Obstacles to Effective Horizon Scanning

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How to Proceed

This is indeed a challenging subject, almost as broad as Horizon Scanning itself. In addition to locating and certifying data in an imperfect world, the meaningful stitching together of a range of sectors can be daunting. Finally, getting long range analyses into policy discussion, when current problem solving often takes first priority, requires an ongoing education and consciousness-raising effort.

A Working Definition

"Horizon scanning" is used here as the practice of monitoring the operating environment, and tracking the changes in the environment that could have an impact on understanding and managing risk. Understanding change is thus pursued through the systematic examination of potential threats, opportunities and likely future developments, including (but not restricted to) those at the margins of current thinking and planning.

Critical Question

There is no doubt that RAHS provides an unmatched advantage to its users. The value of a range of visualization tools for clarifying complex systems and issues is clear. Pattern recognition and communication of concepts among a network of analysts are two of the many benefits, as well as the ability to translate critical questions and concerns up the policy ladder in a manner which assists action.

The range of search, categorization and analysis capabilities are both constructive and energizing for users. However, as RAHS begins to reap the rewards of its successes, such as its expansion to economic and social dominions, the increased complexity of this expansion offers new challenges.

Accordingly, I am presenting an overview of possible pot holes in the road ahead and how to address them.

Points of Concern

My first concern is what levels of data may be consistently available to inform the horizon scanning process, including the quality and comprehensiveness of information resources.

My second concern is analysis of the data chosen, in terms of its relevance and meaning.

My third concern is potential methodological problems with specific approaches.

Accordingly, this discussion will interweave methodological, cultural and policy issues.

CRITICAL TO UNDERSTAND: How is relevant data structured?

Shape – the basic form of underlying data relationships (often mathematical) direct, inverse, etc.

Interaction – relations between multiple factors that shift their effects (mathematical or empirical observation) – such as Reinforcing (positive or negative feedback loops) and Balancing Loops (change-dampers – e.g. thermostats) and Casual Loops (mixes of the two) One way to think about tipping points is the activation of feedback loops. For example, Climate Change dynamics.

Thresholds – discontinuities within data relationships (e.g. catastrophe) where the rules change.

Data Structure (cont.)

Stale Data – Social and economic data often have a short shelf life, but ongoing and continuous updates are very expensive, so snapshots are most often the working compromise.

Data lag – Delay in response between a cause and effect can range from minutes to years (e.g. birth defects from a genetic disease triggered decades before) which thus complicates the accuracy of any change analysis.

Data Translation – Cross analysis between domains, e.g. between social and economic is complicated by common disconnects between language, concepts and assumptions – as are similar translations between qualitative and quantitative data.

OTHER RELIABILITY FACTORS:

Factors affecting reliability in both quantitative and qualitative sources –

- Expense of primary research;
- Homogenization of multiple sources;
- Lack of any stated confidence interval or research context; and
- Distortion of data by media (disproportionate psychological attraction of surprising or disturbing statistics) through selection and repetition (e.g. transmission studies).

Data Variability/Comparability: Dynamics

- false positives or negatives
- broad vs. narrow category definition;
- shifting attitudes over time or between cultures
- skewed survey processes
- analytical proficiency

Data Variability/Comparability (cont.)

- hidden or unstated assumptions
- unheeded unscalability
- correlation versus causation
- failure to eliminate bias .

Sources of Bias:

- Preferring pattern over randomness.
- Failure to Question Assumptions
- Internal research motivations or influencing funding
- Political sponsorship goals (influencing public opinion, attention or awareness)
- Forecaster's or technophile's bias favoring change
- Immersion in the Zeitgeist.

Influence of the Zeitgeist (1890s)

- 1893 Columbian Exposition in Chicago – Leadership forecasts for 100 years in future. The 19th century sense of time was very different. Technological change was slower – not revolutionary – and the social structure was stable in comparison.

  - Leading to 1893 predictions that by 1993, "the law will be so simplified that there will be no work for lawyers"; that "the alcohol problem will have been solved by religion"; and a little more chilling "crime will be eliminated by preventing criminals from breeding"… and finally, "in 100 years humans will be handsomer, healthier and happier".

Confusing desired data with likely

- **Misread Signals –**
- **DURING WWII** (Stalin ignored 84 separate indicators before the German invasion, including end of German commercial shipping to Russia and evacuation of German nationals from Moscow);
  - **FORGETTING THE PAST – Pearl Harbor –** Japanese had done the same thing to the Russians at Port Arthur in 1904;
  - **CONFUSING ANALYSIS WITH REALITY – Peter Schwartz**: the difference between forecasts and reality is that forecasts need to be believable and internally consistent, while reality does not.

Appropriate Scanning Horizons:

Up to a Year (operational/financial)

One to three years – extended short range techniques (little change in underlying factors).

Three to ten years – strategic and competitive elements about infrastructure, technology and social change.

Ten to twenty-five years – flexible visioning.

Twenty-five plus – philosophical and ideological.

Appropriate Levels of Detail/Tools

- **Level One (micro)**
  - Statistical Analysis (Porter's Five Forces);
- **Level Two**
  - Decision Trees;
- **Level Three**
  - Scenarios;
- **Level Four** (macro)
  - Visioning.

[Different sectors change at different rates of speed e.g. technology leaps vs. regulatory resistance]

SOCIAL FACTORS: Can vary by class, race, income, nationality, locality, gender – all within the same country.

- **Social values or perceptions can shift over time.**
- Individuals discount the future [assign immediacy] at different rates
- People confuse desirability and familiarity with probability [Late 1930s American estimates of 1980s air traffic assumed nothing but prop aircraft although prototypes had been flown].

Delphi: Groups of Experts

- Delphi is opinion-based; with a self reporting bias
- Looking backward through expertise
- ‘Educated Incapacity’
- Groups of experts can be rather inbred and develop a uniformity of vision – often little benchmarking
- Difficulty in discerning assumptions
- Some analysts may be intimidated or unresponsive and give answers to the group that please.
- In any analytic system, new inputs can affect the entire system in unexpected ways.

Parsimony in theory building.

- Distinguishing between predetermined elements and critical uncertainties is critical and challenging – If it seems easy, you are probably doing it wrong!
- Straight line projection, no matter how complex, does not involve an understanding of the underlying process, but only observation of past behavior. Just historical analysis or comparison, NO WHY!
- Amount of focus on quantitative vs. Business Balanced Scorecard, including nonfinancial elements. HOW WIDE SHOULD THE SCAN BE…
- Paul Saffo – Drawing too narrow a range of uncertainty increases the likelihood of avoidable unpleasant surprises and of missing important opportunities. Good forecasting is always an iterative process and good forecast consumers are participants in the process and ongoing critics.

Technology adoption factors:

- EXAMPLE - Paperless Office forecasts in 1990s needed existing substitutions – cheaper and more efficient than paper systems, vastly improved security, readiness of market and user adoption.
- Cost – both production and price
- Risk of change
- Ease of Use
- Aggravation of adaption
- Sexiness – popular appeal
- Interfaces with other systems
- Rules of diminishing utility

The Challenge of Petabyte Scales: Modeling in the Global Cloud

- Growing conviction that the models of the past are based on assumptions that are no longer true – while global reality continually changes – at least in scale.
- **Replacement of theory building with Black Box modeling and decision making**; correlation replacing causation; where the cluster itself is the subject
- Growth of data volume and density; **The substitution of Why analysis with What analysis (explanation vs. behavior)**
- **Growth of Bayesian and/or 'fuzzy' logic i.e.** *rational, conditional measures of uncertainty;* assessing the extent of that uncertainty in the light of evidence; i.e., both degrees of probability/randomness and degrees of truth.

Is the goal accuracy or better thinking about the future?

- Scenarios – Driving management Involvement
- Challenge present assumptions;
- Ask questions you had not thought to ask
- Offer an iterative process to pull new information into decision making process.
- Ideal is developing a working mindset for change… quick response, flexible analysis and innovative questioning -- rather than always getting the projections exactly right.

ISSUES IN SCANNING THE FUTURE

- Should the system give the most attention to probable and shapeable trends or improbable but catastrophic?
- Proactive engagement with the anticipated environment which is built on past experience will miss the new and unanticipated.
- Look at outlines, causes, speed of change, and probable impacts.
- Nothing happens unless policymaker has time to focus, has the political freedom/clout, and has the resources to actually affect outcomes.

SUMMARY

- Analytical bias can arise from cultural and psychological causes, but also from data skews and design flaws.
- Transparency of design and operation is a critical value, especially as the scale of the universe grows.
- Horizon scanning must balance systematized analysis with unexpected evolution and growth.
- Ultimate scanning system utility is measured by its assistance in policy decision making.