OFF 2011 – UNEDITED FINAL NOTES

Welcome

Open space generative dialogue; joint publications; new collaborations

2005: 2 books came out of first forum

2008: Angela, Roland, Diana, Betty, Chris, Rafael developed "beyond financial crisis" scenarios; several working papers; Cynthia organized workshop plausibility in Arizona

"Scenarios are a Trojan horse to get into the policy makers' house"

Complexity: Metaphor used in scenario planning, but need deeper understanding and usage, epistemological differences b/w scenarios and complexity

Application of scenario planning -- like future of private equity paper in FT today!

ROUND 1

GROUP: Tools and Strategies for Risk and Uncertainty

Start theme: Clients want a number

- Client are not satisfied with 'stories' about black swans, but want quantification and numbers
- There's a need to distinguish between scenarios that are so chaotic that no numbers make sense and which it does make sense to quantify (unexpected vs. anticipated events in the long tail?)
- Numbers as 'transitional objects': If we have a number, we feel secure. The scenario profession comes to serve a therapeutic role
  - Also a institutional/cultural trend of quantification
  - In the early years, Shell got convinced that figures are not enough, but the management and finance people kept asking for numbers to base decisions on.
- Whether to focus on numbers or not depends on the client and the purpose of the scenario
  - People tend to come to scenario people when the numbers fail them
  - The quant figures are more powerful in the short run. You are paid to calm panic, so you go out of business if you do not come up with a number.
  - Not just a quantitative/qualitative dichotomy, but how the two are combined. Sometimes numbers sum up stories too complex to narrate.
- The feedback mechanisms in the financial sector encourage people to grow their books by all means.

Follow-up theme: Is there a way to say "there is no number"?

- How do you explain that in the current 'crazy place', it is not helpful to ask for numbers?
  - Maybe it's not only in the 'crazy place' that people ask for numbers when they shouldn't, it's on all levels, all the time
  - Scenarios are being talked up a lot, but this is not the core of strategy. There also needs to be more interaction between top management and the rest. This was the problem in BP.
- There's no organizational culture for managing disagreement as an asset. Scenarios are supportive of disagreements.
  - Scenarios are for managing uncertainty, but people try and use them for managing risk.
  - The paradox of capitalism: We need to destabilize to create growth, but we wants to avoid risk at the same time.
    - ❖ Managers need to pretend to be in control. When this impression breaks down, trust erodes in the system.
    - ❖ Uncertainty is the price of growth, while control is the price of accept.
  - Redundancy strategy or efficiency strategy. Most companies come efficiency and risk strategy, but the most successful ones allow for redundancy and internal disagreement.

- The 'swiss cheese' model: The unexpected, high impact events happen only when all the holes in each layers of control are lined up
    - Phase transition theory might shed light on when holes are lined up: When the organizational behaviour is far away from the historical mean.
    - But there's no definitive answer. Knowing *when* is impossible: People knew the Arabic region was unstable, but had no idea when an uprising would be triggered
    - Need to carve out a space between saying "this is when it's going happen" and "we can't know anything".
- Write action plans for the first two days after a scenario is realised
    - These strategy processes easily becomes politicised and can break down, but even if they do, it is valuable to have been down that line of thinking
    - In disasters, there is a need to 'improvise', but that's exactly what accountable and transparent institutions cannot do. Action plans might help some of the way, but the paradox remains. The press will attack improvisation at any moment.

What words to use?
- Need to distinguish between perceived uncertainty and real uncertainty, perhaps dependent on sense of control?
- Uncertainty as the combination of dynamism and complexity
    - Dynamism: digital real time communication
- Uncertainty stemming from the external world and uncertainty stemming from the organizational processes
    - Too much focus on megatrends, too little focus on the metanarratives that people live by and that actually shape the megatrends in the first place

Thinking in silos – and how to get beyond
- When people do not talk about the problems, it's a clear sign that something is going to happen. The scarier it gets, the less people want to talk about it.
    - In business, most managers prefer to go down together instead of taking the risk of pretending to be ahead
    - The 'cassandra paradox': In predicting the future, we change the future
- People tend to ignore exogenous risk because "they can't do anything about it" whereas they are happy about endogenous risk because they have monopoly over mitigating them.
- Two ways of relating models and scenarios
- Using scenarios inside a model versus using a scenario to problematize the model
- Only outsiders can ask for the assumptions of the models to be rethought
- Mind-set shift towards interdisciplinarity
    - There is a lack of practitioners, so people are brought in from all sorts of backgrounds
    - But interdisciplinarity is only feasible when you are at the top of your game
        - ❖ Perhaps in the end it will have to grow out of transdisciplinarity
- Businesses jump back and forth between two ways of organising the silos (e.g. business focus vs. region focus). Perhaps the only way to keep things in motion?

Convenor summary: How to sell the idea of scenarios – in face of complexity quantification

5 points
- Human contexts add to/create barriers in engaging with complexity uncertainty
- Preliminary framing as "-ve"
- Psychological and institutional preference for numbers
- Short term costs of scenarios vs long term benefits
- Silo/institutional setting as barriers in scenarios

Two questions:
- How does organisational contexts influence?
- Role of complexity thinking?

GROUP: Appreciating Social Complexity

Complexity: Definitions and Uses / What is social complexity?
- Social complexity is the study of social phenomenon as complex systems (Source: Wikipedia). Social complexity is an overarching theme for almost all scenario / complexity work.
- The difference between Complication and Complexity
    - Complication refers to the static description of a system.
    - Complexity refers to the dynamic/emergent behaviour of the system.
        - ❖ Can result in many outcomes/futures
        - ❖ Attractors effect the flow of the system and therefore its outcomes
            - ◆ Singularities can have unpredicted and large effects on outcomes
                - Ex1) A very influential leader can change the trajectory of a social movement.
                - Ex2) An unpredicted event can change the trajectory of a country.
        - ❖ Attractors can be related to plausible futures in scenario work
    - Complexity links natural sciences (e.g. physicist), economics (economist) and further social sciences
- Complexity expands possible and valid viewpoints about how social systems morph and change
    - Complexity science can help people think "outside of the box" and to stretch their imagination through the formal explanation of how small events can result in unexpected outcomes
    - The dynamism of societies/groups should be appreciated
    - The process of participating in complexity/scenario thinking can be a valid result on its own – it's not just about the future.

Complexity science and scenario thinking
- Complexity sciences perceived to try to integrate a lot of variables, show real system dynamics and group behaviour / bifurcations as well as to be mostly quantitative
- Scenario planning perceived to be slow and purely qualitative
- Scenario thinking (more useful term tan scenario planning)
- Scenarios -> predetermined elements -> Pierre Wack combined somehow complexity science and scenario thinking as I was a genuine system thinker, a keen observer and went to the field to collect 'raw data' which he integrated thereafter in his mental model
- Trust vs. control?
- Intuitive vs. system thinking?
- Models are 'crushers' to thinking. You have to understand model outcomes. 'Models do not make decisions, people do.'

Politics, Power and Repression
- Scenario and Complexity thinking often seeks to influence decision makers
    - BUT those in power sometimes repress negative futures
        - ❖ Ex) People who suggested that the financial sector was in trouble prior to the recession
    - BUT exclusion of tale scenarios by decision makers -> tendency to simplify everything
    - Often social complexity themes(e.g. disruptive events) have low acceptance with management
- Consequence: People do continue in the old model thinking

- Do decision makers really have that much influence?
  - ❖ It seems that social systems are self-sustaining and therefore we might be overemphasizing the role that decisions makers / individual leader (e.g. Greenspan) play
  - ❖ However, others argue that decision makers have a large impact on the trajectory because they can function like the 'singularities' mentioned earlier.
  - ❖ Maybe opinion leaders are more important than traditional 'decision makers'
- Powerful organizations get into habits that are known to be ineffective
  - Ex) The continued use of immunization as a response to viral outbreaks
- Political systems seek to simplify situations and shut out certain possibilities
  - Futures and Complexity Science can help change this mental framing
  - Perhaps complexity can be seen as a good thing because it allows transformation
  - Trust and Participation vs. Control and Efficiency
- Stakeholder dialogue: balance of involvement vs. efficiency has to be balanced
- Resilience of society is dependent on societal characteristics:
  What does it take to break / keep a social system?
  - E.g. power distance
  - E.g. cultural values
  - E.g. societal response capacity (e.g. Katrina USA 2005, EQ Haiti 2010, EQ Japan 2011)

Conclusions
- Be a brilliant communicator and incorporate scenario stories to influence decision making.
- Good institutions succeed in understanding and appreciating social complexity
- Stretch our imagination!
- "Radical particle" metaphor for social complexity
- System thinking can challenge current assumptions even in complexity sciences

Open questions
- How do we integrate externalities to increase social equity and sustainability / resilience of a society
- Compare complexity science and scenario thinking methods by using 1-2 illustrations
- Vocabulary exchange between complexity science & scenario thinking is key
- Intuitive vs. quant model systems – how to bridge the gap?

GROUP: Taming Wicked Futures

Main themes:
- Theories of change and our assumptions of how changes take place
- Complexity as providing a theory for non-linear change
  - Complexity is an integral part of scenarios
  - Tools are to open up conversation
    - ❖ This is how to get people to open up
    - ❖ Should be emphasizing scenario dissemination - what do you do with it, not just about making scenarios!
      - ◆ Scenarios need to seed into society to grow
    - ❖ Foresight is going through the motions, rather than doing activity.
    - ❖ We are educated with linear models - no theory for change (except gradual change)
      - ◆ Complexity does have a scenario for change.
      - ◆ Looking for the presses that create change.
      - ◆ Social system change - change does not need to be an externality - could be learning.

- The change takes place in the learning.
    - Affect on parameter changes.
- In social systems, change doesn't have to be external
    - Learning and parameter change,
    - Endogenous social change "move to different attractor"
    - Too many people wanting make lock in function - no desire for change
- How does change occur in different social systems?
    - Discount rate of making good change - the future will deal with the problem better than we can.
    - (Gene Sharpe's work).
        - People became active because they had nothing else to do (Arab spring - no job, what to do next?).
            - Then shut off the intent - the change - and people are mobilized
            - Can't prove shutting off internet mobilizes, but you can look at if shutting off the internet will increase other connections (family? friends?)
        - You can over change and system backlash.
            - What unintended consequences have we brought out (Iraq)
    - Tunisia
        - Wiki leaks was the biggest push
            - Internet opened up even though it was shut down by the government.
    - A change means there are more work arounds.
        - Things change when things go from unfortunate (undesirable) to unacceptable.
    - Feedback does not have to linear.
        - Are systems linear up to a point, or are they always non-linear.
    - Are all open systems the same? or are they connect to the same core, but otherwise different?
- Do we "overchange" and backlash?
    - Unintended consequences.
    - Economics - next generation is richer, therefore can deal with issues better,
        - Will our children be richer? as we take away our resources.
- What does complexity science offer us about how social change occurs?
    - Explaining change over the situation.
        - Athletes explain their success, not at looking at how they are right now, but the process.
- Not just relationships in a system
    - It is the thinking.
    - Scenarios are a tool to change how we think.
        - Changing attitude of local populations is crucial for success of entrepreneurs.
- On a high level
    - Networks
- "Things change when things move from being unfortunate to unacceptable"
- Why scenarios as a tool can enable change
    - New hope
    - New sense of what is unacceptable
    - Dissemination as "planting seeds"
- In complex systems
    - You can only point to things that are necessary for change, but never a sufficient set
    - Randomness, same set of factors lead to different outcomes

- Unknowability – open systems
- Mistake
  - Small progress = small effects
  - Large progress = large effects
  - Multiplicity of change
  - Understanding consciousness and calculations
  - Role of humiliation
    - ❖ Linked to unfortunate & unacceptable
  - If we are looking for one fundamental and outmoded assumption = controllability
    - ❖ If controllability is an illusion, we need a different way of working with social systems
- Is there a way in which complexity science can provide a way to reconcile different perspectives/values?
- Perception of uncertainty:
  - Uncertainty as a state
  - West – it is able to be controlled and overcome – arrogance of expertise
  - Are things intrinsically unknowable?
  - Accepting complexity
- Control gets a bad rap
  - The things we can control we call "success"!
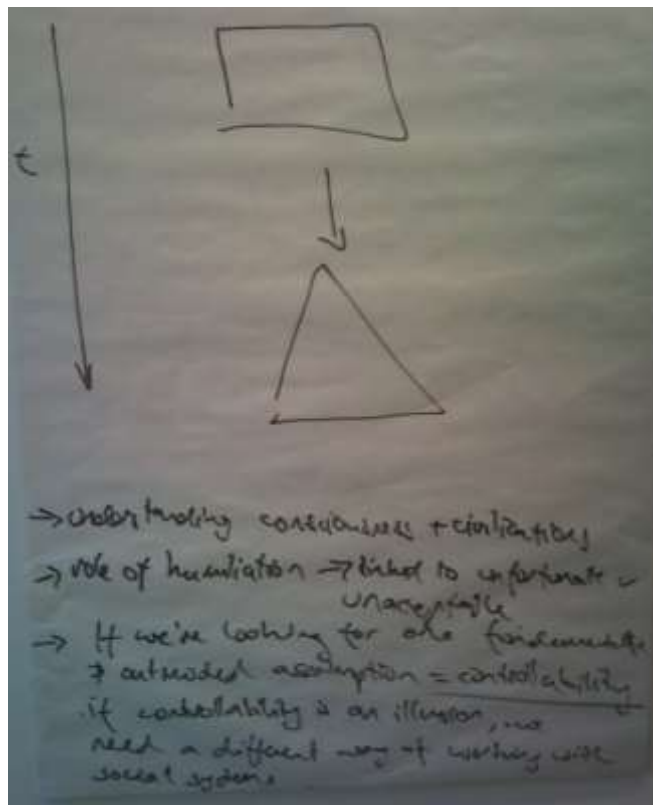
The J Curve by Ian Bremmer was discussed.

End question: Can complexity provide a theory of change for scenarios and other futures work?

(Like "telling the pope there are other Christians")

- Complexity on how the world changes
- Therefore complexity on scenarios worth as a way of dealing with the world
  - Contribute to helping people deal with the situation they are in = high complexity .
- What does complexity Science tell us about ……
- How do scenarios characterize the way people see the world they are in?
- Issues around relationships and thinking
- Micro-models with macro effects.
- Scenarios - complexity as allowing plausibility tests.
- Usefulness = dissemination.

GROUP: Governing Complex Futures

Enablers and Challenges in Integrating Complexity and Scenarios
- Participants each contributed what they considered as being enablers and challenges in analysing and acting on complexity research and scenario work in their respective domains.
- Enablers

- Recent crisis events like Japan and the Middle East highlight the importance of anticipating complex futures, generating strong demand from decision makers
- An element of serendipity – some scenarios come true and enable the process as a whole to be taken more seriously by otherwise sceptical decision makers
- Robust and well-researched products
- Support from decision makers
- Challenges
  - Some policymakers tend not to pay attention to scenarios unless they contain predictions that are seen as "accurate" in some way (e.g. scenarios in Kenya were taken seriously because after one exercise, three of the four postulated scenarios came true)
  - Predictions that come to pass tend to lend legitimacy to scenarios
  - Mainstreaming holistic thinking on the part of academics and policy-makers
  - Filtering out vast amounts of information that meaningfully inform scenarios
  - Cultural divide between the private and public sectors in regard to receiving and utilising scenarios
  - One needs to pay due attention to the extent to which models capture reality
  - While time horizon informs and affects scenarios, determining time horizon is difficult
  - In Kenya, typical time horizon for scenarios tends to be 20 years
  - Religious and cultural backgrounds can preclude scenarios

Ingredients That Would Enable Futures Work to Proliferate - Organised around 12 P's

- Products: futures work needs to produce products that are relevant and timely in informing policy-making
- Platforms: institutions such as meetings among government ministries need to facilitate futures work
- Process: a robust research and engagement process is critical
- Pluralism (Methodological) is crucial, and we must avoid being wedded to single tools
- People: provide training environment which will engage them and facilitate experiential learning
- Psyche: be sensitive about the cultural, institutional, spiritual, and religious motives
- Protection: provide safe haven for futures work
- Provisional: be mindful about the fact that futures work is provisional and needs to be constantly adapted
- Partial: also bear in mind that futures projects do not (and neither must they) encapsulate all relevant realities given a situation; they need to be taken in tandem with other forms of analysis
- Pragmatic: be practical about what needs to be done and how they might best be executed
- Political: be sensitive also about the political climate that would foster or discourage scenario and complexity work
- Problem-led: starting by addressing specific problems rather than methodologies or philosophical positions is crucial

GROUP: Reorganising Complexity

### *Relating back to the conference theme*
- Complexity in context of organization / inter-organization
  - Moving towards the edge of chaos
- Turbulence / complexity -> hyper-turbulence HENCE scenarios no longer useful – how different are they in the context of complexity / scenario
  - creeping turbulence: society beginning to realize that they have been in turbulence system for quite a while

Conditions to induce changes to a system / organization
- Dynamic conservatism vs resilience: certain context can make it favourable to maintain resilience, whereas certain conditions can switch the condition into dynamic conservatism
  - How you can build into the company to review the company's resilience? Using both culture + operational models
- Sudden change / gradual change (then a certain triggering event occur?) -> are they different processes? What are the bifurcation points? Is the reality a combination of the two images?

Thailand as an example of a multi-stakeholder situation:
- Sense of crisis induces drive towards change
- Money + power associated with the role of each sphere
- The forth sphere: the monarchy: wish for the institution to be maintained
- Complexity lies in the lack of formal rules which guide the interaction between these three institutions
- What are the pre-conditions of the co-sensing phase:
  - prior openness / freedom of speech before different stakeholders can convene
  - common goal of creating a better Thailand as the drive towards co-sensing
    - ❖ Problem: united goal, but difference in 'how' because power is involved
  - successful leader of each sphere (legitimacy to convene)
  - the need to concentrate on the future, rather than problems of the past which usually is the source of conflicts
- Challenges in the co-convening phase: how to get to edge of chaos which without leading to situation where communication between groups become impossible
  - Crisis – unsettle things enough
    - ❖ Problem: if used too often, 'crisis scenarios' become powerless to raise further interest
  - Vision (see above: the difference is in the 'how')
  - Both drivers have the possibility to push the situation towards edge of chaos
- The challenge of a dichotomy: power as drive towards self-realization vs love as drive towards re-unification

Political: Government

Economic: Businesses

Cultural: Civil society
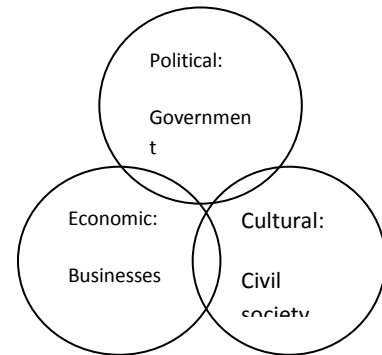
What is the role of complexity work & scenario planning in a multi-stakeholder situation?
- Conceptual framework: a large-scale system, multi-stakeholder; not on the level of an organization
- Possibility of using concept of complexity (networks) to organize / mobilize the resources in each sphere
  - once a critical mass is obtained -> successful change
  - complexity can help frame the creation of communication plan within each sphere
- Scenario as catalyst of initiate dialogue between stakeholders
- Is Thailand a 'damaged ecosystem waiting to be restored'? Or is Thailand going to shift towards a new equilibrium?
  - Moving towards a presidential system from a monarchy -> towards a new equilibrium
    - ❖ Issue of cronyism creating serious social issues
  - But equally true – other actors wanting to maintain the old system
  - Opportunity posed by changing into a new equilibrium: actors from different spheres coming to understand each other more

GROUP: Why Scenarios cannot Deal with Complexity

Scenario planning is 50 years old but have not used much complexity up till now; complexity people have not engaged with scenario people. Why the blockages? Why has it happened only in limited ways? What would be prototype exercises where this might occur?

Cover some basic concepts

- Difference b/w complicated and complex; e.g. swiss watch is former but not latter; behaviour of Swiss watch is not emergent, very predictable; some systems are in principle deterministic but in practice not (e.g. butterfly effect); others may not be predictable at all.
- Prediction is not important ex-ante, it is important that it should be imaginable
- What is the boundary of a system? Social systems interact with environment; limits to comprehension – so we make normative decisions; Can any knowledge systems handle complexity?; Always going to be unknown set of outcomes; I mean by "we" anyone who is trying to understand the world; to acknowledge that I can't predict the future; need humility on what we can approach
- Both scenarios and complexity can't predict all future outcomes
- Scenarios are not helpful for predictability; So what is complexity for if not for predictability?
- Gives tools to simplify problems in terms of describing situations (understanding and exploring rather than prediction)
- How to make sense of it in the context of description; Ideas of complexity science makes sense but application of complexity to social science not that easy
- Distinguishing ontology and epistemology of complexity
- Scenario is a plausible future that connects to the present
- Example of using scenarios AND complexity:
    - Agent based simulations in Cambodia
    - forest protected area
    - imagining different ways of people behaving
    - using complexity science as a visualization tool
    - scenarios can't deal with complexity -- is it because of lack of understanding of complexity? Neither are perfect, so why not use many different methods
- Helbing in agent modelling methods, traffic for instance
- Problem with the modellers is that the model is based on mathematical dataset which uses distribution of the dataset
- make assumptions on people's behaviour but people are not rationale
- some assumptions are that the motorways will function the same way today as tomorrow; but that is not case in futures; tomorrow's possibilities are not facts yet today
- Need to look wrt Metaphor (culture); Meta theory; Process; and Content; It is not a common language in the world to talk about emergent properties; how do you embed notions of emergence that we understand now? How do we integrate and bridge Scenario processes with complexity processes?; Meta bridge: complexity is about understanding living systems; but social systems are not emergent; becomes more explorable with more diversity of people involved; Notion of metaphor that are deeply rooted in cultures – and today metaphors of complexity and emergence is being used more in popular discourse
- The question is a provocation – is like asking Why fish can't stand water?; There are two mindsets:
    - Men and human beings cannot successfully deal with the universe
    - but there are islands of predictability and control – that is why we need narrative constructions like scenarios;
- Once you have multiagent model it is not complex, and it is this clarity that gives you the feel good factor; complexity science is about reduction of complexity so that it is understandable

- Complex means it cannot be solved by reductionist approach; Although you have the explanation, it doesn't make it less complex
- Answer to question is that because nothing can; but it can help us to cope but not deal; even though we create mathematical model there is also normative content that goes in to building it; sounds like we can use metaphors from complex systems to build scenarios
- What difference is there between systems approach and complexity approach
- it is not a provocation; have never seen an article in scenario planning that uses complexity theory to build scenarios; possibly because scenario planning came out of complexity; two families have remained far apart from each other even though they both deal with uncertainty;
- If we build scenarios based on weak signals, isn't it still sensitive to initial conditions?
- Scenarios are a narrative approach to coping with complexity, but scenarios are at a very young stage of development to achieve this; No specific reason on why the two shouldn't talk to each other
- Life is a messy problem -- commonality between scenarios and complexity; they don't talk to each other because of tribal behaviour; learned first about complexity from Ralph Stacey – there is something intrinsically different; if you think of scenario planning as fundamentally systems based; it therefore does not meet the criteria for meeting complexity approach; non deterministic nature of large systems, it would not fit the systems theory
- Troubled by distinction b/w complex and systems approach; narrative approaches have a tremendous amount of resources for dealing with complexity and when scenarios are deficient, it is usually because they rely on trivial narrative approaches; for instance Homer, Shakespeare are better for dealing with complexity; so scenario planners need richer narratives
- Datasets are too big to be dealt with by scenario planners – Scenario planners can learn from complexity tools
- They are fundamentally different both ontological and epistemologically; but my answer is that because nothing can DEAL fully with complexity (completely characterising and comprehending it); so we need to reframe the question, i.e. scenarios can help to COPE with complexity but NOT deal with it; Also complexity is not just about quantitative modelling, but also about narratives?
- Laurent thinks it is already happening; Lex thinks it can happen; David thinks the two are dichotomous
- Not clear on how scenarios deal with large effects from small initial conditions
- Narrative approaches are effective at doing just the above!
- It is the interplay of weak signals and the time at which it erupts

GROUP: Can Complexity Buttress Scenario Planning?

What in scenario practice is valuable?
- Provides multiple futures
- Helps people think about uncertainty with structure
- Learning 'with' futures
- Valuable to thinking in a flexible way
- Generates a positive energy in terms of creative thinking and innovation
- A tool to deal with situations when they arrives (mentally prepared)
- Things could emerge that haven't even been thought about
- Need to be more sensitive towards emerging issues
- Plausible, probable, preferred – 'Probable' rubbish – notion of complexity makes it questionable?

What does complexity provide?
- Complexity provides radical/newness
- A focus on probable will miss the point
- A combination of both complexity and scenarios provides tool to understand future

Open source software
- Novel way of having collective problem solving?
- A form of intervention/design
- Ethicacy of creation?
- Seems to produce things better than professionally produced material
- Can track what's happening – who is doing what

What level of complexity can you bring to the organization?
- Depends on the organisational context
- Key drivers/scale gives huge advantage already
- How much relevance in organization has complexity?
- Nice for theorists and practictioners to make it more complex but what level can you bring to the organisation?
- Organisations have to be able to match the level of complexity in their environment

The Peristaltic notion
- Futures has different levels of convergence and divergence
- A Peristaltic practice/notion?
- Can Complexity science increase this peristaltic notion, rather than dim exploratory thinking (by making it more complicated)

Why do we talk about plausibility?
- Is just because probability is inadequate? (a substitute?)
- Example: Plausibility is a balance of stretching the thinking of a colleague but not losing the decision making capacity and pushing them too hard.

Scenario planning
- Need to distinguish the practicality of scenario planning for commercial purposes, with theoretical practices
- Scenario planning exercises focus on a single topic and ignore something else
- Scenarios are a way of smuggling systems thinking into business
- How does complexity fit into this?
- Different futures – not clear how other stakeholders will change dynamics of this in future.

Contextual/transactional space
- Competitors as factors or actors?
- Need to draw boundaries for a complex system
- What defines the boundaries?
- Environment is your actions and your competitors actions (Reflexive)

Does complexity take us into the first order of reflexive nature of systems?
- "Everything is transactional – just at different levels."
- Complexity allows us to understand more about contextual/transactional environment and how they interact.
- Should improve quality of reflexivity

Main Points
- Reframed scenario "planning" as "practice"
- Complexity as multi-scale vs. scenarios which are focused and reductionist
- Why scenarios? Language, motivational
- Organisations struggle to cope with the 'complexity of complexity'
  - Different levels of variety at different stages in scenario process

      ▪ Being more aware of what we expect organisations to do

Questions
- Does complexity kill off the concept of the "probable future"?
- What would a practice of "implausible futures" look like and who would be the client(s)?
- Does complexity allow tools for how actors behave?
- Does complexity give tools to be more reflexive about T/E and C/E?

PLENARY FEEDBACK

GROUP: Tools and Strategies for Risk and Uncertainty
Challenges to the use of scenarios
- Human context; preliminary framing of uncertainty as risk – that negativity and desire for security; Psychological preference for numbers because of providing protection
- Short term costs on scenarios – awareness of certain things but organizational costs
- Silo culture – both vertically and horizontally (behavioural and institutional)
- Control is the basis for credibility

Q1: How do the broader contexts and cultural settings affect thinking?
Q2: What is the relationship b/w risk and uncertainty?
Q3: What is the role of complexity in helping us to think about risk and uncertainty?

GROUP: Appreciating Social Complexity
- Definition of social complexity – social phenomenon as social system
- Over lapping social systems but also singularities like political leaders
- Social complexity is an overarching theme for scenario and complexity
- Political issues in social complexities – Leadership is needed
- Search of imagination – e.g. theoretical particle through time and space

Q1: Need to talk in a language that is acceptable by all
Q2: How to bridge social complex intuitive systems and quant based systems thinking and also qualitative approach

GROUP: Taming Wicked Futures
- Things change when systems move from unfortunate to unacceptable
- Relationship b/w behaviours and thinking
- Complexity theory can help us understand how micro affects macro
- Complexity allows plausibility tests for scenarios
- Underscored the usefulness of scenarios is dissemination

Q1: Can complexity provide a theory of change for social systems?

GROUP: Governing Complex Futures (12 Ps)
1. Products (scenarios as products)
2. Platforms for future thinking
3. Process needs to be embedded in platforms that work with products
4. Pluralism
5. People involved
6. Psyche and cultural issues
7. Protection of space where this is possible
8. Provisional – not looking to create visions that don't change
9. Partial in sense that it is not complete
10. Pragmatic

11. Political process
12. Problems are leading the work and not the tools

Q1: Given what we are trying to do is complex how do we get beyond the metaphors?

GROUP: Reorganising Complexity
- Thailand example – it is a multi-stakeholder world where no one is in control
- Creating networks and dialogue between the all the groups working in this field
- Moving away from the edge of chaos to a healthier system

Q1: How do you facilitate self organizing among the different groups?

GROUP: Why Scenarios cannot Deal with Complexity
- What are the terms we are using – strong deterministic implications?
- Replace the word deal (fully characterizing) with cope (managing)
- The question is absurd as in asking "why fish can't stand water"? Of course fish can stand water!
- Both scenarios and complexity deal with uncertainty and don't aim for predictability
- Hasn't been much dialogue b/w scenario and complexity – tribal groups? missing forum?
- But is starting to happen – as in simulation; visualization; emergent games
- How to deal with issue of small initial conditions to larger effects – novels do this well, so need better narratives to deal with complexity
- Interesting example of cases from Cambodia where tools from complexity have been used in building scenarios

Q1: How can we identify the blockages that limit the two groups from working together?
Q2: Is talking b/w two groups enough?

GROUP: Can Complexity Buttress Scenario Planning
- Scenarios planning as practice
- Difference in scale of scenarios practice (reductionist) and of complexity (multilevel)
- Behaviour of actors in scenarios is overlooked – for instance actor network theory

Q1: Does complexity kill of probably futures?
Q2: How do organizations cope with complexity of complexity?
Q3: How can you cope with all the levels complexity brings into scenario planning?
Q4: Is plausibility useful -- what if there are implausible futures?
Q5: Does scenario planning give us tools to be more reflexive?

PLENARY REFLECTIONS

Human behaviours are unpredictable?
- Critique: some of the previous discussions reflected the underlying assumption that humans are intrinsically complex –> viewing humans as source of the problem of complexity in a social system rather the complex structure of the system as the source
- Some question whether the unpredictability of human behaviour is a false assumption
- Humans are complex: procedural rationality
    - People not always making decisions based on rational analysis
    - Procedures are used based on ethic ideal
    - Confidence matters

'Lies' – the problem of false representations of the reality
- Political rhetoric -> these confusing / misleading narratives create extra complexity

- Self-deception: e.g. Enron; government in denial leading to -> how to factor this into scenario? Issue of deception is a crucial part of reality: people tend to distort the reality
  - Is this self-denial imposed externally or internally?
- Complexity can add to understanding of the system we are dealing with: perverse incentives, people don't make analytical decisions (perspectives, perceptions of their interest at that time -> reflexive systems) BUT complexity modelling can point out where these perverse incentives lie in the system -> improve trustworthiness

Complexity as a structural problem
- Are systems intrinsically complex? Structural source of complexity: people's perceptions, complex power relations (e.g. certain sectors of society unable to raise their concerns)
- Real system = full description is often complicated – description is static BUT complex system science is dynamic

Scepticism on the term complexity / defining complexity
- Questioning whether we are making the world more complex than it actually is
- Questioning the relevance of recognizing everything as complex
  - Everything is complex e.g. at individual, world, constituents levels. But the existence of complexity doesn't justify complexity to be always taken into account when examining all issues
- Unable to notice the complexity around you if it behaves within its normal state e.g. heart attack – complexity reveals itself, but operating under normal system the complexity is not noticeable
- Complexity vs complicated
  - e.g. watch – a complicated mechanical system, not a complex system
  - complexity involves: feedbacks from memory -> behaviour emerging from the system -> more complex than being mechanically complicated
- Complexity -> dynamic, social, generative types of complexity
- Characteristics of a complex adaptive system: self repairing, self directing, self-evolving, feedback loops => life
  - Take a complicated system apart e.g. watch -> re-build it -> works again
  - Complex system (life system) e.g. a cat
- Defined as a methodology: complex system dynamics --- Concepts and principles vs techniques --- DIFFERENT
- When does complexity become a science? BUT scenario-planning is when data is not enough to predict the future, hence the necessary venture into storytelling
- Complicated vs complex => is the difference in meaning due based on a lack of understanding / k (complexity = lack of knowledge; complicated = there is knowledge)?
  - Would increasing knowledge reduce complexity?
  - So what is the basis of the distinction btw them?

Complexity at the level of an organization
- Organizations set boundary to systems -> within boundaries, systems are complex -> simplification of this complex reality by creating bureaucracy
- Effects of breaching the procedures: organizations become disrupt-able prior to transition into a new steady-state
- Complexity gives an understanding to social engineering
  - Identify point of bifurcation -> by taking energy in / out, can control whether change to another equilibrium occur or not -> testing how the system would react

Organizations using procedures to bound complexity
- 2 hypotheses

- Complex situations which cannot be dealth with adew by existing organizations -> require multi-stakeholder approach -> growing challenge (imp)
- Scenario based strategic conversations – useful for the complex challenges
    - 99% literature of use of scenarios applies to context work for single organization

Critique of scenario
- scenario in organization becoming a self-fulfilling prophecy i.e. not natural evolution, model of future actualized; problem of reflexivity ---- once the future image is seen, it interacts with the contemporary e.g. traffic models

Complete disarray of social sciences – frontier to gather different levels of social sciences (very much silo) social, political, economic, philosophical abstract level how to reconcile all these different perspectives on complexity?

What Influences Decision Makers?
- The amount of time and data needed for building mathematical models is too great for the time constraints of decision makers
- Complexity science can add data that is more convincing to technocrats
    - Ex) Kenyan technocrats do not accept scenarios without data
- Should our work influence, change or reinforce the resiliency of organizations and institutions?
    - How much of the work is dictated by the status quo that clients seek to protect?
- We should ask ourselves if a normal, intelligent decision maker could understand what we are saying.

Why don't complexity science and futures meet?
- More than half the groups don't seem to engage in a conversation that includes both scenario work and complexity science
- The two use a different vocabulary
- The two have their own, distinct organizations
    - We should create an institution of dialogue for both scenarios and complexity science
    - What sort of pluralism do we want? Do we need to combine them?
- There is overlap between them
    - Both deal with social change
    - Both deal with social norms
    - Both have a future orientation
    - Both involve participation
    - Both seek to influence decision makers
- Maybe futures is underdeveloped as a discipline
    - Almost every subject has taken a complexity turn, but maybe futures is too young for this
    - Maybe futures is still defining itself and thus isn't ready for complexity
- Different perception of the future
    - Complexity science says 'What tomorrow?'
    - Scenario practice says 'Model this.'
- Complexity science requires that its conclusions are falsifiable in line with the scientific method

ROUND 2

GROUP: Value of Information

Problem of complexity sciences
- Don't have a presentation of future state or something like scenarios
- Can we include something like scenario planning in complexity sciences to account for making scenarios for/in society?

Example: Auto-management – models for reducing motor consumption
- How much do people use the information given to them/incentives etc?
- Scenarios for BAU or different policy situations
- Don't know how people will react to new incentives or information
- Crowd behaviour vs. anti-crowd behaviour
- 2 scenarios around the element of complexity – will people do what they did before or the opposite?
- Test proposal against both scenarios and if robust enough then should satisfy both
- Evolution of resources - policy makers using scenarios to find out about triggering factors and implications for industry/business.

Scenarios
- Scenarios are a basis for a high level strategic conversation by creating a mental map of the future
- E.g. Shell Energy Scenarios – Scramble vs. Blueprint
- Neither one is more probable than the other, just alternative futures.

Information
- Is there certain information that you don't need?
- Gigantic data sets will not provide more accurate predictions
- Not only about the numbers - about what is relevant and the type of knowledge you have.

The El Farol Model
- Attendance at the bar depends on the night
- Cut off point by night
- Volatility pattern was revealed
- Minority gate – computer model
- People trying to crowd into the two rooms but want to be in the minority
- Evolved into 'genetic minority gain'
- Win more with extreme behaviours (0 to 1)
- Probability distributions from computer model
- Can we model financial markets with this?
- Example of the type of information you can get/use
- Distribution of choice – smile shape – peaks at the extremes at 0 and 1.

The question is if you are the bar manager – what information do you give people to fill your bar based on the distribution?

Example Scenario Process
- On the left: scenario process + stakeholder confrontation & responses
- Re-input these responses into multi-agent models, where we can repeat and extrapolate these behaviours.

- Need a census to be able to project for a larger dataset. E.g. interview 10 farmers but need census to find out the impact that would have on 10,000 farmers
- Problem: social network of influence is the limit. E.g. farmers talk to each other and influence each others behavior (see El Farol Model)
- Mutual influence is very strong and the data does not exist to be able to model it
- This example process contains: Scenarios/modeling/complexity/predictions
- Shows that complexity can be part of scenario planning
- Feedback loop using complexity and agent-based modeling

Most important info from this in terms of adding value is the reference data for population. Categories of information (based on the above process)

(a) Example process, (b) categories of information,
(commod.org shows process flow)

1. (a) 1st generation scenario
   (b) Two key drivers/ factors to give uncertainty 2x2 grid

2. (a) Stakeholder responses (in form of questionnaires)
   (b) Expert opinion/group reaction/ interaction between experts

3. (a) Multi-agent-based modeling (including extrapolation and census data)
   (b) Interactions of the complex system/ insights from complexity/ influence of factors/actors. Qualitatively different output from the above (not a linear expansion)

4. (a) 2nd generation scenario
   (b) Key uncertainties/ influence/ interactions

GROUP: Multistakeholder Scenarios/Resilience
Under what circumstances might whole system (multi-stakeholder) scenario-based strategy conversations be useful in addressing complex, confused, conflicting, problematic situations? How might such processes be organized most effectively? Do they provide a means to appreciating and realising social and/or organisational resilience? What is resilience?

Key Points
- Multi-stakeholder systems can be resilient--but the resilience literature teaches us that there is a sweet spot between excessive efficiency (which implies brittleness) and excessive resilience (which implies stagnation); resilience might not always be a good thing
- Whether or not we want a given system to be resilient depends on the boundaries (scale) of the system; we need to ask about the resilience of what to what and in whose interests
- Humans have preferences, and so don't simply want to fit into their context--they want their contact to fit their intention; we should therefore work iteratively between scenarios (possible futures) and visions (preferred futures)
- Much scenario work is intended to protect the status quo against a presumed dangerous future; we often talk about the future of what and rarely about in whose interest

Main Discussion Points
Frozen and unfrozen systems
Problems with adapting a whole system: challenges posed by 'chronically frozen systems' OR 'chronically unfrozen systems' (Weick, 1970s-80s paper)
- Chronically frozen (central gov) / unfrozen systems (local gov) – perfect description of UAE
- When alternative is to be 'lost in the fog', many feel it is better to stay with status quo

- - Regard problem as impossible to solve – overwhelmed -> inaction
- Bureaucracy / paying lip-service instead of taking real action as source of problem
- Arrogance of inward-looking bureaucrats
- Lack of resources to enable change to occur e.g. Farming families affected by extreme weather.

Tensions between fear and hope in multi-stakeholder scenario processes
- Crisis create a window of political legitimacy for change
- Multi-stakeholder scenarios provide opportunities for people to take on other power positions to assess future scenarios - empowerment
- BUT absence of evidence on the positive power of scenarios, is it just a subjective experience?
  - Issue of established power relations: scenario work for whose interest?
  - How can one assess whose interests would be served?
  - When scenario-planning involves multi-stakeholder participation, compromises become necessary, which often means business-as-usual -> where is the transformative power?

Conceptual issues of resilience
- Many different definitions of resilience
  - Is resilience another risk management approach e.g. resilience = ability to bounce back? Or is it something else, a capacity of a whole system to bounce forward (creatively destruct and regroup, and even to transform the/their whole system)?
- Problems with resilience: organizational resilience – what does that mean? Resilience of what? To what? Whose interest?
- Resilience as series of options – using its multiple meanings to utilise the concept in different ways. Question of where the reserves (to enable changes) are, at what level are they stored?
- Resilience as an ART forms: Adapt, Resist, Transform
  - Some are sceptical of its transformative character – sometimes used to prolong status quo to delay point of crisis and the point of bifurcation and the change to a new equilibrium
    - ❖ Patriotism e.g. Queensland flood: resilience language geared towards conservatism/conservation, preserving (recreating) status quo, rather than seeing it as an opportunity to transform.
    - ❖ These farming families are not very resilient. Rather, they are trapped in a frozen situation. No resources available to escape / change their form of livelihood => defiled optimism, limiting one's acceptance of the impending crisis
  - Some are also sceptical of scenario, seeing them as largely used as protection against future challenges
- There has been most attention to resilience of organisations, less to concept of 'societal resilience'.
  - Conceptual rich but there is lack of 'how to' knowledge: evidence/case studies on 'how to' realise resilience, can it be measured, if so how?
  - From another (societal, political studies?, ecological) perspective there is increasing attention to the notion that human systems (at large scale) are forged on shared norms, are purposeful and reflect preferences about the future, not merely adapting to/surviving changes in context but striving to be somehow better/shape the wider context
  - Resilience in human beings – as plasticity: some react in both directions either significantly / insignificantly
- Not true that efficiency is enemy of resilience or that efficiency is bad, whereas resilience is good: need for some efficiency to be resilient!
- Need to clarify resilience of what? To what? And in whose interests? The need to consider power relations:
  - Between human groups
  - Between human beings + the (natural) environment

Issue of scale

- Resilience of one system/at one scale, can undermine resilience at another system/scale -> so what scale matters the most?
    - All scenario work focussed on some scale
    - Attention needed to linking scenarios across different scales: spatial, temporal and scales of meaning/agency
    - In globalised age concept of glocalisation is gaining currency, e.g. climate change issue - why prioritise the global scenarios and imperative of mathematical downscalingin scenario methods over bottom up scenarios that use non-maths/narratives approaches and upscaling?
    - Not a question of which scale matters the most – complexity highlights need to consider emergence across scales
- Scenario planning involving multi-stakeholder participation -> compromise necessary
- Whether to adapt / to influence the issue (change the challenge into a non-problem) -> is this a question of application at different level of scales?
    - E.g. power vs love is a question of which scale

Complexity, scenarios, resilience

- After 20 years of outsourcing, the boundaries of organisations are increasingly difficult to define-- and so all corporate change processes are now multi-organisation/multi-stakeholder processes
- Taking complexity seriously implies giving up on probable futures and tightening the grip on preferable futures
    - Use of scenarios as maintaining status quo vs. enabling transformation?
    - Range of possibilities faced being limited – complexity work enlightens people on a much wider range of possibilities?
- When considering possible futures – should keep the unfrozen window open as long as possible
- Importance of considering resilience as multi-scalar (not as its impact at separate scales, but how its impact at all scales converge on one person) in a globalized age
- Further question: what do we mean by boundaries of complexity and who decides?

GROUP: Complex Systems Dynamics

GROUP: Stuff Changes

The following is a discussion about how to frame, the point of scenarios, corruption, change, and how to apply for funding, among other things.

How to Frame

- Focus on a problem
    - We can be good at saving a problem, but then good at destroying other things.
        - IE: good at making cars, & good at killing enviro.
            - Does this mean we are good at making cars?
- We can talk about our own values, and you can talk about your values
    - Then where do we go from there?
    - ….No need to go past that point.
    - Scenarios are a tool to explore values.
- Thinking of the future we are thinking of a value set that does not exist yet.
    - We are now imposing our value set onto the future.
- Our problem: If you have a clear problem, then you can bound your system.
- Sometimes we are asking the wrong questions:
    - Spend a day trying to make questions.
    - Then trying to get a piece of the pie.
- The instituted VS the instituting

- (the Mexican ruling party was the "instituted revolutionaries" - Rene Louranud)
- The dialectic is essential - why?
  - ❖ Instituting - mean you rock the boat and try to make changes, but this is harder than being instituted.
  - ❖ It takes 7 yrs to turn heresy into policy (UK policy maker).

What is the point of scenarios?
- Is the point to try to avoid horrible things?
  - NO.
  - Horrible things are normal, animals eat each other as part of a healthy ecosystem.
- A big scenario matrix with different criteria check under different scenarios (scenario bingo)
  - Vertical - not a good scenario vs a good scenario
  - Horizontal - are aspects to keep or not to keep
    - ❖ (Organizational Framework)
- A question to ask:
  - What would happen if we follow down this pathway
- "inevitable surprises"

Funding
- Paradox:
  - If someone was willing to give money to something, be suspicious.
    - ❖ The bureaucrat will not be so enlightened.

Corruption
- Can scenarios do something about corruption?
  - Is corruption always bad?
    - ❖ In Systems That It Is Prevalent It Helps Some Things Work - But Maintains The Divide
  - "The Tyranny of Numbers" (book discussed)
- Avoid seeking consensus - dissent is good and useful
  - Bring together people of a different mind and see what ideas they come up with. Don't expect consensus, but new ideas

Change and Time
- Development of a situation over time
  - Transformation of a situation over time.
  - So we have to see the steps over time, not one individual change..
    - ❖ TIMELINES
  - What Are The Conditions That Precipitate Changes/Effects
- Policy tipping points
  - (banning smoking - seems unimaginable 20 yrs ago, then weeks later it seems normal)
- Intervention in itself.
- Transformation of narrative with time.
  - Situations Transformed By Causes (Paul Ricoeur "Time And Narrative")
- Change = time
- Connection between the arrow of times and the loss of (or transformation of) values.
- For things not to erode, things must be challenged.
  - Manage change to prevent change by creating change.
- Roman collapse - was actually change
  - But we lost reading/writing, security, roads, waterways, hunger
  - Gerard diamond - "collapse"
  - "Questioning collapse"
- Ecosystems remain

- Because the functions remain - where the system itself my fall apart, but will change to the next as long as the function is still there.
  - ❖ For example and badly chemical wasted landscape will have trouble as the function s are altered.

News item discussed
- Bolivia has given rights to nature

GROUP: Can We Prevent Crisis?
- Environmentalist perspective is to ban nuclear power and dismantle existing power plants
- Questions arise on plausibility versus probability
- This means there are cost tradeoffs on how much risk mitigation there should be
- I'd like to comprehend a system where boundaries don't change
- Tryst would bring it back to human values are important as those define tradeoffs; the Japanese are offering an exemplar model of resilience
- How do you define resilience?
- We don't do resilience in terms of crisis but more in terms of changing circumstances – so minimizing the reaction time and decision making process, we focus on strategizing and not planning; as in Abu Dhabi we had tools for situation if economy fails to grow and this helped when financial crisis hit Dubai
- The environment has changed our way of thinking; for instance we need to get away from the cause and effect line of thought
- Cultural dimensions have changed throughout the world so way of thinking can change;
- Complexity can help us understand the links b/w things (people, events, and environment) and limitations of comprehension to what one does or can understand; again we need a higher level of thinking from tactics to strategizing
- Stories are amplified and these influence thinking
- Next forum should have not only have a theoretical and methodological foci, but also a practical stream where SP is applied in real life issues.

GROUP: Scenarios, Complexity & Organisations
- A need to come up with case studies to sell the idea.
- Business Continuity Planning (BCP) to be done by coming up with a scenario playbook.
- Scenarios push complex systems to the edge of chaos.
- Communication is key in connecting the two together:
  - Visualization
  - Games
  - Out of comfort zones
- Complex systems help how the players would react if a certain scenario comes true.
- One way of connecting scenario and complexity together is to view scenario planning process as a way of managing complex process for a particular situation.
- Extract relevant tools from complexity to aid construction of scenarios.
- There could be language barriers in the organization that prevents the marriage of these two groups.
- Complexity materials are used in climate prediction and demographic prediction.
- Developing a sense of boundaries of the complexity, it would be very helpful.
- Identify key blockages to scenario planning in organizations.

Key Questions
- How to answer the 'So what?' question and should we ever do so?
- What should the structure of large organizations be like in a complexity world?

- Scenarios as complex self evolving systems?
- How to overcome political hindrance and high level buy-in for Scenario and Complexity practitioners to work together?
- Where can one expect concrete experiments to show scenario and complexity can work together?
- What efforts are being made in connecting complexity and scenario?
- Is there such a thing as a Complexity practitioner group in organizations?
- Where is 'complexity skill-pool' located in an organization? What inputs do they require and how do they get it?
- Where are Scenario experts and complexity practitioners located in Accenture? Have they worked together? If not, why not?

GROUP: Crowd Source/Online Participatory Scenarios

The group started with an inventory of relevant online crowdsourcing projects:
- Competitiveness Monitor: IT tools on one platform
    - GUI for people to meet, discuss, learn about futures studies, prediction market (logistics questions), trend databases
    - Sponsored by German government to make clusters more efficient
    - Delphi process with experts: Publication forthcoming in Technological Forecasting in Social Change
- I-Know Project
    - Emerging issues and wild card database, portal and discussion/comment space
- FutureScaper
    - BSS and MOD: massive hard science database of climate change impact with people adding, tagging and connecting nuggets of information they found relevant
    - System then connected dots into systems map with complexity based approach: Emergent ranking of drivers based on network/sensitivity analysis
    - QUESTION: Do we misuse the term complexity? Is it more a systems perspective?
- Sensemaker Scenarios
    - A commercial software suite that handles massive amounts of fragments (stories) from many different people submitted online. Crowdsourcing folksonomies and archetype descriptors.
    - Power of narrative – challenging assumptions and worldviews
    - People tend to share narratives that are not literally but logically very similar
    - Scenario archetypes used:
        - ❖ Continued growth
        - ❖ Sustainability
        - ❖ High technology transformation
        - ❖ High spirit transformation
        - ❖ Collapse as a variant of all archetypes: People create visions of collapse that fit the megatrends of the time
    - Output: Aggregate narratives based on keywords
- SuperStruct and Evoke and World Without Oil
    - Jane McGonigal (Institute for the Future, California), recently wrote "Reality is broken"
    - Evoke: Using online game platforms to crowdsource collaborative futures stories (7000 participants)
        - ❖ Inspired by live role playing: Gives people tasks to carry out in real life
        - ❖ Requirement to work in teams, each of which included a mentor who could share skills
        - ❖ Concrete goal: Development. If groups came up with useful ideas and implemented them, they would have a positive developmental impact

- Foresight Engine
  - Playing card inspired: Bright/dark cards are positive/negative forecasts etc.
  - Creates a chain of online real time discussion
    - ❖ You get extra points for having put in the ideas that people refer to subsequently
    - ❖ Need to understand mechanics of online participation
  - Roland: Interesting because it generates a network effect that could result in new knowledge
  - Is this the most truly multipoint to multipoint of these online examples?
- Open IDEO
  - Online platform for idea generation
- Reactions to project inventory
- Seen from the outside the results of online crowdsourcing processes result in a shopping list, where what is needed is in fact digested, condensed accounts
- The interesting point of scenarios is to challenge archetypes
  - But in the end all literature draw on a handful of archetypes
- Key question: What is different about online crowdsourcing of scenarios?
- Is it not just cheaper, faster, more efficient, automated, better disseminated? Is there anything transformational at all? Are there any projects that leverage the network nature of crowdsourcing, to get some sort of emergent content?
  - It has value in itself to quickly generate short-term futures as a reaction to current events
  - The Foresight engine is the only example where there is a self-reenforcing mechanism because the active and creative people are rewarded, leading to an emergent social structure.
- Privileges youth at participants, whereas many scenario projects tend to favour experts (i.e. older) participants. Crowdsourcing include the younger people who drive many of the emerging trends such as the blurring of the rural-urban divide.
- Makes it possible to benefit from network effects – but clearly something that is imaginable for the future, but not realised yet in the tools of today.
- It is possible to be sensitive to many scales: Moving scenario building online makes multiple causalities possible through iterating the same sequence of discrete events over many different users. You're not getting a single solution but a plurality of main narratives than can be synthesised differently depending on your organisational interest. (see photo of hand-drawn diagram)
  - Scenarios is a profoundly reductionist process in assuming to be able to identify the scale that really matters, but complex systems operate at many scales.
- A means to avoid homogeneity/'groupthink'
  - A basic challenge since heterogeneity among participants along the RELEVANT variable is key (cf. "The Difference" by Scott Paige)
  - Different heterogeneity requirements for analysis vs. problem-solving vs. innovation.
  - What really has value is the single outlier that you hadn't seen before. Structuring heterogeneity to look for outliers as an interesting direction to go. Not about what people know – about what people do: Finding outliers generates new ideas.
  - Increased sensitivity to weak signals
- Is there a tipping point after which people just follow success without reflecting on the content? (Cf. Wired article on how someone manipulated a voting site – people want to be associated with success)
- Anonymity online allows dissent to surface in a much more direct way. But without anonymity, text makes people more hesitant because it is
- Scenarios are purely a social comfort tool: The future cannot be quantitatively predicted. Why not take the full consequence of this kind of social grooming and throw it out in the open public?

- Potential for creating a public platform for crowdsourcing scenarios and odds of realisation (short term vs. long term) + then letting the public bid real money on the scenarios.
- There's a business bias in futures research, towards the question that keep business people up at night. Would be interesting to start building scenarios that focus more on making people sensitive to the importance of small changes
  - Is consultancy model of futures work broken and dying?
- How will our kids be doing futures?
  - The gaming industry is larger than Hollywood: Will they be using games?
- What is the purpose of this? Finding the outlier pearl, getting closer to the 'right' heterogeneous sample, or get people to think out of the box (e.g. getting manager's eyeballs away from the bottom line or getting citizens to be more engaged?)
- People generally do not know what they know
- Can we think of an incentive for participating in scenario building? We need people to start contributing because we cannot predict which contribution will be a valuable solution.
  - Using an online betting market
- The views of the marginalised are critical to the future, and it will not be included through the same mechanisms as e.g. a betting market. How would you get all people in Europe to have a say? It's impossible, so heterogeneity remains key.
  - Is that not getting at the unknown knowns that we just haven't bothered to reach?

Conclusion and take-aways
- While the current tools are exciting, they mostly only automate and make more efficient the scenario process – not really leveraging network effects, emergence etc…
- Still there are benefits such as the ability to target different groups, larger scale etc..
- The purpose of the scenario exercise needs to be clear – for some it is all about social change, in which case the engagement benefits of scale through these tools is clear. For others it is more about engaging with the future, understanding uncertainty and risk. In this perspective, it is not clear how new methods will produce higher quality scenarios, or provide insight into complexity features such as phase transitions, small causes/large effects etc…
- From a complexity perspective it seems clear that requisite diversity of stakeholders leads to a better understanding of the complexity of a system. The problem is that the "requisiteness" is not definable. These new techniques can provide a more diverse set of stakeholders, but we won't know if the "requisite" diversity has been attained.
- One promising area is the use of the enormous database of images and stories on the web, to be used as a kind of Lego box for building scenarios. This makes the task one of assembling, rather than generation. Assembling opens the potential for techniques such as genetic algorithms for generating "better" stories.
- Finally the question was discussed whether the desire to game would be sticky enough to get people to participate in the generating scenarios, being rewarded for innovation and effort. That does raise the spectre of have a population with a particular bias.

GROUP: WBCSD Project/Visualising Complexity

PLENARY FEEDBACK

GROUP: The Value of Information

Report
- Categories of Scenarios
  - 1st Generation: find the uncertainty and possible sources of complexity
  - Have a stakeholder strategic conversation
  - Include expert information and group reactions

- Use Multi-Agent Models combining conversation responses and census data
- 2nd Generation: use input from the above modelling
- The modelling can serve as a stress test for the outcomes of the first round of discussions
- The modelling can take into account the interactions and their emergent effects

Questions
- How do we best build and integrate such Multi-Agent Models?
- How do we integrate the information in the modelling into the 2nd generation step?
- How do we take this to scale?

GROUP: Scenarios and Resilience: Scenarios with Multiple Stakeholders Dealing with Complexity and Conflict

Report
- Resilience vs Efficiency
  - NOT just positive or just negative
  - Resilience can lead to stagnation and chronically frozen systems
  - Efficiency (constant adaptation to situations) can lead to brittle and chronically unfrozen systems
  - Need to find the perfect balance between resilience and efficiency
  - Use Multi-Agent Models combining conversation responses and census data
- Ways to be resilient
  - Adapt
  - React
  - Transform
- Scale of the frame is important
  - Resilience of an individual/organization/ecology
  - Whether it is good or bad depends on the scale
- When we talk about resilience and scenarios this becomes a value conversation
- Scenario work often conserves business as usual (helping organizations remain)
  - Important to ask in whose interest the work is being done
- Important to realize that resilience and change require some sort of capital to supply the energy to stay the course or make the change.

Questions
- What is resilient?
- To what end is it resilient?
- In whose interest is it resilient?
- Is a crisis an opportunity for change or is it merely going to deplete people's reserves for change?
- Do we really want to preserve business as usual?

GROUP: Rosetta Stone: A Case Study with Complexity Science and Scenario Practice

Report
- Case Study: Economic Growth and Inequality
  - Complexity Science Equation
  - Looks at attractors and patterns (i.e. energy, production, capital, etc.)
  - Conclusions
    - ❖ Higher Transport Cost → Higher Inequality
    - ❖ Lower Transport Cost → Lower Inequality
  - Scenario practice then adds the information from the model into their 'stories'
  - Allow for alternative consequences

- Stakeholders give their own values
- A policy response is generated (this is called reverse dynamics in complexity science)

Questions:
- What set of values should be taken into account to build and frame the model?
- How do we explain the model to stakeholders?
- What is our role after the policy response?

GROUP: Framing Problems is Value Laden/Stuff Changes

Report
- Everything is interrelated
    - So we must frame a problem in order to address it with finite resources
    - How we frame a problem is in an expression of our values and biases
        - ❖ What is included/excluded
        - ❖ The frame often can predict the conclusions
        - ❖ As a result people will promote their framing and this might give rise to conflicts
- Consensus vs. Dissent
    - Consensus often leads to institutionalization
        - ❖ Institutions often have perverse incentives
    - Dissent can generate ideas
        - ❖ We must allow dissent
        - ❖ This results in a dialectic between instituted and instituting
- Looking at the past can sensitize people to change
    - We can attempt to see which changes led to positive outcomes and which led to negative outcomes
    - This knowledge might lead to inspired ideas about how to construct our futures

Questions
- What are our values?
- How does our framing of the issue limit the conclusions we reach?

GROUP: The Japanese Tsunami and Risk Reduction/Can We Prevent Crisis?

Report
- What can we learn from the Japanese?
    - The population and country has reacted with a high degree of resilience
    - Many positive lessons can be learned from the reactions of the citizens and the media
- How to learn from this?
    - Visit the site and see what could be done
    - Have conversations with people involved to learn from their experience

Questions
- How could complexity science be included?
- How could other countries at risk of similar disasters learn from the Japanese situation?
- Whom should be included in the conversations?

GROUP: Scenario, Complexity and Organizations

Report
- Futures studies already recognize 'complexity'
    - Morphological analysis
    - Workshops with people involved in a complex adaptive system
    - Games and visualization to get people out of their safety zone

- There are no discernable practitioners of complexity
    - What is the purpose of complexity science from the client's perspective
- How could leadership use scenario/complexity practice?
    - Take Somalia as a case study
    - Map out an approach using both

Questions
- What does complexity science look like in practice?
- What is the practical purpose of using complexity science?
- What would a case study that uses futures and complexity science look like?

GROUP: Crowd Sourcing as a Global Norm Shift/Online Participatory Scenarios

Report
- Example of a Future
    - Billions of people online brainstorming futures
    - Market for high heterogeneity scores
        - ❖ Companies compete to generate behavioural change
    - Negative side is that the awarding nature of participating is addictive
- Benefits of Crowd Sourcing
    - High heterogeneity
    - Easier to express dissent because of anonymity
    - Greater sensitivity to outliers
    - Lower cost
    - Continuous process

Questions
- Will crowd sourcing completely absorb future studies?
- What is the role of complexity science in crowd sourcing?
- What values are being expressed in this hypothetical future?

GROUP: WBCSD Project/ Visualising Complexity

Report
- Substance
    - What sustainable development and a sustainable future would look like
    - Uses back-casting as its method
- Communication Method
    - Visual mapping
        - ❖ Systems dynamics mapping
        - ❖ Modularity of mapping to break it down into smaller, more discernable parts
    - Greater sensitivity to outliers

Questions
- How could these methods be used to influence decision makers?
- How could the amount of noise in the presentation be reduced?
- What framing influenced the choice of this future?

ROUND 3

GROUP: Civilisation Transformation

Common Perception of Civilisation Transformations over the ages
- Tribal civilisation
- Local agricultural
- Local/regional empires
- Not much industrial beyond last 1000 years

Is there evidence that you can see the next form of civilisation emerging?
- The framework and assumptions of civilisation is never challenged in any field
- Industrial civilisation is being spread to ends of earth, is this good or bad?
- In the Renaissance, you could see foundations for industrial civilisation; can we see similar signs now?
- Sustainability is our move to Constantinople (like the Romans did) similar plateau on graph set to repeat
- But do we need a dip to catalyze an upward swing?
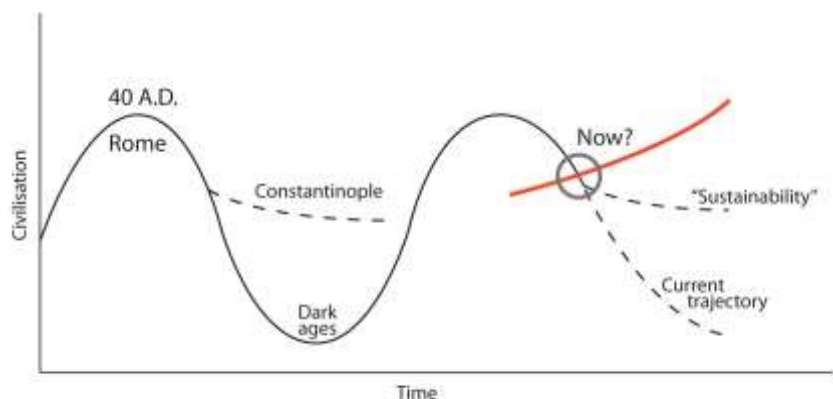
Question: behind the fall, is there something starting on a different level that is fundamentally different?
- Critical mass needed to get everyone on the red line
- Is red line a preparatory line?
- Complexity theory says we don't need everyone
- If 4% of society want this then you have influence not dictatorship
- Critical mass (10-15%) of opinion leaders to help get on other trajectory

Need to put this on the agenda
- So scary that none of the organisations that are based on modern civilisation can afford to look at this
- How do you find ways of talking to get people to understand where the common ground is?
- Stakes are so high – why this is a small group!

What will persist and what will change?
- Could climate change be a positive transformation?
- Transformational adaptation
- Sense of linearity in civilisation – always forward vs. backward
- We have a strong resistance to moving backwards
- Disaster crises create loops
- What is the value attached to circular processes vs. linear processes?
- Idea that human civilisation is on an on-going path to improvement
- Example: Under climate change life will be worse, luxury lifestyles restricted.

Measure of GDP is used as a measure of growth of civilisation, but should we measure something else?
- Fear that GDP growth will slow
- Assumption that man is economic and logical
- Industrial civilisation as it's currently configured cannot last with 9bn people

Debate over whether we need to be looking at the current climate rather than future
- Scenarios don't always capture plurality of views on the present
- Plenty of people suffering from the global climate now
- Different perspectives on where we are at now, so views on preserving what we have now differ greatly

Climate change is the best crisis?
- Is it the transformation that we need?
- Might make us value where we are at now

Environment is treated as an externality – why?
- Modern Industrial civilisation based on economic growth that is linked to consumption and that this us fundamentally the right way

By improving current system (e.g carbon pricing?) are we taking a step towards the transformation we require, or are we creating a barrier to it?
- New currency – excitement?
- Price on carbon, is this just the best we can do at this stage?
- Or is it just self-satisfaction? Diet coke + chocolate cake analogy

Is this all just blindingly obvious?
- Frame of reference we actually live in is still unknown to us
- What may be emerging in terms of a new civilisation?
- Need to understand wider transformations

Idea of a past civilisation is inaccurate
- We now live in a truly global civilisation
- Never really experienced a species wide issue (e.g climate change)
- Planetary-wide governance doesn't exist

Poverty in Africa
- People we see as most unfortunate, are they actually the most adaptive?
- Do they have the seeds for transformation?
- These people are already living in a crisis, what are we doing for them now?
- Popular approach to climate change adaptation is to carry on as we are
- Developed world – technocratic solutions
- Greater impacts are flow on effects
- Different perceptions of how far we have to change

Emotion of transformation
- Trace through impacts and who is carrying the costs
- Caring capacity – stretches spatially, temporally and species perspective
- Sphere of care/social contract to being good people has stretched

Faint signals of change
- Local currency in a city in Vermont, USA

- Example of a place that is preparing for if dollar is not worth much anymore then trade needs to keep going
- Why has nothing been done on aids in Africa? - African leaders do not rely on people
- Canada – two parts of Canada adapting together?
- In case of civilisation transformation – break glass!

"Learning is not required, neither is survival."
Edward Demming

GROUP: Avoiding Catastrophe

GROUP: Multistakeholder Scenario Process
- Scenario used as a shorthand covering a range of approaches
- Process to handle complex, problematic situations: Will be experienced differently by different stakeholders
- Cases ranging from India, Singapore, Zimbabwe, and more.
- Two questions
  - How do stakeholders experience problematic situations?
    - ❖ In vastly different ways: This is crucial to realise.
    - ❖ Defined 7 ways of experiencing
      - ◆ Crisis: Need to defend themselves or need change things
      - ◆ Unmet needs: Expectations have not been satisfied
      - ◆ Conflict: Polarization and violence
      - ◆ "What's the problem?": This is the most important. Characterised by inertia, apathy, denial. Can have huge consequences
      - ◆ Dilemmas: Confusing contradictions
      - ◆ Feeling marginalised: Lack of perceived agency
      - ◆ Lack: Of time, resources, information
  - What approaches can we use to help these stakeholders?
    - ❖ Initiating: Helping people to get started by identifying the legitimacy etc. of the initiator
    - ❖ Creating a permanent, on-going space for people to talk about the problematic situation
    - ❖ Methods to size up and represent what is happening. And what might be happening, and what we want to be happening
    - ❖ Categories of methodologies that allows for moving forward
    - ❖ Methodologies that allows people to move forward together

Summary
Multifaceted situations require means to undertake, track, share multiple experiences

GROUP: New Puzzles
- The group voted on a single topic to focus the discussion on.
  - Request to stick to one example: [stick to a topic closer to "the people", {GMO, etc, what is the next asbestos?, CC, etc])
  - Topics chosen (votes):
    - i. Food, energy, water (5) ****
    - ii. Nano-tech (4)
    - iii. Arctic climate change (3)
    - iv. GMO (1)
- Session plan:
  - Discuss the field.

- Then the agents.
- And then what can come out of it.
- Emergence from a set of factors.
- New problems:
  - Where solutions are different and problems arise differently regionally/culturally/politically.
- As systems change: problems *change*
  - solutions *change*
  - opportunities *change*
  - access *changes* (shipping, etc)
  - interests *change*
  - conflicts *change*
  - physical/chemically *change* (weather, etc)
  - society *changes*
- How can:
  - Scenarios help?
  - Complexity science help?

Comments
- What is in the tool box and play with them?
- Too many constraints applied to the conversation?
  - Food, Energy, Water
    - ❖ Manage systems optimally
    - ❖ People try to work out the system
  - Build models
    - ❖ Territorial boundaries as important ingredient, Monte Carlo simulation, stochastic, probabilistic models - for physical world; …

## *Complexity VS Scenario models.*
- Figure (below): 3 levels

Complexity models	Scenario models
- (Cultural/political [beliefs/values/policies];	- Cultural/political.
	- Data, narrative.
- Social networks;	- Transactional environment, inter actions (actors).
- Biophysical [soil/water/biology]).	- Contextual environment (factors).
	- Drivers / megatrends.

- Interactions/relations between levels.
- Transitions = time.
  - Abrupt or slow
  - Linear or not
- Question:
  - What is a minimum amount of data needed (from complexity science view)?
    - ❖ 2 camps:
      - ◆ *No data*: use general knowledge from experts, bring in stakeholders before model is made – agent based modelling (ABM).
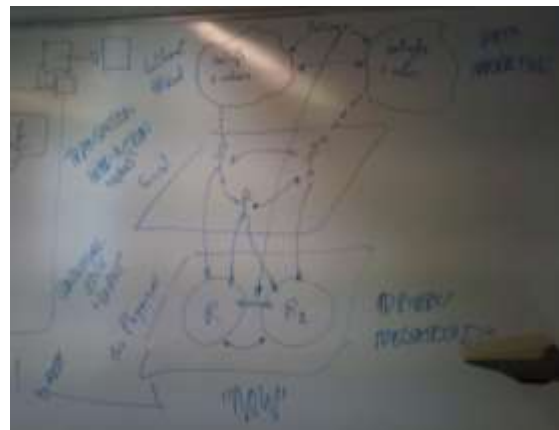
- Model used to feed a discussion.
  - ◆ *Complexity theory*:
    - Focus on key issues and base on pub. literature input over data.
  - Knowledge about system dynamics more important than data
  - Dynamical models based on published literature.
  - Understand system, so you know what data to collect.
  - Be informed before you go in for data.
- Get data:
  - Start with some good data.
  - This is how you can tell the story about how you get to your conclusion (when reporting findings).
  - Help keep the end result dynamic.

Scenario chat
- * t/e - transactional enviro (social zone - actors).
- * c/e - contextual enviro (bio physical - factors) drivers and megatrends.
- * cultural (data and narratives).
- How can the factors shift to redefine the system.
- Scenario work is using past and future perspectives (what has been in the boxes and what changed and what might be future developments).
  - What are the factors that would ch the system.
  - What are the plausible stories of the future that we have to take into account.
- What the future is:
  - Identify what the future should (not) be.
  - No moving from 1 paradigm to another.
  - But multiple versions exist, and how to move forward beneficially.
- Inductive and deductive.

GROUP: Getting Wild with Narrative

Background and aim of the discussion
- Open space discussion model VS practical exercise (CRITICISED BY good practice only) -> scenarios seen only as a complement to serious modelling
- Environmental futures literacy
  - Scenario literature – methodological varieties + deep conceptual reflections 'art of conjecture' on what futures means
  - Missing – narratives
    - ❖ How they are built - construction
    - ❖ Effects, impacts
    - ❖ Reception
    - ❖ Literary theories
    - ❖ French, German etc; classics + history
- Project to promote:
  - Mobilize academic resources showing the depth of academic knowledge on narratives

Challenges of scenario-building
- Setting speed of change; systemic change (disruptions)
  - E.g. flooding in London, scenarios -> socioeconomic outcomes
- Institutional governance changing every 40 years e.g. before WWI / social structural change -> how to take this into account?
- Presentation of scenarios: disconnection between academic / non-academic definition of quality

- public sector decision-making: packaging important; rigorous modelling should not be the only focus
  - popular media / representation hugely influential -> what can be learnt from that area?
- Issue of plausibility
  - A plausible scenario is one that doesn't disturb the client too much?
  - BUT complex systems evolve on the edge of chaos

Scenario-building – practicalities of using narratives

- Scenarios are not necessarily written in interesting ways => Solution: write long historical narrative (generalistic account) + shorter, character-driven narrative e.g. take one through the daily routine (conventional account)
- Useful to list the range of genres -> scenario techniques could be expanded by exploring what genres which haven't been used yet
- Economic geography's difference from economics: significance of narratives - use of narratives to put modelling into context
- Use of historical timelines to illustrate change through time
- Concept of 'worlds' as creating effective narratives -> form an imaginative world
- Participatory approach
  - Working with participants: writing storyboards out with the participants
  - Beware of participants being politically-motivated
  - Use of characters: effective; acting out the scenario; social simulation
- Use of music:
  - music transmits complexity
  - music from certain era / genre can enhance the message delivered
- Use of visual representation:
  - understanding how ideas are diffused from movies
- Learning from literary theories:
  - understanding how to successfully engage with the reader
  - Literature as without gaps, unlike e.g. visual representation
  - Horizons of expectancy - story must resonate with what the reader expects; the more powerful one is, the less powerful is the storyteller
  - Overly detailed narrative prevents participants from adding in their own details
- Attention should be paid to different cultural narrative structures

How to define a successful use of narratives to represent scenarios?

- Asymmetry: fine to use models to do investigative research in science while scenarios are only used to serve clients
- Issue of misrepresentation:
  - Is it significant for the scenario-planner to maintain discursive hegemony in order to avoid misrepresentation of the message planned to be put across?
  - Or is it more important to allow individuals the freedom to draw their own conclusions from the narratives, as the impact would be more powerful?
- Legitimacy of the scenarios: politicians prefer work based on modelling – what do we ascribe authority to? (also refer to horizons of expectancy as explained above)

GROUP: Arab Spring

Gathering data to build complex scenarios

- How many ways forward we can think?
- Do you have a definition and way to do predictions?
  - To build the scenarios identify the data and techniques
  - Is it easy to explore how or which kind of things can happen in future and how to handle it

- The same set of situations can lead to completely different outcomes
- Access to confidential data
- Use of internet
- Use database driven models
- Simulation modelling
- We can model things until people change their behaviour

Human capacity to build scenarios
- How can you model the situation until it collapses?
- People have patterns in their minds
  - Build richer scenarios based on new and extra patterns
- When you study a complex system what boundaries will you select?
- Complexity allows more rich, patterned scenarios

Scenario Building
- What is this for and who is it for?
  - Identify the main audience
  - Historians are of much more importance than complexity people
    - ❖ Historians can predict future better than other people
  - Can complexity science develop scenarios for certain situations
  - Use exploratory models

Post spring scenarios
- How would life be like in Tunisia, Egypt, Libya and Yemen in 10 years time?
- Rise in expectations of people after the change in Government
- What is going to happen in future?
  - We cannot look at each country separately and we cannot look at all the countries as one.
  - There should be a model that changes its own assumptions (Adaptable)
  - Modelling the intuition ---study on wisdom behind intuition
- What could be imaginable? Can we apply evidence based methodologies here?
- When will the new equilibrium establish?

Problem areas in building complex scenarios
- The main problem is to communicate to people that this might happen in future and that these would be the possible scenarios
- Importance of the order of intuition ---the order of intuition really matters

PLENARY FEEDBACK

GROUP: Civilization Transformation

Report
- Need to see, explore, understand, and strategize about the whole forms of civilization (agricultural, industrial, etc.). Most futures work is kept within the contemporary modern industrial world. The need for sustainability calls this assumption into question
- The group agreed that there is good evidence that the current civilization is going to be undergoing a transformation.
- None of this work can be done without a non-trivial understanding of complexity science. The openness of the system and the power of self-organisation can be a source of hope.

- There are obligations to learn about scenarios for civilizational transformation. Up until now the transformations have been slow, unconscious, optional, regional or local. Now none of those apply: The coming transformation will be in some senses all the opposites. This is not yet on our formal agenda.

Concrete action points
- Offline civilization

GROUP: Avoiding Catastrophe

Report: A reflection on the problem of mitigating disaster
- Involve all stakeholders in the decision process
- Wait for consensus
- Learn from past experiences
- Balance real cost-benefits
- Revise with council of security
- Use dynamic programming
- Draw on computer simulation models as a learning tool
- Summary: A number of recommendation of what should be taken into account in order to build nuclear plants in Japan.

Questions
- Is there in Japan regions free of tsunami risk?
- Dilemma: Continue using nuclear power or not?
  - Balance the benefits so far with the damages that the disaster has brought about
  - In the beginning the balance was so positive that no change was needed, but all the negative consequences of disaster has tilted the balance in the other direction.
  - Alternative sources of energy (sun, wind, vegetation) needed.
  - But takes a catastrophe to start doing things otherwise.

GROUP: Multi-Stakeholder Scenario Processes

Report
- Scenario used as a shorthand covering a range of approaches
- Process to handle complex, problematic situations: Will be experienced differently by different stakeholders
- Cases ranging from India, Singapore, Zimbabwe, and more.
- Two questions
  - How do stakeholders experience problematic situations?
    - ❖ In vastly different ways: This is crucial to realise.
    - ❖ Defined 7 ways of experiencing
      - ◆ Crisis: Need to defend themselves or need change things
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  - What approaches can we use to help these stakeholders?
    - ❖ Initiating: Helping people to get started by identifying the legitimacy etc. of the initiator

- ❖ Creating a permanent, on-going space for people to talk about the problematic situation
  - ❖ Methods to size up and represent what is happening. And what might be happening, and what we want to be happening
  - ❖ Categories of methodologies that allows for moving forward
  - ❖ Methodologies that allows people to move forward together

Summary

- Multifaceted situations require means to undertake, track, share multiple experiences

GROUP: New Puzzles, New Tools

Report

- Diagram: Expresses an complexity issue over-layed with scenarios concepts
- How can we focus on a concrete example that brings both teams together?
- Food, energy, water and land chosen as a theme/case
- Lots of commonalities found between the two methodologies
- Complexity can be used throughout the scenarios process
- Discussing how the political space, natural space, and social space would interact
- Exciting because both tool-sets were complementary, but also because they open for a new third set of tools
- How much data is necessary to use complexity science? There is a cultural gap here, because you do not need a ton of data nor perfect data.
- Action point: website for sharing cases across the two disciplines
- Action point: Continuing discussion on research opportunities

GROUP: Going Wild with Narratives

Report

- Starting point: People who do models have theoretical resources, while scenarios are cast as purely practical
- In fact large and old disciplines do highly sophisticated work on narratives. It is crucial to connect these to the futures exercises in scenarios.
- 2 examples form the discussion
  - Avoid flat and boring scenarios based on pseudo economics and commons sense. Alternatively one could have a 'real' narrative with a hero and a threat. In fact there is a much larger repertoire of genres. Here the connection to theory becomes clear.
  - Horizon of expectation of the reader (concept from literary theory): What will be the right format that will appeal to the decision-makers (clients)? What is the gun in the decision-makers head that might fire to the trigger we are trying to design? Need to understand the targets scenarios are aiming at.
- Action point: Connect literary exercises with scenarios
- Action point: Connect with people who research existing images of scenarios with people who design
- Action point: Continue the discussion
- Action point: Mobilize people who really have the knowledge of narrative research to participate in seminars with scenarios.
- Action point: Exchanges between narrative and modelling techniques on a technical level as a basis for fruitful combination of complexity and narrative theory
- Themes added by other participant
  - Social narratives: Game-based models

GROUP: Arab Spring

Report
- Sanity check: Complexity is not going to solve all scenarios problems, it provides an extra tool for shedding light on the situation, for conceptualising how to move from one picture to the next.
- Capturing some intuitions and heuristics: Complexity models can capture some of these intutitions on the minds of the scenario builders
- Not predictions but surprising counterfactual: Supplying evidence that surprises could occur to the decision-makers. Ammunition for the scenario builders.
- Networks: The study of networked, microlevel models of change is very popular within complexity research to explain/shed light in macro phenomena.
- Enrich scenarios: That goal is to strengthen scenario building with modelling

Questions
- Can complexity distinguish between systems that will collapse, land smoothly or sustain its trend?
    - Gini index as a case: Has been increasing steadily, but this cannot go on forever.
- Beware of sloppy models? Different parameters can fit the data equally way, so the time of collapse could be anywhere
- The future of complexity modelling: Will it improve? The recent past indicates: Yes. Change from simple predator-prey models predicting extinction to acknowledging that on the ground this did not happen in certain habitats: Dependent on speeds of movement of certain pockets of prey that can always escape their predators. That type of model could/has be/been applied to models of economic development in Central European economies.

PLENARY REFLECTIONS

Is civilizational transformation something that we as a species should take seriously?
- If so, an international research project should be established. It does not exist currently.
- Citizen engagement project about civilizational transformation, used as an umbrella for all the issues that people are concerned with

Plausibility: What are reasonable expectations for this workshop?
- Complex systems research set up in Oxford set up in 2003: Initial output started coming in 2005. It took time an effort for people to start collaborating rather than merely having interesting conversations. It's kind of crazy that you can bring in practitioners and researchers from two quite different disciplines and expect collaborations to happen after two days
- Specific applications are needed to start the conversation.
- It is fruitful to find the right mix of scenarios builders and complexity researchers: Need to structure the dialogue around this

Further reflections on narratives
- Using narratives, even physical narratives with artefacts from the future, can be very effective. Narratives are not only communication tools, but also research tools.
- Scenarios are very much created with a complex adaptive approach if they draw on physical artefacts
- Too much detail can be a discouragement: One scenario might be enough on certain settings. The consumers will create the alternative if they interact

Other reflections about moving forward
- Show and tell: Going forward websites or similar approaches could make it possible to play around with the ideas
- Collaborative tools are available now to keep momentum going beyond the two days spend here

- Practise what we preach: Think about unreasonable scenarios of what could be done moving forward. Imagine if all got together and started a company that published narrative futures.
  - Or went back to a 1 degree climate scenario.
  - Or defined the ethics and values behind what we are doing
  - There are also "unreasoned" scenarios: Those that one cannot justify based on the past. Good for stimulating minds to be ready for debating the future (veikanningen).
- Emerging field of research on cooperative writing of text, which is related to complex networks. This could be interesting for scenarios because you can set rules for how scenarios are arrived at.
- Need to be cautious about fast and easy understandings of complex systems.
- Build a collaborative list of case studies combining complexity science and scenarios