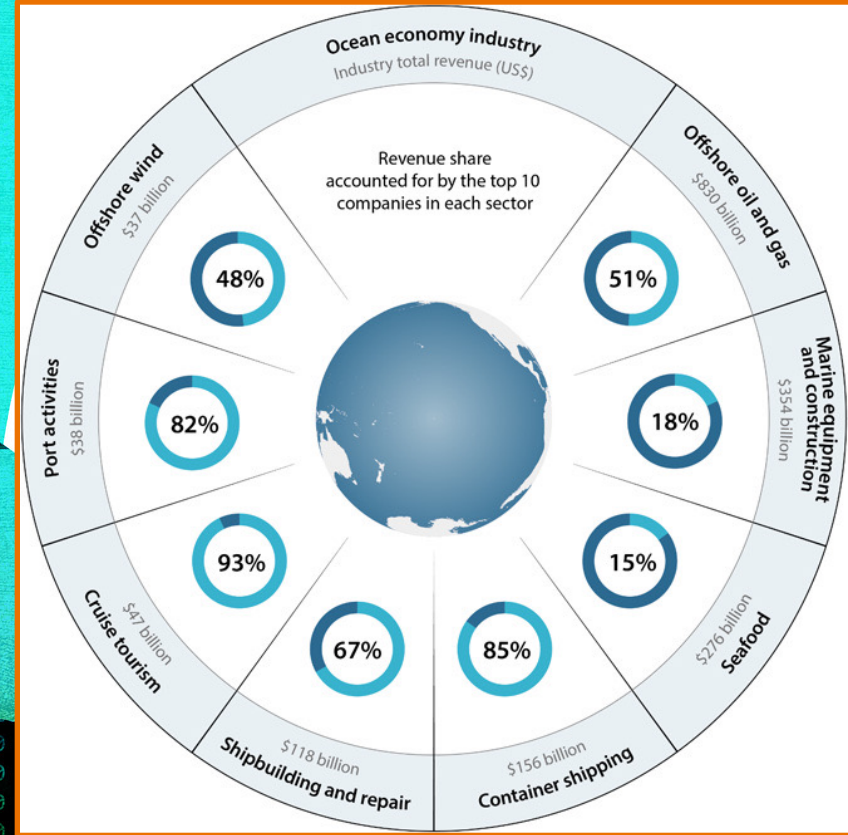


# A multitude of overlapping claims





# A race to define the future **ocean economy**





# Radical Ocean Futures

Image: Christiana Dill



“Stories are powerful things: they create our reality as much as they explain it. The futures we envision, be they positive or futures of collapse, make us much more likely to respond to events in the world in a way that helps create that future.”

**Alex Evans, The Myth Gap:** What happens when evidence and arguments aren't enough?





# The methodology - **Science Fiction Prototyping**

The background of the slide is a vibrant blue illustration of an underwater scene. In the center, a diver in a blue and yellow suit is swimming. To the right, another diver is visible. At the bottom left, a large, colorful fish with orange and white stripes is swimming. The overall style is artistic and aquatic.

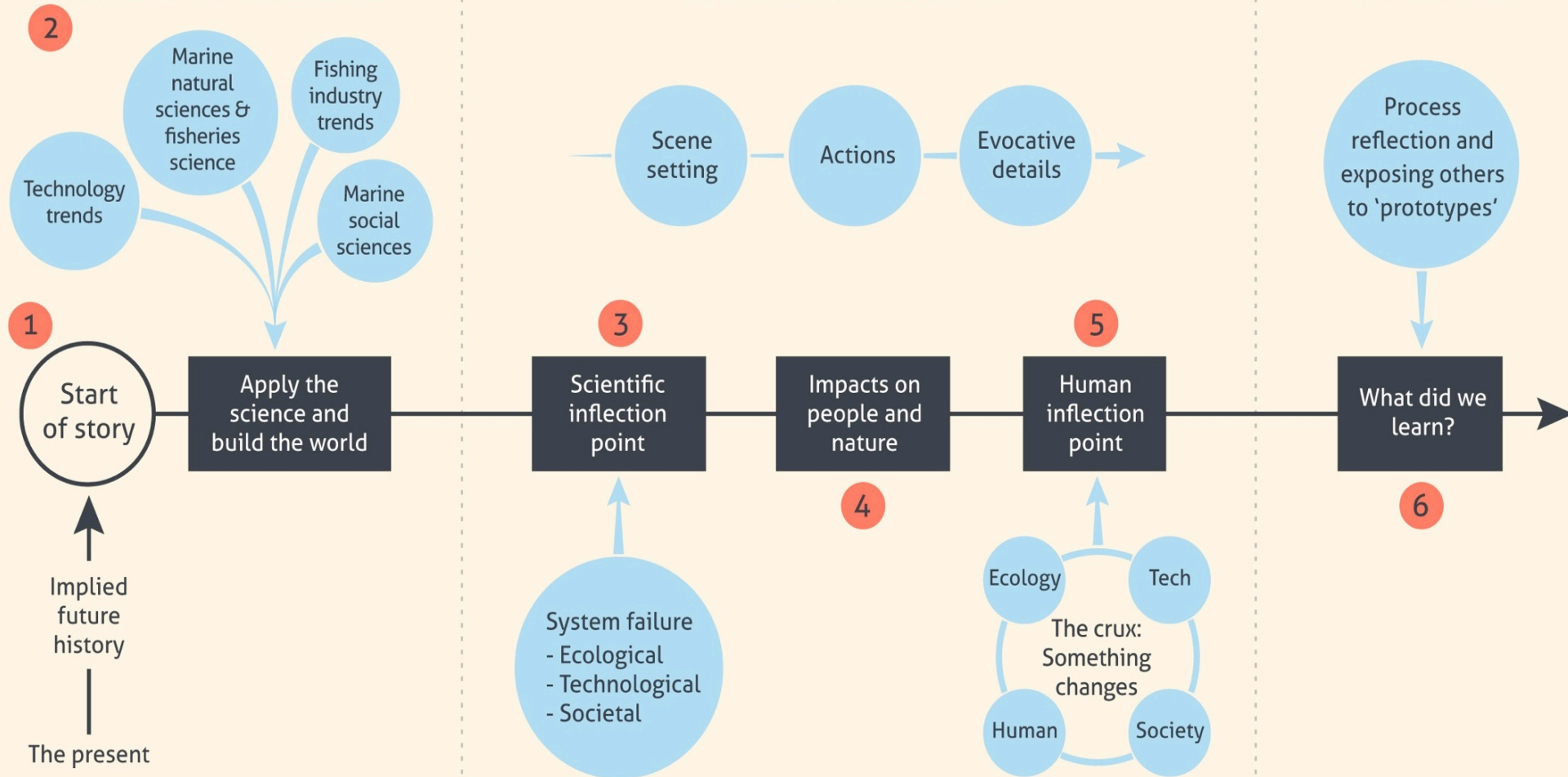
- In-depth literature review (building the scientific evidence base)
- Build a prototype of a prototype (a narrative outline) with eight to ten scientific building blocks
- Rigorous, iterative writing with lots of external feedback to create a coherent narrative with a clear structure and a central 'idea' that you want to explore about the future.



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# Futuring as a design process - Linking Sci-fi Prototyping and Design Fiction

Sci-Fi prototyping - The approach takes scientific facts and spins them into the future to explore the societal scenarios that could emerge. Advocates say an emphasis on exploring how humans might react to technological change creates a “focused, tailored and creative way to think about possible futures around a particular issue”. It differs from other forms of scenario planning, they argue, because the emphasis is placed as much on the narrative used to explore the results as on the results themselves, and because the goal is not to reach a predetermined outcome.

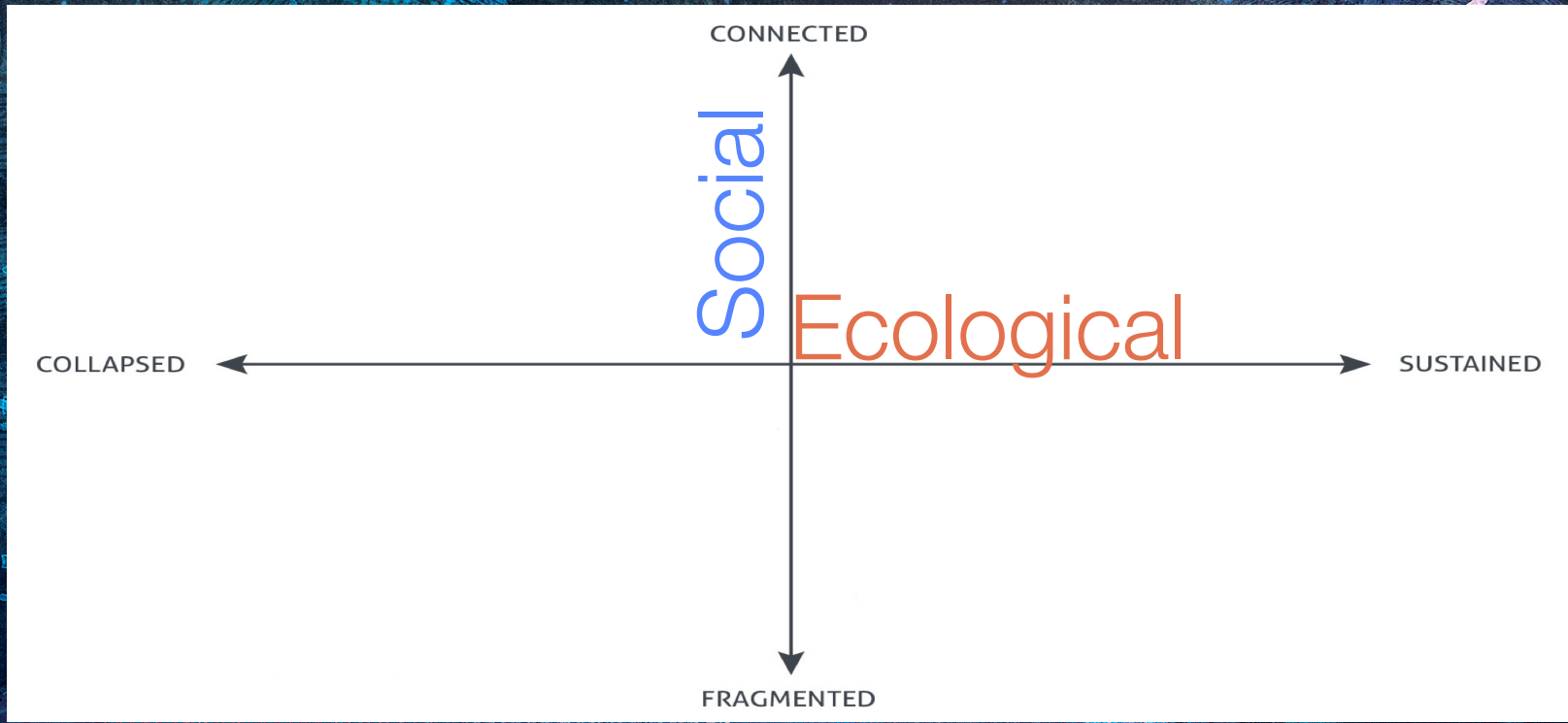
- Learn to tell science stories. *Nature Editorial* (2018)

Design Fiction - “Originally used in product design, the approach is finding increasing use in scientific and medical fields as a way to explore the possible consequences of technological development. These projects are not so much experiments designed to test a hypothesis as they are orchestrated scenarios designed to provoke forward-thinking discussion and debate. From climate science and artificial intelligence to wearable technologies and healthcare, researchers are creating and sharing often dystopian tales about the near future.

- Science and Culture: “Design fiction” skirts reality to provoke discussion and debate. *PNAS* (2020)



# How do we construct the **scenarios**?



# What are our scenarios?

Back from the Brink

FISH Inc

Rime of the Last Fisherman

Rising Tide



# What are our **scenarios?**

Back from the Brink

TED Talk

FISH Inc

Obituary

Rime of the Last Fisherman

Ship's log

Rising Tide

Magazine article

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Professor

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Environmentalism

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Ship's log

Fisherman

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Magazine article

Journalist



**Back from the Brink** – *social connectivity & ecological sustainability*

# Back from the Brink

*social connectivity & ecological sustainability*

*“We all remember the first time we connected with Tethys, right? There is really only - before Tethys and after Tethys. Young people here today cannot even imagine life before Tethys. Anyway, for your benefit this was my first interaction with our artificial super intelligence. You know, I thought I was rather special. Later that day I realized that a couple of billion people had received the same message...”*



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**Fish Inc. Obituary: Astrid Amundsen, CEO – *social connectivity & ecological collapse***

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## ***social connectivity & ecological collapse***

*“FISH Inc. aggressively purchased lease-rights from industry to operate within strategic pockets of the Arctic, as she was able to take advantage of the anarchy that followed the acrimonious collapse of multilateral attempts to govern the region. This was why I despised Astrid’s efforts, and why others held her to be possessed of a unique brilliance. By virtue of her ability to manipulate the situation, FISH Inc. began to experiment with fully integrated production chains, at an unprecedented scale.”*



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**Rime of the Last Fisherman. Dispatches from a dying  
ocean – *social fragmentation and ecological collapse***

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## ***social fragmentation and ecological collapse***

Log Entry: The North Sea Wind Energy Concession.  
February 14, 2062

*Whiles all the night, through fog-smoke white,*

*Glimmered the white Moon-shine.*

I know it is there, stretching to the horizon, I can see it on my instruments, a fool's failed dream. I look out, strain my eyes and looming out of the dense fog is a pylon, brown and gold with rust, the sound of creaking tortured metal. Just one of thousands of turbines, a few even still generate power, power that goes nowhere, generated for no one, it is too late.

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**Rising Tide. Visiting the World's Oldest Seacology –**  
***social fragmentation and ecological sustainability***

# Rising Tide. Visiting the World's Oldest Seacology

## *social fragmentation and ecological sustainability*

*“The Surface to Seabed Territorial Sovereignty Treaty, signed in 2021, aimed to deal with the existential threat posed to low-lying island nations, granting them a claim to their historic boundaries that would persist even after they sank beneath the waters. At the time, this was seen as a symbolic, though empty, gesture on the part of the International community. But to the future Oceania Confederation, it would be the legal shield they would eventually need. In the midst of the Jībiàn, the official (and unofficial) fishing fleets of hungry nations were forcefully deterred from entering the waters of the Oceania Confederation. A fully automated, armed fleet of aerial, surface, and sub-surface drones, continuously monitored the boundaries of the nations that make up the members of the Confederation.”*



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# Key takeaways

- The value of imaginative “fictional” approaches is not in the false promise of “predicting the future” – which is pretty much impossible, even for the best scientific model – but rather to engage with a set of plausible and complex futures. When certain trends in social and economic systems express themselves, individuals and institutions can read the signs, interpret them, and act.
- In cases where anticipation of non-linear change is impossible, our approach can contribute through the creation of an alternate possibility space, which can be used as a type of ‘narrative simulation’, a way to experiment with and learn from the many potential surprising situations and shifts that might occur in the future.
- Imagining diverse futures can reveal unseen pathways, and can inspire human ingenuity, while also highlighting the limitations of human agency in a complex world.
- Incorporating storytelling and authentic artistic expression in to our projects can be a uniquely powerful means to engage the empathy engines of our target audience and perhaps, drive policy action. Plus collaborations with artists can generate greater insight, public interest, and policy action
- Science Fiction is a useful source of insight and ideas for developing scenarios of the future. Science fiction can help us point out biases, absurdities and highlight things that we take for granted in contemporary society

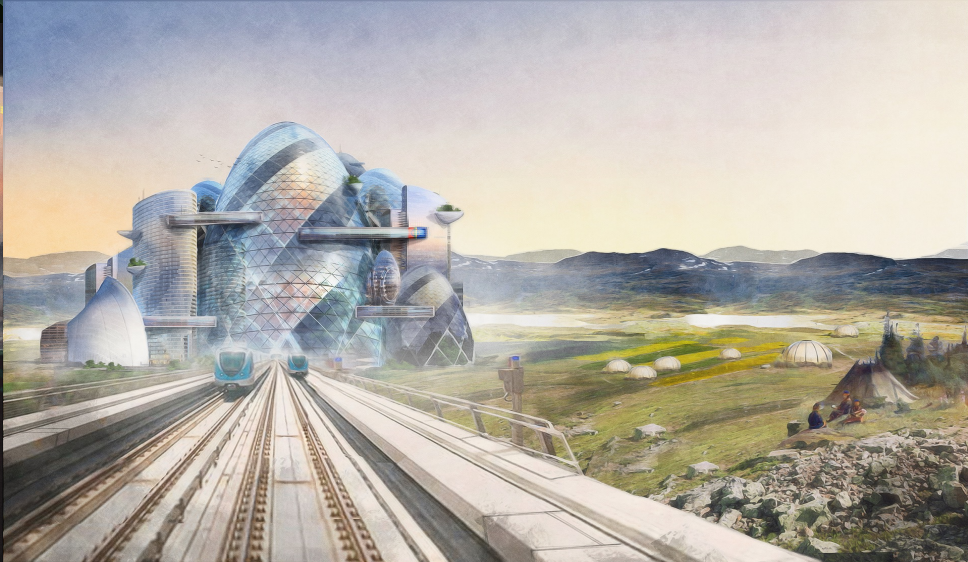


# Planethon - Future Earth / Future Human



Image: Simon Stålenhag













Thank you - **Kia Ora** – Tack

**LET'S TAKE A BREAK – SEE YOU BACK IN  
10-15 MINUTES**

***WHAT'S NEXT?***

# Exercise – Sci-fi prototyping – Baltic 2072

Break into Scenario Groups, each group will create their own version of a 'Baltic 2072' scenario.

Each group will create a short narrative about a future Baltic and present it to the larger group as a news article from 2072 so think of a headline and a beginning middle and end.

Don't worry so much about plausibility Plausibility kills creativity. Also work with the concept of polytopia' Add some drama, a pinch of character or something surprising. Nothing is sacred, question assumptions, biases and perspectives

Assumed context: There has been rapid decarbonisation globally and the world is close to holding warming to under 2.0C

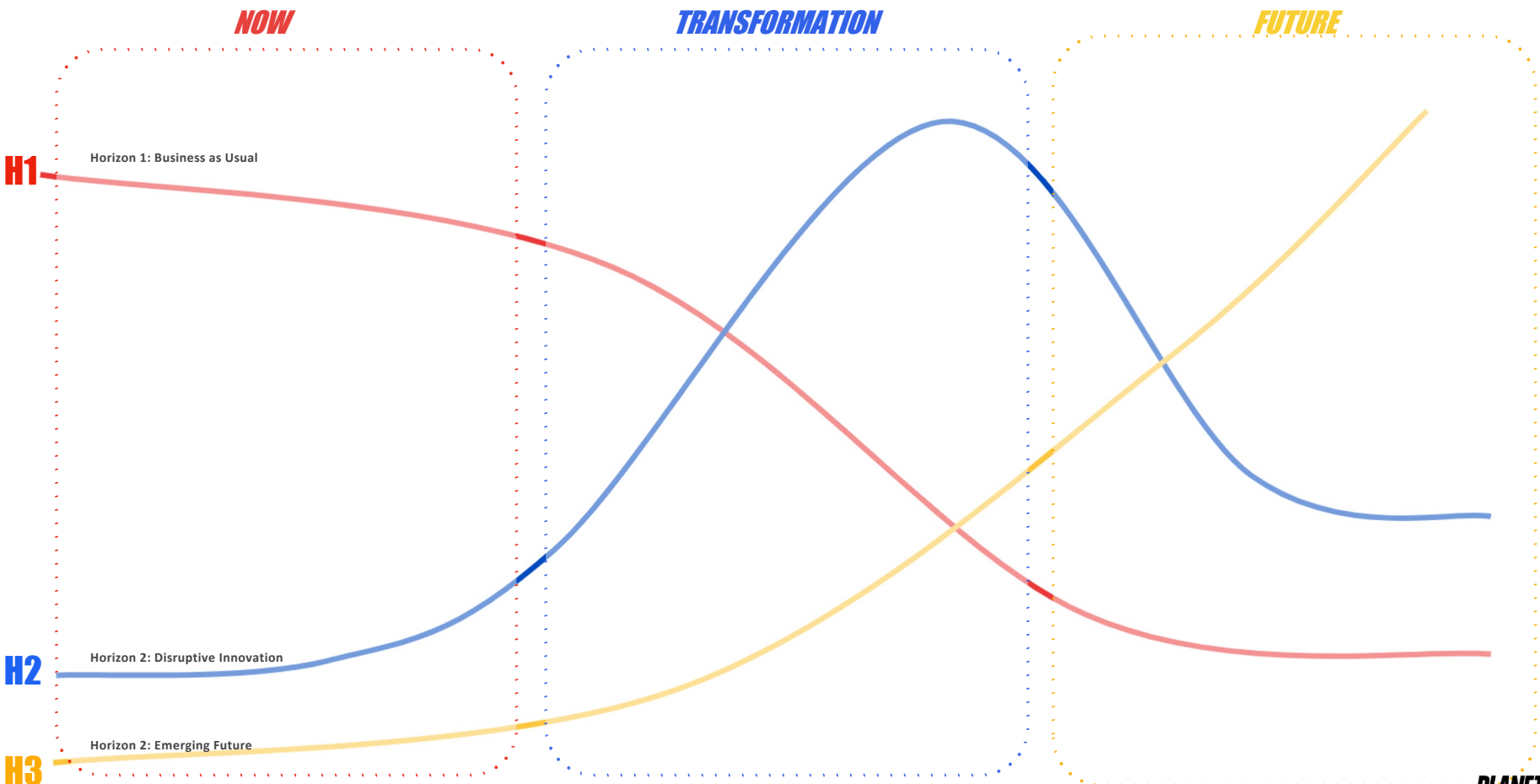
Use the Anthropocene Ocean (my intro) as scientific context, no need to get bogged down in scientific details

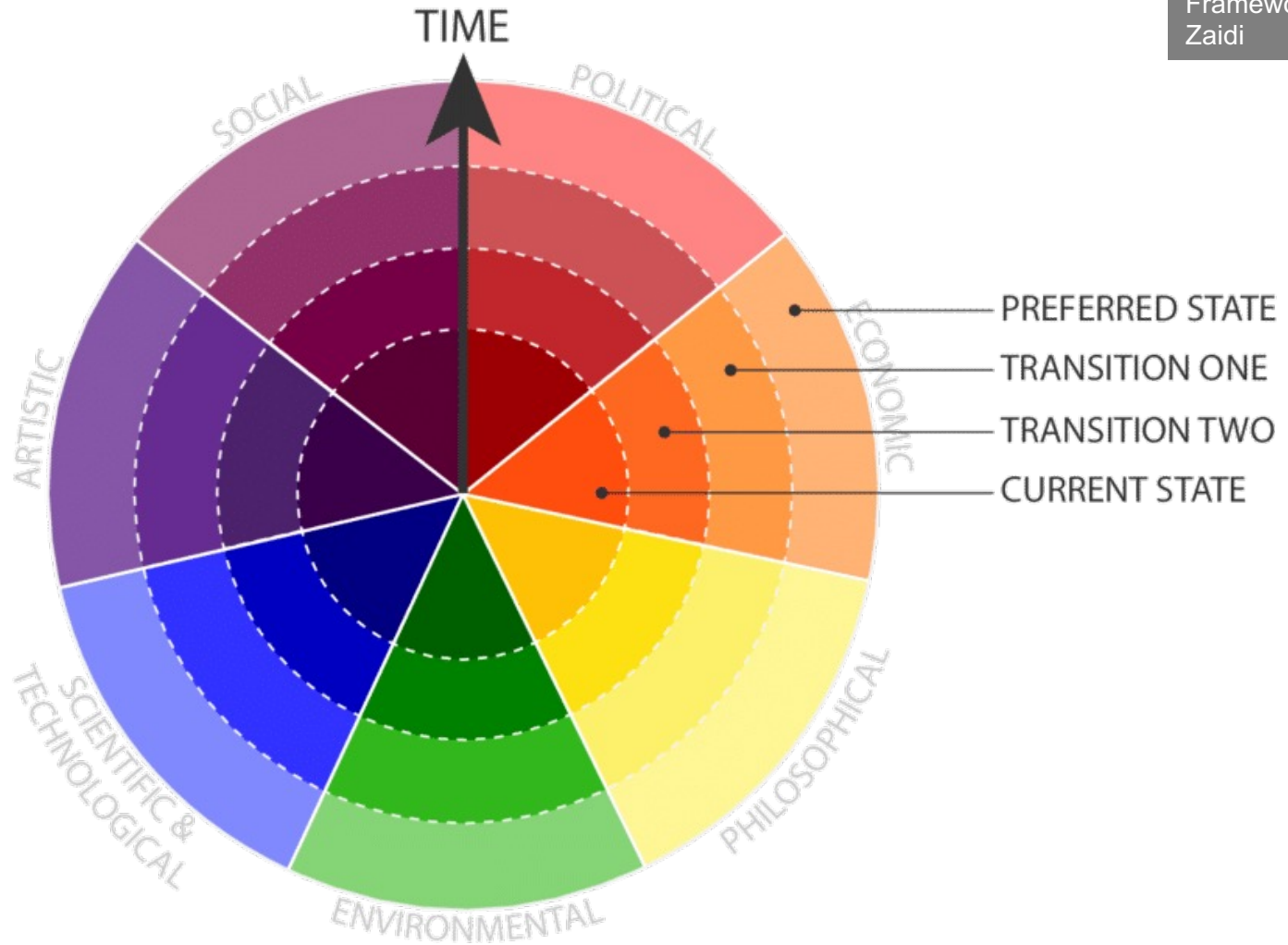
Future Narrative Creation (60 mins) 30 mins worldbuilding, 30 minutes, find the story – What needs to die/be disrupted (15 mins) – what seeds of the future are emerging (15 mins)

Reporting back and reflections (30 minutes).

Think about the integration of the socio-economic, cultural technological and ecological.







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