

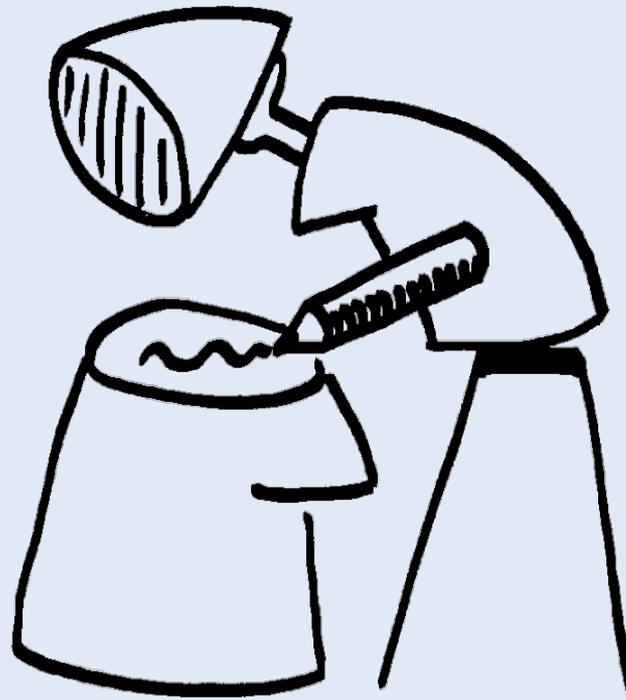
Scenario Thinking & Global Change

CCIS Webinar 2: Scenarios – Narratives & Numbers

6 May 2020

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Change mental maps

(Mosselman)

Outline

- I. Thinking about the Future in a Structured Fashion
- II. Scenarios – A Brief Overview
- III. Some Nuances
- IV. Concluding Thoughts

Three Premises and a Corollary

- I. Our understanding of the world is, and likely will always be, incomplete
- II. The world is non-deterministic: we have some control in shaping the future
- III. The world is non-nihilistic: we prefer some futures over others

(after Daly and Farley 2010)

What Makes Thinking about the Future Difficult

- Ignorance

Our understanding is limited

- Surprise

The world is filled with the unexpected and the novel

- Volition

Human choice matters

(after Raskin 2002)

“Human beings are rarely passive witnesses of threatening situations. Their responses to threats may be unwise, but they inevitably alter the course of events and make mockery of any attempt to predict the future from extrapolation of existing trends.”

(Dubos 1983)

Types of Incertitude

		Knowledge About Outcomes	
		High	Low
Knowledge about Likelihoods	High	Risk	Ambiguity
	Low	Uncertainty	Ignorance

(after Karlsson 2005 and Stirling and Scoones 2009)

third dimension from a policy perspective – Decision Stakes

(Funtowicz and Ravetz 1992)

Reasons for Thinking about the Future in a Structured Fashion

To better imagine the future

- to illuminate potential problems and bring them into focus
- to share understanding and concerns
- to uncover assumptions and rigorously test them

To better consider our options in shaping the future

- to identify alternative choices
- to explore these alternatives in the face of incertitude

Criteria for Thinking about the Future in a Structured Fashion

- Saliience:
 - relevance to issue at hand
- Legitimacy:
 - how and by whom analysis is undertaken
 - how insights/lessons derived
- Credibility:
 - rigor of analysis
 - defensibility of insights

(after Cash et al 2002)

Scenarios – What they are

Histories of the Future

- *“a hypothetical sequence of events for the purpose of focusing attention on causal processes and decision points.”* (Kahn 1965)
- *“archetypal descriptions of alternative visions of the future and paths to these, created from mental maps or models that reflect different perspectives on past, present and future developments.”* (Rotmans and van Asselt 1997)
- *A plausible description of how the future may develop based on a coherent and internally consistent set of assumptions about key driving forces (e.g., rate of technological change, prices) and relationships.* (https://www.ipcc-data.org/guidelines/pages/glossary/glossary_s.html)

Scenarios vs. Sensitivity Analysis

Scenario analysis

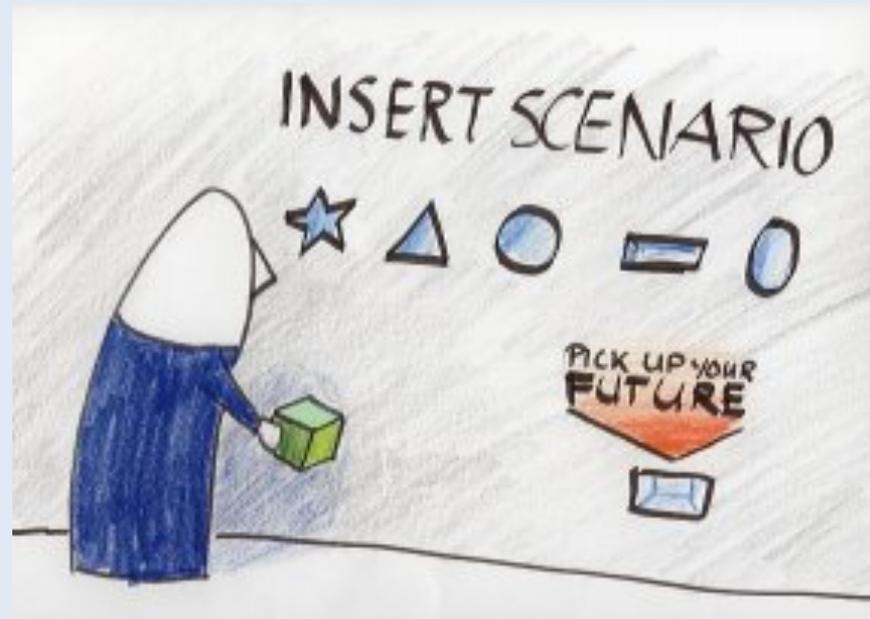
- identify key driving forces and uncertainties
- consider packages of internally consistent assumptions about key uncertainties
- trace out various paths into, or back from, the future

Sensitivity analysis

- identify key driving forces and uncertainties
- estimate probability distributions for key uncertainties
- explore the changes in one or more outputs from a single best guess projection to the variation in one or more of the uncertainties

Scenarios – What they are not

No Predictions Please



(Mosselman)

“It is now generally accepted that scenarios do not predict. Rather, they paint pictures of possible futures and explore the differing outcomes that might result if basic assumptions are changed.” (UNEP, 2002)

“This sort of model is an attempt not to predict the future but to illustrate the basic dynamic tendencies of a complex system under alternate policies.” (Meadows, et al., 1973)

However, . . .

Conditional Predictions

*“The claim that **scenario analysis*** is a non-predictive approach to the future does not imply the lack of inclusion of conditional predictions in the analysis. It does however require that the general purpose of the analysis is not to predict the most likely future state of the system but to assess the feasibility and desirability of different outcomes.” (*backcasting in original)*

(Robinson 2003)

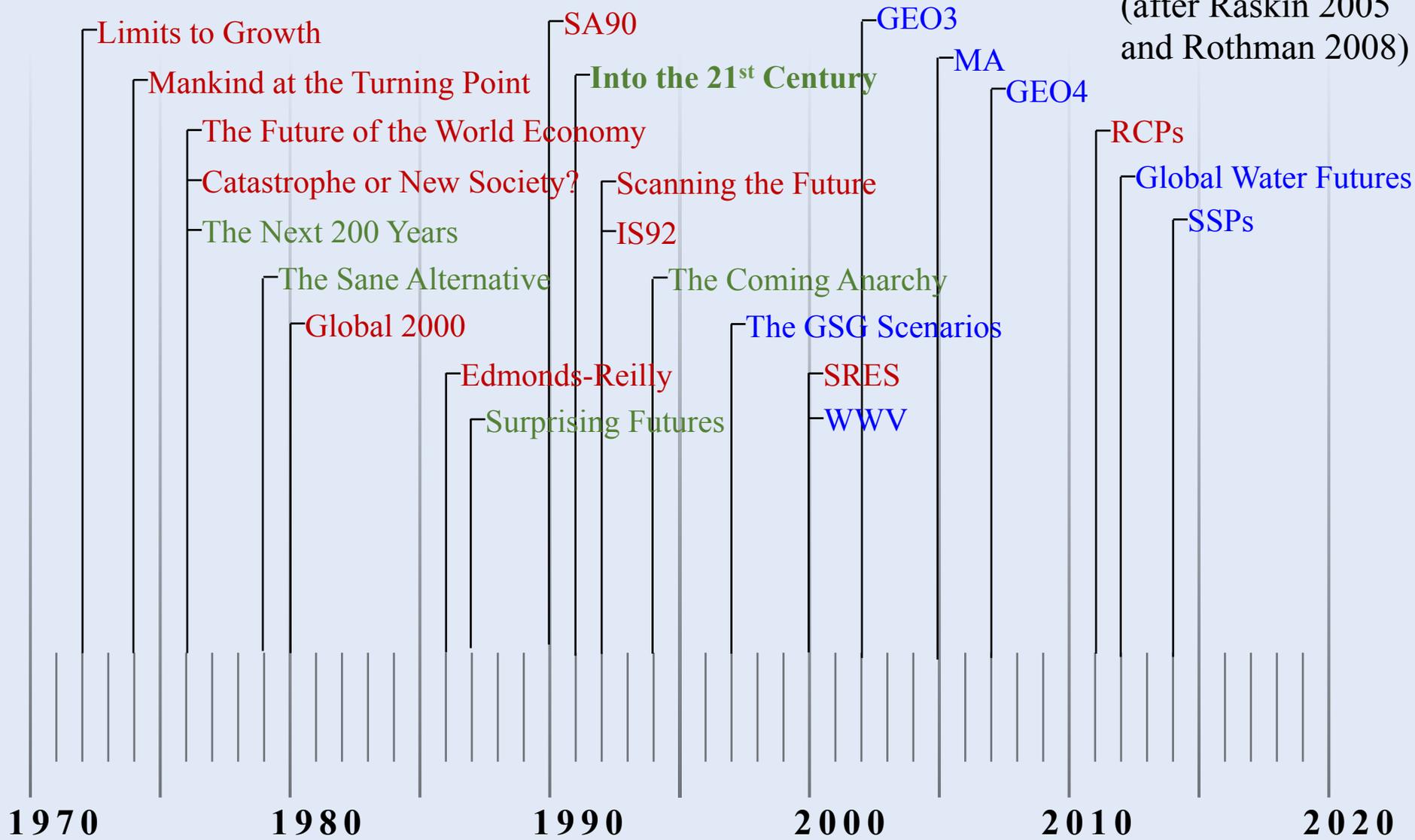
Origin of Current Use of Scenarios

Some Highlights

- Scenarios as part of theater production.
- Military planning in the Second World War
- Post-war moved into civilian domain in 1950s and 1960s
 - US: through Herman Khan at the RAND corporation and Hudson Institute (e.g. Khan 1965)
 - France: “La Prospective” (see Godet 1993)
- “What if” storytelling developed by Shell under Pierre Wack and Ted Newland in 1970s (see Wack 1985a,b)
- 1972: Limits to Growth (Meadows, et al 1973) brings in global modeling
- 1990s: Offshoots of Shell, e.g. the Global Business Network (The Art of the Long View (Schwartz 1991)) helps to reach broader audience

Selected Global Change Scenarios

(after Raskin 2005 and Rothman 2008)



Primarily Quantitative

Mixed

Primarily Qualitative

Multiple Baselines?

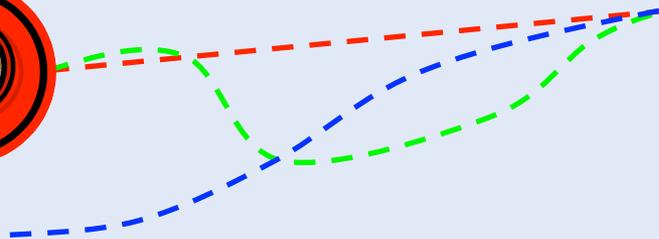
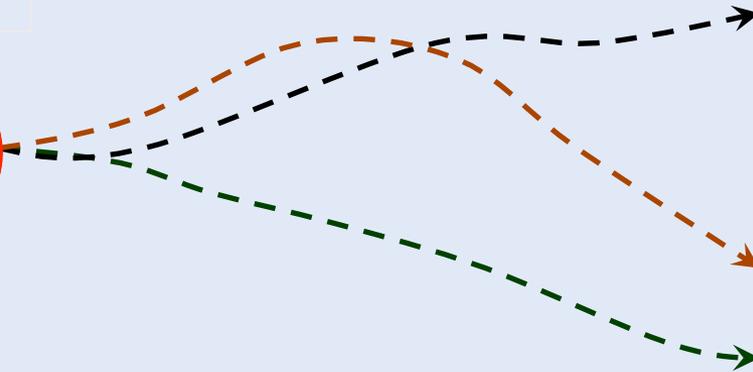
“These considerations strongly suggest the need to work on the basis of several baseline scenarios . . . (which) represent quite different and internally consistent patterns of development due to the long-term consequences of current decisions and current behaviors. . . .These would not be simply scenarios with high, medium or low versions due to various assumptions regarding exogenous parameters”

(Hourcade and Robinson 1996)

Exploration and Backcasting

Exploration

Where might we be headed ?



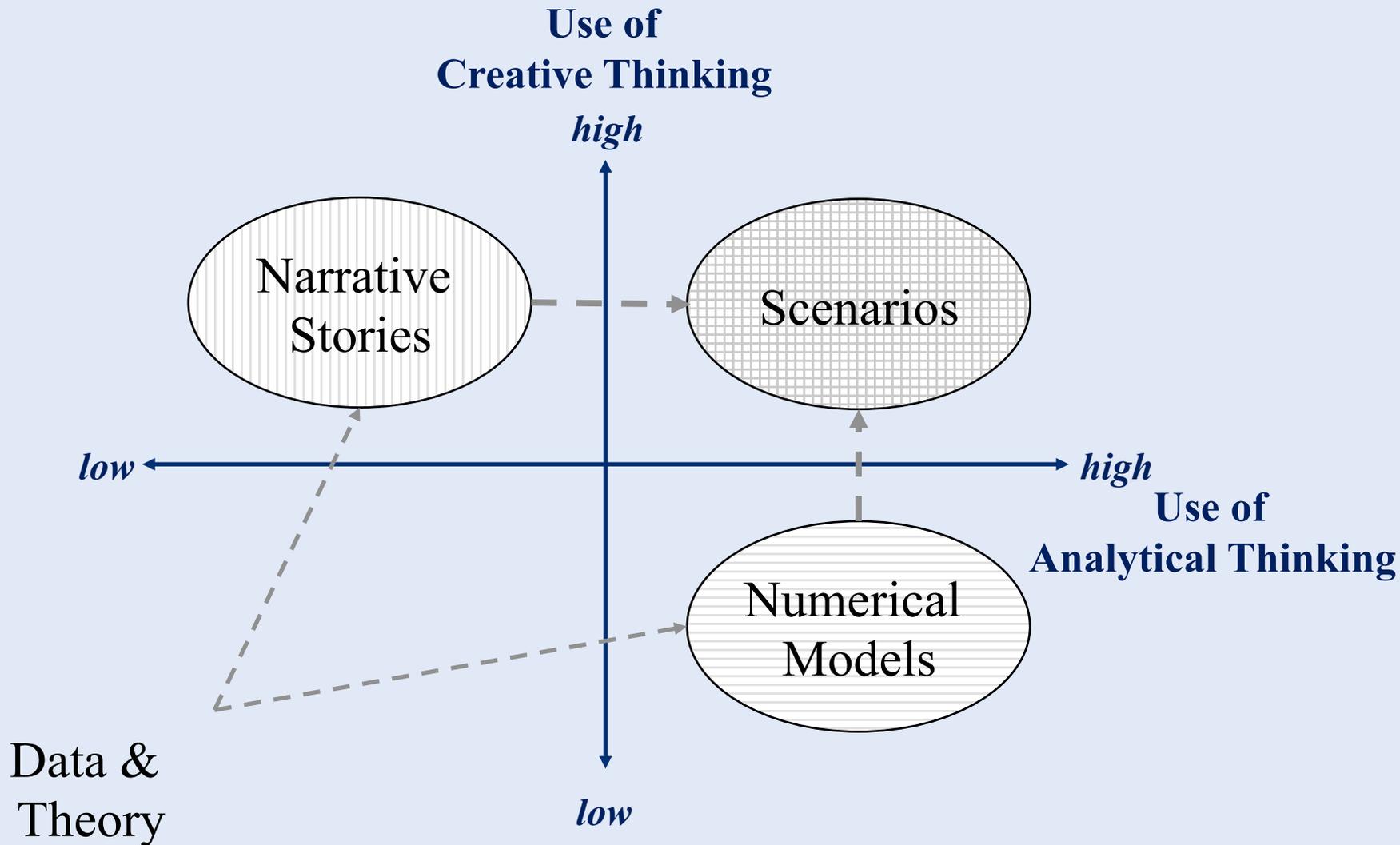
Backcasting

How do we get to (avoid) desirable (undesirable) futures?

Baseline vs Policy

- **Baseline scenarios**
 - Describe future developments in which no new policies or measures are implemented apart from those already adopted or agreed upon
- **Policy scenarios**
 - Consider new policies or measures additional to those already adopted or agreed upon

Narratives and Numbers



(after Ghanadan and Koomey 2005)

Narratives & Numbers

	Advantages	Disadvantages
Narratives	<ul style="list-style-type: none">• can represent views and complexity of many different interests• can explore relationships and trends for which few or no numerical data are available• can more easily incorporate human motivations, values and behavior	<ul style="list-style-type: none">• tough to identify or test underlying assumptions• do not provide numerical information
Numbers	<ul style="list-style-type: none">• can provide greater rigor, precision and consistency• assumptions are explicit and conclusions can be traced back to the assumptions• can provide order-of-magnitude estimates of past, present and future trends	<ul style="list-style-type: none">• have limited view of the world and are often not transparent• exactness gives illusion of certainty

Three Parting Thoughts

“The test of a good set of scenarios is that, while being believable, they should act like a shock to the system, to stimulate debate and to encourage action”
(McKiernan ~2000)

“The only relevant discussions about the future are those where we succeed in shifting the question from whether something will happen to what would we do if it did happen”
(de Geus 1997)

*“...is any purpose served by attempting long-term perspectives for a region?
Yes!!! I say this not because the forecasts will necessarily be right, but because they may stimulate helpful actions – actions that may, in fact, even render the forecasts wrong.”*
(Agarwala 1991)

Thank You

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