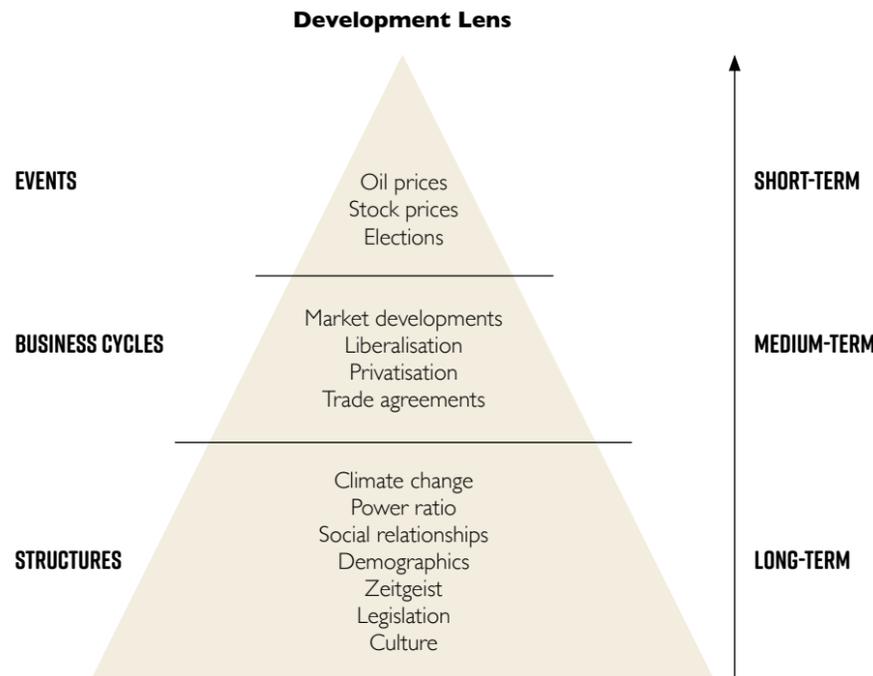


# DO IT ALL THE WAY: ENVISIONING SUSTAINABLE FUTURES

“Rotterdam is an innovative city and one of the most climate-adaptive cities in the world,” proclaims Jan Rotmans, an innovation pioneer himself. As a professor of transition studies and sustainability, Rotmans moves beyond academia to advise sustainable transitions to business and governance sectors. His rich portfolio of achievements includes founding DRIFT, a transition research institute at Erasmus University Rotterdam, and Urgenda, a foundation most known for suing the Dutch government to increase action on climate change. As a true Rotterdamer, Rotmans knows how important it is to sometimes leave work behind and watch football or get a drink at an old Rotterdam pub.

WORDS ZUZA NAZARUK





we don't know – we don't know the exact origin of the pandemic or how a crisis unfolds – a 'known-unknown'. But the top two are the most intriguing. There are 'unknown-unknowns', such as, in the words of Nassim Taleb, the "black swans". 9/11 was a black swan – a low probability but high impact event. But the most intriguing thing for me is the 'unknown-known'. I call them the blind spots. You know these things, but you hide them from your consciousness because it's the knowledge you don't like and don't accept. Like COVID-19 or climate change. We knew there would be a pandemic, but we ignored and didn't embrace it. The same holds for climate change. The blind spots and black swans are crucial to deal with transitions. Yet, we focus on things we think we can control. We ignore what's beyond our control. And if we keep on ignoring like this, we will be surprised yearly. Hitting the basics of our education system, we need to teach children how to deal with uncertainties and risks. We don't do that. We train them to make as few errors as possible. I think we should teach them to make as many errors as possible and learn from them. That's the only strategy that might help: searching, learning, experimenting. We guide children for stability and certainty. Everything that I expect from the coming decade is instability and chaos. So we need to train them in order to embrace the chaos, and then tame it.

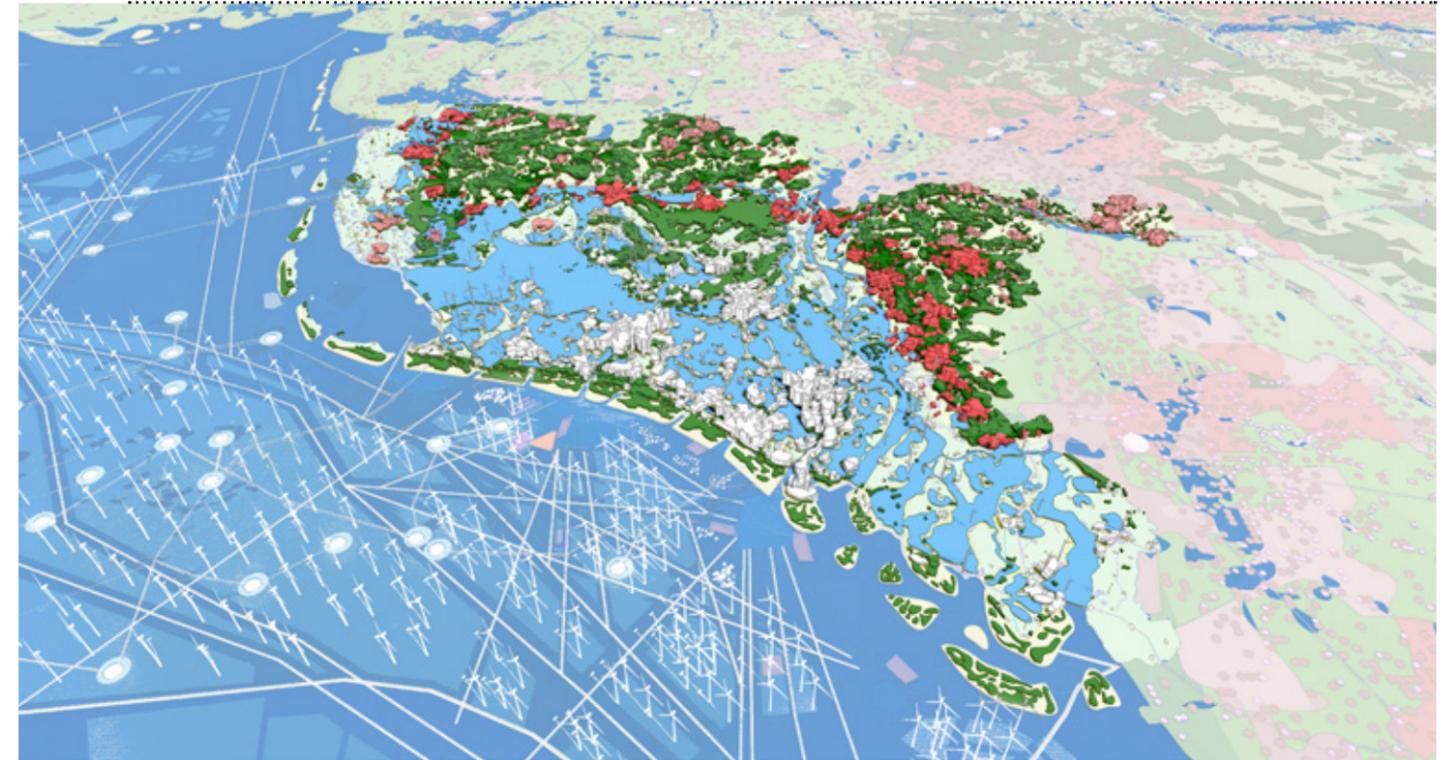
**What is transition science or systems thinking, and how do you apply it to sustainability?**

Transition is a fundamental shift in thinking, acting and organising. In a systemic sense, it's a shift in the system's structure: its culture and practice. It's rooted in different pieces of science: complex systems science, governance and technology and history. For me, it always has two sides: analysing transition patterns while simultaneously trying to govern or influence those patterns. Most people think that the transition is a cumulative process of events. That's not true at all. For a transition, the most important is what happens in the current, at the structural level. I always present it in the form of a pyramid. We need to understand those slow developments at the bottom of the pyramid better. Most people only focus on fast developments, the pyramid's top. If you apply this to COVID-19, you can blame the Chinese markets, but the pandemic is deeply rooted in the way we deal with animals and nature. As long as we feel superior and destroy nature, it will strike back – in the form of a virus or a changing climate. That's deeply rooted in the system. We can blame China, but it could have originated in the Netherlands because we have such an intense farming system, which also causes zoonoses (animal diseases). This is what I call the multi-development lens. You need to analyse multiple ways of development on multiple scales to know

what's going on. If you analyse this, as I do regularly, you can recognise the underlying patterns. If you don't do that, you will be surprised every year. COVID-19 was not really a surprise. When I worked at the RIVM 25 years ago, one of my colleagues had already forecasted a global pandemic. So we could have foreseen it. Pandemic preparation is a part of our safety strategies, but we ignored it. This is exemplary of how we deal with structural uncertainties. There are things that we know that we know, the 'known-knows'. Then, things we know that

**Your new book is not yet translated to English, but the literal translation from Dutch would be *Embracing the Chaos*. Are the issues you discuss now present there?**

<p><b>UNKNOWN-KNOWNS</b> (Hidden Facts)</p> <ul style="list-style-type: none"> <li>• These are untapped knowledge.</li> <li>• You don't know about it, but someone else with the community knows.</li> </ul>	<p><b>UNKNOWN-UNKNOWN</b> (Unknown risks)</p> <ul style="list-style-type: none"> <li>• You don't know about it.</li> <li>• Also, someone else within the community or sphere of influence does not know about it.</li> </ul>
<p><b>KNOWN-KNOWNS</b> (Facts and requirements)</p> <ul style="list-style-type: none"> <li>• Not risks!</li> <li>• These are managed as a part of project scope.</li> </ul>	<p><b>KNOWN-UNKNOWN</b> (Known risks)</p> <ul style="list-style-type: none"> <li>• Classic risks. More predominant.</li> <li>• You have the knowledge of probability and impact values of such risks.</li> </ul>



Yes, the quadrants are an essential part of the book. It covers risk assessment, strategy, uncertainty and treatment, but I try to explain it in a very simple way.

**Rotterdam lies almost 6m below sea level, so it's particularly vulnerable to the looming climate crisis. What future do you see for the city?**

There's one chapter in my book on the Netherlands one hundred years from now. I developed a vision on 2121 with designers and architects of KuiperCompagnons. Not in the sense that we know what will happen, but we assumed a series of development trends and contra-trends. We came up with wonderful maps and pictures. We took the scenario of a one-metre sea level rise and two degrees warming – that's not extreme. I didn't want to be accused of being too pessimistic, so I took the average scenario. Under this scenario, the land level will be dropping by around one metre per century in western Netherlands, including Rotterdam. Sea levels will rise by at least one metre. That's almost two metres, meaning that Rotterdam will be at -8 metres below sea level. But other parts around Rotterdam will go to -9 or -10 metres below sea level. An arbitrary foreign investor would give up and refuse to invest because of the risk. We need to change our mindset and prepare ourselves. There are different possibilities. You can raise the dikes once more, but if you reach -9 or -10, it becomes too costly to pump out all the water. The saltwater is already creeping under the dikes and hindering agriculture.

We came up with a different solution: let the water flood a part of the country. We need the polders for water retention. We need to build on the water and work together with it. Defending ourselves against the water is very unnatural – water is not only our enemy but also our partner. We need it to co-develop. I

**Streamer hier op deze plek**

dream of floating districts, neighbourhoods, houses, railways, roads, farms. I started promoting this in Rotterdam 20 years ago, not successfully at that time, but now there is much more interest. Today in Rotterdam, we have a floating farm, office and pavilion. We started building floating houses. There are approximately 15 now. We'll get a small floating forest. People think that's a bit weird and wonder why we are building on the water. Well, Rotterdam is largely outside the dikes and in open connection with the North Sea. If the sea level rises, this area will be confronted with the rising tide. It's much more natural to move with the rising water than to fight against it. Rotterdam is the most climate-adaptive city in the world, with green roofs, water garages and squares. We have sewage floods five times a year because of the heavy rainfall. But

we also build on the water. One of my dreams is to put millions of floating solar panels in the Rotterdam port.

**When you're not imagining a better future or fighting for a systemic transition, what do you like to do in Rotterdam? What's your favourite activity or place to go to?**

[laughter] A number of things. I like watching football.

**Feyenoord or Sparta?**

Sparta. I have two season tickets, and I go with my son. I also visit my amateur football club, Neptunus-Schiebroek, every Saturday. I like to go to the movies. I go to museums, and I really like to go out, drink and have fun. Every now and then, I go out until late in the morning. I really like to enjoy city life. I like Binnenweg, the old and the new. There's that famous pub on Oude Binnenweg, the oldest in Rotterdam, Melief Bender. It's a dark pub; we used to have many of those. Everyone goes there: young and old, men and women, professors, students, haves and have-nots. I really like that. Then I always end up at Witte de Withstraat. I used to end at the shawarma Jaffa at 5 AM. All kinds of people are there at that time. Sometimes they recognise me and wonder what I'm doing there. I like to do things all the way. Everything that I do, I try to do in a rather extreme way, whether it's work or social things. Work hard and play hard – that's what I taught my children.