

An Overview of the Horizons Foresight Method and the Inner Game of Foresight

Humans have an amazing capacity to imagine the future, and most foresight tools use this capacity but don't explicitly support it. The Horizons Foresight Method puts this power to model and visualize at the centre of the foresight process. This paper describes foresight in general terms, the inner game of foresight, the steps in the Horizons Foresight Method and some of the practical issues that arise when using it. The Horizons Foresight Method was designed to inform policy development on complex public policy problems in a rigorous and systematic way. It examines the issue or focus of a foresight study in the context of the larger system that shapes it.

1. What is foresight?

At Horizons, the objective of foresight is to explore plausible, alternative futures and identify the challenges and opportunities that may emerge. Foresight helps us understand the forces shaping a system, how the system could evolve and what surprises could arise. This analysis provides a valuable context for the development of policies and strategies that are robust across a range of plausible futures. It also provides a solid foundation for vision-building.

Foresight helps governments adapt to a rapidly changing world. In forward-looking organizations, foresight provides a powerful context for policy development, strategic planning, decision-making and even audit and evaluation. The longer timeframe enables organizations to anticipate and prepare for tomorrow's problems and not just react to yesterday's problems. Foresight can also support innovation by exploring how problems could evolve, thereby improving effectiveness and reducing unintended consequences. The objective of foresight is not to predict the future, but to prepare strategies that are robust across a range of plausible futures.

Foresight is often confused with forecasting. Forecasting does try to predict the future. It takes data from the past and extrapolates it into the future using a variety of tools, from statistics to simulations. Expert judgements about the underlying assumptions play a very large role in the design and operation of these tools. Forecasting helps users understand the present and the most likely future (often with upper and lower limits). However, at a time when the underlying systems are changing in fundamental ways, users of forecasting should take care to confirm that the supporting assumptions are still correct.

Horizon scanning is an essential initial step in foresight. It is an organized process that searches for weak signals—signs that something new is occurring that could disrupt the system in unexpected ways. Often, the disruptive change comes from places where analysts are not looking. But the changes may be known to frontline workers, early adopters, critical thinkers, etc. Great scanning provides the evidence for insightful foresight. Then, foresight explores how the weak signals interact with the system in unexpected ways to create surprises.

It is worth noting that most individuals and organizations focus their attention and scanning on the expected future—that is, the *high probability, high impact* developments that could disrupt their operations. These developments are often in the media and part of the everyday public and policy dialogue. It is important for organizations to address these issues, and many organizations are very good at it. However, developments that are perceived to have *low or unknown probability* and potentially high impact are often discounted or ignored. Policy analysts see them as tomorrow's problems or as lying beyond the scope of the study or the

mandate of the organization because they cannot see the pathways through which the weak signals disrupt their system. These are the developments that scanning should reveal.

Foresight is an academic discipline that draws on many other fields and is rooted in systems thinking. As a result, there are many tools in the futurist's tool box.¹ It is common for people to open the tool box and create a workshop, and while the workshop is often creative, it is not strategically useful. As a result, foresight is frequently criticized or discounted as a useful activity. Putting the pieces together in a useful way requires skill that can only come from experience. Rafael Popper highlighted the challenge: "So far the selection of foresight methods has been dominated by the intuition, insight, impulsiveness and—sometimes—inexperience or irresponsibility of practitioners and organisers."² Ultimately, there is a need for rigor in this work. There are a number of formal foresight methods³ that assemble a selection of tools to serve different purposes. Most of these formal methods were developed for technological forecasting or business purposes. The Horizons Foresight Method contains all of the steps to explore the future of a policy issue in a rigorous, systematic and participatory fashion. One of the unique features of the Horizons Foresight Method is that it deliberately harnesses our natural mental capacity to model the future.

2. The inner game of foresight

Carl Pribram, a famous neuropsychologist, said we can learn a lot about the mind by observing it in action.⁴ He described mental processes as having a holographic/contextual quality. Humans can recall "pictures" in our minds and replay "movies" from our past experience. We can also create and manipulate pictures and models of completely new ideas in our minds. Indeed, humans use this capacity to practice a primitive version of foresight when doing tasks like extrapolation, impact assessment and scenarios on simple problems in our minds. Over the years, many foresight practitioners (e.g. Wak,⁵ Sengi⁶) have talked about the central role of mental models in foresight but have not explicitly brought them into the process. The Horizons Foresight Method works directly with participants' mental models to strengthen and take advantage of this inner game of foresight. Here are some of the ways the Horizons Foresight Method works with our natural capacity to improve foresight:

- **Work with people's mental models.** There is a branch of cognitive science that explores the role of mental models in thinking.⁷ According to this set of theories, "the mind constructs small-scale models of reality that it uses to anticipate events, to reason, and to underlie explanation... Mental models have a structure that corresponds to the structure of what they represent. They are akin to architects' models of buildings, to molecular biologists' models of complex molecules, and to physicists' diagrams of particle interactions... *Everyday reasoning depends on the simulation of events in mental models.*"⁸ According to this theory, the four building blocks in mental models are facts, assumptions, experience and dialogue. Of necessity, mental models are incomplete representations of reality, and sometimes they are wrong. Policy analysts, managers and leaders usually have fairly well-developed mental models of the systems they manage. They use these models to run movies in their heads of how a given action could play out within the system so they can test ideas, develop strategies and make decisions. There are a number of reasons for working directly with people's mental models, which are at the core of decision-making. Examining them helps us understand how people think the system works; identify, test and improve the underlying assumptions that shape decisions; and combine models from different people's perspectives to get a more complete picture of the system. While most participants are unaware of this aspect of their mental lives, they are happy to work with it.
- **Use graphics to support visualization.** Surfacing and describing mental models can be very challenging if it is done as an analytical process using words rather than graphics. Humans can only keep 5 to 7 things in working memory at a time, which makes dialogue and progress on complex

topics difficult and frustrating. Good graphics can help the group manage complexity. For instance, complexity is reduced when participants can point to a drawing to talk about how and where a change driver impacts a system. The Horizons Foresight Method uses guided imaging—a visualization technique that helps participants surface and share their mental models of the parts of the system as they understand it. Over the whole process, a variety of visualization exercises and graphic tools are used to reveal participant information and insight.

- **Focus on the system.** For many people, talking about the future can be like walking in the fog. Some kind of structure is helpful. In most cases, putting the system at the centre of the study will make it easier and maximize strategic insight. The Horizons Foresight Method surfaces participants' mental models and then draws a simple system map with nodes and relationships. Each node is a window into some part of the system that is changing. The diagram helps focus attention and structures the dialogue at each step in the process, allowing participants to challenge and clarify facts and assumptions. The participants run mental simulations to visualize how the system could evolve under different conditions at each step. The focus on the system allows participants to see that future. Working with a clear model that is grounded in current reality but evolves under plausible conditions is a key to creating useful foresight.
- **Use a structured process to explore sources of uncertainty.** The Horizons Foresight Method uses the knowledge and visualization capacity of participants to explore five sources of surprise that contribute to uncertainty in the future behaviour of a system:
 - Surprises coming from the places we are not looking—scanning can help.
 - The cascading (third-, fourth- and fifth-order) impacts of change as it rolls across the system—cascade diagrams provide the scaffolding to see how a change evolves.
 - Changes interacting with each other—cross-impact analysis can help.
 - Lack of awareness of the pathways through which change could flow—system mapping can help.
 - Lack of imagination as to how unexpected patterns of change could emerge—scenarios embodying different models of change can help.

Looking at each of these sources of surprise in a systematic way provides useful information to reduce uncertainty and understand how the system could behave.

- **Work with assumptions.** Assumptions (i.e. what we believe to be true) are a very strategic focus for foresight. They shape perception and decisions and are one of the building blocks in mental models. If you state several assumptions about a system, most people will use them to build a mental model instantly and then test it against their own mental model of the topic. A productive dialogue is possible when the mental models are clear. It turns out that assumptions are also a very concise way to communicate findings, especially to senior managers who don't have time for a 50-page report. Surfacing and testing assumptions is one of the important functions of the Horizons Foresight Method.
- **Immerse participants in the future.** Most people are focused on the expected future and are less aware of the weak signals or disruptive changes that could impact their policy domain, especially changes coming from beyond their silo or area of responsibility. In a foresight exercise, participants need to be familiar with all the significant (social, technological, economic, environmental and governance—domestic and international) changes that could disrupt the system. In the Horizons Foresight Method, this information is gathered through scanning and interviews and then presented to participants and users as insights about plausible disruptive changes—ideally with short videos that allow the user to see the evidence (in its current emergent state) for themselves.

3. The Steps in the Horizons Foresight Method

This process is fluid, dynamic and iterative. Each step builds a better understanding of the system, how it could evolve and what surprises could emerge. At each step, a large amount of information is gathered, considered, filtered and then edited to focus attention on the essential building blocks. Simple diagrams and other visual tools provide scaffolding to enable participants to share their models and facilitate dialogue at every step in the process. In Figure 1, the method is presented as a linear process, but in practice, it is common to move back and forth among the steps as understanding of the system grows.

Figure 1: The Horizons Foresight Method



Preliminary Step: Frame the problem. There is often pressure to frame the topic of a foresight study in very narrow terms. People think it will be easier to do a small, contained study. In most cases this will help you understand the expected future, but not identify the surprises that will disrupt the system. Generally speaking, you should include the pathways and systems that are the context for your topic. The framing

of the problem may change as you learn more about the multiple pathways through which drivers could impact the system.

Step 1: Surface current assumptions. Before any foresight activities start, the Horizons Foresight Method identifies the current, commonly held assumptions about the issue or problem under study. These are the core assumptions that are shaping public policy and public dialogue on the issue. These assumptions are collected at the outset through interviews and research and then put aside, to be tested for robustness later in the process.

Step 2: Scan for weak signals. Scanning identifies changes in the domestic and international environments that could have significant implications for the issue and the system in which it is embedded. This can involve literature reviews and interviews, which try to surface and probe the mental models of people who have knowledge of the system. The focus is on finding weak signals that could indicate a significant change is possible or underway. Weak signals that appear to have a significant potential for disruption are further developed into insights. Insightful scanning is the foundation of effective foresight.

Step 3: Map the system. The study participants and invited experts each draw a picture of their mental model of the system. These maps can range from simple process diagrams to complex causal loop diagrams. An attempt is made to develop a group system map that includes the elements where participants think significant change is possible.

Step 4: Select change drivers. All the insights from the scanning phase are reviewed, and those that appear to have a significant, disruptive impact on at least one of the elements in the system map are chosen as change drivers for the scenario exercise. At this stage, cascade diagrams are used to explore the potential second, third, and fourth order impacts of the drivers, and cross-impact analysis is used to explore how the chosen drivers and insights could interact with each other to add new information about how the system could evolve.

Step 5: Develop scenarios. For each scenario, an archetype and scenario logic are customized to explore strategically useful futures. The state of each driver and insight is deduced from the scenario logic. Then the state of each system element is deduced from all of the preceding steps. At this point the participants can see what the system could look like under the given conditions. These end-state scenarios offer a vivid snapshot of the key system elements for each future.

Step 6: Test assumptions and identify challenges. Guided visualization is used to immerse participants in each scenario. Participants are asked to identify challenges and opportunities for which current policies and institutions are not prepared. Finally the current assumptions (from step 1) are tested against each scenario for their robustness. Weak assumptions are revised to be more robust.

4. What are the results of the Horizons Foresight Method?

- a. Clarifies planning assumptions.** Assumptions play a central role in planning, policy and decision-making. The Horizons Foresight Method is one of a handful of tools that is able to systematically test the assumptions that planners and decision-makers are using to shape our future.
- b. Identifies emerging policy challenges and opportunities.** Looking 10 to 15 years down the road, the process identifies real issues that current policies and institutions are not ready to address and thus gives government time to prepare for disruptive changes and take advantage of opportunities.

- c. **Develops more robust policy and strategy.** Foresight provides a context for policy and planning that enables governments to ensure that proposed policies are robust across the range of plausible futures.
- d. **Helps individuals and organizations prepare and rehearse for change.** The process of sharing mental models, identifying a set of emerging issues and developing a set of robust policy assumptions about the future helps analysts and decision-makers imagine the future and rehearse for the challenges that lie ahead.

5. Who should be involved?

When Horizons uses this method to conduct a foresight study, there is a core team who act as caretakers of the process. They are aware of the tools, concepts and what can usefully be achieved in foresight. They do the study and systematically seek input from others. In a major study, hundreds of thoughtful people are interviewed during the scanning phase to surface their mental models of the system, in order to understand how different parts of it work and how it could evolve. For some problems, it is useful to have external participants and stakeholders do a short, customized version(s) (dry run) of the process to benefit from their knowledge and the collective interaction of their mental models as input to the study.

Given the pressures to digest a huge amount of information about the whole system and potential disruptive changes, the external participants can seldom commit the time needed for an entire study, so the core team does most of the work. The dry runs help the core team understand the system, fill in gaps and explore new ideas.

The knowledge and personal qualities of the team, interviewees and participants can make a huge difference in the success or failure of a foresight study. The following personal qualities can be used to screen potential participants and improve the chances of success:

- Participants—including stakeholders—are knowledgeable about one or more parts of the system.
- They have good group, interpersonal and communications skills.
- They are curious and widely read. They may have lived in several different countries or had jobs in different domains or studied different disciplines. In some way, they have lived with the dilemmas and paradoxes of change in their lives.
- They are creative and comfortable with thinking outside the box.
- They have a high tolerance for ambiguity and uncertainty, as it takes time for a group to bring the pieces of the puzzle together.

6. How long does it take to do a study?

Once the core team understands the Horizons Foresight Method, a foresight study on a complex public policy issue can take 2 to 12 months, where half of that time is spent scanning and conducting interviews to identify potential disruptive changes. In parallel, if a dry run is being done with external participants, it is possible to go through all of the steps with them in a few days, assuming the external group has internalized the insights from a great scan.

7. How do you get buy-in from those who are not involved?

In foresight projects, it is common for the people who are directly involved in the study to be fully committed, but non-participants can be resistant to the results. Horizons uses a number of ways to engage non-participants in the process. Interviewing senior people to collect their understanding of the system is

a useful way to involve them. Often they will be interested in the report, because they want to see what you did with their insights. After the study is complete, Horizons designs exercises for groups to immerse them in the study and to surface and test their mental models. Generally, the best way to communicate the written report is to take the reader through the process in a way that allows them to construct their own mental model and see the future for themselves.

8. Conclusion

There are many useful approaches to foresight, several of which are tailored to business settings. The Horizons Foresight Method has been designed to address the kinds of uncertainty and complexity that arise in public policy settings. At each stage in a structured process, the Horizons Foresight Method provides scaffolding to help individuals surface and share their own mental models and to construct a collective model of the system and how it could evolve. What is unique about the Horizons Foresight Method is the emphasis on utilizing the amazing capacity of our minds to visualize and run simulations at every step in the foresight process. Most participants report they feel better prepared to deal with a rapidly changing policy environment.

The Horizons Foresight Method focuses on the essential steps to help individuals and groups do useful and strategic foresight. The main results (robust assumptions, plausible futures and emerging challenges and opportunities) have enormous value in forward-looking policy and planning processes.

For further information: At www.horizons.gc.ca, overviews and PowerPoint presentations describe each step in general terms. In Fall 2016, the site will also include facilitator's guides that describe group processes for each step in more detail. There are tip sheets and examples as well.

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Notes

¹ See the foresight diamond <https://rafaelpopper.wordpress.com/foresight-diamond/> in Popper, R. (2008) Foresight Methodology, in Georghiou, L., Cassingena, J., Keenan, M., Miles, I. and Popper, R. (eds.), The Handbook of Technology Foresight, Edward Elgar, Cheltenham, pp. 44–88.

² Popper, R. (2008) “How are foresight methods selected?” Foresight, Vol. 10 Iss: 6, pp.62–89.

³ Bishop, P. and Hines, A. (2015) Thinking about the Future: Guidelines for Strategic Foresight, Hinesight.

⁴ Pribram, C. (1971) Languages of the Brain, Brandon House.

⁵ Wack, P. (1985) “[Scenarios: Uncharted Waters Ahead](#)” Harvard Business Review, September.

⁶ Senge, P. (1999) The Fifth Discipline: The Art and Practice of the Learning Organization. Random House.

⁷ For an introduction to mental models see <http://mentalmodels.princeton.edu/about/what-are-mental-models/> or <http://www.slideshare.net/kishankits/mental-models-final-presentation> and for a more theoretical overview see <http://www.ecologyandsociety.org/vol16/iss1/art46/>

⁸ <http://mentalmodels.princeton.edu/about/what-are-mental-models/>

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