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Holistic Framing of the Future: The 4F Foresight Framework

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WORKING PAPER

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Holistic Framing of the Future: The 4F Foresight Framework

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Abstract

This paper introduces the 4F framework as a comprehensive guide for conducting foresight exercises in today's fast-paced and unpredictable environment, where the status quo is constantly being challenged. The necessity of foresight exercises is emphasized at the beginning, outlining their significance in navigating the complexities of modern change. The framework is built around four pivotal elements: Forensics, Forecasting, Future-Sighting, and Future-Proofing, each serving as a fundamental phase in the foresight process.

The paper unpacks each element, highlighting specific tools and methodologies applicable within their scope. It stresses the iterative nature of moving through these stages, with continuous feedback loops enhancing the process's efficacy. Furthermore, it explores how each element ties into future horizons, facilitating a comprehensive understanding of how past and present dynamics inform future possibilities.

Lastly, the paper emphasizes the importance of recognizing transitions to achieve envisioned futures, framing the management of transitions as a critical component of successful foresight planning. This document serves not only as a guide to the practice of foresight but also as a call to action for adopting a more holistic and forward-thinking decision-making to create readiness for the future.

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1. Introduction

Many believe foresighting to be a modern phenomenon beginning in the 1960s and 70s and connect it to the efforts of Olaf Helmer and Ted Gordan at the RAND Corporation, who helped initiate the survey of emerging technologies, and efforts by Pierre Wack and Herman Kahn and colleagues working at Shell under the Unified Planning Machinery program that led to the development of early forms of scenario planning. Yet, foresight has roots that can be traced back to early human societies seeking to predict and prophecy guidance for the future (Anderson, 2006; Jemala, 2010). The undeniable fact is that humans have always been curious about the future, and early societies were involved in a range of divination practices. According to ancient mythology, the Delphi Oracle, located in the sacred temples of Greece, predicted the future. Futurists and sages, therefore, held significant authority and influence in these early societies. However, the advent of the 18th century Enlightenment brought a dramatic shift, favoring rationality and science, which marked a new era in the approach to understanding and planning for the future.

2. What is Foresight and Why Do We Need It?

Everywhere you look, the contemporary landscapes, whether they be corporate, societal or technological, are changing at an increasing pace. Often, the nature of the environment is characterized by the acronym VUCA world, which stands for Volatile, Uncertain, Complex, and Ambiguous. In this world, problems are complex, intermeshed, and even contradictory. The environment is driven by the existence of multiple forces of change that interact in complex ways to create, what the World Economic Forum (WEF) (2023) coined, a polycrisis. Polycrises are situations in which the total impact of the interacting forces is greater than the sum of the separate parts (Tooze, 2022). In other words, the multiple challenges have feed-in and feedback loops that amplify their impact. In these types of contexts, traditional planning often proves to

be inadequate. Under such conditions, business corporations, policymakers, and others find the need to develop preparedness for multiple potential futures. Whilst it is not possible to predict the future, foresight exercises can help us explore future possibilities by analyzing trends and detecting developing signals of impending change.

As a practice, foresight exercise improves the quality of decision-making through the process of thinking about emerging challenges and opportunities, trends and breaks in trends (Miles et al., 2008). Foresight can help in a variety of ways. Key among them are:

- **Deal with uncertainty and complexity** by enhancing our understanding of emerging trends and the explicit and hidden risks they carry and how these will impact our future.

- **Enhance strategic planning and decisions** by challenging and checking upon the robustness of assumptions and using novel perspectives and assumptions to define and explore alternative futures.

- **Stress-test decisions** that need to be made by checking the likely futures that current decisions and resource allocations will bring.

- **Early warning system** by identifying signals and signposts of potential failures into the future.

- **Preparedness** by having thought through the potential consequences of failures or sudden onset of crisis.

- **Shared perspective** by bringing different stakeholders together to develop and plan visions and pathways for the future.

- **Resilience** by anticipating the future and planning adaptive strategies and resource allocations.

- **Drive innovation** by understanding the needs of the anticipated future.

Contrary to popular belief, foresight in its modern conceptualization, is a systematic and structured process involving activities that provide insights about possible futures and how they evolve. Amara (1981) highlights three premises about the nature of the future:

i. **The future is indeterminate.** In other words, it cannot be pre-determined. The future is in a constant and endless state of evolution.

ii. **The future is unpredictable.** It is impossible to collect enough information to state with complete confidence the end-state in advance. As noted under point (i), the future constantly evolves, and the end-state that eventuates can only be probabilistically predicted from the present point in time.

iii. **The future can be influenced**. The decisions that we make and the actions we take (or do not take) all influence the trajectory of development and the nature of what future outcome will prevail.

It is always good to keep the above three premises in mind when conducting a foresight exercise, since they highlight that the future is malleable and can be made. The future, though it is not pre-ordained or fully predictable, is determined by the actions (or lack of actions) that we take in the present. The choices and decisions that we make today lead us to different future states. The responsibility is ultimately ours.

Foresight exercises are essentially anticipatory in nature, and can be conducted for a variety of strategic purposes. They differ from traditional planning in that they bring into play a longer time frame than conventional strategy and planning exercises, and incorporate consideration of possible, plausible, probable and preferred futures. Strategic planning exercises focus on attempting to execute robust programs over the near term for competitive success, whilst foresight exercises focus on early detection and development of options of

response to ensure adaptiveness to emerging conditions. In other words, foresight exercises are more concerned with building resilience.

Foresight exercises can vary in depth, moving from the shallow, superficial futurist headlines and soundbites in the general popular media to deeper analytically driven exercises developed through intensive effort and systematic investigation. Slaughter (1999) suggests four levels of depth in future thinking:

- *Popular (Pop-futurism) exercises* - are shallow, often highly hyped and sensational future predictions, and most often found in popular media.

- *Problem-oriented exercises* - are focused on exploring issues and problems relevant to society and firms to uncover significant effects in the future. Most foresight exercises are at this level.

- *Critical exercises* - go one level deeper than problem-focused exercises in attempting to uncover the causes that led to the development of the problem(s) in the first place. They involve questioning and re-questioning taken-for-granted beliefs and assumptions. Exercises at this level are increasingly being observed but remain relatively scarce.

- *Epistemological exercises* - are the deepest level of future exercises and focus on the fundamentals of society, organization and behaviour. They are philosophical in outlook, challenging the status quo through epistemological and ontological questioning. Through the process, they can enable fundamental paradigmatic shifts in thoughts and behaviours. Such studies are very rare.

3. The Foresight Process: The 4F Framework

Foresight involves a process of developing insights about possible futures, and the paths along which each could develop, and using this knowledge and understanding to guide decisions that need to be taken today to realise the best possible tomorrow (Horton, 1999). The foresight process is a guide to structure thinking about the future and plan for it. It is a systematic future intelligence-gathering process that relies on getting diverse perspectives as inputs from stakeholders, using creative and novel assumption-challenging thinking to capture a wide range of alternative possibilities to develop strategic actions that will enable the travel to the desired future state. Foresight contrasts sharply with future studies that are purely analytical expressions of a few experts.

We put forward the 4F framework as a holistic framework that captures the central core activities for a foresight exercise[1]. The four elements of the framework involve the conduct of forensics, forecasting, future-sighting, and future-proofing. Drawn as a figure (see Figure 1), the elements on the surface look to be sequential, yet, in fact, they are iterative and have continuous feedback loops into one another.

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[1] The 4F framework is core part of the 6F framework. We elaborate the 6F framework elsewhere.

Figure 1.

The Four F Framework Elements for Foresight
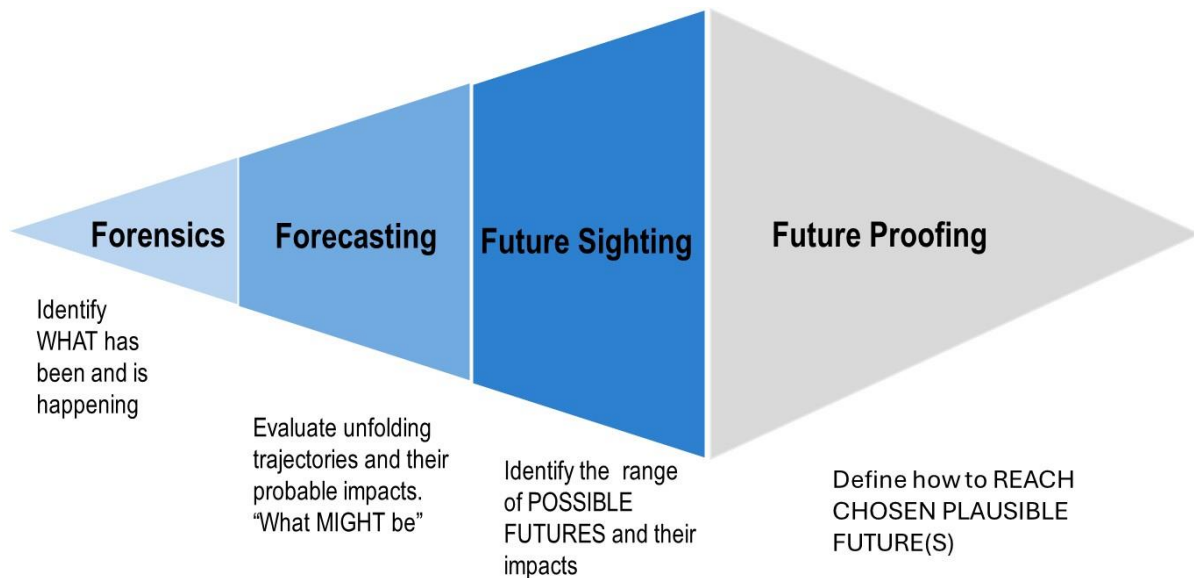
Note. This figure was created by the authors.

In brief, the four key elemental steps are:

- **Forensics.** Collection of contextually relevant data and evidence to put together a detailed picture of the context under study.

- **Forecasting.** Extrapolation of signals, trends and drivers and evaluation of their potential impacts based on historical past and non-historical creative inputs and considerations.

- **Future-Sighting**. Insights from Forensics and Forecasting steps are used as input to develop possible future pathways and scenarios.

- **Future-Proofing**. Future possibilities, as encapsulated in scenario options, are evaluated and assessed to define pathways that avoid pitfalls and negative trajectories

of future development and define actions and pathways to navigate toward desired futures identified.

Execution of the 4F process involves the following:

Understanding the past. Although the past is not necessarily the way the future will evolve, the past can exert a powerful influence. In academic parlance, this is often called path dependency. Importantly, one must have a deep appreciation of your starting point. Without knowing where you are on the map, it is difficult to navigate the future.

Imagining the future. In foresight, the future must be more than a mere extrapolation of a historical trajectory. It matters not whether the extrapolation is linear, curvilinear or any other historically defined pattern. Often, these trajectories are limited by the assumption that the future will be conditioned on the pattern of the past. However, in foresight structural breaks and radical shifts from past patterns are a key consideration in developing and anticipating future alternatives.

Imaging and interrogating the future. Good foresight produces multiple alternative futures (scenarios), and each of these images must be discussed and interrogated for internal logic, robustness and probability of occurrence.

Shaping the future. Foresight should not stop at just defining future alternatives. It is important to work out how these future alternatives, or at least the preferred future alternative, can be realized. Policies, actions, plans and resource allocations need to be thought through, and done so in a stage-by-stage process. In other words, what are the stages required to shape and transition to the preferred future, and what actions are needed at each stage over time?

As we can observe from the preceding discussion, foresight involves traversing through several discrete horizons. The 4F framework encapsulates the past, current, and future horizons. The Three Horizons Model provides a useful schematic for considering and connecting diverse futures and interlinking them into a system of structures and strategies evolving over time (Baghai et al., 1999; Curry & Hodgsen, 2008). Under this schematic each horizon captures a transition point related to the nature of innovation taking place within the trajectory. Transition 1 is a staging point, in which Horizon 1 shifts to Horizon 2, and acts as a platform for the move to Horizon 3 through the second transition.

Figure 2.

The Three Horizons
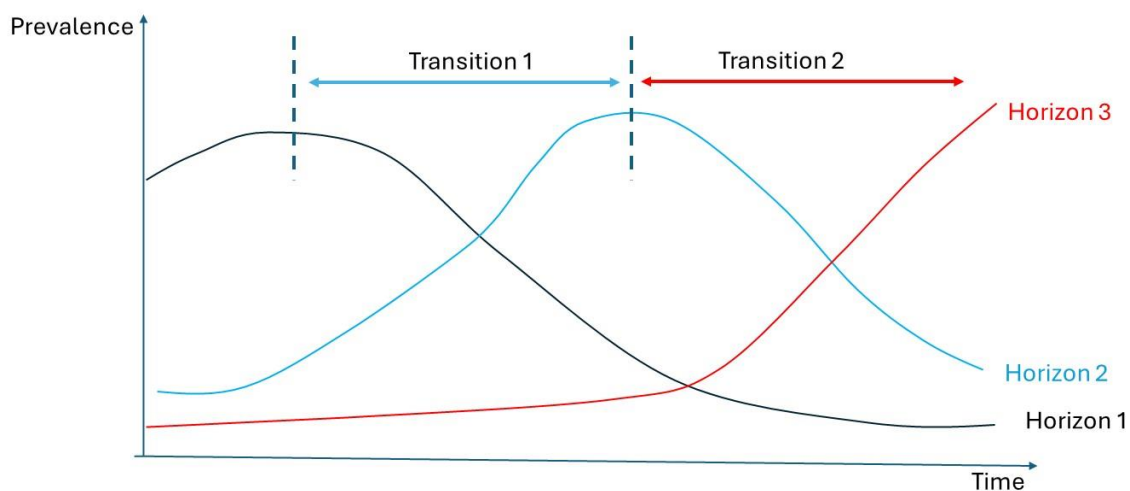
Note. This figure was created by the authors based on the original Three Horizons conceptualization.

Horizon 1: This relates to the prevailing system and represents the status quo position, as it evolves over time. It is a horizon within which a strategic fit exists between the external environment and internal structures, strategies and systems. However, the prevailing system, as it moves into the future loses "fit" due to changes in its external environment.

Horizon 3: This is an embodiment of the future in response to the anticipated change(s) in the environment. Horizon 3 identifies weak signals or issues that are likely to come to the fore over time to define the future. This captures the potential strategic mismatch between the current and future, and the likely consequences of the mismatch or the gains from leveraging the weak signals and taking advantage of emerging opportunities.

Horizon 2: In between Horizon 3 and 1 is where the transition from the known to the unknown takes place. Within Horizon 2, systems are typically in a state of flux. This is the transition space across which Horizon 3 and 1 compete for dominance in response to the changes in the external environment. Over the course of this period, different future alternatives are possible. Which alternative comes to dominate depends on the actions and activities taking place and their ability to "fit with" and, at the same time, influence the emerging environment. The time distance between the Horizons depends on the nature of the issue under scrutiny, its complexity and the pace of flux. For instance, different industry sectors may shift at a very different pace to an emergent new technology or threat. It is mindful to note that often in practice it is the case that the system shift gets bogged down in transition 1 and transition 2 fails to materialize fully because of weaknesses in future planning and underestimation of the resources and time required.

Building on Inayatullah's Futures Triangle (Inayatullah, 2023), we highlight a quadrangle of forces of transitional change as a useful thinking device to delineate key forces and highlight the interlinks between horizons. The image of the future propels us forward, the pushes of the present are drivers and trends that are shaping the future, and the weight of the past encapsulates barriers to the change that we desire. The weight of the future is the constraints to reaching the future, such as financial and other tangible and non-tangible resources. The interaction of these forces defines the future that will ultimately emanate over

time. The quadrangle prompts us to consider both the capacity to change (drivers) and the challenges that must be overcome to arrive at the preferred future.

Figure 3.

Forces of Transitional Change
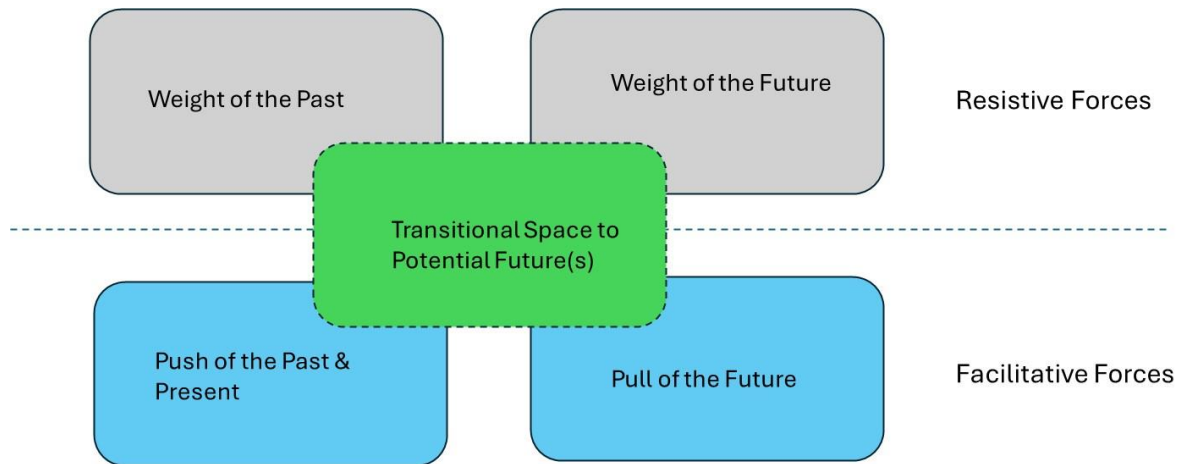
Note. This figure was created by the authors.

We now discuss each of the four F elements in more detail and explain how they span the three horizons.

3.1 Forensics

Forensics is about understanding the present by looking at the past. It requires discerning what has taken place and drawing out learning and understanding of the phenomena. It is a process that relies on collating data and evidence to draw a picture of the present, but as we shall see in the discussion on forecasting, it also provides clues on the expected future. Hard evidence and data only exist in the past and present and not in the future. This is a Horizon 1 exercise, in its primary essence.

Horizon scanning is an essential first step, involving an organized search for weak signals- signs that something new is starting to take place, which is likely to disrupt the system in dramatic and unanticipated ways. Often, the change arises from areas that are not at the forefront of everyone's gaze, even trained experts can be easily blinkered by their narrow disciplinary specialisms. It is important, therefore, to include a diverse group of individuals from different backgrounds, age groups, and frontline employees, among others, to overcome the blind spots of analysts and foresight sponsors. Scanning provides inputs for later parts of the foresight process, and if the net is not cast wide, it is possible to miss out on signals that may upend the system in the future.

Although a number of ways can be used to structure the scanning exercise at this stage, such as STEEP, we advocate the following ten areas for comprehensive coverage.

Figure 4.

The Ten Forces of Change
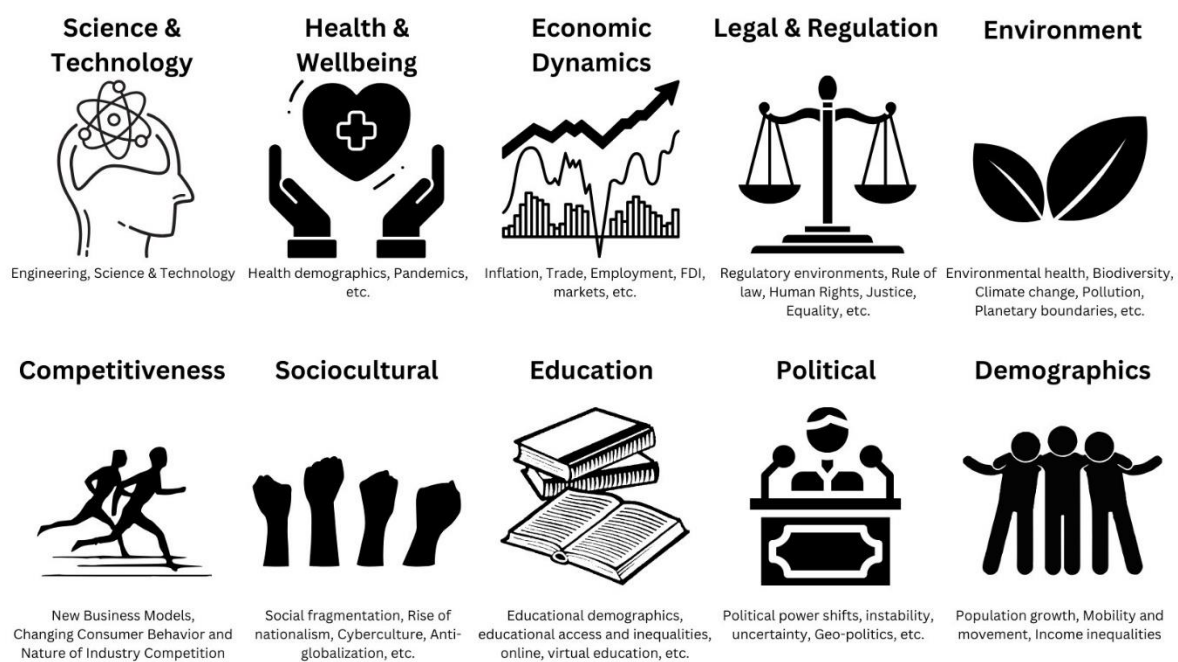
Note. This figure was created by the authors.

Signals are early indicators of an event or an issue that is likely to lead to disruption or discontinuity. Weak signals tend to be diffuse and hardly perceptible, and their trajectory of development tends to be ambiguous and uncertain. Strong signals, in contrast, are clear in the nature of their existence and likely impact.

Signals in the environment often interact with one another and can over time, begin to show directionality, in which case they become part of trends. However, it is important to note that the occurrence of signals does not equate to the emergence of trends. Signals are precursors of likely impacts that may take place within different time horizons (short, mid or long-term). Additionally, a signal has consequences, whose impact and relevance can come into play in the short-term or come into play over the mid- or long run. Short-term signals impact the present or near future, whereas mid-level signals tend to be more uncertain, yet it is possible to anticipate their likely impacts with some level of confidence. Long-term signals are difficult to assess.

A good scanning exercise should be able to pick up disruptions and events across the zone of plausibility by casting a wide net at the start and narrowing down quickly. Scanning for weak signals helps identify low probability high impact events that are easily overlooked in conventional strategic planning exercises. Without picking up on these events, their occurrence can lead to both surprise and panic.

Signals that are deemed to have a low probability of occurrence are often discarded by analysts, yet they may have a high impact. They are ignored because they are often perceived to lie outside the study scope or because analysts cannot define the pathways through which these weak signals may disrupt the system. When they do eventuate, they appear to the shock and surprise of analysts, experts and sponsors.

Differentiating between Signals, Trends, Drivers

- Different **events/issues** interact with each other and converge to create an effect (**signal**). The emerging signal can be weak or strong. Strong signals are easily observable, and their potential impacts across the short, mid and long-run future are relatively easier to discern. Weak signals, in contrast, are ambiguous, and their future impacts remain difficult to predict.

- **Signals** are a stream of events that are either happening or waiting to happen. They have an impact on the system.
  - Weak signals are a sign of impending change that may disrupt the existing system.
  - Strong signals have definite and clear outcomes and, hence, whilst important, are not critical levers (not the bread and butter) of a foresight exercise. However, this does not mean that they are not important and need not be considered in the foresight. They are, in fact, the foundations on which other layers, such as identifying and understanding the impact of weak signals, are built upon.

- **Trends** are signals that possess directionality in addition to impact.

- **Drivers** are events or trends that have a purposeful influence to create certain consequences, i.e., they are causative. A→B→C
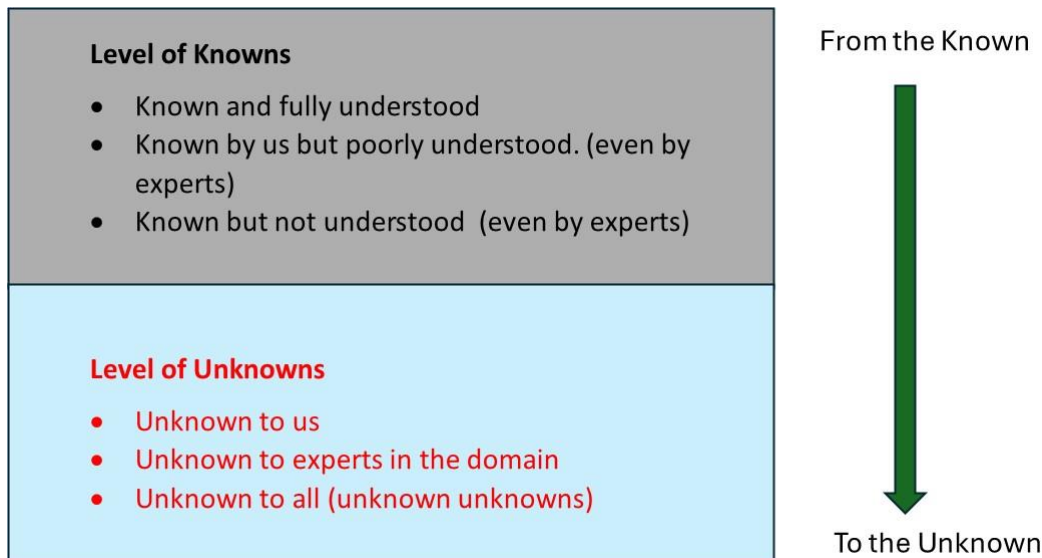
3.2 Forecasting

Foresight and forecasting are often confused with each other but are different. Forecasting is about being able to predict the "expected future". It relies on data and evidence to establish the unfolding trajectory of the future. It is about predicting the future through data collected on specific phenomena and used to project the phenomenon's future evolution and impact. A wide variety of tools can be deployed for forecasting, from statistics to complex simulations. Forecasting first builds an understanding of the present by looking at past evidence and then uses the understanding and data to make extrapolations into the future. The

extrapolations may vary from linear conjectures of the future, curvilinear, or even include breaks and shocks to the system. In conducting forecasting, it is important to explicitly draw out any supporting assumptions and question whether they will remain robust into the future or whether amendments need to be made to these assumptions to capture an accurate depiction of the future.

Forecasting the future through projection is both an art and a science. The expected future is the future that we consciously or subconsciously expect to materialize. It typically tends to be a data-driven interpretation of evidence and trends, or it can be based on beliefs and assumptions that exist in the minds of people and society. Simple or naïve projections tend to be based on the assumption that events taking place in the recent past will define the future. This can work in the near or immediate future predictions and typically revolves around the familiar. However, projection over a longer horizon requires the compilation of data covering a substantive period of time in order to extrapolate the expected future. This can range from linear projections to complex simulation modelling involving a web of interactions or involve simulations based on expert opinions, such as the Delphi panel.

Forecasting is linked with the Forensics stage in that its extrapolations are based on signals that were captured in the forensics stage. The basis of the extrapolations is often based on the knowns, yet foresight needs to capture the unknowns (the weak or almost imperceptible signals). In this sense, we need to note the known and unknown levels (see Figure 5). In forecasting it is important to keep in mind that there is a proclivity to extrapolate based on knowns. However, forecasting, in a foresight exercise, should incorporate a diverse range of unknowns, such as shocks or structural breaks in the system.

Figure 5.

Level of Knowns and Unknowns

Level of Knowns
- Known and fully understood
- Known by us but poorly understood. (even by experts)
- Known but not understood (even by experts)

Level of Unknowns
- Unknown to us
- Unknown to experts in the domain
- Unknown to all (unknown unknowns)

From the Known

To the Unknown

Note. This figure was created by the authors.

In the forecast of future alternatives, it is important to be able to discern those trajectories that are highly probable to occur from those that are less likely to transpire. This is particularly important for high-impact issues or events. Additionally, it is worth stressing that in cases of major disruption, such as a severe social, economic, and technological change, forecasting models based on the past may not be reliable unless they are able to incorporate the likely impacts of these "shocks" into the trajectories of development. Despite this awareness, there is always a tendency to focus on the strong signals since we are comfortable dealing with knowns, yet we do so at our peril since they represent the zone for which we are unprepared. A foresight exercise is, at its core, an anticipatory exercise that must, as a default, incorporate the unknowns into the knowns.

In the process of developing future trajectories, it is important to note that the signals, trends and drivers hardly ever function in isolation. They are intricately interlinked, and

therefore, this aspect must be considered when developing forecasts. One of the easiest ways to do this is by explicitly considering how one element influences and impacts the other. This aspect is usually covered under cross-impact analysis, which can be both a quantitative assessment of the nature and level of impact of one trend on another, or it can be a judgmental assessment of experts and stakeholders. Cross-impact analysis is usually conducted under a matrix-type format (see Figure 6), and practitioners tend to incline towards a probabilistic and quantitative approach. However, it is important to be careful not to fall into the quantitation trap since many of the signals and trends in a foresight approach are both difficult to predict and quantify. A qualitative-quantitative mixed approach is best to assess potential cross-impacts.

Figure 6.

Cross-Impact Trend Analysis

	Trend1	Trend2	Trend3	Trend 4	Trend 5
Trend1	T1 ←→ T1	T2 ←→ T1			
Trend2	T1 ←→ T2	T2 ←→ T2			
Trend3	T1 ←→ T3	T2 ←→ T3			
Trend 4	T1 ←→ T4				
Trend 5	T1 ←→ T5				
Overall Impact	T1 ←→ T1..T5				

Note. This figure was created by the authors.

3.3 Future Sighting

Future Sighting is about looking at and identifying the shape and form of the future. It encapsulates developing a rich picture of the future through the process of scenario building. Scenarios are essentially a representation of narratives of alternative futures. They are qualitatively distinct visions, narrated as stories encapsulating how the future looks, and are based on a variety of assumptions. They serve the purpose of building a shared understanding, a way of sense-making or depiction around which dialogue, questioning, and learning can be initiated. They are not strategies, plans or policies but rather a capture of perspectives, underlying assumptions, and evolving trajectories arising from within the past and present into the future.

How many scenarios do we need? The answer to this depends on the purpose of the foresight exercise. The number can vary from a single scenario to any number. The more scenarios, the more difficult it is to make sense of them within a consolidated whole. Unsurprisingly, a large number of scenarios make the task of strategic and action planning quite arduous and perhaps even lead to confusion. For instance, a rich visioning approach can lead to a single, compelling, detailed scenario of a desired future, especially if driven by a clear normative agenda. On the other hand, some exercises can have many scenarios. For instance, a two-by-two matrix approach may lead to four main scenarios, but each may have four sub-scenarios, resulting in 16 scenarios. A key challenge under these types of situations is to provide an umbrella to frame and understand the many different alternate futures. A simple rule of thumb is to keep the number within three to eight scenarios in any foresight exercise.

A few points worthy of keeping in mind when developing the scenarios are:

- Scenarios should not be simple linear forecasts of the past. Extrapolations of the current trends based on visibly known strong signals should be part of conventional strategic planning and not constitute the core of foresight.

- Scenarios should not overlap; if they show significant overlap, they should be folded into a single scenario. It is always better to have parsimony since, most of the time, it allows for easier comprehension and cuts out confusion.

- Scenarios should be constituted by an umbrella narrative that converges into a consistent, plausible whole.

- Scenarios are best when used for long timespans, at least ten years, unless there is an exceptional need to keep them below this period, such as in a fast-changing, highly dynamic environment. Change arising from weak signals is often a slow, uncertain and protracted process. To capture the unfolding impacts of weak signals, a foresight exercise should preferably have a time span of 20 to 30 years, if not more. This allows for different future alternatives to appear and fully sediment in the form of a "rich" scenario picture.

Scenario thinking contemplates three types of queries regarding the future (Börjeson et al., 2006), namely:

- What will happen?

- What can happen?

- How can a particular objective be accomplished? (Note: This comes into play more fully in the Future-proofing stage)

Various methods exist for generating scenarios, including quantitative and qualitative approaches, but to date, qualitative approaches are preferred for scenario generation (Amer et

al., 2013; Börjeson et al., 2006). Qualitative approaches rely on the knowledge and expertise of individuals or groups, rather than quantitative approaches such as historical statistical data, simulation, and extrapolation, which are used more in forecasting (Bradfield et al., 2005; Ducot & Lubben, 1980; Huss & Honton, 1987). Scenario generation techniques include alternative futures analysis, morphological analysis, the Cone of Plausibility and brainstorming, which can be run as an individual or group, structured or unstructured, physical or virtually structured activity (Dhami et al., 2016). Each of these techniques differs in terms of the necessary expertise, time, and resources.

The simplest and most popularly employed scenario generation technique is the 2 x 2 matrix. This approach emerged from the early work by Royal Dutch Shell and the refined version was elaborated on by Schwartz (1991). In its essence, the matrix is formed by identifying two key dimensions that capture future uncertainty and are key to its future development. The combination of the uncertainties creates four scenario quadrants, each encapsulating a distinct narrative of the future. The key to successfully deploying this technique lies in identifying genuine uncertainties, rather than naïve, surface-level dimensions that are unable to draw out future alternatives. When selecting the two dimensions, it is important to bear in mind that they should not be simple trends (since for these we already know what is likely to transpire into the future) but they should be critical uncertainties that are likely to shape the future and their manifestation could lead to extreme future outcomes. Another technique that builds on the matrix notion is that developed by Dator (2009), in which generic futures (Growth - continuation and acceleration of the present, Collapse - a fundamental structural break from the present, Discipline - a highly controlled and regulated future, and Transformation - a radical shift from the present) are used as generic futures and each is evaluated with respect to emergent forces of change.

Figure 7.

The 2 x 2 Scenario Matrix
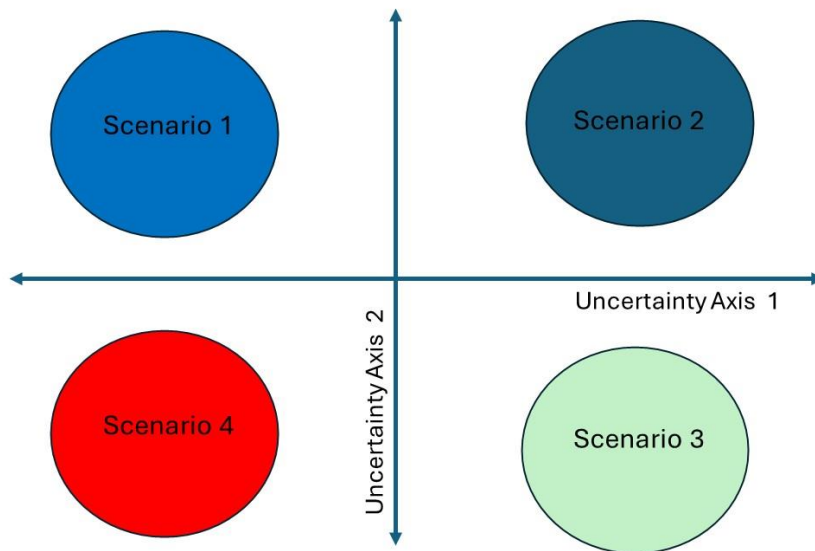
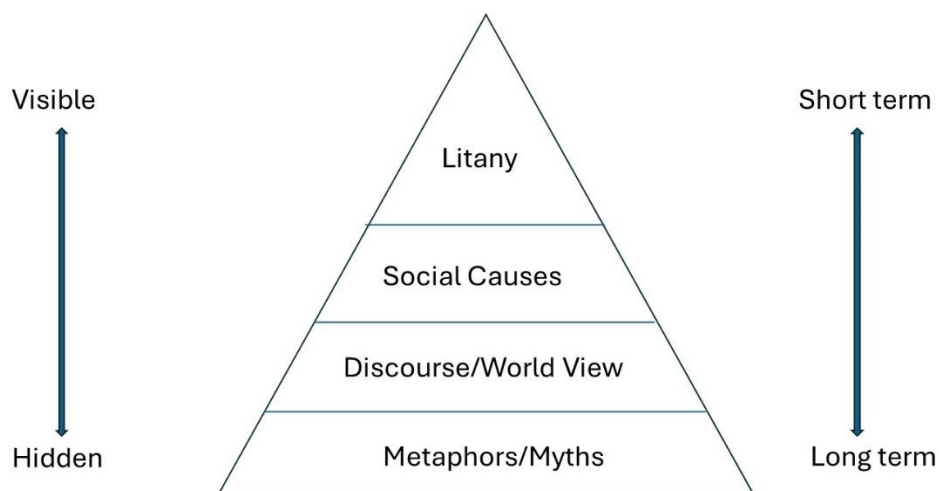*Note.* This figure was created by the authors.

To develop depth in a single scenario, the technique of visioning is useful. It is a method of enriching and giving depth to a particular scenario, and because of this, it is sometimes referred to as "Incasting". There are many ways to build depth but from among the many, Inayatullah's Causal Layers Analysis (CLA) is a particularly useful guide for fleshing out scenarios (Inayatullah, 2004). CLA is an integrative analytic process, which moves from the superficial "litany" level to uncover deeper metaphors and myths that define worldviews. Inayatullah (2008) provides a set of six questions that help us consider and develop future options (scenarios).

1. What do you think the future will be like? What is your prediction? Why?

2. Which future are you afraid of? Why? Can you transform this future to a desired future? Why or why not? (Normative Foresight)

3. What are the taken-for-granted or hidden assumptions of your predicted future? Will they hold or change?

4. What are some alternatives to your predicted future? If you changed and adjusted some of your assumptions, what alternative options emerge?

5. What is your preferred future?

6. How do you move to this future? What steps need to be taken to get there?

Figure 8.

Layers of Causal Layered Analysis

Note. This figure was created by the authors based on Inayatullah's (2004) CLA method.

Good scenarios (Amer et al., 2013; Dhami et al., 2022) should possess the following qualities: completeness, plausibility, context (also known as relevance/pertinence), coherence, and order effects (also known as transparency):

- *Completeness* refers to how detailed a scenario is with regard to its drivers, outcomes, assumptions, and provision of relevant background information.

- *Plausibility* refers to the connection between the drivers and outcomes in the scenario, as well as its assumptions.

- *Context* refers to the current social, economic, environmental, legal, and political context and history and their relevance to the problem question at hand.

- *Coherence* refers to the logical flow of the argument presented in the scenario.

- *Order effects* refer to the identification of potential consequences/ impacts as they ripple outwards from within the scenario kernel.

Scenario development often additionally involves connecting scenarios to the possibility and/or probability of these scenarios transpiring. This requires connecting scenario trajectories and trend extrapolations to the possible futures (Voros, 2001; Voros, 2003). Hancock and Bezold's (1994) Futures Cone is a useful metaphor for capturing the broad probabilities of the future (possible, plausible, probable and preferable). The value of the Futures Cone is that it allows an easy yet systematic way to evaluate scenarios' plausibility.

Figure 9.

The Futures Cone
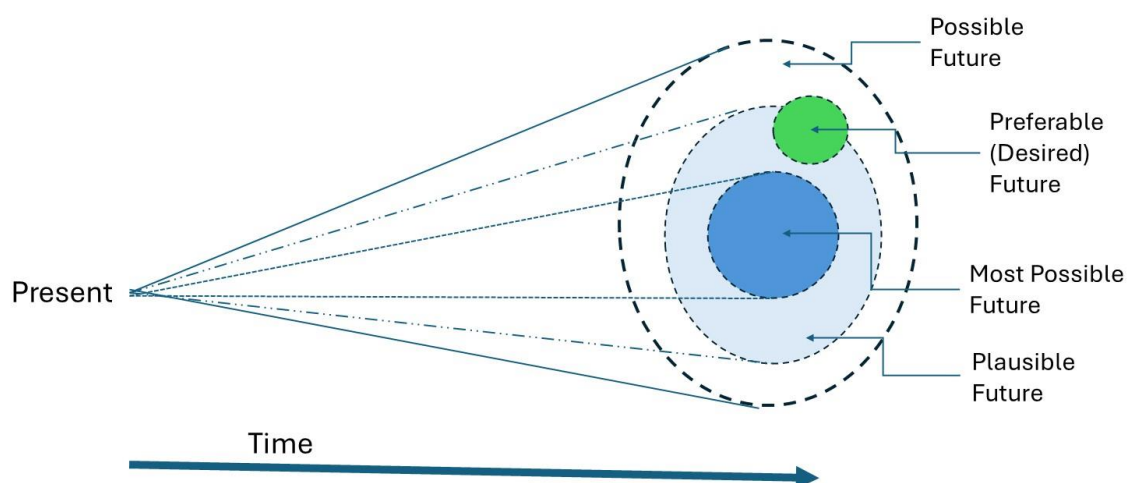
Note. This figure was created by the authors based on Henchey's (1978) four main classes of the future.

3.4 Future Proofing

As highlighted earlier, scenarios are projections of alternate futures with associated pathways of their development. The fact of the matter is that the future is inevitable; the only question is what will it look like and what will its impact be? Yet the key is to not just build a picture of the future alternatives but to monitor and be prepared by planning courses of action to facilitate the occurrence of the desired future or have mitigating plans for addressing undesirable future(s), should they come into being. In other words, once you build a "rich" picture of a scenario, laden with an extensive capture of relationships, sentiments, problems and opportunities, the scenario needs to be scaffolded to policy, strategy and action plans (van der Heijden, 1996; van der Heijden, 1997). This part of scenario use occurs within our model's Future-proofing stage.

Future-proofing is about defining ways to reach desired scenarios. Defining the pathways to the future necessitates thinking through the courses of action needed to secure the desired future. Linking strategies to scenarios can be quite an involved process. If not taken seriously, the value of foresight is easily undermined since scenarios in themselves are unable to deliver outcomes. Without outcomes, scenarios become an empty exercise of thinking. Scenarios of desired futures must be materialized, and undesired futures must be actively avoided or mitigated. Bridging scenarios to strategies is quite demanding; it requires considerable effort and time and is a process that involves a back and forth from scenario to strategy to forge a strategic fit.

The scenario to strategy and action process can be addressed via the employment of various approaches. At the simplest level, we have the Scenario-Strategy Matrix, in which strategies are first developed for each scenario and then evaluated for "fit" across several dimensions: strategic, cultural, risk, economic and financial. This matrix allows an evaluation

of how different strategies and action plans can reach a specific scenario. From this set of strategic options, a choice can be made based on the circumstances of the sponsoring agents, such as the amount of resources, preferences and time in making the final choice to meet desired objectives within extant resource constraints.

Figure 10.

The Scenario-Strategy "Fit" Matrix

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Strategic fit				
Financial fit				
Resources fit				
Risk profile fit				
Economic fit				
Culture-Values fit				
Overall fit				

Note. This figure was created by the authors.

Apart from the Scenario-Strategy matrix, strategies and actions can be explored via various approaches. Of these, Backcasting, originally developed by Robinson (1990) to avoid the trap of linear extrapolations, is a particularly useful methodology since it can be used to develop scenarios of the future and then used to question what the steps are to get to that future. The process starts by first developing or using a normatively desired future, then working backwards to identify major stages, events and data points in the anticipatory trajectory of the future. In the process of defining these staging points, policies and strategies needed are devised and evaluated for "fit". This allows the identification of policies, strategies and plans that will be needed to traverse from the present to the future. The wind-tunnelling concept is closely

associated with this "strategy" exercise, which turns attention to how future changes may impact the ability to deliver the strategic objectives, goals and aspirations of the foresight exercise or desired scenario.

4. Concluding Comment

In this short introductory consideration of foresight, we introduce the 4F elements that are a core part of the methodology. Our focus in this paper was not to explicate each tool that can be used within the framework but to highlight high-level aspects taking place within the 4F elements of the framework. In subsequent work we hope to elaborate on the full framework and cover in detail the component parts. We hope this serves as a useful primer for other papers in the foresight series.

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