BLACKROOM

A Concept Incubator for the Future of Coarse Wool

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"For I dipt into the future, far as human eye could see,

Saw the Vision of the world, and all the wonder that would be;

Saw the heavens fill with commerce, argosies of magic sails,

Pilots of the purple twilight, dropping down with costly bales…"

Locksley Hall

Alfred, Lord Tennyson (1809–1892)

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Abstract

The coarse wool industry has been described as being in a state of malaise by the existing literature and industry experts. Back in 1981 Prime Minister David Lange infamously boasted that agriculture was a sunset industry (Federated Farmers, 2014). At the time this was challenged by industry sector leaders as being false. However, whilst undertaking an analysis of the coarse wool, the research has indicated the industry has passed through the 'sunset phase' and now is in the 'decline' phase and may be irretrievable, unless major changes occur.

The primary reason for this research is to investigate the future for coarse wool. Wool is a hugely under rated product that has so many positive, environmentally conscientious and natural benefits that are being over-looked in favour of synthetic alternatives.

The report continues on from the previously titled "The New Zealand Coarse Wool Industry – Does it have a Future?" (Oliver, 2015). As reiterated in the prior report, the only way forward now for the industry in the expert's opinion, is for the industry to commit itself seriously to advanced research to take the coarse wool fibre into new uses. This report outlines the potential of using a foresighting, backcasting concept incubator, named 'Blackroom'.

The key to the utilization of a Blackroom futures concept is to takes the researchers away from the present and places them in the distant future, envisaging the future system state and then bringing it all back in order to determine the pathway to the future product use. The resulting outcome of the Blackroom will be to develop new research pathways for the future of the wool fibre and industry.

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Glossary of Terms

Backcasting: a tool for visualizing obstacles in achieving a goal and the steps needed to overcome those obstacles.

Causal layered analysis: a tool to expose hidden assumptions and help create a new narrative that facilitates the desired change.

Delphi: an expert elicitation process to increase the accuracy of expert estimates through confidential voting over several rounds where participants can adapt their views based on the views of others.

Forecasting: predicting future conditions based on past trends.

Horizon scanning: a tool for collecting and organizing a wide array of information to identify emerging issues.

Scenario planning: a tool encompassing many different approaches to creating alternative visions of the future based on key uncertainties and trends.

Strategic foresight: a structured process for exploring alternative future states.

Visioning: a tool to envisage the most desirable future and a commitment to create that future.

1.0 Introduction

The coarse wool industry in New Zealand, given that is a commodity, has been in decline for decades. Historically there have been many attempts to conjure up new product classes for the fibre and these in the main have been unsuccessful. The current state of the wool industry itself is dysfunctional, despite this the fibre has a viable future, provided it is invested into. The future of wool without suitable investment into the fibre and industry faces decreasing returns to farm gate and declining production and industry. The importance of acting now to save the fibre and industry has never been more relevant with only 2% of global fibre usage being wool.

This report is the resulting outcome of prior master's thesis research into the coarse wool industry (Oliver, 2015). The conclusion of that research found the "industry sector group coarse wool is indeed in full decline and may never recover in its current form unless the fibre is differentiated along with the industry actors, and the chain elements" (Oliver, 2015).

The primary reason for this research is because I am passionate about the future of coarse wool, coming from an old farming family that has produced coarse wool for many years. Wool is a hugely under rated product that has so many positive, environmentally conscientious and natural benefits that are being over-looked in favour of synthetic alternatives. The aim of the research report is to determine a potential concept pathway to establish a future for the coarse wool fibre and industry.

The concept proposed is a futures concept, which places specialist people in an incubator environment, foresighting out several decades and envisioning a future system state and backcasting to the present, resulting in working out research pathways for the fibre. This concept incubator is known as "Blackroom"

The structure of the report will follow a review of existing futures literature around foresighting, backcasting, scenario mapping and research pathway selection. Following this is an analysis and resulting outcomes of the literature and a discussion on how the Blackroom concept will be envisaged. The report will investigate what the Blackroom concept should look like for coarse wool, how it

might be set up, what kind of people would be involved, include likely costs and potential outcomes.

Following this is the conclusion, recommendations and next steps for the report. The conclusion reviews and sets out the implication of using the Blackroom concept for the industry, followed by the recommendations which consider the where to next. If the blackroom incubator concept is successful in producing a paradigm shift or disruptive change for the fibre, this in turn will save the coarse wool industry.

2.0 Aims and Objectives

The aim of this report is to present the 'Black Room' concept as a potential answer to the New Zealand Coarse wool sector's systemic problems. The objective of this report is to provide an explanation of how the futures design incubator works.

A study question:

Given that the New Zealand coarse wool industry is in decline and any development currently of wool products is unlikely to save the sector, is it feasible to establish a Blackroom design incubator to foresight and backcast coarse wool products, beyond the present to a 50-year horizon, thus saving the sector?

3.0 Literature review

3.1 Background

The conclusion from the research surveys (Oliver, 2015) and the interview data reviewed from previous research sets out that the industry sector group coarse wool is indeed in full decline and may never recover in its current form unless the fibre is differentiated along with the industry actors, and the chain elements (Oliver, 2015).

The only way forward for the industry now is for new research to take the coarse wool fibre into new end uses outside of the traditional carpets and apparel. Such new segments may be the filter media, housing insulation, infant care, and

cosmetics for example. In my opinion, the industry needs to seriously commit itself to advanced research to look at product uses beyond the traditional fibre products end markets. I believe this research may involve foresighting the fibre use out in the future then backcasting to the present in order to work out fibre products. This will involve a 'blackroom' research approach that takes the researchers away from the present and places them in the distant future, envisaging the future system state and then bringing it all back in order to determine the pathway to the future product use.

"You cannot solve today's problems with the same thinking that created them."

Albert Einstein (Green & Williams, 1996)

The wise words of Einstein above hold true to this day. The future no longer belongs to those who create the future using past events as their guide and wool is no exception according to the experts interviewed. Economic success and the coarse wool industry survival will exclusively lie in my opinion with those organisations and people that seize the opportunity of responding to the challenges in this industry. These responses must be in ways which confront the existing paradigm of the current 'business as usual model' and that extend beyond the current trappings of product incrementalism that is apparent today. Those who focus on the longer-term future when engaging in strategic planning and future product design will be the survivors. (Hamel & Prahalad, 1994; Slaughter, 1995; Weaver & Jansen, 2004). In essence the new paradigm of tomorrow must entail the creation and development of new products and services with far heightened levels of eco efficiency and that service the same needs of society today yet embody totally new forms - not like anything society of today has ever witnessed. Over the Horizon design and strategic planning (also referred to as *frontier* design*)* which has its roots firmly ground in futures studies is possibly the *only* means available to this industry that is genuinely capable of addressing and attaining long-term coarse wool market sustainability.

"Over the Horizon" strategic planning and product design entails four fundamental futures planning tools that support strategic decision-making which enable firms to transition towards real levels of future product design. These are

foresight, backcasting, scenario planning and most importantly the creation of "black rooms" for research and development - protected spaces or niches working *independently* of current business activities involving innovative actors from a diverse range of sectors who develop and conceptualize alternative visions, agendas, and ideas for the coarse wool fiber.

Current models have been designed to accommodate strategies derived from present business and usual practice driven from the base of *today* (Weaver P. , Jansen, van Grootveld, van Spiegal, & Vergragt, 2000; Jansen, 2003; McDonough & Brungart, 2002; Ryan, 2008). Therefore, they are only accustomed to short-term, current thinking influenced by past and present trends and events. The premise upon which the Over the Horizon model operates however is the exact opposite. Instead of using the current paradigm as the basis for future change, Over the Horizon starts by going *out into the future* to establish where wool success will be and then comes back to the present – a form of simulated hindsight that embraces long term planning and design. Therefore, in order for Over the Horizon to work firms must disassociate themselves *completely* from the present day mode and focus only on the future and on the future they *want* to have occur.

However, given that all current models are based on the premise of going forwards, none are approaching sustainability from the other direction as in Over the Horizon. With this in mind it is evident that for Over the Horizon to work - and it *must* if organisations wish to successfully ride through the rapidly advancing sustainability movement - then business must radically change their current business models and organizational structures in order to accommodate the principles that Over the Horizon planning and thinking entails. This is the only way forward for coarse wool.

This process is not easy (path changing and paradigm shifting) based on 'over the horizon thinking' and is somewhat difficult to achieve with present research methodology. The idea that you can 'go out' several decades and visualize a future system state (e.g. what materials will be used what will be clothing, what will be cladding composites, what buildings might look like and what insulation might

look like.) is a concept that few can accept or even perceive. This work will set up the parameters of the black room and the work it must do.

This work only covers the criteria for a Black Room and includes;

- Foresighting and writing a 'Future System State' for coarse wool
- Backcasting
- Scenario mapping
- Research pathway selection.

3.2 Foresighting

The hardest part of foresighting operates is in stark contrast to forecasting, that allows firms way to think about the future outside of today's norm. The difference assists firms' ability to identify opportunities and threats likely to arise over the coming years and decades. Foresight allows organizations to reflect, expose and challenge deeply held suppositions regarding the future, but also to plan any new trends that may potentially arise, and prepare for these in advance. This work will study how to foresight and how to let go of the present and go out into the future and develop and visualize what the state will be of the world, and its materials and their use.

The future of business is uncertain the face of increasing change. The speed of change over time is constantly accelerating across technological, societal and geopolitical settings. Governments, companies and decision makers require relevant up to date information to better understand the future opportunities, threats and potential disruptions at both global and local levels (Eagar, Boulton, & Demyttenaere, 2014). Sophisticated methods are being utilized to capture this data and turn this into readily available information. Despite this, the world over seems to be constantly disrupted with unknown and unpredicted technology, business models, economics, politics, or natural events in an era of hyper-competition, technology disruption and increased customer power (Sardar, 2010). The resulting knee-jerk reactions from government and business alike

when surprised by a new 'megatrend/s' or "an inevitable evolution leading to a change [within] society, business economics or [the] environment" (Eagar, Boulton, & Demyttenaere, 2014) is unsatisfactory.

Some of these current megatrends are included in Figure 1, which are facing decision makers.

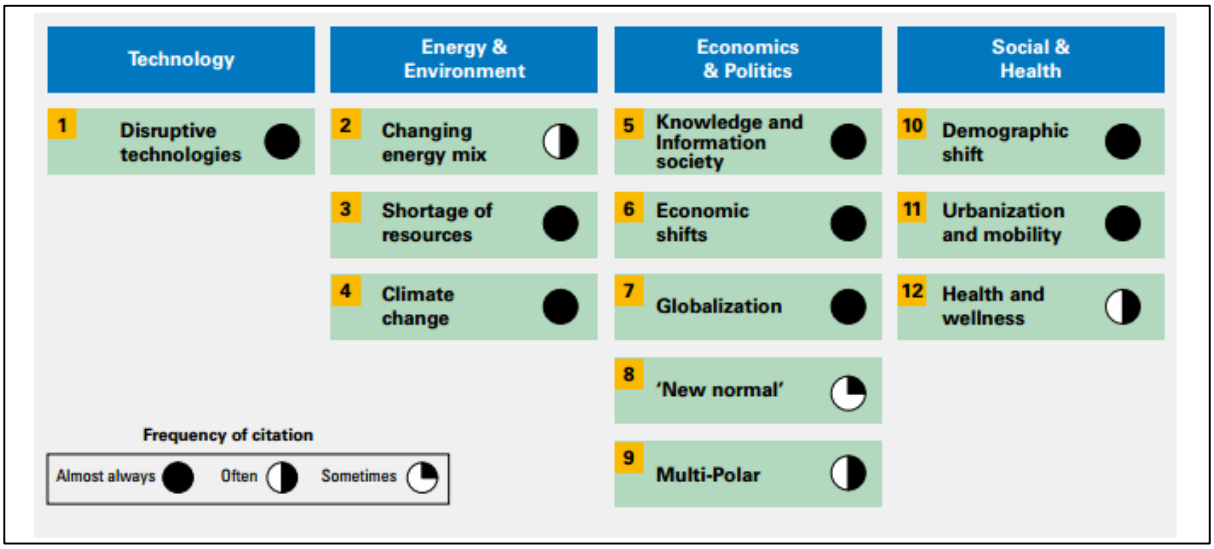

Figure 1: The 12 Most Discussed Megatrends According to Eagar et al. *(Eagar, Boulton, & Demyttenaere, 2014)*

In fact, it is rapidly becoming clear that the historical ways of thinking based on "our ways of working and the assumptions and models upon which we have structured our organisations are no longer useful or relevant" (Conway, About Foresight - Thinking Futures, N.D). Looking at the combinations and interactions of these existing megatrends is a useful exercise for governments and organisations to understand impacts and opportunities. In order to successfully analyse these trends, an effective approach is required to make sense of all the data to turn this into a form which is effective for decision making. This involves gathering, analysing and interpreting trend intelligence, and integrating it into strategy and planning (Eagar, Boulton, & Demyttenaere, 2014). Some approaches of utilizing big data and megatrends are continuous scanning, using models and simulations, moving from static data gathering to dynamic reconnaissance,

foresighting tools and utilizing integrated intelligence service providers (Eagar, Boulton, & Demyttenaere, 2014).

The next step for governments and organisations is to turn the resulting information into processes to transform the way they conduct day to day business. The resulting outcome of this is an end to end process integrating future thinking, planning and strategizing into the business as usual mindset. Figure 2 suggests a way which this end to end process could look like to incorporate future thinking as according to Drucker, summarizes situation by claiming that "in the next 10 to 15 years, collecting outside information is going to be the next frontier" (Cook, Inayatullah, Burgman, Sutherland, & Wintle, 2014).

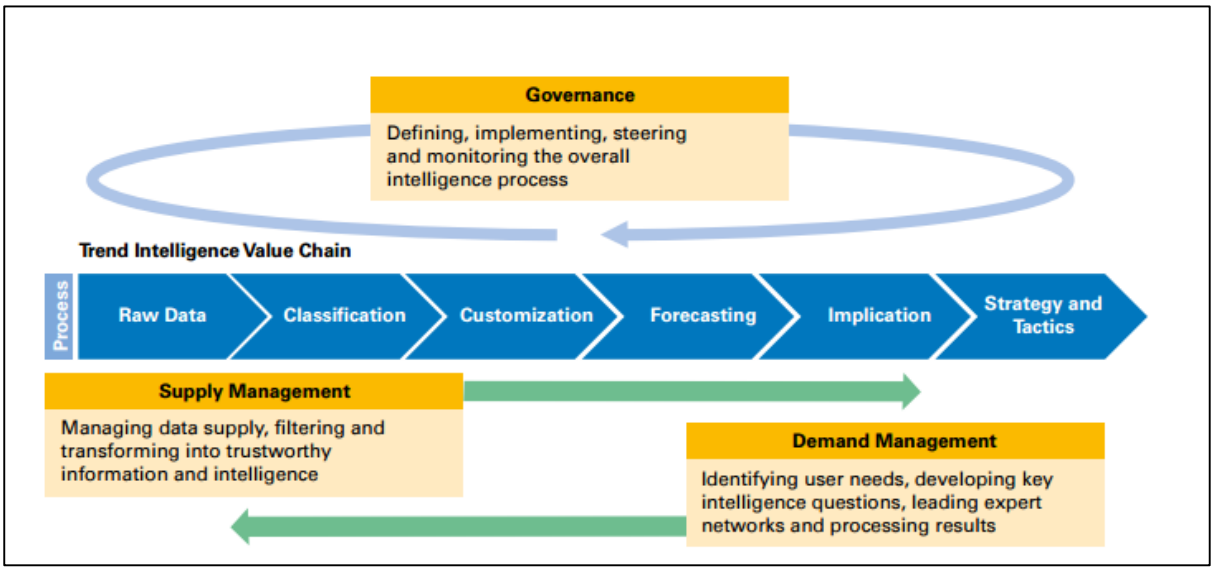

Figure 2: End to End Process for Business to Integrate Future Thinking *(Eagar, Boulton, & Demyttenaere, 2014)*

The systematic examination of the future in the sense of modern futures research is not a recent phenomenon "it can be traced back to the end of World War II…. futures research per se emerged as a quasi-formal discipline [during] this period…" (Von der Gracht, Vennemann, & Inga, 2010)

During the 1950s, futures methodologies, such as the scenario or Delphi technique, were developed. In the late 1970s, Strategic Issue Management (SIM) emerged as a method to support the corporate planning process and to cope with uncertainty in the business environment (Von der Gracht, Vennemann, & Inga, 2010).

Since the late 1980s the term 'foresight' has increasingly been used. It describes an inherent human activity used every day by individuals throughout society and business and draws on wider social networks than 'futures studies' view foresight less as a technical and analytic process, but as ''a human process permeated by a dialectic between the need to know and the fear of knowing'' Corporate foresight has become the prevalent term used by many companies for their futures research activities (Von der Gracht, Vennemann, & Inga, 2010).

Foresighting has been defined as "the learned thinking capacity to explore possible futures to inform decision making today" (Conway, About Foresight - Thinking Futures, N.D). Foresighting is a way of future thinking that is open, long term, collaborative and expansive. It moves beyond mainstream, short term, strategic, cross disciplinary and cross industry current thinking into long term patterns which take notice of changes focuses, interactions and patterns (Conway, About Foresight - Thinking Futures, N.D). Using foresighting as a planning tool allows for proactive responses to issues and problems, rather than a reactive, subjective and emotive response to change. Furthermore, using foresighting helps drive strategic future thinking around long term future change. Such as "what changes are coming that will undermine our current business model, or who will our clients be in 10-20 years…" (Conway, About Foresight - Thinking Futures, N.D). Foresighting has had issues of identification in the past with vagueness and there have been many attempts to qualify the word in business strategies for years now.[1]

The basic way of conducting foresighting according to Conway could be considered by Figure 3:

[1] See: Major et. al.2001 (Major, Asch, & Cordey - Hayes, 2001) in the "Futures" Journal 2001 mentioned that Foresight is an elusive and oft-misunderstood term. Lacking a widely accepted definition, it is unclear when and whether it refers to a process, to a human attribute or competence, or to a national Foresight programme. 2001 Elsevier Science Ltd.

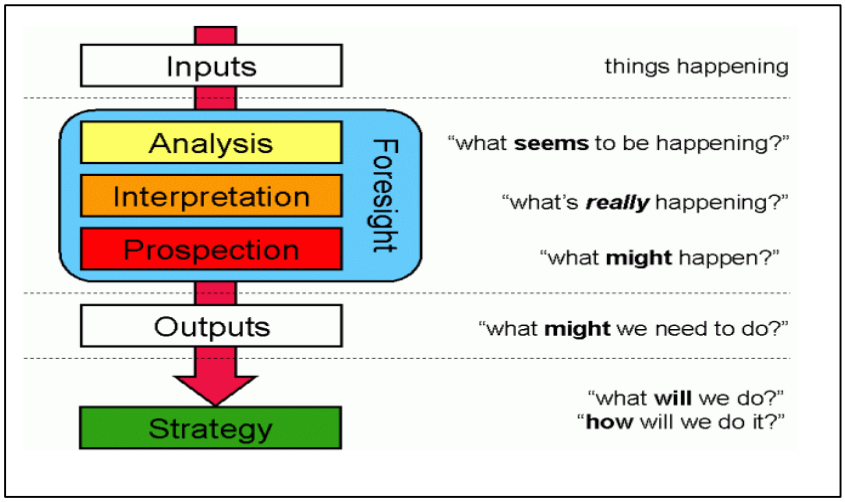

Figure 3: Foresighting Model taken from *(Conway, About Foresight - Thinking Futures, N.D)*

Figure 4 considers a more complex way of considering foresighting and other useful factors that may need to be considered:

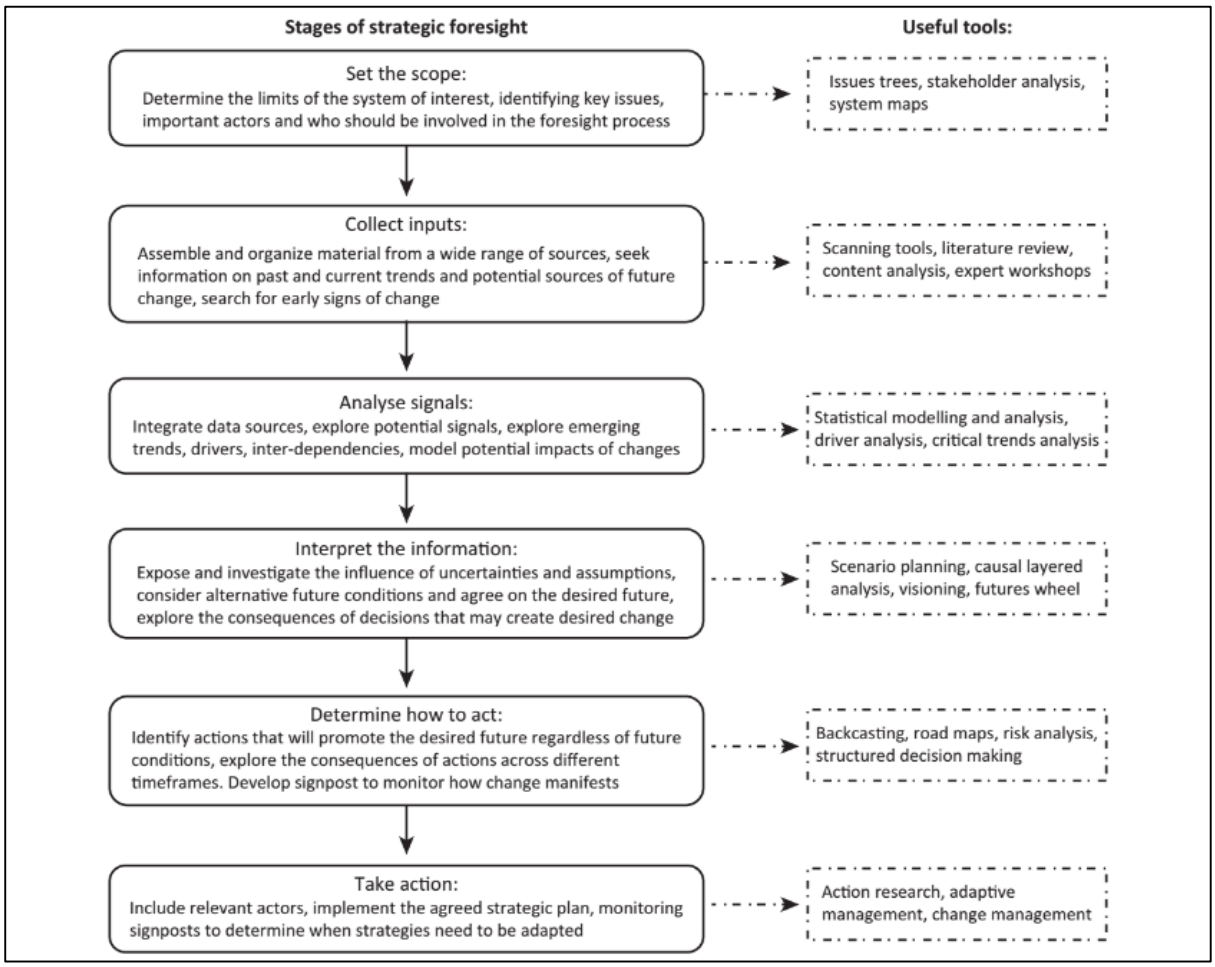

Figure 4: The Stages of Foresighting Alongside Other Factors to be Considered *(Cook, Inayatullah, Burgman, Sutherland, & Wintle, 2014)*

The main principals of the foresighting approach according to Ratcliffe is to:

- "Look far way, as prospective is a long term activity;
- To look breadthways, in order to examine interactions;
- To look in-depth, so as to become aware of the most important trends and issues;
- To take risks, because new adventures can lead to the change of long-term plans; and

To take care of humanity, as prospective should fundamentally be concerned with implication for people". (Ratcliffe, 2008)

However major challenges face decision makers in adopting a futures orientated approach as a result of fragmented, unstructured and bias information. Ratcliffe's suggestion to overcome these challenges is to adopt the five key fields: "fostering a culture of foresight, envisioning change, exploring creativity, communicating futures, and championing prospective" (Ratcliffe, 2008).

Further to this Ratcliffe believes that "we can shape the future if we can first imagine it" and then having a value – driven system that fosters the evolution of the socially sustainable organisation (Radcliffe, 2008).

Foresighting can be used in two situations where it can add to the innovation process. The first is before the idea is born and the second is when the idea is already established. In the first situation, foresighting is applied as a concept to inspire and create new ideas for innovation or services. In the second situation, foresighting can help to assess either the commercial and technological viability and/or to adjust or abandon the innovation process (Von der Gracht, Vennemann, & Inga, 2010). In addition, a range of tools within foresighting can be utilized to strengthen the foresighting process and cut through the sheer volume of raw data at part of the innovation process as seen in figure five:

- **Parmenides Eidos:** Visual strategic options analysis tool allowing visualization of relationships and outcomes.
- **Real-Time Delphi:** On-line questionnaire for collecting and synthesizing expert opinions to support global opinion studies.
- **SciCast:** Crowdsourced prediction tool to forecast the outcomes of key issues in science and technology.
- **Analysis of Competing Hypotheses:** Software to analyze incomplete or ambiguous information.
- **Insights Maker:** Online shared simulation and modeling tool which uses causal loop diagrams or rich pictures to describe a system.
- **Implications Wheel:** Software-enhanced group process for discovering and mapping the implications of change (e.g. emerging trends, M&A, new policies, new regulation, etc.).
- **Coggle:** Freeware mind-mapping web application which produces notes online which can be shared and edited by several people at the same time.
- **Kumu:** Cloud-based visualization platform for mapping systems and better understanding of relationships.

Figure 5: A Range of Foresighting Tools *(Eagar, Boulton, & Demyttenaere, 2014)*

Milojevic and Inayallullah believe foresighting focuses not on the veracity of the future—is a future true or false—but on discovering and creating new stories that better meet needs and desires of the preferred/wished for future (Milojevic & Inayatullah, 2015).

Furthermore, Milojevic et al. believe; the foresighting concept balances between the empirical, interpretive, critical, and action learning concepts of futures studies. It uses the forecasts of the empirical but recasts them as possible stories. It is unlike an empirical approach of futures studies, which sees narratives or qua data as accurate and sees reality as being constantly negotiated by stakeholders. Foresighting challenges assumptions and interests, not just to disrupt the categories of that which is being questioned. (Milojevic & Inayatullah, 2015).

Importance of reliable data and quantitative analysis cannot be underestimated with foresighting. It focuses on linking the empirical findings with the social and

cultural context within which they result from, looking to balance reality with numerical data "underlying [the] framework of meaning… [and explains how] … subjective and inter-subjective come to be considered objective" (Milojevic & Inayatullah, 2015).

It is only by various narrative transformation over time it is possible to develop alterative futures which inspire the implementation of different strategies from the present. Foresighting seeks to future map and explicitly address the understandings of risk and deconstruct and reconstruct the future where appropriate. Using foresighting methods offer an opportunity to identify and challenge underlying assumptions and frameworks and gain alternatives that look different at surface level as well as at deeper levels. The result is not to provide, yet more data to people so they can make better decisions but to understand the worldview of the individual, organisation or institution resulting in a story which supports the change and aids in creating the new alternative future (Milojevic & Inayatullah, 2015).

3.3 Backcasting

The history of backcasting started around 1970s, when backcasting was proposed as an alternative planning technique for electricity supply and demand. It would be beneficial to describe a desirable future (or a range of futures) and to assess how such a future could be achieved instead of focusing only on likely futures. The assumption was that after having identified the strategic objective in a particular future, it would be possible to work backwards to determine what policy measures should be implemented to guide the energy industry in its transformation towards that future (Quist & Vergrabt, Past and Future of Backcasting: The Shift to Stakeholder Participation and a Proposal for a Methodological Framework, 2006) (Quist, Thissen, & Vergrat, The Impact and Spin-off of Participatory Backcasting: From Vision to Niche, 2011)

Backcasting is defined by creating a desirable (sustainable) future vision or normative scenario first, followed by looking back at how this desirable future could be achieved, before defining and planning follow-up activities and developing strategies leading towards that desirable future (Robinson, Burch,

Talwar, O'Shea, & Walsh, 2011). Backcasting is more than just a futures method, backcasting is a shift in attitude and approach to the research task (Hojer & Mattsson, 2000). Traditional backcasting studies have aimed to provide decision makers and the public with an idea for the future as a background for opinion formation and decision making, especially when the when the problem to be studied is complex, affecting many sectors and levels of society (Dreborg, 1996).

The utilization of backcasting is not a new concept in planning for the future. Previously it has been used in a range of applications from policy-making to sustainable technology development mainly in European countries. It has been embraced by companies such as Shell International started early using scenario planning tools such as backcasting. This future thinking tradition has spread and has been adopted and expanded on by the Global Business Network, Du Pont and Statoil in Norway (Dreborg, 1996) (Quist & Vergrabt, Past and Future of Backcasting: The Shift to Stakeholder Participation and a Proposal for a Methodological Framework, 2006).

Dreborg stated that backcasting is useful when the problem to be studied is complex, affecting many sectors and levels of society, when there is a need for major change since dominant trends are part of the problem and, when the time horizon is long enough to allow considerable scope for deliberate choice. While forecasting in comparison is an extrapolation of the present towards an unknown state in the long-term future, backcasting is an interpolation towards the present from an already envisioned future state (Gaziulusoy, Boyle, & McDowall, 2008). The comparison between forecasting and backcasting can be found in Figure 9:

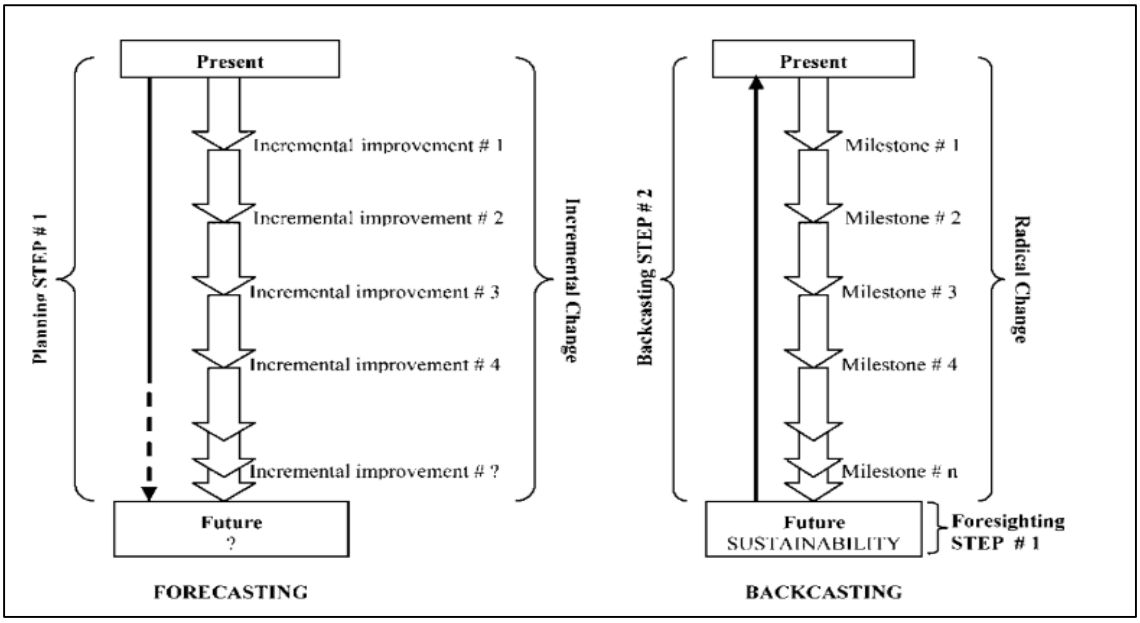

Figure 6:Comparison between Forecasting and Backcasting Scenarios *(Gaziulusoy, Boyle, & McDowall, 2008)*

Backcasting according to Dreborg consisting of five stages (or steps), these are:

1. Strategic problem orientation;

2. Construction of sustainable future visions or scenarios;

3. Backcasting;

4. Elaboration, analysis and defining follow-up and (action) agenda;

5. Embedding of results and generating follow-up and implementation (Dreborg, 1996).

This is reflected in Quist et al. work as seen in Figure 10 where the five key steps are considered along with other important factors such as goals, tools and methods which need to be involved within the backcasting process.

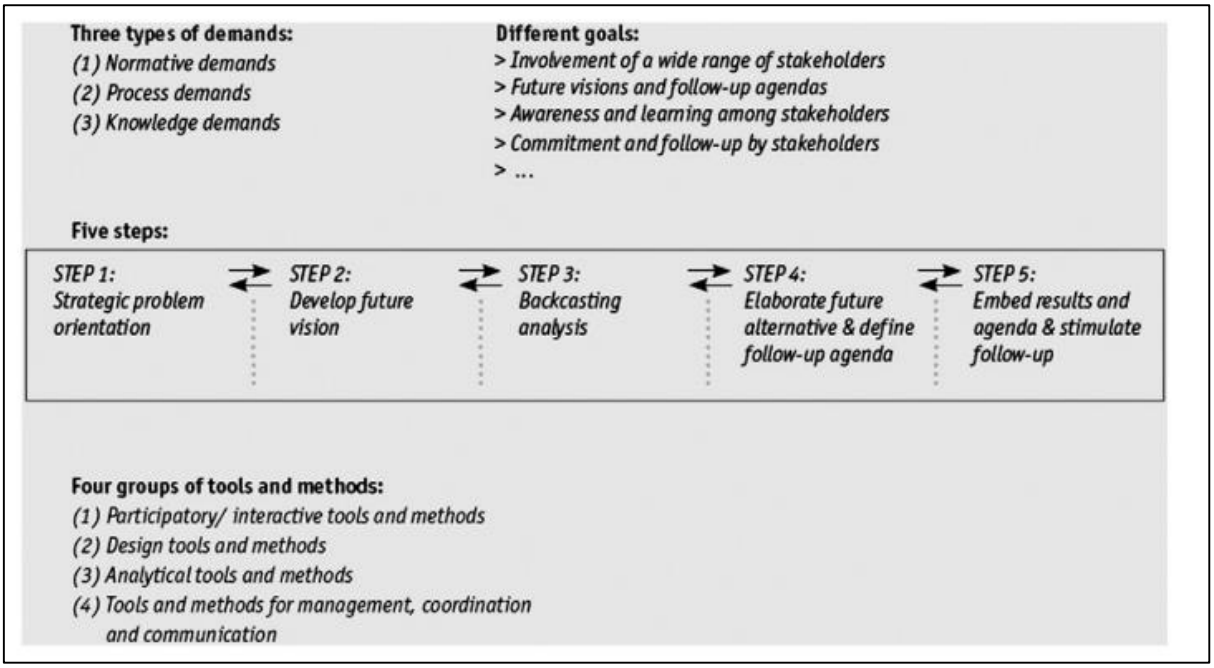

Figure 7: Suggested Backcasting Frameworks *(Quist, Thissen, & Vergrat, The Impact and Spin-off of Participatory Backcasting: From Vision to Niche, 2011)*

The use of backcasting as a tool implies an operational plan for the present, which moves toward an anticipated future state. Although backcasting can be used to analyse to what extent undesirable futures can be avoided. According to Quist et al. backcasting is not based on an estimation of the present into the future—rather, it involves the estimation of desired or inevitable futures back to the present. It is important to realise that future vision outcomes in backcasting are not only analytical constructs, but also social constructs. So it is important the plan should be constructed around processes which are interactive and iterative. The process implies that many stakeholders are involved and in addition there is continuous feedback between future visions and present actions (Quist & Vergrabt, Past and Future of Backcasting: The Shift to Stakeholder Paricipation and a Proposal for a Methodological Framework, 2006).

Backcasting is useful when there is a need for major change and when dominant trends are part of the problem. Forecasting these trends are a problem to a due to uncertainty, externalities and when the time horizon is long enough to allow considerable scope for deliberate choice (Quist & Vergrabt, Past and Future of

Backcasting: The Shift to Stakeholder Paricipation and a Proposal for a Methodological Framework, 2006).

The time horizon used in backcasting scenarios is practically important. According to Quist et al. a typical time horizon used in many backcasting studies is 50 years. This choice for the time horizon is appealing because it is both realistic (it spans two generations, and thus everyone can imagine it as the time when our grandchildren are about our age); and it is far enough away to allow major changes and even disruptions in technologies, lifestyles, and even cultural norms and values (compare the world now with the world 50 years ago....) (Quist & Vergrabt, Past and Future of Backcasting: The Shift to Stakeholder Paricipation and a Proposal for a Methodological Framework, 2006)

In the long term, the potential for man to have an influence on the development in a desired direction is relatively large, however, human perceptions can limit real change. The scenarios of a backcasting project may broaden the scope of solutions being considered by describing new options and creating alternative images of the futures through an analysed study based on feasibility and consequences (Dreborg, 1996).

Desirable scenarios often require that current trends are broken. If backcasting is to be more than just wishful thinking, it is important that the feasibility of the scenarios be analysed and that necessary measures and actions for the realisation of the scenarios be identified. During this process, models, or other tools that help quantify the consequences of different measures, are important instruments. However, throughout this process it should be emphasised that there is nothing wrong with considering historical trends, searching for patterns and trying to find invariances or looking for causal relationships (Hojer & Mattsson, 2000).

3.4 Scenario planning

Arie de Geus, who was the former director of planning at Shell considered scenario planning an important tool in trying to navigate turbulent times, such as the oil industry went through in the 1970-80s. due to planning out alternative strategies, companies can better prepare for and adapt to changes in its environment. Simply

put, “We will not perceive a signal from the outside world unless it is relevant to a future which we have already worked out” (Lannon, 2016).

The philosophy goes back to the work of Swedish neurobiologist David Ingvar. According to Ingvar, the human brain is constantly generating multiple scenarios of the future and then storing these alternatives. As a result, we are continually creating and saving memories of the future. By engaging in this activity 24 hours a day, we mentally prepare for future possibilities. These “memories of the future” protect the brain from information overload by directing us toward signals that are relevant to a future that we have already “seen” in our mind’s eye (Lannon, 2016).[2]

According to Ingvar’s work, being single-minded is not a compliment—in individuals or in companies. Says de Geus, “Most companies have usually worked out only one path—the operating plan or the strategy which covers only the near future. This corporate ‘one-track mind’ means the company sees and hears very few possibilities for change” (Lannon, 2016). It also increases the possibility of missing important signals that appear tangential or unrelated to the operating plan.

The exercise in scenario planning is shown in Figure eight below. There are three main scenario developments Possible, Plausible and preferred. But the Blackroom must also develop wild cards that are likely to be disruptive.

[2] See Hojer & Mattsson, 2000. There paper discusses “Waves”. The first wave was the development of agriculture. The second was industrialisation. And now comes the third, the information wave. The First Wave of change — the agricultural revolution took thousands of years to play itself out. The Second Wave — the rise of industrial civilization took a mere three hundred years. Today history is even more accelerative, and it is likely that the Third Wave will sweep across history and complete itself in a few decades.

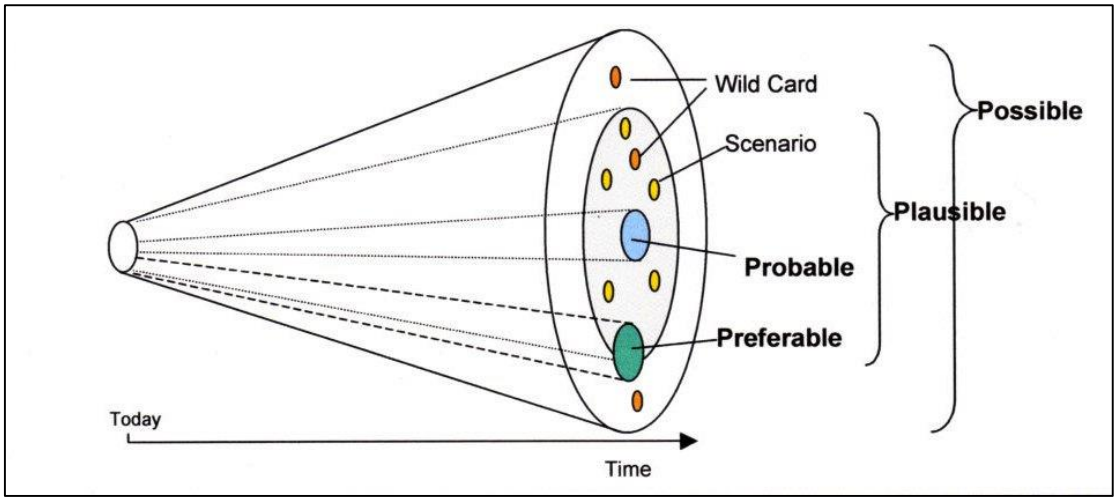

Figure 8: Three Main Scenario Developments: Possible, Plausible and Preferred (van Teulingen, 2011)

4.0 Analysis and Results

The literature shows us that foresighting is first and foremost a state of mind that determines how you think about the future (Conway, Foresight: An Introduction, 2014). It is a way of doing and thinking that is unlike current conventional strategic planning. Ratcliffe argues that it is all about a mind-set. It is essentially a new mindset which is required by organisations to anticipate and prepare for the future. A mindset that embraces individualism, collaboration and innovation. A mindset that addresses societal and environmental, as well as economic, imperatives. Above all, a however, a mindset that can tackle complexity, uncertainty and change (Ratcliffe, 2008).

Conway adds to Radcliffe's argument by proposing that "Foresighting done well expands future options available and enhances the operational context of the strategy". It uses new ideas and options to develop into proactive responses to change. Done less well, it results in an "interesting experience but there is little change to how strategy is developed or the understanding of the scope of change shaping the organisation's future" (Conway, Foresight: An Introduction, 2014).

On the other hand, foresighting can be portrayed as storytelling as discussed by Sohail Inayatulla. It has been recognised for quite some time that narrative or storytelling is one of the primary modes of knowing for humans. Story telling is

our primary way of organising our experience of time, and it is through this and drawing from perspective of the end that the beginning and the middle make sense' (Milojevic & Inayatullah, 2015).[3]

It is important for people working on future creation to understand how the telling and use of stories to frame and reframe experiences and ideas so that they can be heard, seen, and understood emotionally gives context to the way people process and understand both the past but all the future. The influences of the stories we are born into help shape not only our identities, but provide meaningful frameworks for seeing, indeed, constituting reality, and resultantly shape boundaries for what is perceived plausible and desirable (Milojevic & Inayatullah, 2015).

As mentioned in the literature review Inayatulla is into serious story telling or narrative and this serves the blackroom concept as visioning. Narrative always mediates our understanding across the three time dimensions, making choices, action and strategy possible. Time, therefore, "assumes a main role in the narrative not only as an episode structuring and organizing element, but also as a dynamic mechanism for constructing meaning through the integration into the narrative of the past, of the present and of the anticipation of the future" (Milojevic & Inayatullah, 2015).

The literature also confirms for us that other prospective methods include visioning, apart from storytelling, where a group focuses on identifying and scoping out a preferred future. Backcasting is another method that is used to identify how potential futures worlds might have emerged. Starting in a future world, people work backwards in time, exploring events and decision points until they reach the present. Radcliffe tells us that the research should be in-depth, long on view and wide on breadth.

To create the future one must first be capable of imagining it (Hamel & Prahalad, 2013). Not predicting, not planning, not forecasting – imagining. A mindset that

[3] In my opinion it is not a coincidence that Inayatulla's work of Causal Layered analysis or CLA is located in a story telling place. See Inayatulla's work "The Causal Layered Analysis" (Inayatullah, 2014)

embraces individualism, collaboration and innovation. A mindset that addresses societal and environmental, as well as economic imperatives. Above all, however, a mindset that can tackle complexity, uncertainty and change.

Successful Future System State definitions depend on a combination of advances in scientific understanding, appropriate political programmes, social reforms and other institutional changes. Organizational and social innovations would always have to accompany any technical innovations and some would have to come first.

The one thing we can be sure of according to the literature, is when formulating future system states that the world will emerge from the present arrangement of values, of beliefs, of social and economic structures, of political concepts and systems, indeed of world views, will all be different from anything anyone today imagines. The Blackroom in encouraged to believe in this approach (McDowall pers com).

This implies a mindset that is oriented to process rather than to structure; that is ecologically driven rather than hierarchically driven; that is value added rather than competitive; that is holistic rather than functional; and that is collaborative and innovative rather than adversarial and derivative. A futures orientation, with strong foresighting capability and capacity, founded on flexible and adaptable systems, is the secret of success.

In McDowall's Journals there were notes (circa 1976) that there should be three distinct phases in any "futures" exercise – divergence, emergence, and convergence and notes in his 1998 Journal that there "were far too many foresighting studies placing too much emphasis on the present" (McDowall, Foresighting, 1998).

McDowall goes on to say in his article "Over-the-Horizon Design" that radical changes to present production and consumption systems, especially in the developed world, are required to achieve sustainable development. These changes on a system level are referred to as industrial transformations, while also terms like sustainable system innovations or transitions towards sustainability are being used. Such system changes or transitions require combinations of technological, cultural, social, institutional and organisational changes, while

affecting many stakeholders when diffusing into society and involving complex processes of social change on the long term. However, sustainable system innovations (or industrial transformations or transitions) are very complex phenomena, due to the inherent uncertainty of the future and the inherent ambiguity of stakeholders having different value sets and mental frameworks" (McDowall, Foresighting, 1998)

Questions have been raised about what kind of approaches could be applied to such complicated issues, how to identify attractive and desirable system changes (system innovations, industrial transformations or transitions), how to explore these, how to get these started and implemented in practice and about the role of different stakeholder groups and stakeholder co-operation.

In my opinion, current models have all been designed to accommodate strategies derived from present business and usual practice driven from the base of today therefore only accustomed to short-term, current thinking influenced by past and present trends and events. As McDowall notes in his Journals "The premise upon which the Over-the-Horizon model operates however is the exact opposite." (McDowall, Foresighting, 1998). My interpretation of this is that instead of using the current paradigm as the basis for future change, Over the Horizon starts by going out into the future to establish where wool success will be and then comes back to the present – a form of simulated hindsight that embraces long term planning and design.

In analysing Over-the-Horizon design literature, in order for this technique to work firms must disassociate themselves completely from the present day mode and focus only on the future and on the future they want to have occur. However, given that all current models are based on the premise of going forwards, none are approaching the future of wool from the other direction as in Over the Horizon technique. With this in mind it is evident that for Over the Horizon to work then business must radically change their current business models and organizational structures in order to accommodate the principles that Over the Horizon planning and thinking entails. This is the only way forward for coarse wool. It is also clear in my opinion that this forms the backbone to the Blackroom concept.

5.0 Discussion

While the literature discusses and defines the parts of a Blackroom and the activities that are to be performed, in other words the WHAT, none of the literature describes the HOW. There is a lack of literature that fully describes the function and operation of the black room nor is there any detail description when the Black room is formed up of people, just how do they go about the work and in what order. This part of the work looks at the HOW, by examining the WHY and reaching forward beyond the literature by interviewing McDowall and reading his journals.

The literature explains that the concept of Over-the-Horizon strategic planning entails four fundamental futures -planning tools that support strategic decision-making which enable firms to transition towards real levels of future product design. These are foresight, scenario planning, backcasting, and road mapping. Most importantly is the creation of a 'Blackroom' for research and development - protected spaces or niches working independently of current business activities involving innovative actors from a diverse range of sectors who develop and conceptualize alternative visions, agendas, and ideas for the coarse wool fibre.

Narrative, according to Inayatulla, always mediates our understanding across the three time dimensions, making choices, action and strategy possible. Time, therefore, "assumes a main role in the narrative not only as an episode structuring and organizing element, but also as a dynamic mechanism for constructing meaning through the integration into the narrative of the past, of the present and of the anticipation of the future" (Milojevic & Inayatullah, 2015). For our Blackroom, however much less emphasis is placed on the past, in fact in some circumstances the past and present is deliberately excluded.

Where does the name "Blackroom" come from?

'Upon arriving at the relay division of ASEA in Sweden in the winter of 1971, I was directed by the CEO Bengt Hosbo to work in the TTT room. As a young engineer I had no idea what a TTT room meant but eventually was informed that it meant 'The Tennyson Theorem room' where product design was focussed on the future. The reference to Tennyson was from the poem 'Locksley Hall'. For the next three years I

worked in this room designing products and systems for power networks 30-40 years out into the future. We used methodologies such as foresighting and scenario mapping. Several important products were designed by the people in the TTT room and these eventually became part of the company product line". (McDowall, 1971)

"A 'black room' was a [secret part] of a telecommunications center used by state officials of several European countries to conduct clandestine interception and surveillance of communications. Typically, all letters or communications would pass through the 'black room' before being passed to the recipient. This practice had been in vogue since the establishment of [diplomatic] posts, and was frequently used in France by the ministers of Louis XIII and his followers as cabinet noir (French for "black room"). The term "black chamber" has since come to represent any code-breaking organization, but was originally applied to groups of code-breakers associated with the French postal service that intercepted, read, copied and decoded diplomatic mail. In the twentieth century, Americans created a black chamber to intercept and decode radio transmissions (telegraphs) rather than postal mail.

Most of Europe's black chambers were closed in the mid-nineteenth century by a combination of public opinion and new social philosophies. The reading of other people's mail was seen as an infringement of personal freedom. In England public pressure forced the government to cease its opening of diplomatic mail in 1844. Four years later, the black chambers of Austria and France also ended their work.

America did not have a black chamber until the early twentieth century, and it was concerned with radio transmissions (telegraphs) rather than postal mail. Its fame is mainly due to Herbert Osborne Yardley (1889–1958), who described the inner workings of the covert organization in his book, The American Black Chamber. Yardley wrote his controversial text after the closing of the code-breaking organization in 1929. However, by 1940, the black chamber had to be reformed (without Yardley) to counter the threat of war. Today black chambers have become electronic monitoring systems, which many governments use to monitor suspicious communications across the world." (Tulloch, 2016).

McDowall in the years that followed his work in Sweden in the 1970s coined the phrase "Blackroom" to denote the original TTT room. He based this on the French "Cabinet Noir" as discussed above and the argument being that the Black Room was for 'decoding' the future system state. He has used the Black Room foresighting and backcasting techniques for more than forty years (McDowall, 1971).

Fundamentally the 'Blackroom' is about the notion of defining a future system state or visioning or envisaging a future system state. The elements of a black room are complex, integrated and indeed interdependent. When the sub-components of each element and their deeply connected interrelationships are taken into consideration, it is realised that both the global ecological, economic, and social meta-system and related sub-systems are in themselves complex systems. There are few people who can completely let go of the present and imagine a future system state and they must be carefully chosen. A scenario planner is essential in this process.

Even though the meta-system of global ecological, economic, and social relationships can be analysed in more manageable scales, any attempt to provide a definition of a future system state will be meaningless if this analysis is carried out by not taking these interdependent complex systems into account. This means a multi-layered process is contemplated where the participants will be required to work in an interdependent manner. Even though they are working on say a 'possible future' they will be integrated with the person working on the 'preferred future'. This sort of work is referred to by the people in the Blackroom as visioning or envisaging a future system state.

Clearly the Blackroom concept is carried out by establishing a stand-alone 'facility' that is cut off from the present and avoids the past. The people that are recruited for the Blackroom are taken from various scientific, management, sectors and futures roles. The participants, computer services etc. will require substantial funding because the wool futures Blackroom will need at least a year of contemplation. The allocation of tasks is done by activity and by decade. The wool Blackroom will require several decades of analysis, probably out to 2050 or more.

After the future system state is defined then backcasting is used. Sometimes the members of the Blackroom can change at this point so that people who know the answers do not contaminate the backcasting process. Backcasting as the literature has indicated and confirmed by McDowall is a planning methodology which involves first establishing a desired and preferable future state long into the future and then planning backwards from this state into the present usually through a series of intermediary milestones or steps (Holmberg & Robèrt, 2000; Inayatullah, 2008). A defining feature of backcasting is that it always takes it is a point of departure from a desired or preferred situation in the future (Holmberg & Robèrt, 2000; Inayatullah, 2008; Jansen, 2003; Knot et al., 2001) and which has no relevance or is connected in any way to the present.

Due to these characteristics backcasting is able to initiate a deep innovation process that can prevent loss of creativity and time trap inertia of the present (Jansen, 2003) which is currently fixed in today's paradigm. The members of the Blackroom have to structure the definition of the future system state very carefully so that backcasting takes place from an origin that does not exist.

For these reasons backcasting enables people and organizations to become agents of change rather than been driven by change and to create trends rather than follow existing ones. One takes the synthesized future system state and brings it back to the present through multiple research pathways and sets milestones for the actual product or process development. Often the backcasting solutions are not yet telegraphed by current technology and the pathway has undefined "black boxes" on its route. The fact that the technology may not exist is no barrier to the members of the Blackroom. They work on the basis of the end game and whatever technologies have to be invented along the pathway is an issue that does not concern them. Figure 9 shows a synthesised or envisioned trend view, out into the future for energy, developed by McDowall. The Blackroom people for each of the decades under study produce this.

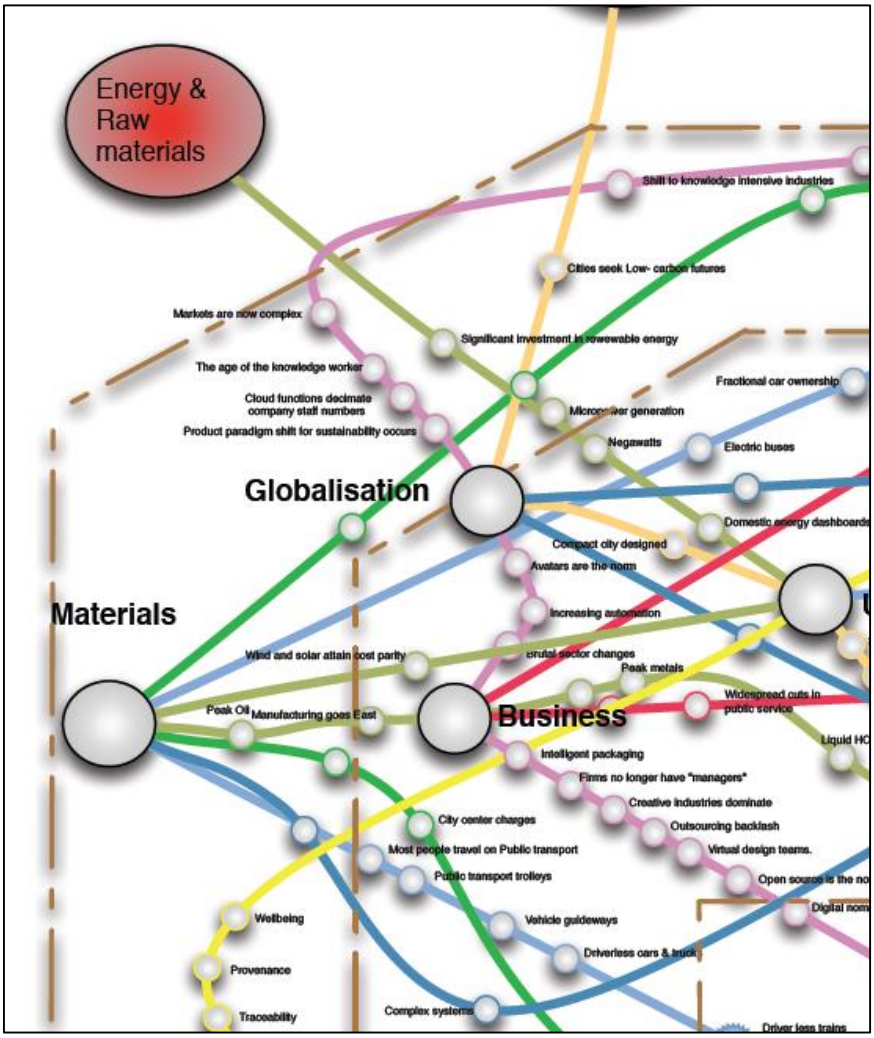

Figure 9: Energy Envisaged Future and Megatrends *(Auckland City Council, 2012)*

McDowall cites an example of future system state visioning and backcasting in his Journals. In the 1970s the company McDowall worked for in Sweden was concerned about the Ultra High Voltage distribution systems that could be required in the year 2010. The Blackroom people including McDowall knew that the current known technology would never be able to protect these systems.

The Blackroom research had envisaged that the UHV system would be at least 1200KV some 40 years out from 1972. (In the 1970s the highest HVAC system was 220KV). So the Blackroom people started out with the preferred future system state (using a complex envisaging system scenario approach) of 1500KV and backcast the system protection development that would be required to protect such a system. They knew that the detection system would need to work very fast to prevent the system melting under fault conditions so they backcast to a milestone that said the

design of a sensor that could work at the speed of light would be required and this was shown on the road map as a "black box". Some twenty years went past before the company was able to develop such a sensor and the rest as they say is history with the protective devise being installed all around the world from 228 and onwards. (McDowall, 1970s)

The final part of backcasting is the production of the Road map. When all the research pathways are known as the visioning has been brought back to the present then a road map is prepared. Usually at least three pathways are formed each provided with the technological base science and their own milestones. The road map then defines each step along the way and the milestone achievements that are required. An example of the Blackroom activity is shown in Figure 7. The futures envisaged in this example are possible future, probable futures and plausible or preferred future. These are backcasted and shown on the final road map in Figure 10.

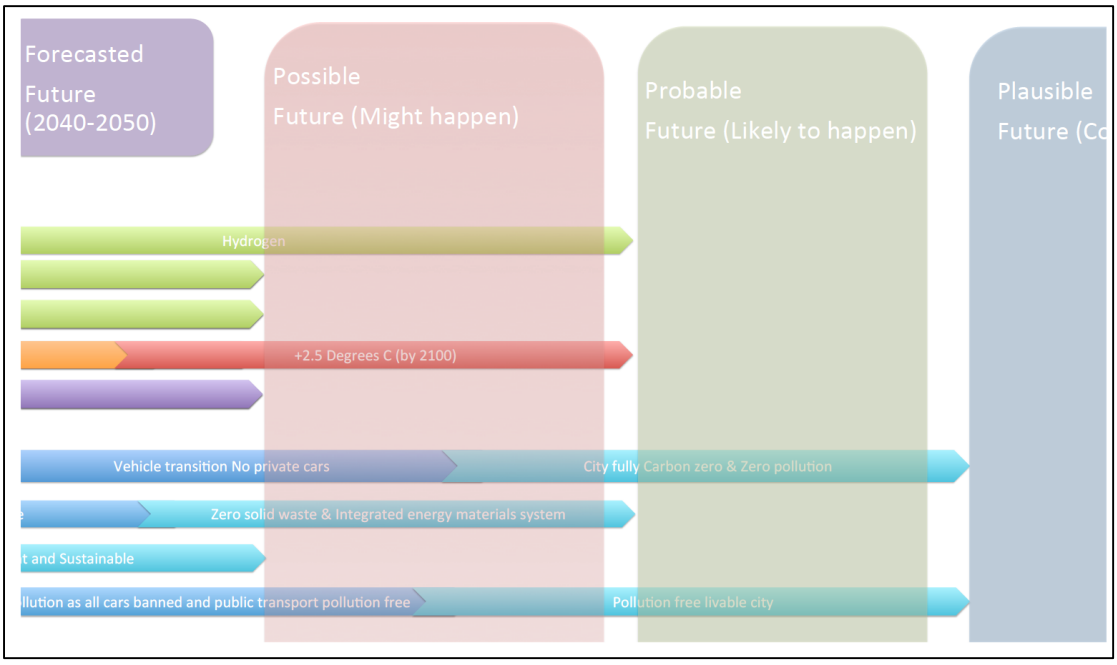

Figure 10: Example Futures backcasted Auckland Council 2040 *(Auckland City Council, 2012)*

In summary the Blackroom concept is based on securing a future system state (foresighting) across many sector aspects and this is done by the Blackroom membership visioning in parallel, or perhaps in real future time and just in time visioning and using a multiple scenario and thinking systems. Where a material might be envisaged in a product use then another visioning could then take that envisioned material and place in a future product design. Essentially, and this is key, the visioning process is not a single one-way activity. It is a multi-strand interdependent process where the strands directly affect one and another and may oscillate backwards and forwards. While the concept of visioning out in the future is hard enough, doing it in multi-dimensions provides a significant challenge to the management and control of the Blackroom.

Once the strands are verified then a Deep Though Analysis (DTA) is required, and this may involve people outside of the Blackroom, and involves a reality check against the envisioned future system state as being likely or not. After the DTA has verified the veracity of the 'strand' then the backcasting exercise starts. In some cases, this proves may be conducted by a set of new people in the Blackroom rather than the visioning people. In some cases, of course a backcasting exercise can start with a single strand but with multiple pathways while further envisioning is being carried out by the original team.

Backcasting almost always will involve multiple pathways of research. In fact, if only one research pathway is backcast it is likely to fail. Usually a minimum of three would be required. This is because when the fibre's future system state is defined and verified it is generally not known what development has created the future system state. Upon developing the backcasted pathways to the present time the process ends when the developers have forecasted forward the milestones that are required to hit the envisioned future system states and the final road map can be designed, (McDowall, pers com 2016) as seen in figure 11.

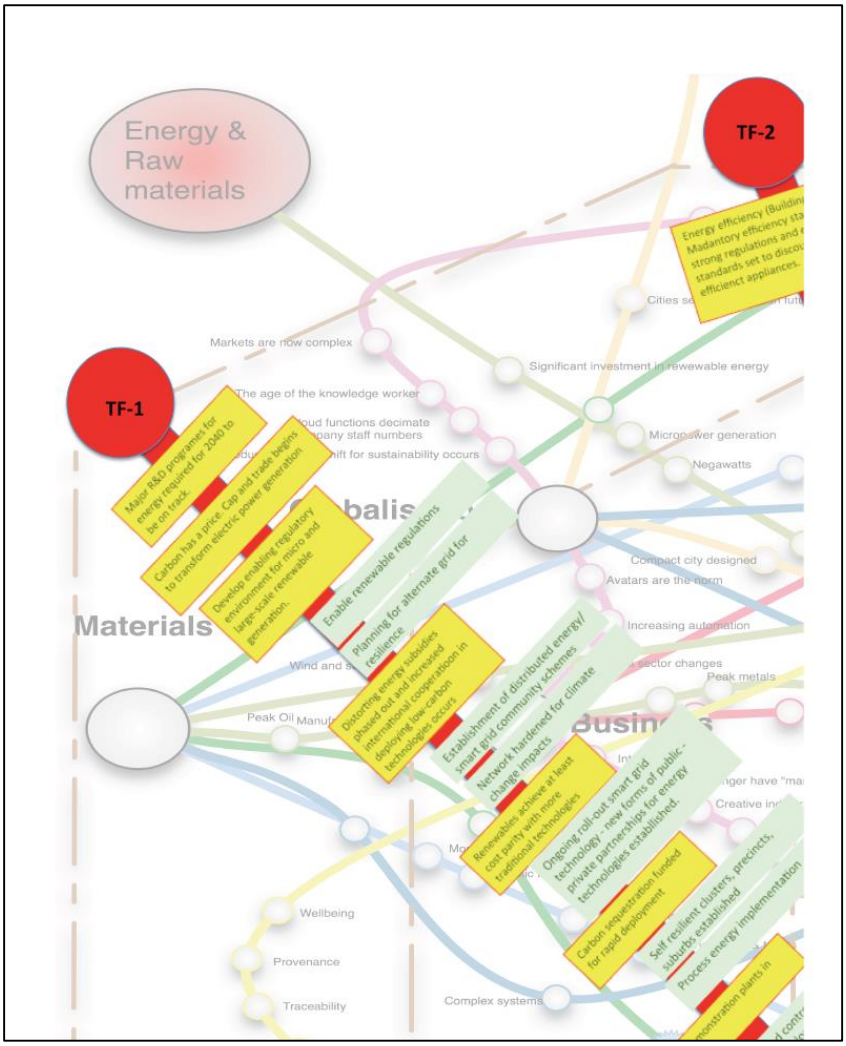

Figure 11: Final Road Map: 40 Year Road Map for Auckland City Energy *(Auckland City Council, 2012)*

6.0 Conclusions

The report sets out to establish how to achieve a Blackroom concept to establish a future for the coarse wool industry. The hypothesis for the work established the wool industry currently faced irreversible decline and to ensure the future major investment needs to occur. The report outcome recommends major investment revolves around a futures concept incubator concept – Blackroom to develop future pathways for the fibre, thus saving the industry.

The outcome for the report was derived from an examination of the existing futures literature, both historical and current to establish a baseline of existing research. The relevant futures research investigated covered a background on major issues facing decision makers, foresighting, backcasting and scenario planning.

The conclusions of the literature analysis found the importance of storytelling and visioning in developing futures work, along with multiple planning tool approaches were key to developing plausible futures work.

The literature reviewed forms the 'WHAT" basis of the Blackroom concept with the discussion developing and processing the "How" by examining the "WHY". This section examines the historical background to the naming of the concept from the 1971 journals of Dr McDowall. This definition frames the Blackroom as being a stand-alone 'facility' that is cut off from the present and avoids the past. The Blackroom is further defined by the people required to be involved, and the processes which must be undertaken throughout a Blackrooming process. This continues with the likely costs and possible outcomes, along with several examples of successful Blackroom example outcomes have been given such as the Ultra High Voltage distribution systems and the Auckland City Plan.

To conclude, the only way forward for coarse wool is to invest in developing new end uses outside of the traditional carpets and apparel. The outcomes of the examination of the Blackroom concept is that the concept incubator is viable and achievable and is the future of the coarse wool industry.

7.0 Recommendations and Future Research

"The future belongs to those who see possibilities before they become obvious"
John Scully

The words of John Scully are a reminder that the current state of the industry does not have to remain the status quo. The survival of the fibre and industry are with the organisations and people that seize the opportunity to respond to challenges in a way that considers the long term future.

The long term paradigm must entail the creation and development of new products and services with far heightened levels of eco efficiency and that service the same needs of society today. The desired paradigm shift is only possible though the use of a concept like Blackroom.

The next step for the concept is to actually undertake the described Blackroom exercise. The intention is to undertake a Blackroom as a Doctor of Philosophy at Lincoln University over the next three to four years, with the resulting outcome of determining future viable pathways for the coarse wool industry.

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