CLEAN DISRUPTION FOR ABUNDANT FUTURES

Professor Sirkka Heinonen & FFRC Neo-Carbon Team

International Symposium "Clean Disruption for Abundant Futures"
7th-8th June 2016, Kiasma, Helsinki
CLEAN DISRUPTION FOR ABUNDANT FUTURES

• International Symposium organised by Finland Futures Academy (FFA) and Finland Futures Research Centre (FFRC), University of Turku, the Tekes-funded Neo-Carbon Energy Project (www.neocarbonenergy.fi)

• Millennium Forum (by Helsinki Node of the Millennium Project)

• Futures Clinique & Summer School (FFA)
WHO WE ARE
CLEAN DISRUPTION FOR ABUNDANT FUTURES

Focus on societal disruptions, transformations and discontinuities enabled and fostered by the Neo-Carbon energy system.

Neo-Carbon energy is a system in which energy is produced by solar and wind and stored in synthetic hydrocarbons. Energy would be clean, cheap and produced in a distributed way (e.g. by households).
LIKE OUR SOCIETY, THE FUTURE ENERGY SYSTEM IS INCREASINGLY DECENTRALIZED
OBJECTIVES

The objective of this futures clinique is to address possible socio-economic futures as related to the neo-carbon energy system and the convergence of energy and internet

- \textit{\textbf{Clean Disruption}}

In such a system ample resources would be available. This, in turn, will affect social relations and communities of the future.

- \textit{\textbf{Abundant Futures}}

What are social relations, communities and workplaces like in a future of renewable energy and ubiquitous communication?
EXPECTED OUTCOMES

• The main outcome of the event: four different futures images produced by the work groups, inspired by keynote presentations and supported by background material.

• The futures images are used to enrichen and elaborate the transformative scenarios of the Neo-Carbon project (*Radical Startups, Value-Driven Techemoths, Green DIY Engineers, and New Consciousness. See descriptions: [http://www.neocarbonenergy.fi/impacts](http://www.neocarbonenergy.fi/impacts)*)

• The results will be documented as a report, to be published and sent to all the participants.

• Students will do assignments/essays

• Futures learning process (orientation, approaches & methods)
Critical triangle of humans, nature and technology

Energy is as much about technology, environment as about people (lifestyles, values, politics)

"Promises and perils of new technologies" -> NBIC AI

Interview of José Cordeiro at VTT 10 yrs ago: https://sites.google.com/site/futuremediac/videos--presentations
(please scroll down, the video is almost at the bottom of the page)
Collapse vs Co-creation

Jared Diamond Collapse (2005) claims that humanity collectively faces many of the same issues as historic societies – Eastern Islands

D.H. Lawrence Apocalypse (1930) D.H Lawrence claims that earlier civilizations sustained a lot of wisdom – we have lost a sense of wholeness
D.H. Lawrence warned us not being entangled in a humanless technology which would destroy us until we changed our minds. We should pay attention to what ancient civilisations knew. Instead of mere rational thinking, a combination of hearts & minds is needed. For this purpose he recommends the humankind to develop the concepts of sense-awareness and sense-knowledge.

FUTURES CLINIQUE

Futures Clinique is a special futures workshop that utilises various foresight methods to probe possible and preferred futures (not probable). Much attention to discontinuities, disruptions, transformation.

It aims at strengthening and deepening systematic futures thinking and foresight of the participants through a co-creative process.

In this futures clinique five foresight methods are used:

- Futures Window
- Futures Wheel
- Futures Table (PESTEC)
- Futures Image
- Black Swans

For further information see:
Heinonen & Ruotsalainen 2013,
FUTURES WINDOW

- Image cavalcade of visual weak signals
- Originally developed by Elina Hiltunen
- No right or wrong answers – viewing is for stimulating futures thinking through futures visualisation

For more information:
FUTURES WHEEL

Futures Wheel is a mindmap-like method developed by Jerome Glenn of the Millennium project.

It consists of two “circles”. Originally the first circle opens up direct impacts of a topic and the second one its indirect ones.

Modifications: the first circle is used for free ideation, and the purpose of the second circle is to analyse the consequences of the ideas, or their concrete applications.

PESTEC TABLE

= a futures table for the systemic analysis of a phenomenon. It studies the phenomenon from six dimensions:

 Political (P)  Economic (E)  Social (S)  Technological (T)  Environmental (E)  Culture/Citizen/Customer (C)
FUTURES IMAGE

Futures image is a “proto scenario”: a concrete depiction of a possible future of a certain theme (without detailed paths)
Black Swans are highly improbable, hard to anticipate and surprising events with radical consequences on practically everything.
SESSION I: FUTURES WHEEL

Group 1
Moderated by Sofi Kurki

Group 2
Moderated by Sakari Nisula

Group 4
Moderated by Nicolas Balcom-Raleigh

Group 5
Moderated by Merja Lang

Groups 3 (moderator Hazel Salminen) and 6 (moderator Amos Taylor) will work outside the seminar room.
What is Disruption?

Sirkka Heinonen
&
Sakari Nisula
What is Disruption?

- Disruption happens when a change in an industry leads to a fall of the old one replaced by the new one (Seba 2014)

- A process when a disruptive innovation based on disruptive technology outperforms its competition and causes market leaders (incumbents) to fail (Christensen 1997)
Disruptive technologies & innovations

- Disruptive technologies and innovations are used for value creation/starting the process of disruption.
- **Technology** – “means the processes by which an organization transforms labor, capital, materials, and information into **products** and **services** of greater value.”
- **Innovation** – “refers to a **change** in one of these technologies.”
- A new technology, method, application, or way of doing things that leads to disruption in an industry.

Source: Christensen 1997
Disruptive innovations typically...

- enter the market from the low-end or create a new market
- are more convenient, simple and cheaper than mainstream products
- initially inferior in performance
- in the end, outperform and replace the incumbent of the market and disruption happens
# Examples of disruptive innovations

<table>
<thead>
<tr>
<th>Disruptor</th>
<th>Disruptee</th>
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<tbody>
<tr>
<td>Car</td>
<td>Horse</td>
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<tr>
<td>Personal computers</td>
<td>Mainframe and mini computers</td>
</tr>
<tr>
<td>Cellular phones</td>
<td>Landline phones</td>
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<tr>
<td>Discount retailers (Walmart)</td>
<td>Department stores</td>
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<tr>
<td>Digital photography</td>
<td>Kodak</td>
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Clean Disruption

- **Clean disruptions** disrupt industries using polluting energy sources (fossil fuels: oil, natural gas, coal, uranium)

- Superior technologies and business models are introduced to the markets making the old ways of energy production and use, as well as, transportation obsolete

- Three major clean disruptions are
  - i. electric vehicles (Tesla)
  - ii. autonomous/self-driving cars (Google)
  - iii. technologies in solar and wind power

Source: Seba 2014
Clean Disruption

According to Seba (2014) clean disruption is not only possible, but rather inevitable and it will be over by 2030.
REFERENCES


What are Black Swans?

Sirkka Heinonen
&
Juho Ruotsalainen
Black swans

- Black Swans are highly improbable, hard to anticipate and surprising events with radical consequences on practically everything.
The concept of black swans was coined by Nassim Nicholas Taleb (2007).

“Human history is mostly shaped by such events.”

BLACK SWANS
BLACK SWANS

Black swans are about discontinuities and unexpected – manifestations of unlinearity. Black swans can be seen as a complement to the standard, linear way of anticipating the futures by trend analysis.

Trying to anticipate possible black swans and prepare for them helps in understanding and tackling discontinuities.

One practical method of anticipating black swans is to analyse clusters of weak signals (new, still rare but possibly strengthening phenomena).
Black swans can be unfortunate or fortunate (world war I vs. penicillin), and they can be man-made or natural phenomena.

As our world becomes ever more complicated and complex, the number of black swans is likely to increase.
BLACK SWANS

Examples of past black swans

- The collapse of the Soviet Union in the 90’s
- The invention of the world wide web 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 (?)
REFERENCES AND FURTHER READING


1. Identify possible black swans. What unexpected events or issues could occur to change the future discussed in your group?

2. After generating possible black swans, try to imagine one black swan that promotes the future and another that hinders the future discussed in your group.

The black swan can come from “outside” or result from the futures image and/or disruptions identified in PESTEC table.
3. Generate or choose one black swan to give to another group (clockwise).

4. Testing the resilience of the futures image with black swan identified in another group. How would the black swan you received change your futures image?
Futures Provocation and Dialogue

9:15–9:30  Registration and Coffee
9:30–9:45  Opening words and introducing the aims of the 2-day workshop (Sirkka Heinonen)
9:45–10:45 Keynote as Futures Provocation: Clean Disruption, EnerNet, and Energularity (José Cordeiro)
10:45–11:30 Towards a New Consciousness - Commentary remarks by Christian Breyer

Questions & Answers session – Questions posed by the audience

11:30–12:15 Lunch

12:15–13:15 Introduction to Neo-Carbon Energy project – How to reach 100% renewable energy system? (Christian Breyer)
13:15–13:30 Futures Clinique as a method (Sirkka Heinonen)
13:30–13:45 Futures Window – Cavalcade of Visual Weak Signals

Session I

13:45–14:00 Introduction to the work
14:00–15:30 Method: Futures wheel
15:30–16:30 Cross-Fertilization (all groups together)
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tr>
<td>9:00–9:30</td>
<td>Coffee</td>
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<td>9:30–10:15</td>
<td>Innovations from the Energy Internet: Cases from the Singularity University and beyond (José Cordeiro)</td>
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<td>10:15–11:00</td>
<td>Systems of self-organising work (Markku Wilenius)</td>
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<td>11:00–11:30</td>
<td>Questions &amp; Answers</td>
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<td>11:30–11:45</td>
<td>Futures Provocation: Ten Illusions of Energy (Pasi Vainikka)</td>
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<td>11:45–12:30</td>
<td>Lunch</td>
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<td>12:30–12:40</td>
<td>What is disruption?</td>
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<td>12:40–14:00</td>
<td>Method: Futures Table PESTEC</td>
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<td>14:00–15:00</td>
<td>Black Swans</td>
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<td>15:00–16:00</td>
<td>Cross-Fertilization (all groups together)</td>
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<td>16:00–16:15</td>
<td>Concluding Remarks</td>
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MBA, Ph.D. Experience from over 130 countries across the world on technological foresight, futures studies, globalization, economic integration, long-term development, energy, education and monetary policy. Director of the Single Global Currency Association (SGCA), the Lifeboat Foundation, co-founder of the Venezuelan Transhumanist Association, the Internet Society Venezuela Chapter.
CHRISTIAN BREYER

D.Sc. (Tech.), Professor of Solar Economy at Lappeenranta University of Technology (LUT). Conducts research and teaches solar economy, energy scenarios and market mechanisms. Background in physics, energy systems engineering and business.

Chairman of the Scientific Board for the Energy Watch Group, co-founder of DESERTEC Foundation, and expert in International Energy Agency’s work on solar photovoltaics. Around 100 scientific articles and books as author, co-editor and contributor.
SIRKKA HEINONEN

Professor of futures studies since 2007 at FFRC. Technology foresight, urban futures, future of knowledge society, media and communication. Guest Professor at University of Science and Technology of China. A member of the Club of Rome. Co-Founder and Chair of the MP Helsinki Node.
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Professor of futures studies since 2004 at FFRC. Research on innovation and creativity in companies, economic transformation, information society, futures of mobile technology, futures of food consumption, role of culture within economies, and futures of media. UNESCO chair and a member of the Club of Rome. Co-Founder of the MP Helsinki Node.
PASI VAINIKKA
VTT

Principal Scientist at VTT Finland. Adjunct Professor at LUT. Coordinator of Neo-Carbon Energy project, the largest renewable energy research project in Finland. Holds academic background and experience in energy systems, energy economics, inorganic chemistry, and innovation management.