

WRR

SCIENTIFIC COUNCIL FOR GOVERNMENT POLICY

# *Beyond the Crises*

*Angela Wilkinson  
John B. Robinson*



WRR *lecture 2010*

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WRR-Lecture 2010

*Angela Wilkinson*

*John B. Robinson*

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## PREFACE

We live in turbulent times. This begs the question of how the world might look once the crisis (or crises) is over. For the WRR Lecture 2010 we addressed this question by inviting two internationally renowned experts in the field of future research: Angela Wilkinson, Director of the Futures Programme at Oxford University (UK) and John Robinson, Professor of Sustainable Development at the University of British Columbia (UBC) in Vancouver (Canada).

While Wilkinson used scenarios to present different interpretations of the financial crisis as a means of challenging deep-rooted assumptions and beliefs, Robinson posed questions about thinking in terms of 'crisis'. According to him, a crisis is by definition a short-lived concept and its uses encourages ad hoc, defensive and reactive actions. He believes that thinking in terms of 'crisis' provides an inadequate means of reflecting on change. For him, 'after the crises' means acknowledging the need to distance ourselves from thinking in terms of crises.

Both Wilkinson and Robinson emphasised in their lectures that the ambition of futures research is to lay bare embedded expectations and thought processes. It is not so much a matter of describing the future itself, but rather of exploring whether existing perceptions are adequate for entering that future wisely. Both speakers advocated enthusiastic embracing of the openness of the future. They believe that anxiety about the future prevents us from seeing promise and realising opportunities. Enthusiasm for openness does however mean that uncomfortable scenarios also have to be thought through. Wilkinson stressed that we need to allow ourselves to learn from undesirable, frightening futures. That can offer a counter to the trap of seeking overly short-sighted explanations for the present turbulence. Wilkinson refers to this as 'learning with the future', which she sets against 'learning about the future'.

Both Wilkinson and Robinson stressed that accepting that the future is open, but not empty, encourages enthusiasm for action. The future is uncertain, precisely because choices and actions taken today influence that future. It matters what we do, even if we cannot shape the future entirely to our own ends. Wilkinson and Robinson called for the passive cry of “what will the future bring us?” to be abandoned in favour of a perspective for action that is focused on that future: “where do we want to take the future?”. Robinson stressed that this is a normative question. It requires us to answer the question of what kind of world we want to live in. Not everything that is desirable is also possible. There are constraints, but the challenge is to reflect on the basis of the options that are possible about the direction in which we wish to move. That is not a question on which only so-called future experts should be reflecting, but is the core question about which society needs to engage in debate.

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Visitors who had been hoping for a simple and uniform description of the future following the crises may well have been disappointed by the lectures delivered by the two speakers. Wilkinson and Robinson turned the perspective around. It is not about what the future looks like, they argued; that question is by definition unanswerable. The challenge is rather to reflect on what we want to do for the future: ‘Don’t ask what the future will do to you, but ask what you can do for the future’, to paraphrase John F. Kennedy. Whether future research takes the form of two challenging narratives constructed by experts (Wilkinson) or of a societal process supported by computer gaming (Robinson) is not the sixty-four thousand dollar question. The central issue is to learn to make use of futures research and of reflections on it in order to tackle the challenges of today in a way that is focused on the future.

Part of the task of the WRR is to lock in the current thinking about the future. With the Investigation Out of sight: studying the future with policy (Uit zicht: toekomstverkennen met beleid) and the WRR Lecture 2010, we have attempted to prompt individuals and organisations involved in government to reflect again about the art of looking ahead. It is also for this reason that we are publishing

these two lectures; those who would prefer to '(re)visit' the lectures can visit the WRR channel on YouTube via [www.wrr.nl](http://www.wrr.nl).

On behalf of the WRR,

Prof. Marjolein van Asselt (Council member and chair of the WRR Lecture 2010) and Prof. André Knottnerus (chairman of the WRR)



## LEARNING WITH FUTURES

*Angela Wilkinson*

Good afternoon, ladies and gentlemen,

It is a great honour to be invited to share my work on futures. I would like to thank André Knottnerus and the other members of the WRR for this opportunity.

Future changes and challenges have been a hallmark in my own career. Educated as a physicist, I started by developing models for probabilistic assessments of climate change impacts. In the world of business, my interest has been in helping businesses understand and address new forms of risk (environmental, social, reputational) and explore new opportunity spaces. I spent nearly ten years as a member of the Shell scenario team.

Within the past decade, I have had the privilege of directing a number of international and interdisciplinary scenario-based initiatives on varied topics, including the futures of Australia, of water and of HIV/AIDS in Africa. These initiatives differ from the approaches that have been taken in developing and using scenarios as part of global scientific assessments, such as those conducted by IPCC and MEA, in that they convene across the scholarship-practice interface to forge new collaborations rather than directly targeting policymakers.

I recently joined the Smith School of Enterprise and the Environment at the University of Oxford. At Oxford, we are working hard to establish futures as an important field of scholarship. We are using futures methods to conduct research programmes and are developing programmes of research into futures methods, for example asking what is actionable foresight, what works, when and why? We are also aiming to provide education that equips current and forthcoming leaders to take responsibility for the future in a manner that realises the role of enterprise in addressing environmental changes and challenges.

Today I would like to address three important issues. First, if the future is full of uncertainty, what can we do about it? Then I want to illustrate the often misunderstood value of scenarios. I will refer to the scenarios called Growth and Health that we published last year looking beyond the financial crisis. Roland Kupers, a co-author of these scenarios, will give you a brief version of the first story and I will narrate the second. In the third and final part, I will offer some deeper reflections on the opportunities and challenges in realising our collective responsibility – as leaders, as parents, as citizens – to shape a better future.

### **r: If the Future is Uncertain, what can we do about it?**

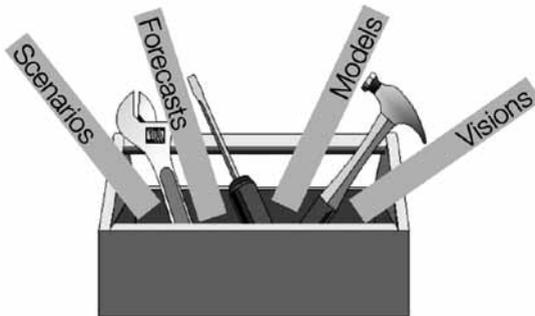
We live in turbulent times. Change happens. Societies across the world are facing complex challenges. Connectivity has become a key driver of value and vulnerability, yet many people treat inter-dependency as a matter of choice. The recent financial crisis, the Indian Tsunami, the devastating floods in Europe, New Orleans and Pakistan, the Gulf of Mexico deepwater oil spill were all events that were neither prevented nor effectively anticipated by the hosts of experts that are already using sophisticated futures methods.

I am not a futurologist, nor do I claim to know what will happen. I am concerned about a social addiction to prediction and the emphasis on risk in general, and quantitative risk assessment in particular. The emphasis on learning about the future presents the challenge of the future as a knowledge gap. To fill that void, we extrapolate the past to create fear of the future, limiting policy and planning to futures that are a continuation of past experiences.

We all know the dangers of driving forward whilst looking in the rear view mirror. And the more comfortable challenges from assuming we know the road ahead, rather than shouldering responsibility for rethinking mobility challenges and options. I suggest that we need a better balance between learning *about the* future and learning *with* futures. Let's combine extrapolation and forecasting with visioning and scenarios. Let's look at how assumptions about the

future impact problem framing and actions today. Learning *with* futures instead of *about the* future can help forge the holistic and shared understanding needed to address today's biggest challenges.

Responsibility for the future is now key to humanity's quest to survive and thrive in the next century. Some commentators have given only 50:50 odds. Other doomsayers even less. I prefer realistic optimism. Exercising this responsibility benefits from asking questions such as: where might the future take us? Where do we want to take the future? And how does the perspective of the future help us to see the present situation more clearly? It requires literacy in the futures discipline and more reflexive practices if we are to cultivate a widespread ability to harness the modern futures toolkit and put it to good use.



I am impressed by heroic efforts to gather more data, develop better models and convert uncertainty into risk, but I think our focus on an ability to learn about the future is also fed by an obsession with minimising risk. This has generated a fear of the future and prevents us from looking at challenges differently and finding new solutions. We need, instead, to look not only at the quality of our futures thinking but also at what makes foresight actionable. We need to navigate the futures paradox: if we could really know the future, who would believe us and how could we change it!

The development of a wide range of modern futures methods over the past 60 years has created a toolkit that many are unaware of and fewer are able to use. The diversity of and within different methods

has created confusion and misunderstanding – about scenarios in particular. Research into futures practices is essential if we are to clarify and enhance practical effectiveness.

However, whilst history is a well established and respectable field of scholarly study, futures studies and scholarship are often received with suspicion or dismissed as speculative. Sure, there are no facts about the future, but the influence of future assumptions in shaping our understanding of the present is real and cannot be dismissed. Linear futures thinking can only take us so far. Thinking about the future as possible and preferable can also help realise more options.

Taking responsibility for the future means we cannot rely on the power of dreaming. But visioning is useful for deciding where society should go, and anchoring around shared values is one way to forge common ground and cope with an uncertain world. Testing visions using models and scenarios can help illuminate the pathways to more realistic dreams. Being unable to harness and better relate different futures methods is similar to having a toolkit filled only with different types of hammers! And bad workmen blame their tools, so a futures education is needed to equip today's and tomorrow's leaders with the mastery in futures needed to harness the modern toolkit to better effect.

The confusion about scenarios provides one explanation of why there are questions about the value of work. The diversity within methods is particularly noticeable in the case of scenarios. The purposes, clients and settings of scenario work are diverse. Scenarios are sometimes confused or conflated with other futures methods or labelled in terms of good and bad methods. Scenarios are not projections or forecasts. They are not various runs of a spreadsheet or model. Scenarios are not visions, good versus bad stories reflecting preferences of the future.

Instead, I invite you to think of scenarios as framing and reframing devices. They provide different pairs of eyeglasses to look through and see the assumptions we have to make in order to understand our world and how it works. The principles of good design vary accord-

ing to the purpose, setting, clients and users of scenario work. The actionability of a set of scenarios rests not only on the quality of the research and the number of scenarios developed but also on co-producing plausibility between different groups and communities and forging the common ground in which new intentions and collaborative action can flourish. Scenarios must connect with the inner most mental models of decision makers if they are to be effective in bearing fruit in the present. Increasingly, scenarios provide a means to reveal and test the meta-narratives – the really big stories – that guide action and decision making at the organisational and, even, societal, level. The Netherlands has a tradition of thinking about the long term. You have many decades of experience in building scenarios and using scenarios to make big decisions, such as committing € 150 billion to sea defences over the next 25 years, in anticipation of climate change impacts. This demonstrates how the Netherlands is using scenarios in policymaking to protect itself from the future.

However, this contrasts with the use of scenarios by some in combination with other methods as a way to reveal and test assumptions in order to clarify the present situation and reshape future possibilities. In the run-up to the financial crisis, individual banks and some regulators were also developing scenarios as part of their stress-testing activities to protect the firm from the future. Banks populated the ‘fat tail’ distributions of their quantitative risk analysis with specific events based on what had happened in the past. In the process, they overlooked key assumptions built into their risk models, such as the assumption that ‘growth can go on forever’ and dismissed signals of change that indicated a less familiar and more uncomfortable future context is also plausible.

For example, one of the ‘scenarios’ developed by the UK FSA (Financial Services Authority) outlined a ‘Black Rock’ type of situation. However, this scenario was regarded as too improbable and taken off the table. What this points out is that the real value of scenarios lies not in their promise as yet another form of probability analysis, but in their use in thinking through less familiar, more uncomfortable ‘what if’ questions.

The scenarios Roland and I will share with you were not designed to stress test an individual bank but to reveal deeply held assumptions about the financial system held within the financial services sector and by other key constituencies of that sector. Think of them as two different pairs of spectacles. They are designed to help us see different aspects of a dynamic, puzzling, contested and complex situation.

## **2: The Oxford Scenarios: Looking Beyond the Crisis**

Our ‘Beyond the Financial Crisis’ scenario project started life as a voluntary collaboration following the 2008 Oxford Futures Forum, which brought together the communities of scenario and sense-making for the first time. As our group continued to exchange ideas, we began to use the unfolding financial situation as a common point of reference. We noted that the system became so blinded in the pursuit of greater returns that it ran itself off a cliff. Just like Wile E. Coyote. In the cartoon story, the drop from the cliff is always followed by a huge object crashing down on the already devastated Coyote. For us in Europe, that big object might be the Euro!

Our initial insights led us to ask four questions:

- 1) How had we all been complicit for decades in manufacturing and sustaining the widespread belief in a world of easier and cheaper credit and the pursuit of unlimited growth?
- 2) Why were early warning signs, such as Warren Buffet’s statement about derivatives as ‘financial weapons of mass destruction’, overlooked time and time again?
- 3) Why weren’t more people concerned by the divergence between economic assumptions and real world behaviours, when economics has a significant and pervasive impact on public policy?
- 4) Do risk professionals and experts unintentionally promote a misunderstanding of uncertainty and confuse better analysis with better judgement?

We did not set out to develop a set of scenarios, but decided to develop these two stories as a way to share and continue our learning with others.

Let's look back at what was happening in the Netherlands in the period of the crisis.

- Both the Netherlands and the UK had embraced the promises of Icesave with a vengeance under Central Bank approval.
- At the threshold of the crisis, ABN-AMRO was taken over and taken apart by a consortium of RBS, Santander and Fortis.
- The subsequent collapse destroyed one of the banks and led to nationalisation of the other amid great anger at the scandal.
- Bankers' bonuses created an embarrassment of riches that had been gained privately at the expense of the public.
- Ironically, its unique fully funded pension system had exposed the Netherlands to more market risk than other countries.

The financial crisis was also bringing to light tensions that existed under the surface, raising questions such as

- What is the role of banks and the financial system in society: shareholder value optimisation or to serve the economy?
- Are institutions such as SER still capable of resolving tensions such as the pension crisis?
- Who is accountable for systemic risk?
- Should the Central Bank have looked at the systemic stability of the Icelandic financial system, rather than at the single bank?
- What is the place of equality in a country grappling with its egalitarian roots?

### VOTING QUESTION 1

So let's see where we are today in terms of opinions in this room:

- How many of you think the financial crisis is over?

**RESULTS: Yes: 6% No: 82% Not sure: 16%**

When we asked the same question at the Global Economic Symposium in Kiel last year, 50% thought the crisis was over. The participants also thought that both our scenarios were equally plausible.

Our starting-point was to stay with the problem rather than jump to the question of how to fix the crisis. We asked “What sort of crisis is this?” and “What do the different responses to the crisis imply about the futures they will create?”.

There were so many different ‘root cause’ diagnoses of the crisis. In each case, people pulled at parts of a holistic and complex set of challenges and proposed solutions that did not fit together. So please think of them as two different pairs of spectacles, designed to help us see different aspects of a dynamic, puzzling, contested and complex situation. Let me now hand over to Roland Kupers who will invite you to put on the first set of spectacles.

## **Growth**

### *Put on red glasses*

Let me take you into the world of Growth, looking through a pair of red glasses, a world where the map is drawn, the horizon is visible and, through the path of analysis, we know what to do.

### *Take off red glasses*

Imagine that you are the CEO of a large financial institution. Your office predictably lies on the top floor of a shiny skyscraper. You look out the window and see the world at your feet. You observe the life down there, the bustle of the crowd, the complex traffic streams: uncontrollable!

Fortunately, things are different in your professional life. Sure, there were very difficult moments at the height of the crisis, and it is clear that markets did not deliver on some pretty essential dimensions. However, we are well on our way to fixing the market mechanisms. In the world of Growth, action is taken to solve the crisis by strengthening existing regulations and reforming established governance systems. There is a strong belief that market failures hastened the crisis, so the emphasis is on correcting for market failures. In short, in Growth we believe we can understand the problem and have the ability to fix it.

In Growth, the pain of the crisis is shared across many countries, sectors and communities as impacts continue to cascade and ripple into the real economy and society over several years. There are urgent attempts to fix the financial system, that is, the many different systems that exist at a national level. Countries scramble to stabilise and fix their own system before trying to coordinate across regions. Regulation improves, but at a cost to companies. Financial speculation initially has a bad name, but the blame and fury at bankers' bonuses dies out and ordinary people cling to the hope that speculation allocates capital efficiently, or at least more efficiently than most governments! Governments continue to support banks – as the most efficient way to move out of recession – although much of the investment seems to benefit the old economy rather than stimulate a greener economy. The old laws often reign because the new laws have not been drafted yet.

And there is a power struggle as two financial centres in ShangKong and Frankfurt-New York battle for the prize. Who will define the new rules of the game? Following a period of rapid de-leveraging and economic chaos, some countries begin to emerge. There is light at the end of the tunnel. And just because some of the worst-hit economies are small, their impacts cascade as problems worsen.

In Growth, policymakers act on their insights. For example, pension reform is actually undertaken and the structural problems are addressed. The ostrich lifts its head out of the sand.

In the run-up to the crisis, innovative options propagated and hid risk. When these instruments failed, there was fear and a breakdown of trust. The bottom of the financial market turned out to be made of cardboard, and so it collapsed. Liquidity vaporised almost overnight. The global economic growth machine ran out of the lubricant of capitalism, cheap and easy credit.

In fixing the crisis, attention focuses on introducing systems to help regulators and banks restore trust and release liquidity. To repair market failures, there is an increase in transparency. Technology is used to provide better data, and there is confidence that automated

real-time early-warning systems are more effective than their human equivalents. There is also attention for how to manage the stuff outside the growth machine.

In Growth, environmental externalities are brought in from the cold. Climate change is considered mainly as a market failure, and pricing carbon opens new opportunities for the role of finance, enterprise and technology to be harnessed in addressing environmental challenges.

In Growth, markets slowly regain trust and are managed in such a way that carbon prices have become relevant. Not like in the first decade of this century, when you will remember it was all a bit of a joke. Now hands are joined, while all parties are still looking after their own self-interests.

Growth also has a heart. Social fairness is a priority and, in Europe at least, in Growth the institutional capacity exists to act and ensure this. This enables Growth to set social goals and also realise them. There are many new opportunities for growth. There is also some capacity to deflate bubbles in a timely fashion. Transparency and information pave the way for managing bubbles.

But underlying questions remain in Growth:

- Are new and better oversight mechanisms and more transparency enough?
- Will new financial structures and new environmental markets do enough?
- Even if Bubbles can be spotted, will they be avoided?

Are we in for another and even more intense rollercoaster ride, another and even more intense boom and bust? Or have we been castigated by the crisis and learnt from the past to be able to build a more stable financial system?

## VOTING QUESTION 2

So now that you have heard the story of Growth, I would like to invite a second round of voting.

Voting: Is Growth a plausible future?

**RESULTS: Yes: 63% No: 21% Not sure: 16%**

Let me now hand back to Angela for the Health scenario.

### Health

You may know some people who see the world as Growth, but let me tell you it is really Health. So let's put on a different set of yellow spectacles. In 2008, just before the crisis, many people were concerned about how a still growing global population could fit with a world of resources constraints, with peaks in oil, water, soil seeming to rush forward from the future at the present.

This slide shows the cover of a book called *Risk* that was published by John Adams in 1995:

- The black area of the cover represents the total number of potentially carcinogenic chemicals.
- The yellow square represents the number of chemical carcinogens actually identified.
- The small yellow dot represents those that are actually regulated.
- No wonder people are concerned about their safety!

Achieving health rests on prevention rather than cure. If the past was better risk management, in Health the future is the search for resilience. Not only in terms of the ability of communities, systems and nations to bounce back after shocks, but also the ability of whole systems to transition from an unhealthy growth regime, fuelled by ever easier and cheaper credit and inattention to social and environmental costs. In Health the connections between finance, society and ecology are recognised as the key drivers of value and vulnerability in a more interconnected world.

In Health, feedback within and between systems is recognised as an important source of order and change. Before the crisis, societies were beginning to use social media and communications technologies to harness the power of social feedback. Ordinary people were being encouraged to make change happen. US President Barack Obama harnessed the power of social feedback in his first election campaign with the innovative shift from \$20,000 a plate fundraising dinners, to viral marketing of \$20 campaign contributions.



In Health, it is recognised that, whilst markets can provide constant feedback on supply and demand and help navigate a more efficient way forward, the markets alone cannot be left to determine where societies should go. Economic efficiency can be the enemy of societal resilience, when taken too far.

In Health, chat rooms, TV debates, webinars focus on questions about bankers' bonuses and the appropriate role of banks in society. There is widespread concern that fiscal stimulus has done little more than maintain a terminally ill patient on life support at the tax payer's expense. As public debates intensify, attention also shifts to the multiplicity of links between the financial system, the real economy, society at large and the state of nature and the global commons.

A diversity of financial instruments, sources and forms of banking starts to emerge.

- New financial instruments: social impact bonds.
- New sources of financing: Sovereign wealth funds, cloud capital, Grameen micro-financing.

- New forms of banking: Islamic banks, UK Green Investment Bank, ethical banks.

And an increasing number of countries reject solutions that rely on 'bigger and bigger' technology bets. And a new approach to risk-resilience emerges in the Boardroom of banks and amongst regulators of the global financial system.

More holistic thinking on the links between finance, society and ecology takes off very rapidly in the emerging economies. China, castigated as the global environmental laggard during the 1990s, emerges ahead in the so-called Green Race. Its eleventh Five-Year Plan signals that growth is not the goal but the means of development and that the 'quality of economic growth' is pivotal to social and ecological health. Forging a path forward that resolves the growth incongruence implied in over focus on eco-efficiency and experimenting with a diversity of solutions that include options uncomfortable for Europeans, the political legitimacy of the Chinese state continues to derive from the greener growth it realises in the tremendous first-mover advantage in sustainability solutions.

In Health, the diversity of financial sources and systems starts to reflect the diversity of the real world in which financial systems are embedded. And it is not only ecological diversity that matters. In the world of health, biological diversity is not left up to the silver bullet solution of 'one thing fits all' and alternative approaches emerge to simply raise the eco-efficiency of markets. There are diverse models of economy, as different as Iceland is from India and operating at different scales than just at the global level. Institutional diversity is as important as biological diversity, in recognition that dominant regimes do not die easily but fight for their survival.

But in a multi-polar world, there are intentional differences of Health, and diversity is not universally fair. In Health, addressing inequality remains a key necessity in the social ecosystem. In Health, green is not a colour, but a spectrum. The creative destruction of the market place is utilised by some nations to social benefit, and some governments restrict corporations to ensure effective limits to be-

coming 'too big to fail'. In the business world, successful companies re-invent themselves to navigate plurality and fit the needs of a truly globally interconnected and multi-polar world. An increasing number of governments place emphasis on and investment in societal resilience, building the adaptive capacity needed for their whole societies to overcome cultural, political, social and technological inertia and continuously reinvent themselves.

In Health, we are all sailing uncharted oceans and continuously navigate between the promising winds of growth and the strong currents of healthy interconnections. Resilience reframes the decade old paradigm of eco-efficiency based sustainability – rather than Cartesian dichotomies there is more attention to achieving a healthy dynamic: exploitation *and* exploration, efficiency *and* resilience, enterprise *and* environment. In Health, there is greater attention to harnessing disagreement as an asset and exploring the social and normative uncertainties that shape our understanding of systems dynamics and network characteristics. There is more attention to how our hopes or fears – how unchecked assumptions shaped by our expectations of the future can cloud and obscure the quality of our judgement. There is greater balance between looking for signals to confirm what we expect and thinking the unthinkable. Is a network too stable, does it have the capacity to adapt, might its present structure amplify a crisis or absorb its effect?

Compare a study of the New York Fedwire interbank flows, representing \$1.2 trillion of daily transactions to the study of the electric power grids, and we can ask: can you avoid a brown-out by having the right network design? Of course, one key difference is that electric power grids are actually designed, whereas banking networks grow pretty much organically.

To determine whether the connections are really healthy, you need more than just the flows and topology; in Health there is attention to the role of social factors, such as the wisdom of crowds, the spread of rumours and herd effects.

Yet in Health, underlying questions remain:

- Can media tolerate the resilience rhetoric of policymakers?
- Can people accept the social changes and tensions that come with sustainability?
- Do the long-term benefits justify the short-term uncertainties?

### VOTING QUESTION 3

So now that you have heard the story of Health, I would like to invite a third round of voting.

Is health a plausible future?

**RESULTS: Yes: 56% No: 22% Not sure: 22%**

Let's look at both scenarios.

This table provides a comparison of some of the key dimensions of Growth and Health. As I mentioned earlier, they are not designed to be preferences or prescriptions. You may find that after hearing these two stories you have a preference for Growth or Health. We are all conditioned to think of the future as a dichotomy: the good versus the bad future. One of my Indian colleagues once commented to me about what he saw as the poverty Western imagination to think beyond Heaven and Hell. If you do have a preference for either, I suggest you ask yourself why and consider which aspects you may have filtered out. Learning with futures requires that we can challenge ourselves to learn from futures we do not like or want.

Learning to ask better questions about the role of future assumptions in the present can help us avoid the pitfalls of premature problem framing. Last year, we published a paper describing our scenarios as 'canaries of the mind'. In coal mining, a canary was often used to detect if methane gas had been released from a coal seam: as long as the bird was alive and singing, the miners knew it was safe to breathe the air. Sadly, recent events in New Zealand show the dangers of coal mining. The coal miner is a hero figure often working at the limits, producing value by persisting with uncomfortable and dangerous conditions. Without vigilance to changing conditions, no-one can survive and thrive in uncertainty.

Similarly, scenarios provide a way of safely rehearsing the future and for thinking through the longer term consequences of today's actions without triggering a toxic reaction that quickly closes down any new possibilities. Scenarios can help us remain alert to what is inevitable yet unexpected and to navigate between the plural narratives of progress that are still unfolding throughout the world.

#### **VOTING QUESTION 4**

When I asked the questions earlier about whether the crisis is over, which crisis were you assuming?

- A) Was it a crisis of growth and sorting out how to avoid a prolonged 1930s-style depression? What some might call the need to return to normalcy?
- B) Or are we in the midst of paradigm shift, paying more attention to the connections between finance, society and nature?

**RESULTS: A: 41% B: 59%**

### **3: Deeper Reflections**

So let us wave goodbye to Growth and Health and move to the third and final part of my lecture. Kant said "Perception without conception is blind. And conception without perception is empty". Simply put, we see what we expect to see. So how do scenarios help train our minds to see the unexpected?

Our start was to focus on the assumptions being made about the so-called global financial system. The Growth and Health scenarios make different assumptions about the nature of the financial system. In Growth, the assumption is that business, nature and society are separate, largely self-contained and independent systems. As a result, environmental and social changes can be treated as externalities and priced into the economic system. By contrast, Health assumes they are embedded systems. Business-nature-society linkages are multiple, hence the emphasis is on the health of connections in whole systems. In Health, there are many ways in which these different business-nature-society linkages might be drawn. In Health

pricing offers one way to deal with global commons concerns but there is no “silver bullet” solution and a variety of “pricing plus” approaches emerge which include attention to taxation, new oversight mechanisms, demand side measures and even alternative commons management systems.

The role of a good set of scenarios is not to determine which form is correct but to provide the common vocabulary and shared platform for better quality of strategic conversation, which explores the implications of these different systems assumptions for the nature of the crisis and its fix. These scenarios provide different maps to navigate the crisis – maps that, if adopted, also reshape the landscape.

As the granddaughter of a Dutch merchant seaman, Cornelius van Willigenburg, I have always been fascinated by old sea charts and newer maps. Unlike a set of physical maps that have enabled a journey from one place on earth to another, scenarios are mental maps that enable us to journey between the future and the past. They are not designed for greater accuracy but for enabling shared understanding and better judgement about how the world works.

Let me illustrate. This slide shows two global maps. The map on the left uses the Mercator projection. In 1569, Flemish cartographer Gerardus Mercator published his first map using his ‘Mercator projection’ method, which enabled a spherical earth to be mapped onto two-dimensional charts. It became the standard map for nautical navigation, enabling ships to travel beyond sight of land and across vast and open oceans using true north. The Mercator projection, however, distorts the size and shape of large objects: on a Mercator map, for instance, Greenland looks larger than South America.

Peter’s Projection provides another way of looking at the world. This map depicts the relative size of the continents more accurately. Africa now appears massive. It is much less useful, however, for navigating true north! Both maps are, in fact, somewhat inaccurate but still useful.

Like any physical set of maps, the value of scenarios is having different sets of maps to hand. Unlike a set of physical maps, the real value in working with scenarios is their role in revealing assumptions that shape the future. This brings me nicely to the challenges of engaging with uncertainty about the world out there and dealing with cognitive limitations and the social and political realities that limit any theory of pure rationality, in particular the social construction of ignorance. The social construction of ignorance, which stems from the purposefulness, risk culture and power structure in any organisation, helps to explain why clear and present signals of danger are ignored, for example such as in the UK and the Netherlands in the run-up to Icesave.

Did people in Amsterdam in 1661 know about Hartmann's Catholic Church - Our Lord in the Attic? Of course the Protestant authorities knew about the hidden church, but they turned a blind eye as Amsterdam's policy was to tolerate the diversity of faiths that flourished in the city. However, in other cases turning a blind eye creates a much bigger problem. The concept of known unknowns and the unknowable unknowns has been around for many decades. You may recall the former US Secretary of Defence Donald Rumsfeld's mantra on uncertainty. He referred to:

- What we know, we don't know (uncertainty)
- What we don't know, we know (denial, social construction of ignorance)
- What we don't know, we don't know (undiscovered or inherently unknowable).

The social construction of ignorance relates to unknown, knowns – what others know about but which we, in our community or organisation, cannot know. Addressing the social construction of ignorance is not easy; it is a by-product of the efficiency of human organisation. You cannot have the one without the other without vigilance to the co-evolution of knowledge and ignorance and the difference in uncertainty as something 'out there' or 'within' both the individual human mind and the processes of collective society. Engaging with ignorance requires shifting from being comfortable about what we know and can know, to having the courage to address things others

might already know, things we are ignorant about or more comfortable not knowing about.

Decision makers also struggle with uncomfortable forms of knowledge e.g. how to deal with differences in expert judgments derived on the basis of the same ‘weak’ evidence? Experts struggle to embrace ignorance and to find ways to offer opinions whilst avoiding the traps of hubris and arrogance. Everyone struggles with less comfortable aspects of reality. For example, doctors in the USA invented a new disease with a flourishing scientific literature – brittle bone syndrome – to explain fractures in children. This new disease prevented them from having to consider the much less comfortable reality that some parents beat their kids and, in the process, break their bones. This is a true story and not the only one of its kind.<sup>1</sup>

Addressing uncomfortable knowledge and engaging with ignorance requires courage to ask awkward questions. Working with a set of scenarios that reveal and test deeply held assumptions can ‘make it safe’ to look at the worlds ‘out there’ and ‘within’ and articulate what is often known but remains unspoken: the so-called elephants in a room. Scenario-based processes can help catalyse and support the courageous conversations needed to address the social construction of ignorance but only if they avoid the traps and pitfalls of scenario work e.g. re-iterating comfortable knowledge and failing to remain vigilant to changes in their assumption base. Working with scenarios to rehearse crisis situations can enable the courage to look at the pitfalls in sticking with well established routines and well practised tools.

Firemen have been known to burn to death in forest fires because they fail to drop their heavy axes which impede their escape. Firemen become experts in dealing with forest fires through training and by learning to recognise the pattern of different types of fires. But this capacity for anticipation based on familiar pattern recognition can prevent the improvisation needed to deal with new situations. A fireman’s axe is not only a heavy tool but also a symbol of his identity. It is the last thing to be dropped. In some fires, this reluctance to drop a very heavy axe has led to death.

The clinging of financial analysis to quant models and modelling in the run-up to the financial crisis highlights that whole organisations and individual experts become identified by their proprietary and professional tools. After all, what is a modeller without a model, a financial analyst without a spreadsheet or a scenarist without a set of scenarios?

We must all learn to drop our heavy tools and work with lighter tools. Dealing with turbulent changes and managing through crisis is about navigating unfamiliar situations. It requires improvisation. Otherwise we run the risk of making matters worse by sticking to our established ways of working and familiar tools. In securing the opportunity to learn and unlearn with the future, I see the value of scenarios as lighter tools – providing more flexible and temporary scaffolding – that can complement the much heavier and harder-to-drop tools of data-heavy models.

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In Health, the challenges of navigating a world of complex linkages require a new mindset, as well as the tools and institutions, to understand and manage a diversity of linkages between different systems and geographical scales. In harnessing the modern futures toolkit, we must also pay attention to time matters and think about the influence of temporality in creating different scales of meaning. Let me illustrate this point with this slide, a painting by Vermeer, *De Schilderkunst*, from the golden age of Dutch map making that is relevant to the challenge of facing climate change today. The painting shows a scene of everyday life. On the back wall hangs a tapestry showing a map of the world. Just imagine the stories people would have told to make sense of this whole, round world.

Today we face a similar situation. Climate change is now a feature of our global map. We have established a truly amazing process of global scientific assessment through the scenario work of the Intergovernmental Panel on Climate Change, which is a hybridization of scenarios and modelling. But while careful surveys, such as Globescan, demonstrate a high degree of concern everywhere, people struggle to be supportive of action at their own scale. My interest in scenarios stems from their ability to relate these many different

scales by remaining ‘light tools’ with the flexibility to focus and refocus at different scales in subsequent rounds of building and use.

The value of stories and storytelling processes in scenario work is also pivotal in relating these scales of meaning. The process of co-creating plausible stories through conversation and storytelling is essential in revealing meaningful anticipatory knowledge and forging common vocabulary between different communities. John Robinson and others are already working with scenarios in a way that enables much wider participation, and I think these wider engagements are key to relating global science and local decision-making. In scenario work, we rely on lexicon, rather than mathematics, to indicate which stories of the future to pay attention to. Combining scenarios (what futures are plausible?) with other futures methods, such as visioning (where do we want to take the future?) and statistical modelling (what constraints from the past might there be in the future?) is already the new hallmark of leading edge futures practices.

Responsibility for the future implies leadership ability to harness the modern futures toolkit and to find ways of navigating between what Adam Kahane calls an adaptive and activist stance to the future:

The Adaptive stance is a reactive stance that asks ‘Where will the future take us?’. It often leads to responses centred on protecting and preserving systems and organisations in the face of future changes.

The Activist stance, by contrast, asks ‘Where do we want to take the future?’. The focus is then on strategic innovation and creative destruction, transforming organisations and institutions to create a society that brings forward a better future.

In an era which some leading social scientists, such as Ulrich Beck, have referred to as characterised by ‘risk society’ and in which risk control has become a dominant feature in regulation and national policy making, we should not shirk the responsibility of shaping a better future. That the future is not certain and open to shaping, is also greatly empowering, but only if we can learn to learn from the inevitable failures that characterise longer term success and progress.

**In conclusion**

Scenarios are but one tool in the modern futures toolkit. I believe scenarios offer an effective way to engage uncertainty and, in particular, navigate the social construction of ignorance. However, it requires courage to use them in this way. Scenarios offer an opportunity to learn *with* futures rather than *about the* future. Our Growth and Health scenarios were designed to help us all take a step back and reframe the financial crisis by revealing and testing the deeply held assumptions that are impacting today's decision making and the design of early warning systems. The value in using scenarios to enable and consolidate this deeper learning is often not realised. Futures scholarship and futures education are needed if we are to reduce confusion and misunderstanding about scenarios and help leaders make better use of the modern futures toolkit.

Let me end with two questions: How prepared are you for the many roads ahead and which roads have you helped to build?

Thank you for your attention.

- [i] One of our colleagues, Dr Jerome Ravetz, has suggested a more publicly accessible example of how experts also struggle with uncomfortable knowledge: 'Semmelweis syndrome'

For the holders of power and authority, uncomfortable knowledge entails what we may call a 'Semmelweis syndrome', based on a real incident in nineteenth-century Vienna[\*]. In such syndromes the official response by healthcare administrators to a warning of a feral future where medical students are unwittingly killing mothers in their facility was along the following lines. *"How dare you accuse our medical students of killing women in childbirth! I would never entertain such a monstrous accusation without full experimental proof, and I would never permit the experimental investigation of such a monstrous accusation". For a contemporary example, we might have: "One cannot allow the mission of the Church as the stern and infallible guardian of sexual morality, to be impeded by publicity about the actions of a few aberrant priests"[/]\*\*]. Uncomfortable knowledge tends to be suppressed because it 'sends the wrong message' about those in power – that the authorities got it wrong.*

[\*] John, Z; Sadler, M.D., Yosaf, F., and Hulgus, M.A.: 1989. Hypothesizing and Evidence-Gathering: The Nexus of Understanding. Family Process Volume 28, Issue 3, pages 255–267, September 1989

[\*\*] Kathryn A. Dale; Judith L. Alpert 2007: Hiding Behind the Cloth: Child Sexual Abuse and the Catholic Church Journal of Child Sexual Abuse, Volume 16, Issue 3 August 2007, pages 59 - 74



## TOWARDS A SUSTAINABLE FUTURE: CHOICES, CONSTRAINTS, AND INTERACTIVITY?

*John B. Robinson*

It is a great pleasure to be here. This is one of my favorite parts of the world to visit (I try to visit the Netherlands once a year) and I appreciate the opportunity to talk to you about some issues that are fairly close to my heart and about some of the work we are doing in Vancouver. So what I would like to do, after some preliminary remarks, is just to set up the kind of work that we have been doing in participatory exercises with local communities mostly in our region of the world.

I am going to work with you to create a scenario, using one of the modeling tools that we have developed over the past 10 or 15 years, which is a computer game, a simulation tool that we use with various stakeholders and publics, called Metro Quest. These normally take 3 or 4 hours. We are going to do it in 20 minutes so that is going to be a subset of the whole but hopefully it will give you a flavor of the kind of things we do to engage citizens in thinking about the future. I will close with some reflections about a way forward and how we can move more actively in the direction of engaging many more people in thinking about the future of their region, their city, and their neighborhood.

The context for what I am going to say are several things I want to take from the report that was produced for the WRR on foresight in September. An excellent report, I have only read the English summary version of it, but I want to take a few things from that report because I think they really set up what I want to say very nicely:

- The idea that the future is open but not empty. I think that is actually a profound insight that is worth elaborating on, and I think Angela's remarks are very consistent with this insight as well.

- The idea of an uncertainty as what is called a ‘cognitive uncertainty’ in that report. We have a lot of uncertainty about social and normative issues, and this results from the fact that, unlike in climate modeling, climate science, or much other natural science, within the field of observation of the social sciences there is human consciousness, which has volition or intentionality that changes the nature of the whole exercise in a fairly fundamental way.
- We are really trying to juggle different views, and Angela has already given you some really powerful examples of the degree to which the framing of the problem can change the whole nature of the diagnosis and the proposed solution. This, then, is what we called the blind spot in the report about normative participatory future studies. I think there is a real opportunity in that area.
- Our work has led us to conclude that the fundamental spatial scale, even for global issues such as climate change, is increasingly below the national level. Now, in our country, below the national level means a lot further below, spatially speaking, than it is in the Netherlands. Nevertheless, the question of where the locus of agency is, is a very interesting one, and the failure of the process at the international level has led a lot of people to suggest that the interesting activity areas like climate change is happening at a more local level. We have certainly found in Canada that it is very depressing to deal with the national government on climate change. It is far more interesting to deal with our provincial government and their municipalities, so let’s focus on cities.
- The night before last, I read a report about foreign policy in the Netherlands and the future of foreign policy. The report highlights the concept of the network world we are increasingly moving into: we only need to turn to our children to see a completely different set of social relationships and behaviors that are derived from this highly interconnected form of interaction that happens through the social media. The concept of a transparent deliberation framework is exactly the type of thing I will be arguing for. I want to ask the same question Angela also asked: what kind of world do we want to live in?
- And then, finally, this idea of learning with and not about the future, this is really a fundamental shift in perspective from

thinking that there is something out there that we can describe and cover and see to, thinking that it is a process of learning as much about us now as about the future, examining scenarios as mental maps or as tools framing tools. In a way, the question that lies behind everything I am going to say, is: where do we want to take the future?

A normative ideal within much of the scientific community is the idea that prediction equals understanding, and, therefore, the goal is to converge on likelihood. We want to find the most likely future and that is the base case: that is the one that will happen if nothing else occurs. The key point here is scenarios are not predictions, they do not converge on likelihood, and they are typically incommensurable. They are not reducible to each other; they are not variants of the base case; and they are not derivable from each other. They are actually fundamentally different logics. This is in some ways the basic insight of scenario analysis.

What I want to add to that is a third approach which we have been trying to work with for the past 20 years or so of talking about how to get to desirable futures. What makes this whole exercise more explicitly normative? I would argue it is always normative, but the normative nature is usually hidden in a predictive framing. Let's make this more explicitly normative and start talking about the desirability of futures, not simply likelihood but not even multiplicity. So the question is: how do we make this third approach operational? This has been a lot of the work we have been doing over the last few decades.

I want to say a word or two about uncertainty, using the example of the intergovernmental panel on climate change because it is such a perfect case study of this issue. What we have in ipcc is three working groups: working group 1 on the science of climate change itself (which is the one everybody knows), working group 2 on impacts and adaptation, and working group 3 on mitigation. What may be less appreciated is that these are completely different communities with a very different center of gravity in their disciplinary expertise. The physical science community makes up almost all of working group 1. Working group 2 has a preponderance of ecologists and biologists as a sort of

environmental science community. Working group 3 is the catch all for all of the other social sciences and a lot of economists as well. Working group 3 did scenario work on the emission side, and what happened is very interesting. In the second and third assessment reports and especially in the fourth, what we had was this huge process of trying to establish a common approach to uncertainty so that the language between the three reports would be the same. Because there was a response from various audiences and governments saying: “you are saying different things in these reports about uncertainty, they’re commensurable, and we can’t relate them to each other,” so quite a large process was started. A massive email blitz went around, and meetings and discussions were held to try and come up with a common framework for uncertainty.

This basically failed in my view despite the attempt to put a good face on it and have a language that was consistent across the reports. It does not work very well, and the reason it does not is that we are talking about three different ways of thinking about uncertainty: one based on likelihood, one based on confidence, and one based on choice. Likelihood is a probabilistic assessment of what the world is like: our best judgment of what the probability of the outcome is.

Working group 1 tended to adopt more of a likelihood approach of thinking about the future of climate systems. The environmental scientists tended to focus just a little more – this is just my anecdotal impression – on the confidence question: how much confidence do we have in these statements about the future? And this is a different thing because that’s locating uncertainty in the head of the scientist, not in the world. If you read the report, you will see that these two are conflated, and both kinds of statements are now in the reports, but they mean different things, and different communities were promoting them.

Now I am going to focus on a subgroup in working group 3, which was the scenarios people. I was the convening lead author of the scenarios chapter in the third assessment report, and basically what we were doing was saying: that’s the wrong question, confidence or likelihood, for if we are talking about socio-economic systems with

humans in them with intentionality and volition, likelihood is not a very useful concept, and confidence is not something we can express. We cannot even predict quarterly gdp three months ahead so we are talking about hundred year scenarios? As a result of such considerations. the special report on emission scenarios ended up taking a scenarios approach. It said there are four fundamentally different futures, and they cannot be reduced to each other or expressed in terms of each other. They are different worlds and to some extent – not entirely – it is a question of choice. That is very different from natural science, where we do not usually impute a certain amount of choice to what is going on there, but in socio economic systems, confidence and probability are not the best ways to think about uncertainty.

I want to pick up on this idea of choice because it underlies the work we do, and I will be following this theme through a little bit. If it is about choice, then that raises the question: who chooses? This leads us to a need for a participatory approach to scenario analysis. Scenario analysis is not just communicated out to the public and stakeholders, but it actually involves the participants, the audience, in the creation of the scenarios themselves. There is a very familiar reason why we might want to think about more participative approaches: there are normative reasons, and people have the right to be involved in the discussion about futures that are going to affect them. This is a pretty obvious reason for participatory approaches.

However, there are substantive reasons as well. There is certainly an argument that a more participatory process in principle increases the quality of decisions, bringing into the analysis information that is not available to the scholars and the experts creating the scenarios. There is, first of all, ethical and political input, which actually is not the province of the experts anyway as most experts try to remove this dimension from their work. If we are going to have deeply ethically and political decisions, we need input from the people that are going to be affected and who have some say in those issues as citizens. Local knowledge is another input. Finally, there is a set of instrumental reasons for participatory approaches which are actually becoming more and more important as our world fragments into anger and mistrust, and we see this happening across the planet. In every country, cer-

tainly in the Netherlands and in Canada, such levels of mistrust and anger are historically unprecedented at least in the last few decades. In those circumstances especially, we need processes that are going to allow people to feel somehow part of it. If people feel imposed upon by various types of elites, then they will be resistant in principle.

Can we create processes that are going to lead to enough sense of ownership for the results of the process to be more widely accepted? That is the opportunity, the instrumental opportunity, of a participatory approach to processes. This has led us to what we call second order backcasting. First order backcasting was that we, the researchers, would identify some desirable futures and do an analysis of how to get there. As I just said, we are trying to move this into a more participatory direction. So what we are trying to do is to combine scenarios and traditional analysis with backcasting and types of participatory processes where we do not start with our articulated desired future, but where we start with a set of goals that have to reflect the audience. So we start with a process of eliciting what the goals are from people such as this group in this room, and those goals do not define outcomes, they define a kind of color of the future.

Then we launch a process of creating scenarios: we take a scenario into the future, we see where it takes us, and then we compare. Is that future consistent with the goals? We keep doing this and we keep repeating scenario creation until we get to a future that is consistent with our goals. That is the one we want, and that becomes our objective. Now we can look at ways of getting there from here. So you see the crucial component here is to align the scenario with a goal and to have the goal emerge out of the process rather than to be imposed from the outside.

This in turn leads us to a procedural definition of sustainability. You all know that sustainability is an essentially contested concept that has many different definitions. There are many people who think there is a problem with the concept of sustainability. I think the opposite. We have managed to get by for 2000 years with multiple concepts of truth, justice, and democracy, and somehow that has not stopped us from developing legal systems and political systems.

I think sustainability is one of those types of concepts, an essentially contested concept, and the contestation is part of the process of deciding of where you want to be. So we define sustainability in the light of that type of approach as an emergent property. It is not a scientific concept. Sustainability is basically a normative, ethical concept in our view that is emergent from a process of discussion and dialogue among a community. This is where the science comes in, to give us some understanding of the higher order ecological, economic, and social consequences and the trade-offs associated with different choices, and different courses of action. This is crucial. These are the choices we have, and choices give rise to different consequences, and these in turn go into the discussion of future.

In other words, sustainability and desirability conflate to some degree. In many years of doing this, I have never met anybody who argued for unsustainability; maybe there are people but I have never met anyone. What we argue about is what we mean by sustainability and what is indeed sustainable. That is exactly the argument we need to have; that is the discussion we require. What set of outcomes are acceptable? What trade-offs are we willing to make? Put another way, we need to take lots of expert understanding, which is located partly in the universities, partly in industry, and partly in government and combine it with public attitudes, values, norms, perceptions, and beliefs. By creating processes and tools that bring these two types of understanding together and give rise to this emerging property, we may potentially get some type of agreement on where we want to go. So this is the promise; this is the ideal.

Reality, of course, is a little messier. This means that we need some tools that allow these two forms of knowledge to be combined. We want to locate our tools in between. We need the world of models, and the quantification of outcomes is crucial to this kind of exercise because otherwise it is just conversation, conversation uninformed by any technical analysis of consequences and trade-offs. We want some modeling, but people do not live in model land. In our normal everyday life, even we, the academics who are much more focused on this type of analysis than anyone else in the world, even we in our normal lives do not sit down with our partners and do an analysis of

our relationship. This is not how we live our lives. Instead we live our lives in story land, as narratives. We tell each other stories about our relationships or about our friends. This has been the medium of exchange for the whole planet from the dawn of time, and yet we think that, somehow, purely technical analysis can translate directly into the experience of individuals that do not have any technical training. This does not happen. When we show people charts and diagrams, their eyes glaze over in ten seconds, as they are not communicating in a way that is meaningful to them. So we need to deal with narrative. As we try to locate our tools in between the world of models and the world of stories, narrative is the way in which we can engage people more deeply.

So, for example, in the interface you will see in a few minutes, no number ever appears. Underneath the hood are all kinds of algorithmic calculations, but the dashboard is qualitative. What is the challenge, the modeling challenge? I would like to quote Pierre Wack, whose two famous 1985 articles (wonderful articles, actually, even today) in the Harvard Business Review said something very profound: “the purpose of modeling is not to describe the world: it is to change the mental model in the heads of the audience.” That is a really interesting idea. You heard Angela talking actually about just this question: what are these mental models? How do we bring them out and examine them, unpack them and understand them?

Then we met with John Hiles. He ran a company called Thinking Tools which was the business division of Maxis Corporation, all the Sims products. He did business simulations. He built Sim Refinery for Chevron and Sim Health for the health system in the us. He said something really interesting: “most people on earth are alienated from the large systems of technology, politics, and economics. And they are alienated from them not because they lack information. The Sunday New York Times has more information on all those systems every week than anyone can absorb. There is no lack of information, but it is not actually information to most people. It is just noise. And it is noise because we do not have a mental model to make sense of it. Interest rates go up, and if we understand a bit of economics, we might understand what is going on. Otherwise what do we do? We

rely on the columnist that we like to explain it to us, and we might like that columnist because he is kind of handsome or we might like him for reasons that have nothing to do with economics but he is the one we will turn to because we do not have a mental model to explain that phenomenon. As we cannot have expert models on most phenomena in society, so we depend on others.”

If you combine these two quotes, you will see the huge opportunity for tools that will give people mental models to make sense of noise. Sense making is a term that I know Angela likes. But always remember Neil Postman’s warning many years ago: “Information is the garbage of the 1990s.” I think this warning holds true for this decade as well.



All of this is background to the tool we built called Metro Quest. QUEST originally stood for Quasi Understandable Ecosystem Scenario Tool. We were trying to turn this into a quite useful eco scenario system tool, and you may judge for yourselves whether we have achieved that. We have sold the software to 18 cities around North America so there is quite a bit of experience now of using this on an urban scale and now I want to take you through it.

We are going to imagine we are doing a Metro Quest session. Unfortunately, we only have North American cities, so it will be a little different in context. I am going to start with a few slides to give you a feel of the kind of issues we grapple with. We did not have a The Hague or an Amsterdam Metro Quest to show to you, so this is the very southern tip of Vancouver, the west coast of British Columbia.



Unlike most European cities, but like most Canadian cities, we are growing a lot. We expect a 35% population growth by 2038, which is completely migration driven. This is a big growth in a small period of time. This, by the way, is what most of the planet is doing outside Europe, Japan, and parts of North America.

Slide 20

So the interesting question about sustainability is: how do we plan for a 33% increase? This is the land area available for putting more people and houses and roads and infrastructure, but when you start to take away the areas you cannot build on such as water, steep slopes, sensitive eco systems, protected species, green lands, nature reserves, agricultural land reserve set aside for farming, and built up areas, you

can see that the actual amount of land available is relatively small. So I hope that this would make you feel like this is more a Dutch situation, with many constraints and not a lot of room to go. Despite your impression of Canada as this infinite expanse of land, a lot of it is not very expendable into. So here is the challenge: there is the land that is available, and now we are going to add 110,000 people. How do we do it? This is what we take out to the public and talk to them about land use, about transportation, about urban density, about jobs, about energy use and so on and try and figure out if there is a way forward that works for people.

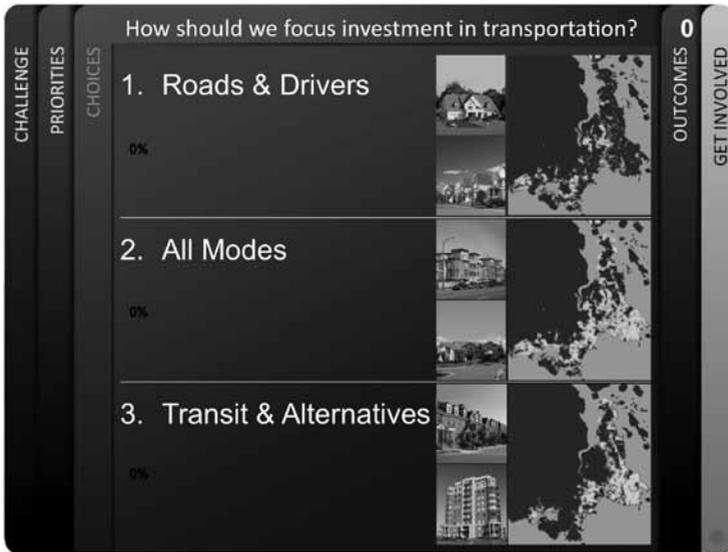


So what I am going to do now is take you to the software, on the web we choose some priorities and we see the outcomes. I will choose five priorities for you and ask you to vote on your top priority. I have thrown in a priority that might not be a typically Dutch one but a more typically North American priority, but I thought I would just give you the chance to be North American if you wanted to. More green space – what a surprise – is number one. Number two is quiet neighborhoods, I should have done my predictions of your votes. Low carbon emissions is number three. Lower cost of living is number four. Large homes with big yards is number five. At this point, we

will move on to making some choices. Having set the priorities, we can now make some choices, and we are going to make choices in two areas. There are only two questions. Where do we want to develop? Do we mostly want this new growth in population and infrastructure to take place in new areas, outside the existing urban environment? Or do we want to densify and try to fit as many of these people as possible into existing built-up areas or some kind of mixture? As you can see, the pictures illustrate this to some degree. There is that suburban American house that we all love, in a slightly or significantly more densely populated area. So this will be the first choice.



Your second choice will be on transportation. Some versions of Metro Quest have up to six choices on certain issues, but this one just has two. Remember we are adding 35% to the population, which is a significant number of new people. Do we want to improve the road system, which is already inadequate to support the existing level of drivers? Or do we really want to focus on drivers? Penalize drivers or encourage them or some kind of mix, where we really have to respect the God given right to everyone to drive as much as they want but we also want good transport.



So where do we encourage new development? You can start voting now. Imagine that you have been sitting at a table discussing this choice with a group of ten other people and try to think through the consequences of that. Wow, what a surprise. I think you, as an audience, are in the right part of the world. If you are planning a move to a certain continent a little left on the map, you might have to rethink some of your answers.

Let's take a look at the outcomes. The first thing you can do is see the spatial implications of your choice and zoom in and get a sense of what has changed. You have chosen the least new development, but you can see the density increase that is happening over time, so you really have densified those urban cores by the choices you have made. What you can also see here on the screen is your five priorities and what you did. You did pretty well on three of them, but you did pretty badly on two of them. Two got worse: it is noisier because you have densified, and you just did not get those large homes you really wanted to have in the suburban area. But you have lowered the cost of living because denser infrastructure is more cost-effective to build. In our experience, this is an unanticipated consequence. People do not make the connection between density and taxes, for example,

although once it has been pointed out to them and you walk through these things, people can understand those links. So these are our priorities.



You can also look at other people's potential priorities. From an urban lifestyle point of view, not surprisingly, the suburbs hate this; it does not do them any good. That is an important point: not everybody is happy with the outcome. From a travel point of view, it is a lot better because you have densified, and distances are shorter. For the environment, it is not so bad, mostly positive, and from a cost point of view as well. So you are very virtuous in several points of the outcomes here. It is always about the diamond in the middle, and you can see how that changes over time. You can also compare your scenario to the present, and you can also zoom in and zoom out as well to give you some sense of what you could do.

We chose priorities, we made choices, and the third big step is to iterate it. Maybe you do not like the outcome, or you do not like the consequences of some of the outcomes, and you say: I did not expect that, or I really do not like that. At this point you have the opportunity to play, to change the choices, and see the outcome. In the first

version, this took six hours, then we got it down to two minutes, and now it is zero time because we have pre-run all the scenarios. You can actually play until you get to a scenario that the room in general is most happy with. That finishes step three, and that can take quite a bit of discussion time.

Step four is actually the most interesting part. That is when you turn all this technology off and say: how do we get there from here? That is not in the model; that is entirely in the discussion. That is when the dialogue becomes the most informative because you have a sense of the trade-offs and the consequences of doing this; you may disagree on what you like, but at least you have that sort of common framework.

Now let's talk about how, and that's the really good part of the discussion. We do these kinds of exercises using three channels or modes, and one is workshops. Here are the four steps I talked about. So there is the workshop process, and that is about half a day. You can run dozens of workshops, but you cannot run hundreds of workshops. The other way to do it is on the web, so Metro Quest in Chicago, which was paid for by the Metropolitan Planning Authority of Chicago, put

The screenshot displays the 'Chicago Metroquest' website interface. At the top, it features the title 'Chicago Metroquest' and 'GO TO 2040' with the Chicago Metropolitan Agency for Planning logo. The main content area is divided into three sections, each with an 'ENTER' button:

- VISIT 2040:** Includes a small image of a cityscape and the text: 'Take a quick tour. Change the focus through a couple of clicks and spend a little time in 2040! Meet with speakers on /jsherees repash/ Erros agud.'
- INVENT 2040:** Features a map and the text: 'Get creative. Make choices about the future and see graphical graphs showing what the might /SHARAF/ look. Send feedback on issues you care about and get your friends involved!'
- COMPARE 2040:** Shows a bar chart and the text: 'Go even deeper. Dig into the GO TO 2040 scenarios and see how they stack up against each other and scenarios you built yourself.'

At the bottom, there is a section titled 'About GO TO 2040' with text: 'Population in metropolitan Chicago is expected to reach nearly 11 million by 2040. To accommodate 2.8 million new residents, our region has urgent decisions to make in the very near future. GO TO 2040 is the Chicago metropolitan Agency for Planning /SHARAF/ campaign to guide development and investment decisions to accommodate our region's growth.' Below this is a link: 'Click here to really dig into OMP's three sample scenarios.'

The interface also includes a footer with 'www.GOTO2040.org', 'Disclaimer & Privacy', and a 'Done' button.

this on the web, and you could visit 2040, and we would show simulations on how Chicago would develop. They could invent 2040, and here you can see they had five choices, so they had more variation, more possibility.

Then they deposited their preferred scenario, and then they could compare their scenario to other people's scenarios and to the official scenarios of various organs of government. This becomes an interactive process of learning and depositing. By the way, polls give you ten seconds and no context. A workshop like this gives you three hours to learn about those same problems and what you deposit at the end of the process is in principle a much more useful expression of your values and your preferences than you can ever give in a poll. We think that these processes can be a more useful input to decision making and we have it in kiosks. We have five kiosks in the city of Chicago, and people could come and play Metro Quest for a minute or two and walk away. There were 500 people per day at the busy kiosks.



It was during the summer of 2009. We had about 1,500 people in workshops because we ran 50 workshops in Chicago, which is a lot.

We used the workshops to try to push the people to the web, so we sent e-mails following up the workshop, saying: here's the website. Twenty-two per cent of the people opened their e-mail, which apparently is fairly high in that kind of thing, and 5 per cent clicked through and started to play Metro Quest online. We had 4,000 visitors online. And then a declining number went through the scenario and left it behind. But these are still significant numbers. And 20,000 people played it at the kiosks.

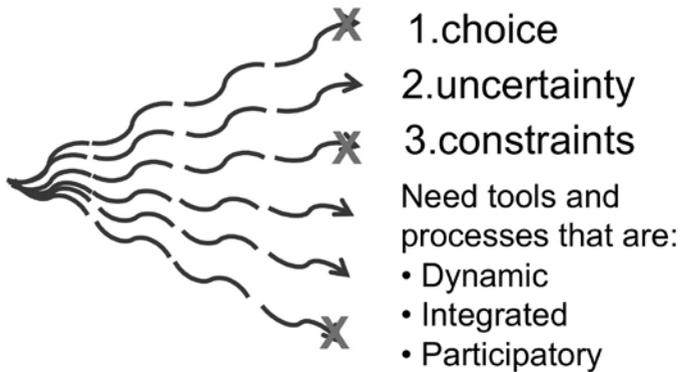
Now think of that, you have millions of workshops going on in the Netherlands consensus land, but do they ever involve politically significant numbers of people? Typically not, and typically it is the old STP phenomenon that you always see here: 'The Same Ten People'. Oh there they are again. There are people that go to meetings, and there are lots of people that do not. With these kinds of kiosks and online opportunities, there is the possibility of engaging politically significant numbers of a particular community. This turns it into a whole different ballgame with respect to potential impact on policy. There is a quality/quantity trade-off here that the bigger numbers are in much shorter experiences. But it is a new world with this new technology.

Let me end with some reflections on the question of crisis, a really simple-minded conceptual framework I want to put forward where I see some of the frontiers of this work, an example of what we are trying to do and an end point. This whole question of crisis as we heard in the first half of today is kind of interesting and sometimes problematic to think about the issue. As we know, everybody's crisis is someone else's opportunity: crisis by its nature is a short-term concept. If you take a ten-year perspective, it might be different, it might be a different kind of crisis, and always the question to ask is: who benefits? Who gains and who loses? That is always an informative question to ask from the framing of terms like crisis: who benefits from that, and who loses from that, and from the policies that follow. I think the psychology of motivation is very important here. We sometimes think we need a crisis to get action because people are so resistant to change. I think that's a misunderstanding of our culture by the way; I think we are the most changed culture in the history of humanity, but nevertheless there is this feeling that people are resistant to change so crisis will allow us to make the transition.

In fact I think it's the opposite. Crisis leads to very short-term, defensive, and reactive thinking, and it does indeed create change, but the change is

hardly ever strategic, enlightened, and long-term. Just think of the last few natural disasters around the world and what the response was to them and how many of them have been long-term thinking and how many are just trying to solve an immediate problem. Most of the social benefits in the Western world were put in after 1945 at least until 1980, when things began to unravel, and they were put in place at times of rising expectations and rising welfare. So it is not clear that crisis is the right framing for thinking about progressive change.

## A simple framework for navigating the future



Here is a very simple framework we use to think about navigating the future. Choice is the fundamental point. It is real choice, it's something in which we can exercise some choice but there is indeed some uncertainty of the cognitive kind and of the kind that I was criticizing earlier, and there are constraints, as not every opportunity is actually available. To me the interesting question is: let's identify the ones that are still left there and start to make some decisions about which direction we want to go. That means we need tools that are dynamic over time, that are integrated, and that are participatory. Now think of the models that are currently used to look at the future. How many meet those three conditions?

From our work I think there are some preliminary lessons. We get incredible enthusiasm when we go out with the stuff. People are really interested in talking about their communities. Scale is important: it is not the country or the province, but it is their city. Temporal scale is important: 100 years does not work, but 40 years works. We prefer 40 years because it allows turnover of capital stock which you need to get big change. But it worked for people not for that reason but because they can imagine their kids in 40 years. That was the most fundamental factor. Or they would be young enough that they will still be working in 40 years. So 40 years worked for us, and people got very engaged. Interactivity is very crucial. Do not create scenarios and give them to people, let them create the scenarios; that is one of the biggest things we found. That is when the buying is much higher at this local level. Visualization. We have too high credibility, as people believe this stuff too much, and they are not so critical, so we have to be careful. We see increased knowledge and engagement in some of the evaluation of the work we have done.

Our world today is really lacking in the sense of collective agency: we are fragmenting. If you look at the literature in this area, there are some really interesting things about qualitative and quantitative analysis, models versus stories, true to life versus fun to use; there is a tension there. My first two grad students working on QUEST called themselves Mr. True to Life and Mr. Fun to Use, and that was the tension. This becomes a matter of communicative complexity, but it is not connecting to policy. All these big projects are done, and then they die. People get their expectations up, but nothing happens. How we connect this to policy is a really big issue. I will not talk too much about this, but there are a lot of frontiers we can go into.

I want to say one word about landscape visualization because we are moving more and more into this direction. People's eyes glaze over charts and tables, but show them a landscape and they are there, they are right there, and they read them in very sophisticated ways. All of us are quite sophisticated in our understanding of landscapes. The reason why this is cartoonlike is that Greenpeace got sued when they showed climate change on real streetscapes; the property owners said: you have reduced the value of our property, so now researchers use non-recognizable streets. If you show people things like climate

change impacts or adaptation strategies in a context they recognize, they can have very sophisticated discussions about this. This is about communicating complexity in different ways. Here is a fairly attractive Vancouver intersection, and here is an alternative version. You can have a 3-hour workshop on that image; everything is there: renewable energy, life-work, food production, green space transit, it is all there in ways people can understand and respond to.

I want to almost end by telling you briefly about a project we are just starting. We hope to engage tens of thousands of Vancouver citizens. We start with the public and the goals the city has declared – their so-called green city goals – and we are going to set up five channels, workshops, mobile application, table top games and kiosks, online events, and performing arts, wrapping the whole thing in social media and different forms of invitations to engage. The city is our partner in this, and then there will be an evaluation process. We want to know who is invited and who plays, who engages in this stuff, how do they participate? How do the different media and channels import their engagement, and what do they say at the end of the process? We see an opportunity to evaluate the different modes of appeal of these different ways. Do we really have dialogue going on? Persistence over time, impact in both cognitive and non-cognitive ways, and deep or average commitment, that is on the evaluation of the modes of engagement, but we also want to evaluate the content. What are they saying? What do people choose? What do they say about policy? So that is the project; it is just getting started so I can say anything, but in two years' time we will have done something.

I want to end by making the very simple point that everybody knows. If we talk about the future and the changes of the world and making choices, it is not just about the future. There are lots of things wrong today that we also need to change. So future studies is present studies and it has to be present studies. Thank you very much.

## ABOUT THE AUTHORS

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The Netherlands Scientific Council for Government Policy (Wetenschappelijke Raad voor het Regeringsbeleid, WRR) is an independent advisory body for Dutch government policy. The Council focuses on policy issues with long term social, economic, technological and political significance, which, as a consequence, transcend the policy domains of the various ministries. Members of the Council are highly qualified academics, appointed by the government for a period of five years. The WRR is an independent think tank; it directs its own research programme, which is funded from the budget of the Prime Minister's Office.

The annual WRR lecture offers policy makers and academics a high profile opportunity to discuss current policy issues with long term relevance for Dutch society.

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