

How to Explore Futures?

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Futures Studies and future of sustainable energy system

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Structure of Lecture

1. Diversity of futures research methods and methodological frameworks
2. Horizon Scanning for Futures Signals
3. Futures Cliniques and Scenarios

An aerial photograph of a large, deep blue lake surrounded by numerous forested islands and peninsulas. The trees are a vibrant green, and the water is a deep, clear blue. The sky is light blue with some wispy clouds. The text is overlaid on the lower half of the image.

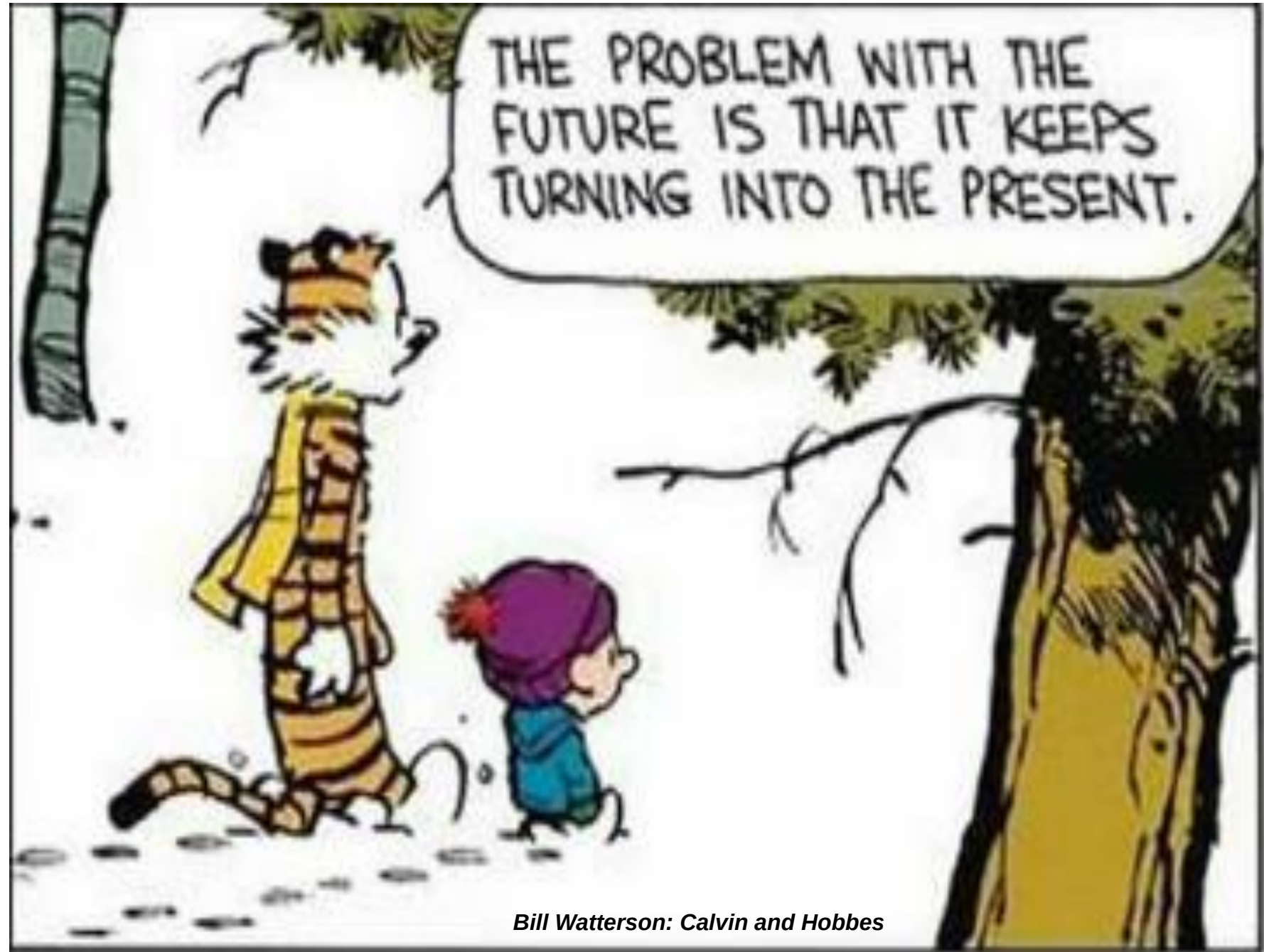
1. Diversity of futures research methods and methodological frameworks?

The Problem Concerning the Future?

----->

Thick Present

(Prof. Roberto Poli
Trento University, Italy)



FUZZY CONCEPT OF FUTURES?



Examples of relevant questions posed by students:

- Has the future always existed?
- Does the future have a beginning?
- Will the future always exist?
- Does the future have an ending?

What is your question?

YES, WE CAN

EXPLORE THE FUTURE

– HOW?

Principles + Approach + Methods

FUTURES STUDIES METHODOLOGY

- Interdisciplinary territory
- Uses methods and tools from other disciplines
- Develops methods and techniques as specific to futures field
- Other disciplines adopt futures methods (e.g. urban planning)



Taxonomy of Futures Research Methodology

- Quantitative vs Qualitative Methods
- Normative vs Exploratory
- Positivism vs Hermeneutics
- Empirical (focus on external change)
vs. Critical & Integrative
(focus on balance btw internal and external factors)



Diversity of methods and their evolution

- Delphi
- Scenario (...backcasting)
- Modelling, simulations
- Statistical analysis
- Technology roadmaps
- Futures Wheel
- Futures Table
- Futures Matrix
- PESTEC
- CATWOE
- ACTVOD
- Megatrends
- Weak signals
- Wild cards/black swans
- Causal Layer Analysis (CLA)
- Discontinuities
- What if?
- Futures window
- Futures workshops...



How to Explore Our Futures?

Futures studies is a discipline closely related to the social sciences and arts. As a discipline, it is based on interpretations on the nature and reliability of future-related knowledge, which also connects it to the exact natural sciences. The first edition of this book was published in Finnish in 1993. This first English-language edition is based on the third, updated edition, published in 2013 and containing new methods and articles. 25 years ago, futures studies was still finding its form in Finland and elsewhere in the world. Today, it is a more established field among the sciences. In Finland, there is now both a master's and a doctoral programme in futures studies. The writers of the book are largely the same as in the earlier, Finnish-language editions, but we have also included contributions from new experts of Finnish futures studies.

Besides presenting methods, the writers reflect on the position of futures studies compared to other fields. The methods introduced in the first edition of the book are still important. We now have a broader understanding of scenarios and the different methods used to create them. In addition, the development of new methods and the use of new opportunities, e.g. for the Delphi technique and we can even speak of an internationally high-level, Finnish school of Delphi.

Participatory methods, such as the Delphi technique, have developed considerably in 25 years. A basic understanding of participatory methods is important for everyone who is interested in futures studies and its applications. The book is also well suited to be used as a futures studies textbook.

- **Dozens of methods!**
- **Participatory methods!**
- **Agency and action – pioneer analysis** (Heinonen 2017)

How Do We Explore Our Futures?

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How Do We Explore Our Futures? Methods of Futures Research

Sirkka Heinonen
Osmo Kuusi
Hazel Salminen
(eds)



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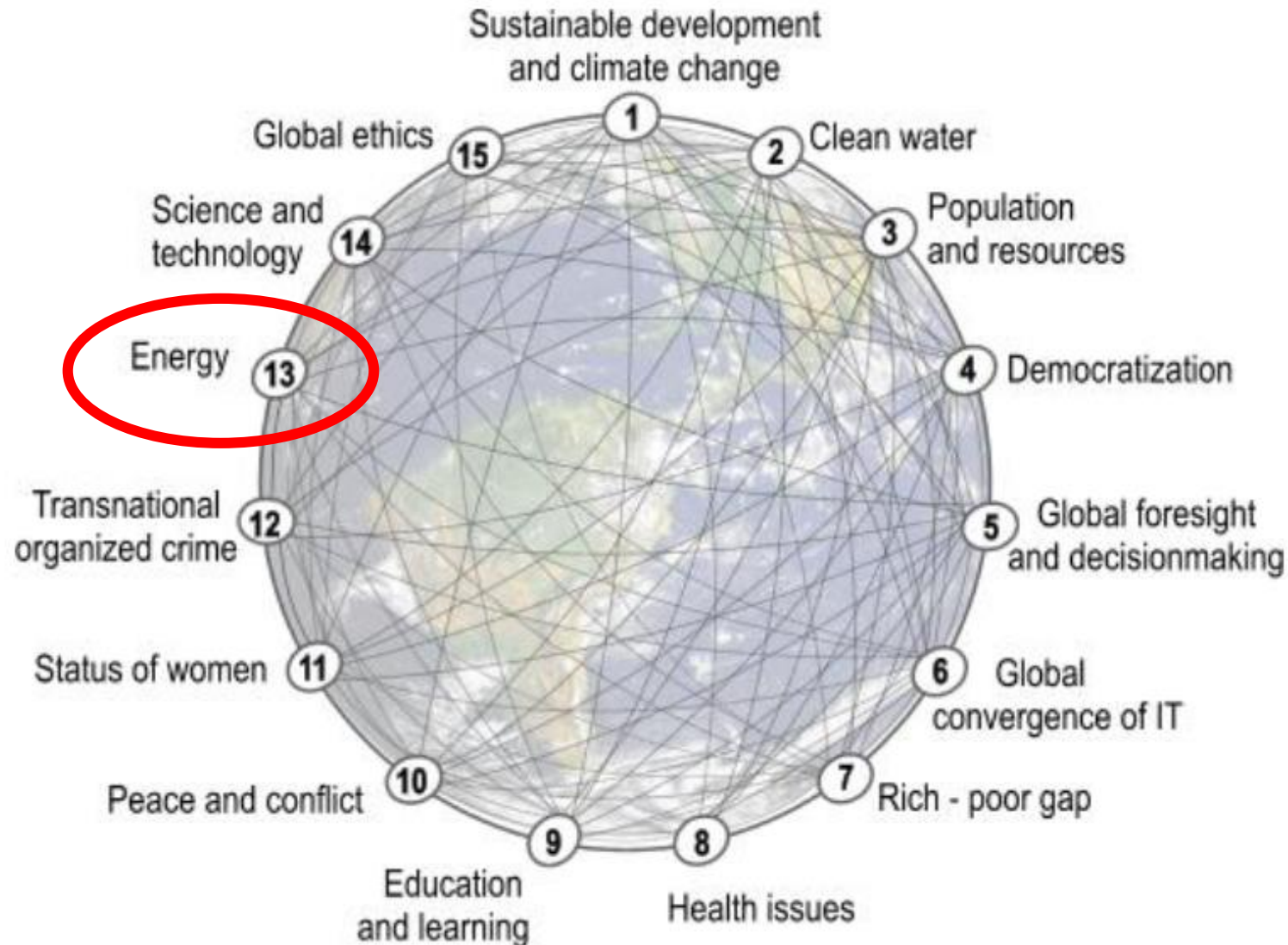
Methodological Frameworks

UN Sustainable Development Goals to Make the World a Better Place



Methodological Frameworks

Millennium Project's 15 Global Challenges



- 
- | | | |
|---|---|---|
| 1. Introduction to Futures Research Methodology | 14. Substitution Analysis | 27. Using Vision in Futures |
| 2. Environmental Scanning | 15. Statistical Modeling | 28. Normative Forecasting |
| 3. Text Mining for Technology Foresight | 16. Technology Sequence Analysis | 29. S&T Road Mapping |
| 4. The Delphi Method | 17. Morphological Analysis | 30. Field Anomaly Relaxation |
| 5. Real-Time Delphi | 18. Relevance Trees | 31. Agent Modeling |
| 6. The Futures Wheel | 19. Scenarios | 32. Chaos and Non-Linear Dynamics |
| 7. The Futures Polygon | 20. A Toolbox for Scenario Planning | 33. Multiple Perspective Concept |
| 8. Trend Impact Analysis | 21. Interactive Scenarios | 34. Heuristics Modeling |
| 9. Cross-Impact Analysis | 22. Robust Decisionmaking | 35. Causal Layered Analysis |
| 10. Wild Cards | 23. Participatory Methods | 36. Personal Futures |
| 11. Structural Analysis | 24. Simulation and Games | 37. State of the Future Index |
| 12. The Systems Perspectives | 25. Genius Forecasting, Intuition, and Vision | 38. SOFI Software System |
| 13. Decision Modeling | 26. Prediction Markets | 39. Integration, Comparisons, and Frontiers of Futures Research Methods |

MILLENNIUM PROJECT

<http://www.millennium-project.org/>

- **f. 1996**
- **65 Nodes**
- **State of the Future Report**
- **15 Global Challenges**
- **FR Methodology**

An aerial photograph of a large, deep blue lake surrounded by numerous forested islands and peninsulas. The trees are a vibrant green, and the water is a deep, clear blue. The sky is light blue with some wispy clouds. The text "2. Horizon Scanning for Futures Signals" is overlaid in white, bold, sans-serif font in the center of the image.

2. Horizon Scanning for Futures Signals

Future As Signals

Horizon Scanning

aims at detecting futures signals and
producing futures images/scenarios



Futures images ≠ Scenarios

Future image = Snapshot or short story of the futures

Scenario = Manuscript of the future with detailed plot and logical path to it

HORIZON SCANNING FOR FUTURES

SIGNALS AT FOUR LEVELS

1. MEGATRENDS = Strong global developments

2. TRENDS = Quite well-known developments

3. WEAK SIGNALS = Signs of marginal emerging issues

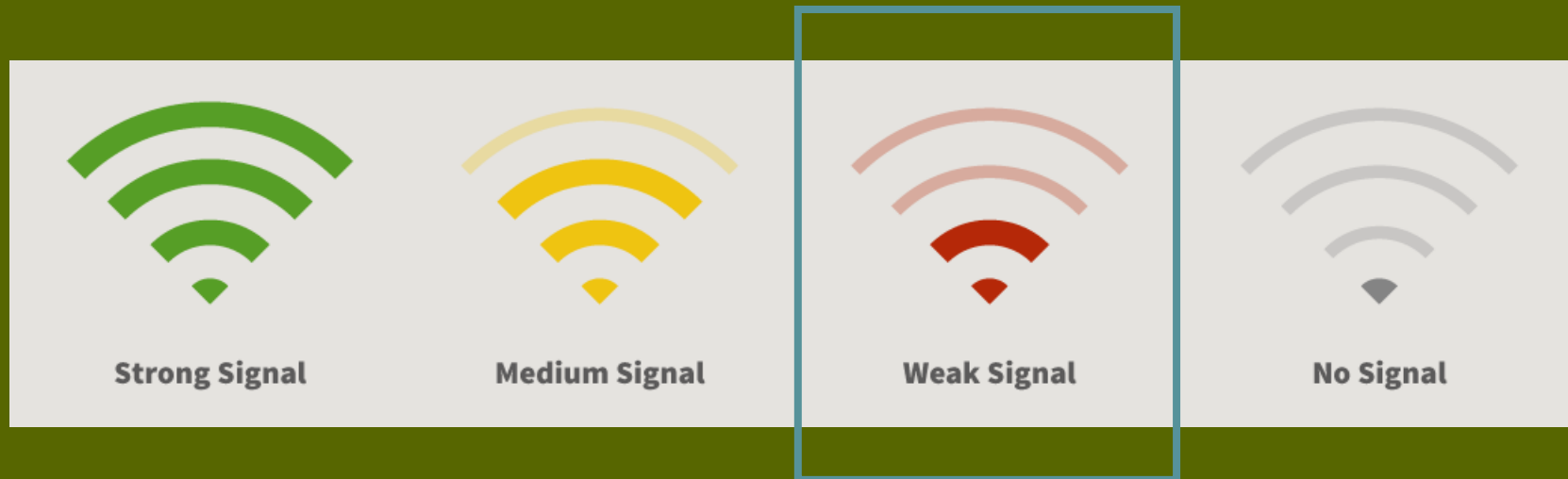
4. BLACK SWANS = Surprising events with radical impacts

GLOBAL MEGATRENDS

- Climate Change & Energy
- Demographic Changes (population growth, ageing)
- Globalisation
- Digitalisation
-

WEAK SIGNALS

- An indication of a possibly emerging trend
- The first expression of change
- Signal indicating "Emerging issues"



MOTORCYCLE TAXI AT THE PARIS AIRPORT



Plastic fibres found
in tap water
around the world



Futures Window

- **A visual presentation** of possible weak signals. Viewing the images opens up futures thinking, subjective interpretation and impact.
- **Aims at developing** the viewers' futures consciousness, by opening up innovative futures thinking through visual stimuli.

BLACK SWANS



- The concept of black swans was coined by Nassim Nicholas Taleb (2007).
- “Human history is mostly shaped by surprising events.”

WILD CARDS, BLACK SWANS, X-EVENTS

- Surprising **change factors** which **unexpectedly** divert the course of events to **uncertainty**
- **The characteristics of a wild card:**
 - Low probability + high impact



Examples of Past Black Swans

- The collapse of the Soviet Union in the 90's
- The invention of the world WWW and its rapid spread in the 90's
- 9/11 terrorist attack in 2001
- Tsunami in South-East Asia in 2004
- Global financial crisis 2008
- The Arab Spring 2011
- Donald Trump presidential candidacy (?)



Rising Black Swans

- Black swans can be unfortunate or fortunate (world war I vs. penicillin), and they can be human-made or natural phenomena.
- As our world becomes ever more complicated and complex, the number of black swans is likely to increase.



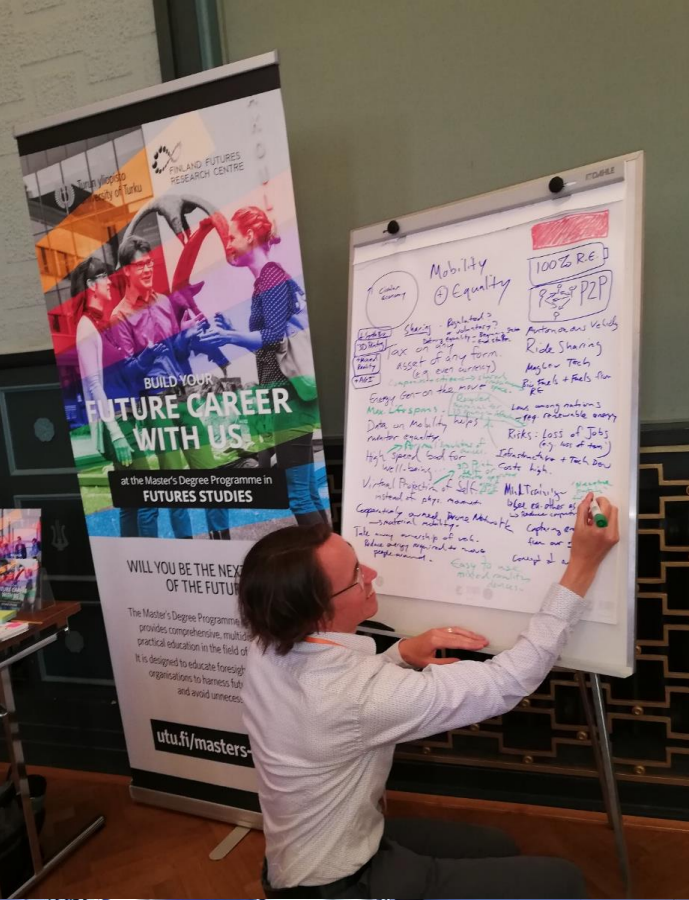
EXERCISE AT LECTURE

1. Imagine a Black Swan (= sudden event) **that** could happen and have a strong impact on energy (**system, sources, technology, legislation, use etc....**)?
2. Describe its impact briefly



An aerial photograph of a vast, deep blue lake surrounded by numerous islands and peninsulas, all densely covered with green coniferous forests. The sky is a clear, pale blue with a few wispy white clouds. The water's surface is calm, reflecting the surrounding greenery and the sky. The overall scene is a serene and natural landscape.

3. Futures Cliniques and Scenarios



Workshops in futures studies:

- Robert Jungk, Ruediger Lutz and Norbert R. Muellert developed the *futures workshop* - method 1970s.
- **Aim is to develop new ideas or solutions to social problems**, generated by a group of people.
 - Not just anticipating but co-creating → social learning
- **Suitable for** all kinds of participant groups, including children.
- **Aim to create** empowering, desirable futures images with steps to their realisation
- **Social learning:** Responsibility/tasks for the practical realisation of the images shared among the participants.





Futures Cliniques

- Specially structured futures workshop
- As an innovative process for learning systematic futures thinking and easy-to-use methods

Futures Clinique Process

1. Extensive back office research → background material provided to workshop participants
2. Fast-advancing workshop utilising different foresight methods and provoking out-of-the box thinking
3. Documentation and analysis of the results

See *Heinonen & Ruotsalainen 2013*

Metaphor from medicine:
symptoms – diagnosis – prognosis
- recipes



Futures Clinique methods

that can be used at the workshop phase

A Futures Clinique always tailored to the topic

Suitable methods to be used inside a Futures Clinique include:

- **Futures Provocation**
- **Futures Window**
- **Futures Wheel**
- **Futures Table (e.g. PESTEC)**
- **Identification and impact analysis of weak signals**
- **Identification and impact analysis of black swans**
- **Scenario narrative/ policy recommendations/
manifesto**

Examples of Futures Cliniques

Topics: media and journalism, livable cities, renewable energy, aging society....

Recent example: Six Neo-Carbon Energy Futures Cliniques:

Identifying several pathways and factors that may drive a third industrial revolution and the realization of the neo-carbon energy system.

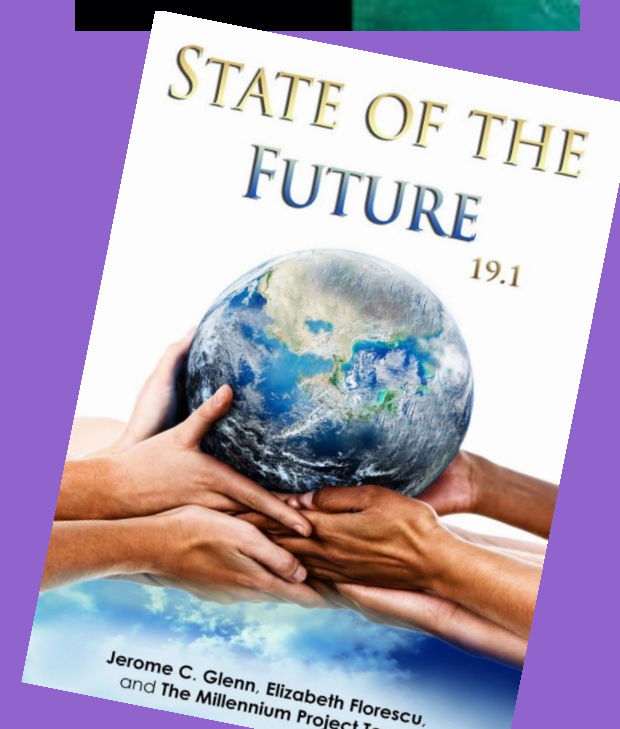
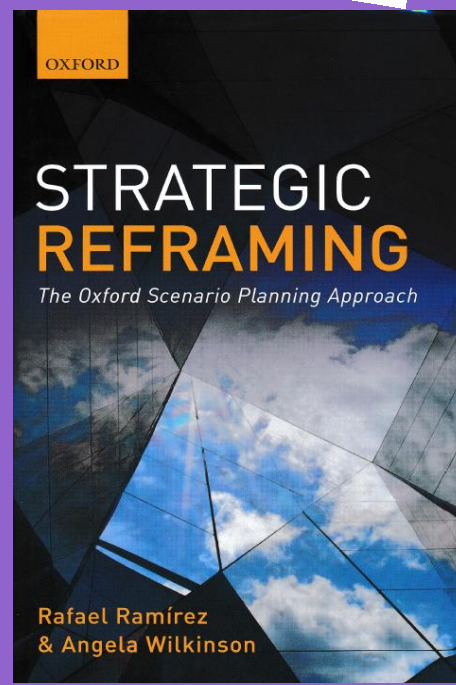
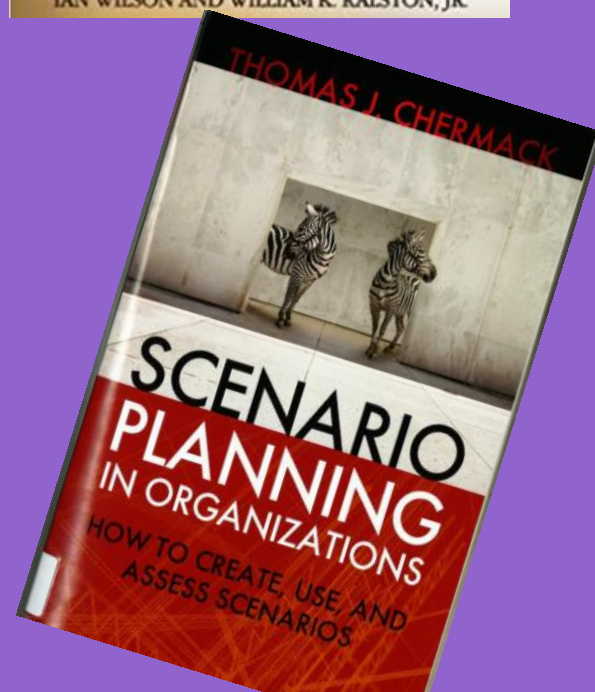
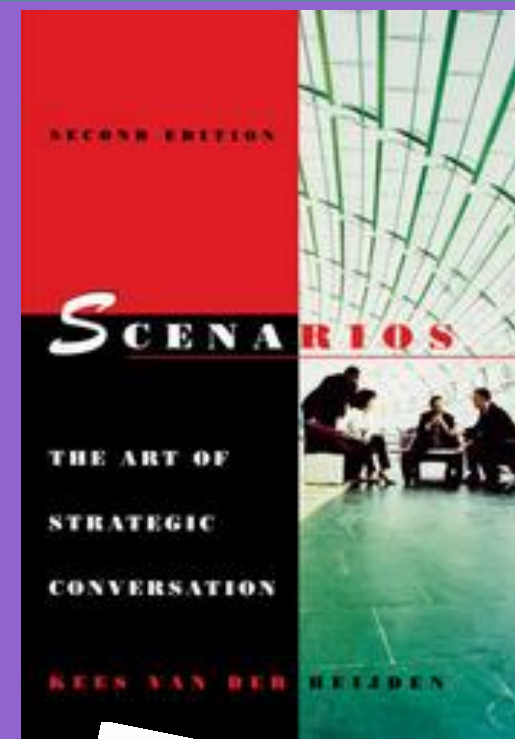
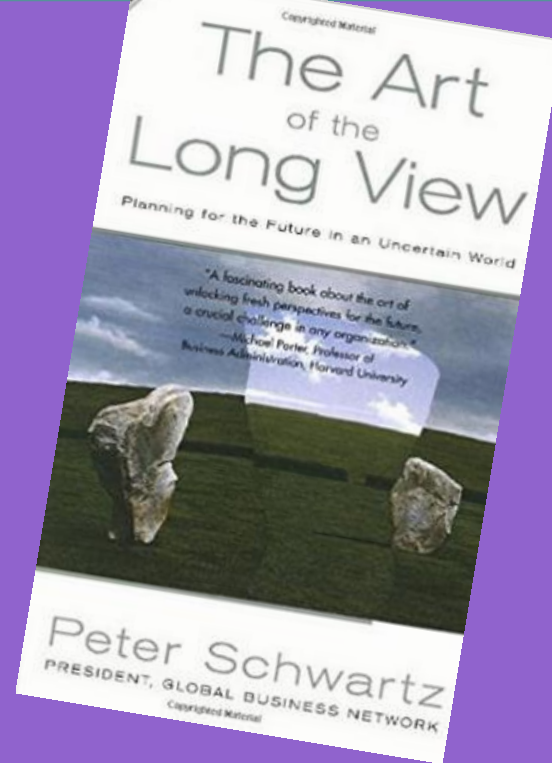
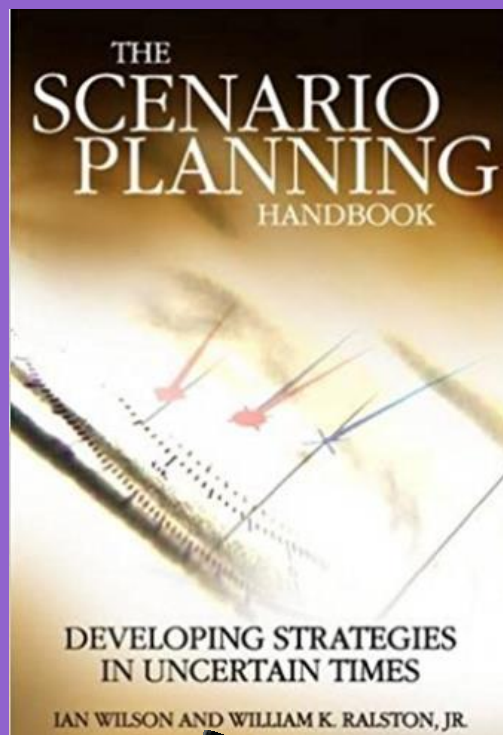
Neo-Carbon Energy Futures Clinique Participants

6th May 2015 at SITRA

- **Ca 70 experts from different backgrounds;** representatives from government, business and third sector, project members, professors, scholars, students, media...
- **Participants divided in 8 moderated groups** working with 4 scenario sketches

Scenarios at the Core of Futures Thinking

- **Crucial role in futures studies.** Applied ever since the beginning of the field in early 1950s, Dutch Shell and RAND
- Herman Kahn borrowed **the term “scenario”** from the theater world and drama – it consists of a stage, plot, actors, sequence of action, for military and strategic purposes.
- Manuscripts of the future - **Description of a future** + paths
- **Different types** of scenarios (not a single method)



The Four Generic Alternative Futures

by Jim Dator, Hawaii University (2009)

1. Continued Growth



2. Collapse



3. Disciplined Society



4. Transformation

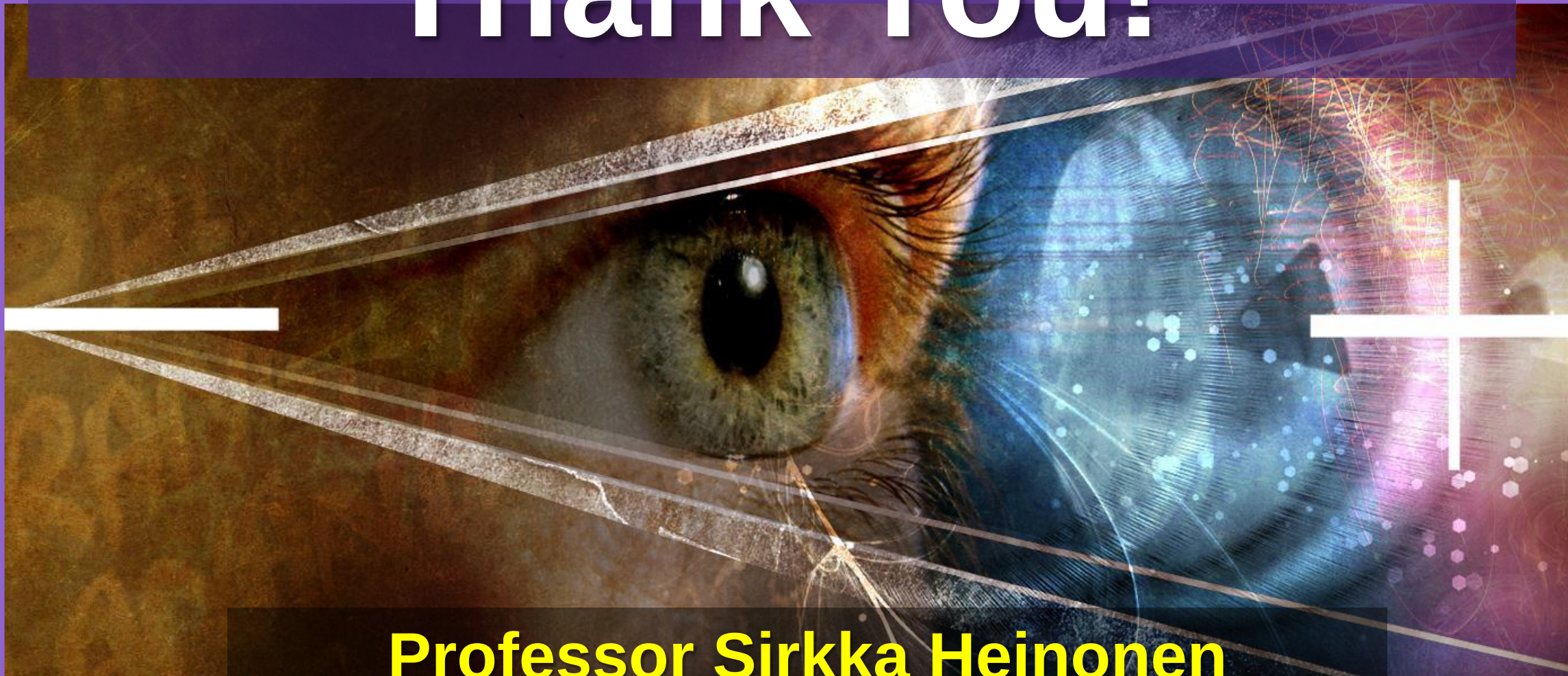


USING THE METHODS

Methods gives us the ladder to climb up the “futures steps” towards making the world more sustainable



Thank You!



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How To Explore Our Futures?

Information about the methods book

- **Editorial Board:** Prof. Sirkka Heinonen, Adj. Prof. Osmo Kuusi & MSc Hazel Salminen
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INQUIRIES & ORDERS

- **Printed book: EUR 45 + postage** (discounted price EUR 40 for members of the FSFS)
E-book: EUR 25 (member price EUR 20)
- **For orders, visit our online shop:** <https://holvi.com/shop/Tutuseura/section/julkaisut-publications> **OR** contact directly Hazel Salminen at the Finnish Society for Futures Studies, Finland, at this email: toimisto@futuresociety.fi