A Combined Approach

Exploring the unification of explorative and normative scenario planning in the context of CRE portfolio strategy

Aryzo Arrindell – 5009022

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Aryzo Arrindell
5009022

Subject: Researching the possibility of combining explorative and normative scenario planning in one combined method and its possible impact for formulating corporate real estate portfolio strategies

1st Mentor: Ir. H.J.M Vande Putte
2nd Mentor: Dr. K.B.J. Van den Berghe

Graduation Organisation: CBRE Group
Organisation 1st mentor: Ir. D. Lutjeboer
Organisation 2nd mentor: Msc. R. Vermoolen

Delegate of the Board of Examiners: F.T. Toni

Abstract

When considering the future, an inherent debate is whether the future 'overcomes us' or is steerable. This is reflected in how the future is approached in both postmodern and positivist theory, respectively, according to Gong (2024). However, considering the paradox of observing systems as put forward by Luhmann (1995), one always has influence over the future. Therefore, the future must be approached as something that both 'overcomes us' as well as something steerable. It is at this point where the theory of critical realism finds the middle ground between postmodern and positivist theory.

Engaging with the future within the context of our field, management in the built environment, specifically corporate real estate (CRE) portfolio strategies, an often used tool by portfolio managers is scenario planning. Scenario planning for use in strategies can be split up into two schools of thought: explorative scenario planning (XSP), which is mainly used by the private sector and aligns with postmodern theory on futures that 'overcome us' on the one hand, and normative scenario planning (NSP) on the other, which is mostly used by the public sector and builds on the positivist theory that the future is steerable. Meanwhile, there appears to be no method of scenario planning that aligns with critical realist theory. Combining XSP and NSP to form a Combined Scenario Planning (CSP) method could possibly fill this gap. To this end, this thesis aims to answer the following question: *Can explorative scenario planning and normative scenario planning be combined in a single method and what could be its impact on corporate real estate portfolio strategies?*

Through in-depth interviews and literature study, it has been found that while these methodologies differed, there was no upfront hindrance in combining XSP and NSP. Combined with how scenario planning can be used in formulating CRE portfolio strategies, it was possible to develop a new CSP method through of research by design. This CSP method proposes an 8-step protocol in which normative brainstorming delivers a list of actions, which are tested against either chosen or developed explorative scenarios. When an expert panel of CRE portfolio managers evaluated this method on how this could perform for strategizing, it was found that while the CSP method shows promise, particularly as a strategic support tool, its practical implementation and ease of use need refinement. Real-world testing and further development are essential to address the concerns raised by the expert panel.

Preface

To my mentors, the delegate of the board of examiners, and other readers,

Before you lies my P5 report. Within my thesis, I have researched the possibility of combining explorative and normative scenario planning in one combined method and its possible impact on formulating corporate real estate portfolio strategies.

After my P2 presentations, I immediately initiated work on the empirics necessary to answer my research questions. This journey has lead me past multiple experts, and has given me a great insight into scenario planning, as well as the practice of CRE portfolio strategy formulation. Now, past my P4, I have further refined my work to what is presented in front of you.

Whilst this thesis has concluded that it is possible to unify both explorative and normative scenario planning in one combined method, this research also found another important conclusion. Namely the role of scenario planning in thinking about the future, and how this confirms this thesis notion on critical realist theory regarding the future. Interviews with scenario planning experts showed glimpses of confirmation of the paradox of observing systems as defined by Luhmann (1995); the moment we even write down, let alone publish a scenario study, we have already influenced the future. It shows us that we have to start thinking differently about the future: this thesis has shown that, like in critical realist theory, the future neither 'overcomes us', nor is fully steerable, it is a combination of both, for the very fact that we make scenarios, we have already steered the future into certain directions. The CSP method as developed within this thesis can therefore be seen as a operationalised form of critical realist theory on the future, tuned for the direction of CRE portfolio strategy formulation.

This academic journey has been one of great insights. I hope that you, the readers, find this thesis as insightful and enlightening as I have found researching this.

Let us hope that with this thesis we have come a step closer towards the dawn of a new era on thinking about the future. The world is in need of this transformation and I believe with this research that we are one step closer to its realisation.

Aryzo Arrindell

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Summary

Problem statement and research aim

Humans naturally desire to predict and understand the future, but the future's inherent uncertainty complicates this effort. Three meta-theories in social sciences—positivism, postmodernism, and critical realism—offer different approaches to future forecasting. Positivism relies on past and present data to predict the future through extrapolation, but this method is often flawed due to limited data and changing circumstances. Postmodernism focuses on power structures and suggests that the complexity of these structures makes future steering impossible. Critical realism strikes a balance, recognizing multiple possible futures influenced by human actions, yet acknowledging that some aspects remain beyond our control. This aligns with Luhmann's paradox of observing systems, highlighting that observation itself can influence the future.

In practical terms, especially in corporate real estate (CRE) management, organizations face increasing external uncertainties like geopolitical shifts and rapid technological advancements, which demand strategic adjustments. Concurrently, there's a growing need to meet Environmental, Social, and Governance (ESG) standards due to regulatory requirements, internal targets, and sustainable finance packages.

Scenario planning is a key tool in managing these uncertainties, categorised into explorative (XSP) and normative (NSP) scenario planning. XSP, originating from the work of Herman Kahn and Pierre Wack, involves exploring potential futures to prepare for unforeseen events, whereas NSP, rooted in the work of French philosopher Gaston Berger, focuses on actively shaping a desirable future, primarily used in the public sector. These two approaches reflect the broader philosophical divide between reactive and proactive strategies.

The aim is to research the possibility of combining explorative and normative scenario planning in a combined method and its potential impact on our context of corporate real estate portfolio strategy formulation. Both theory and practice suggest that there could be a demand for a new way of looking at the future. A scenario planning method that combines both explorative and normative scenario planning could fill this gap and potentially improve CRE portfolio strategies. This thesis therefore enters the forefront of this field, for recent research and experiments on this have primarily been performed in the context of land use, forestry and water futures, as well as being largely based in a single method.

Research questions

This thesis therefore aims to answer the following research question:

"Can explorative scenario planning and normative scenario planning be combined in a single method and what could be its impact on corporate real estate portfolio strategies?"

In order to answer this, the following set of sub-questions must be answered:

1. How do explorative scenario planning and normative scenario planning compare to each other?
2. What are corporate real estate portfolio strategies?
3. How can explorative and normative scenario planning be united in a combined scenario planning approach?
4. How would a developed combined scenario planning method impact the context of corporate real estate portfolio strategy formulation?

Methods

This thesis consists of four phases, as seen in Figure i.1. The first phase consists of the literature review performed for sub-questions 1 and 2. In the second phase, the literature reviews were complimented with semi-structured interviews of 45 minutes with experts in scenario planning as well as CRE portfolio management. The outcomes of sub-questions 1 and 2 functioned as input for the method design in sub-question 3, where a process of research-through-design was used. In the third phase, the developed method was tested by performing a simulation in which the entire method was applied on a test case. An expert panel of CRE portfolio managers then evaluated this simulations. In phase 4, conclusions were made based on the answers to the other sub-questions.

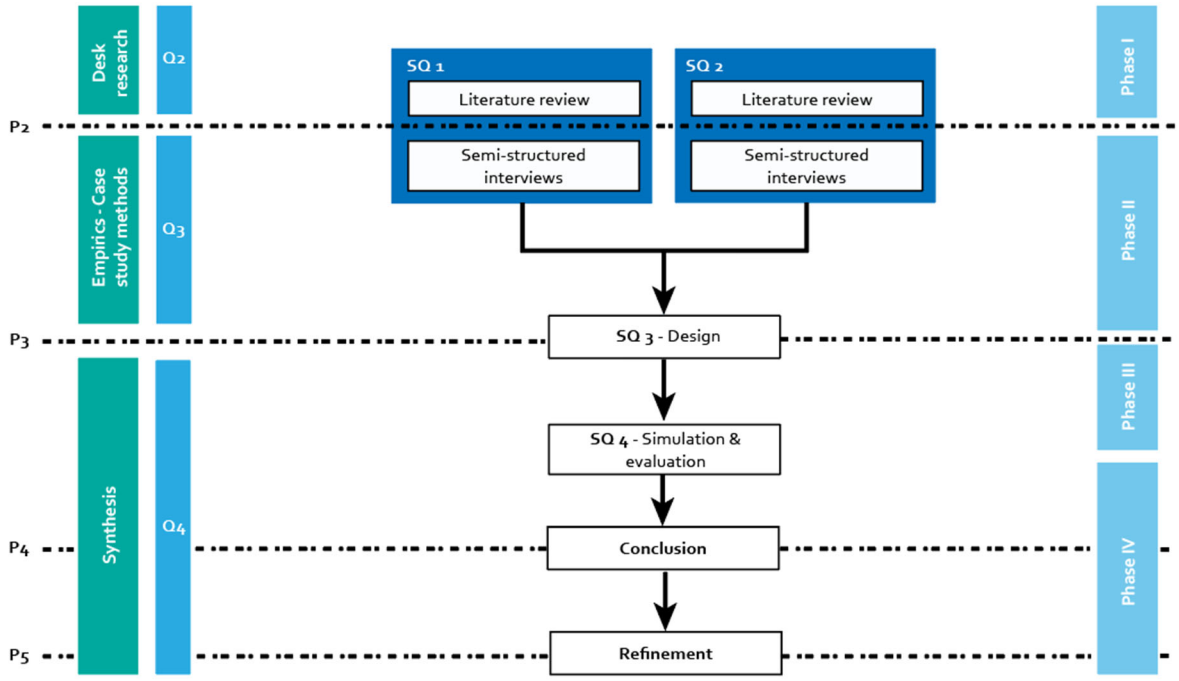

figure i. 1 Methodology and phasing of this thesis

Results on scenario planning

Explorative scenario planning (XSP) and normative scenario planning (NSP) emerged in the late 1950s and early 1960s. XSP arose in response to a changing geopolitical landscape and business uncertainties, while NSP developed due to dissatisfaction with existing forecasting methods. Culturally, XSP is associated with the USA, but it was further developed by Pierre Wack at Royal Dutch Shell, blending American and European influences. NSP, rooted in France, focused on socio-political issues crucial for France's future. XSP, initially used by the US military, gained corporate traction, especially after Shell's successful navigation of the 1973 oil crisis. In contrast, NSP has remained mainly within the public sector.

Concerning methodology, interviews with experts largely confirmed theory. XSP is flexible and diverse, utilizing qualitative data such as literature studies, interviews, and workshops. It involves identifying driving forces, clustering them, and creating a 2x2 matrix for scenario development. This approach emphasizes collaboration with internal teams and occasionally external experts. NSP follows a structured four-part methodology: analysing the current situation, considering the external context, historical simulation, and developing scenario narratives. It combines probabilistic methods with qualitative data and heavily relies on external experts and computer modelling. Both methodologies involve iterative processes and team collaboration but differ in their flexibility, data gathering, and process structure.

When it comes to use of scenarios, confirmation of practice and literature was also demonstrated. Explorative scenarios, exemplified by Shell, aim to understand and explore potential futures, challenging assumptions and supporting strategic decision-making. Initially, XSP scenarios were tools to provoke new thinking, later evolving into decision support tools linked to real options theory. NSP, advocated by the la prospective school, proposes actively creating and modelling the future, offering blueprints for long-term planning and challenging policymakers' binary thinking. While XSP is more common in businesses, NSP is prevalent in the public sector. Despite their differences, both methodologies contribute to strategy formulation, challenge existing mindsets, and adopt a holistic approach to problem-solving.

One of the most important points however, where all scenario planning experts agreed on, was the fact that there is difficulty in use of scenario planning because of the inconvenient truths the scenarios often produce. Something that management does not want to be confronted with, due to the impact these reports can have on the future of an organisation. This has gone as far as organisations wanting to influence the outcomes of scenario studies and even preventing publication all together.

Results on CRE portfolio strategy

Despite varying methods, all managers follow similar steps in formulating CRE portfolio strategies: analysing the current portfolio, setting goals aligned with the business strategy, managing stakeholders, and testing the strategy. A major challenge is data collection, as noted by PM1 and PM2, who find it time-consuming due to missing or inconsistent data. PM3 did not face this issue, indicating company-specific differences.

The business strategy's influence is crucial. PM1 emphasized cost-cutting impacting CRE strategy. PM2 highlighted organizational impacts and operational decisions. PM3 focused on financial goals like lowering LTV ratios and increasing profits per share. Clear goals and scope, as stressed by PM1 and PM2, ease stakeholder management. All managers agree that stakeholder management is time-consuming, with PM3 noting the need to align the strategy with board and shareholder preferences. PM1 mentioned testing the strategy with a pilot case to mitigate high costs, a step not mentioned by PM2 and PM3.

Internal factors vary among managers. PM1 emphasized company commitments to employees, leadership, and stakeholders, linking these to the business strategy and sustainability reporting. PM2 highlighted local working cultures, noting differences in office utilization between regions. PM3 focused on financial metrics like IRR and the broader business strategy.

External factors impacting strategies include hybrid working trends, interest rates, and market developments. PM2 illustrated this with a project halted by rising interest rates, emphasizing market dependency. PM1 highlighted market conditions affecting leasing strategies, especially when cost-cutting. PM3, dealing with retail real estate, emphasized consumer preferences, monitoring metrics like consumer spending and income levels.

Managers use 'what-if' scenarios for financial analysis. PM1 and PM3 draft financial scenarios to guide strategy, with PM1 focusing on short-term leasing portfolios and PM3 considering long-term ESG and Paris Proof goals. PM1 argued that rapid decision-making limits long-term forecasting's utility. PM2 acknowledged long-term scenario planning's value but pointed out the paradox of seeking flexibility while tackling sustainability challenges. PM2 also uses 'what-if' scenarios for hybrid working impacts on office demand. PM3 hinted at limited explorative scenario planning, focusing on factors like e-commerce and interest rates, performing both internal and external scenario analyses. In summary,

while scenario planning is used, its emphasis varies, with financial considerations dominating the approach.

Developed CSP method

Based on the results on scenario planning and CRE portfolio strategy formulation, a list of design considerations was drawn up in order to guide the research-through-design process. The considerations a potential method had to fulfil were:

- Re-use as much portfolio data as possible and keep new data to a minimum
- The method should be able to be applied with least amount of fte as possible as quickly as possible
- The method should be easy to carry out as not many are familiar with scenario planning
- Results of the method need to be able to be clearly communicated

Initially, three different iterations were drawn up: one where XSP had more influence than NSP, one where XSP had less influence than NSP and one method where XSP and NSP had equal influence in the method. From this three iterations, the method wherein XSP had more influence NSP was chosen to be developed further, based on fulfilment of the design criteria as well as feedback from portfolio managers.

The developed CSP method is based on the idea that first normative 'brainstorm' scenarios ought to be developed. From this, actions can be listed that would help to achieve such a normative scenario. These actions can then be tested against explorative scenarios to see if these actions can be deemed as no-regret measures or call/put options, which can be used in the final strategy (see figure i.2)

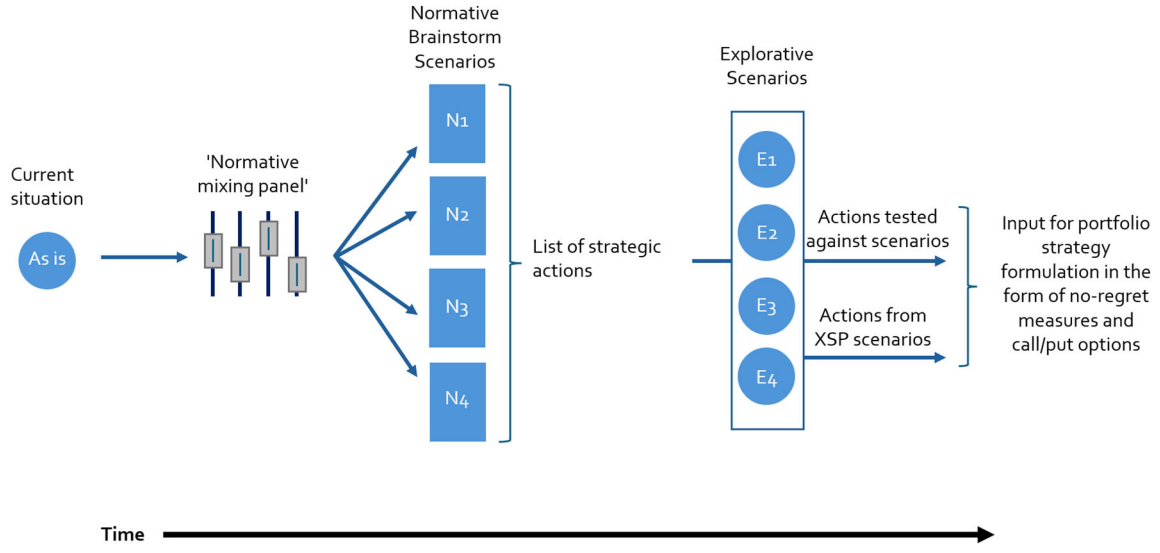

figure i. 2 the developed CSP method

The method itself consists of the following 8 steps:

1. Analysing the current situation (portfolio and the company) 'as-is'
2. Developing a 'normative mixing panel'
3. Brainstorming different normative scenarios based on the mixing panel
4. Developing a list of normative strategic actions based on the normative scenarios
5. Choosing or developing explorative scenarios

6. Testing normative actions against explorative scenarios
7. Developing additional actions from the explorative scenarios
8. Summarizing the actions from step 6 and 7 in a final potential action list

Results of simulation

An expert panel of three anonymised CRE portfolio managers (EP1, EP2, EP3) evaluated the developed CSP method. Opinions on ease-of-use of this method were mixed. EP2 saw potential but noted the outcome's dependence on scenario quality. EP1 found the method labour-intensive and suggested using predefined scenarios to streamline it, pointing out that the method failed to minimise required time. EP3 noted that while initial steps were intuitive, confusion arose in the testing phase due to multiple scenarios. Despite ease-of-use concerns, the simulation demonstrated the method's practical performance. EP3 found the examples sensible and intuitive but suggested including regret measures. All panellists agreed that real-life application is needed to fully assess the method's effectiveness. EP1 mentioned potential organizational limits impacting the method, while EP2 emphasized the importance of well-developed scenarios.

When it came to whether the panellists would choose the CSP method for their own use, only EP3 would directly choose the developed method, combining this with additional analyses. Other panel members had concerns about covering a wide enough range of scenarios and data availability. EP2 indicated he would prefer another method if data were insufficient.

When asked about the method's impact on developing CRE portfolio strategies, EP2 could not answer due to lack of real-world testing. EP1 highlighted the influence of power balances between global and local teams on decision-making, potentially deviating from a global strategy. EP3 appreciated the method's inclusion of relevant factors but noted the exclusion of local considerations.

Suggestions for improvement varied. EP2 proposed developing all possible normative scenarios, while EP1 suggested creating a toolbox for easier navigation. EP3 recommended localizing the analysis and complementing the method with additional analyses, such as occupancy analysis and workforce surveys.

Most panellists preferred seeing real-world applications before commenting on the method's impact on CRE portfolio strategy formulation. However, EP3 believed that combining this structured approach with practical application would make it a strong method. EP1 saw it as a good decision and discussion support tool, improving CRE teams' ability to justify strategic actions.

Conclusion

Answering the questions: *"Can explorative scenario planning and normative scenario planning be combined in a single method and what could be its impact on corporate real estate portfolio strategies?"* This thesis has found that it is possible to develop a scenario planning method that unites both explorative and normative scenario planning. This is in the form of a CSP method that consists of the 8 different steps and can be seen in figure i.II

Concerning the potential impact of a new method on CRE portfolio strategy formulation, the expert panel evaluation of the simulation showed that, while there was agreement on the practical performance of this method, further improvement is required. Key points that should be addressed are improvement of the ease-of-use, as well as further testing on real world cases. Panellists did agree that this method could have an impact on the CRE portfolio strategy formulation, mostly through adding no-regret measures, as well as providing argumentation and a basis on which different actions as part of the strategy can be taken.

When it comes to scenario planning, this thesis concludes that practice largely aligns with theory when it comes to methodology and how the scenarios are used in strategy formulation. There was however one important other conclusion of this thesis, namely *how* scenarios communicate and impact the future. Scenario planning's strength lies in provoking discussion and encouraging different thinking. However, management often resists being confronted with inconvenient truths. Instances of organisations influencing scenario studies highlight the impact of scenario planning on the future; namely that even thinking or discussing the future, has an impact on said future, thereby confirming Luhmann's paradox of observing systems. Therefore there is a balance between postmodernist and positivist theories shows that while the future is not entirely uncontrollable, it is not fully steerable either.

Content

1. Introduction

1.1 Background

The philosophy of the future

The desire to get a grasp on what the future may hold is an inherently human desire. However, as trying to grasp the future is inherently human, so is the future inherently uncertain. Considering this, it is important to evaluate how to look at the future and how this should be reflected into the different methods used in our day and age to grasp the future. According to Sousa (2010), there are three meta-theories that currently underpin social sciences: positivism, postmodernism, and critical realism. In relation to thinking about the future, these meta-theories provide different approaches.

Positivist theory makes the assumption that the future can be predicted as well as controlled, hence all visions of the future are based on what is known about the past and the present. This therefore allows for precisely calculating the future through extrapolation (Melnikovas, 2018). However, this already points out why positivism is inherently weak when it comes to thinking about the future; the fallacy of extrapolation is looming in the background. Extrapolation on the basis of too little data as well as disregarding the uncertainty of other processes taking place makes for forecasts that are not as effective in changing circumstances.

Meanwhile, postmodernism contrasts the positivist view by placing its focus on power structures and thereby posing that the world is of such complexity that human action cannot possibly steer the future in any meaningful way. Therefore, the postmodernist focus lies on the deconstruction of different processes in order to discover the current struggles of power (Gong, 2024).

Critical realism takes the balanced approach between positivism and postmodernism, assuming that there are multiple possible futures: the future still needs to take place, and how this will take place is partially based on actions by the involved actors, therefore giving is multiple possible outcomes (Patomäki, 2006). This balance between positivism and postmodernism is best observed when looking at how the different meta-theories observe reality and therefore the future: positivists claim that the future can be extrapolated and steered through taking action, whilst postmodernists claim that the future is determined by the ongoing power structures and struggles and therefore cannot be steered. Critical realists meanwhile state that some aspects of reality will always be beyond our ability to interpret, and therefore accept that the future can be influenced, but not in its entirety (Patomäki, 2006).

This idea of critical realism connects rather well with what Luhmann (1995) calls the paradox of observing systems. This revolves around the idea observation is subjective in nature, which leads to conflicting views on what is considered natural, artificial, necessary, or contingent within a system. In relation to studying the future, this therefore means that it is almost impossible to simply observe the future without considering ones own role and influence in it.

Considering all this, this thesis departs with the following proposition, namely that when thinking about the future, the following things are to be considered: on one hand, following critical realist theory, there are aspects that influence the future that will forever be out of our zone of influence and therefore happen to us. On the other hand, following the same critical realist theory, we also do have influence in what the future looks like. Possibly aligns with the paradox put forward by Luhmann (1995) which states that the future cannot simply be observed, for the mere act of observation has influence on the future. This thesis therefore start with the notion that if one wants to properly study the future, one has to acknowledge that the future both happens to us, as well as it can be shaped.

Bridging the future to practice

Relating this to our practice of management in the built environment, two different things can be observed.

On one hand, there is an increase in external uncertainties that 'happen to us' and either directly or indirectly influence our corporate real estate (CRE) portfolios; rising geopolitical tensions, rapid technological advancements in fields as AI, shifting societal and political landscapes as well as changes taking place in the economy. An example of how this influences businesses and their strategies is the recent move of chipmakers to close their factories in Taiwan and move back to the US; spurred by supply chain issues and grants provided by the US federal government to achieve more strategic autonomy, large chipmakers such as Intel have started construction of new plants and foundries in the US (Intel, 2023; Thorbecke, 2022). Here it is clearly seen that external uncertainties, such as geopolitical shifts, demand adjustment of the business strategy.

At the same time, an increasing need to cover aspects of the future one is obliged to control can be seen. One of the major aspects are ESG standards. Through an exploratory conversation with a director at a major real estate consultancy, it came forward that corporations experience a larger need to comply with ESG standards due to internal targets and financing. This has only increased in recent years since the European Commission(2021) adopted a new sustainable finance package which makes compliance and reporting of ESG metrics more important. ESG, initially drawn up in 2004, is an investment framework which considers Environmental, Social and Governance factors which stems from socially responsible investment (Li et al., 2021). Through this it can be seen that companies are facing more obligations for their future.

When trying to incorporate the future in our CRE portfolio strategies, a common tool for a CRE manager and their team to use is scenario planning (Appel-Meulenbroek & Haynes, 2014). The current concept of scenario planning has been developed from the second half of the twentieth century onwards (Börjeson et al., 2006; Bradfield et al., 2005). While this means that a great deal of research has already been performed on the subject of scenario planning, this has not been done in a structured manner; so many methods of scenario planning have been developed that Bradfield et al. (2005) refer to it as a 'methodological chaos'. However, literature generally supports the notion that scenario planning can be subdivided into three different schools: explorative scenario planning (XSP), normative scenario planning (NSP), and the probabilistic modified trends (PMT) school (Amer et al., 2013; Bradfield et al., 2005; Cordova-Pozo & Rouwette, 2023). For the purpose of this thesis however, the PMT school will not be considered for this is not used in formulating strategies.

Explorative scenario planning

Explorative scenario planning, also known as the intuitive logics school, finds its modern roots in the work of Herman Kahn during his time at the Research And Development (RAND) corporation thinktank in the '60s and that of Pierre Wack when he was employed by the Royal Dutch Shell during that same time (Bradfield et al., 2005). During the 1970's, Wack and his team developed multiple scenarios concerning the future of the oil industry. One of these scenarios were concerned with a possible oil embargo by middle eastern nations; at the time seen as a relatively improbable event. However, these scenarios forced Shell to think differently and to prepare for such a crisis, which eventually turned out to happen. It is therefore the work of Wack and his team that allowed shell to successfully navigate the oil shocks of the 1970's (Amer et al., 2013; Jefferson, 2012; Metze, 2023). It was this proven success by Shell that popularised the use of scenario planning in other fields and industries, leading to the fact that explorative scenario planning has been the most researched and practiced one (Fergnani, 2018). The main goal of these scenario is to explore potential futures of the

context in which an organisation is present and to trigger managers to think differently from the regular, as well as serving as input for strategy development (Amer et al., 2013).

Normative scenario planning

Normative scenario planning, also referred to as the la prospective school of scenario planning, rose up when French philosopher Gaston Berger founded the *Centre d'Etudes Prospectives* during the 1950's. Here a scenario approach was developed with a focus on long-term planning as an answer to failing forecasting methods (Bradfield et al., 2005). The most important principle in normative scenario planning is the notion that the future can actively be influenced, created and modelled. Scenarios that are therefore developed by this school aim not only to show potential futures, but to function as a blueprint for a future to work towards and are therefore of a long-term nature. This is also reflected in the way scenarios are used in France: it aren't so much companies that use this way of scenario planning, but the public sector (Amer et al., 2013; Bradfield et al., 2005).

Explorative versus normative; overcoming versus forming; reacting versus acting

Looking at XSP and NSP, the same opposing ideas as in positivist and postmodern visions on the future are seen; namely that of explorative futures that 'overcome' us versus normative futures that can be actively formed. Relating these scenarios to their use for strategizing, a clear difference emerges between the two. Namely that scenarios produced in XSP are used as input for strategies that *react* to the outside world, whilst scenarios produced by NSP are used as input for strategies that *act* towards a desired world. It can therefore be said that XSP and NSP are rooted in fundamentally different world views.

1.2 Problem statement

Thus far, it has been noted that postmodern and positivist theory oppose each other in a similar fashion as how XSP and NSP oppose each other; at its core it is about the question whether the future 'overcomes' us or if it can actively be steered. However, unlike in theory where critical realism forms a middle ground by stating that some parts of the future can be influenced by actors and some parts cannot, this does not appear to be the case for scenario planning.

Besides this, it is also observed in practice that there are challenges concerning external uncertainties, as well as obligations for the future that need to be carried out. It can therefore be said that there is a demand from both theory and practice for a scenario planning method that combines XSP and NSP to fill the current gap (see figure 1)

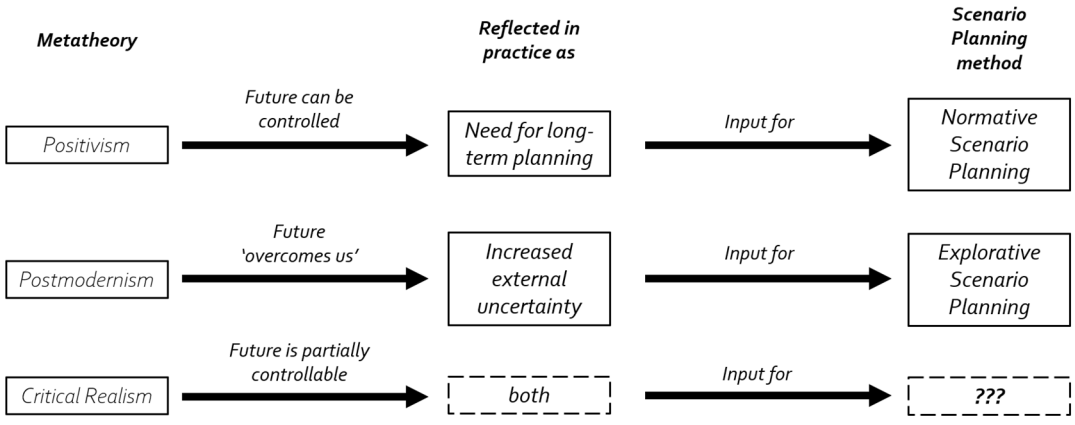

figure 1 the gap of critical realism between positivism and postmodernism

However, despite this demand for a combined scenario planning (CSP) method, little research has been performed on this subject, only within the domains of forestry, land use, and water strategies (de Bruin et al., 2017; Milestad et al., 2014). One should therefore ask themselves in how far it is possible to combine XSP and NSP and what the impact could be for CRE portfolio strategies. This thesis therefore arrives at the research aim as depicted in figure 2.

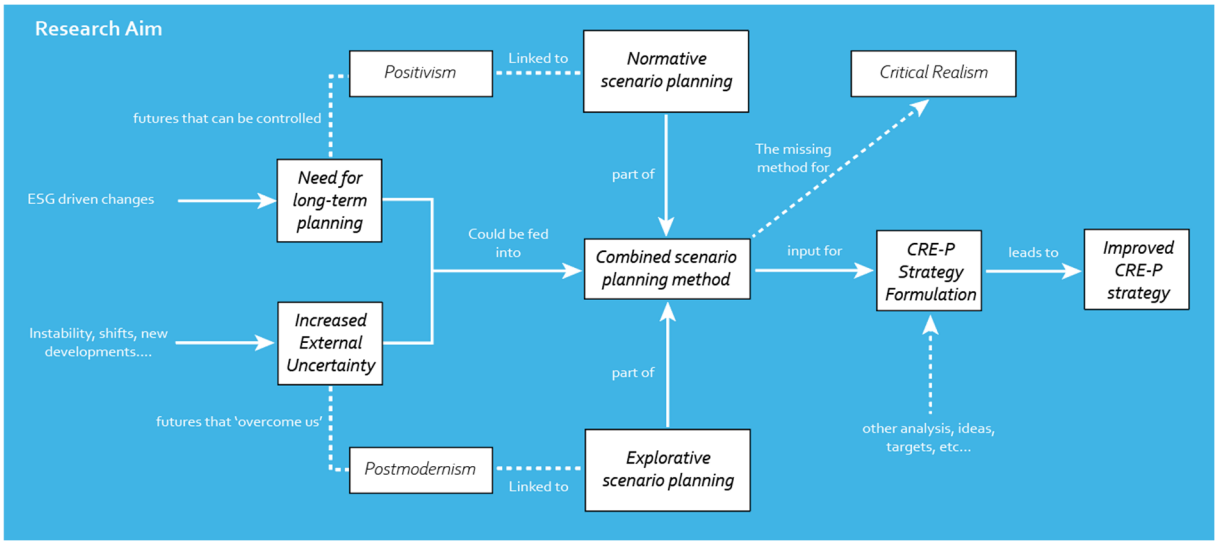

figure 2 aimed research of this thesis

1.3 Societal and scientific relevance

Having a method to consider the implications of the future is essential to have within both the private and public sectors. Increasing external uncertainty combined with an increased demand for long-term planning due to the now mandatory ESG reporting standards make it of great value to develop and test a new form of scenario planning which can address both concerns.

Not only is developing and testing a new combined scenario planning relevant for the corporate world, it is also interesting form a scientific perspective, for it shakes up the current discourse in literature concerning the context of the two scenario planning methods this thesis will attempt to combine; explorative scenario planning is most popular in the private sector, whilst normative scenario planning enjoys most of its success in the public sector (Amer et al., 2013; Börjeson et al., 2006; Bradfield et al., 2005). This separation of schools could therefore be broken down following these research and can hopefully fill the gap that currently exists between these two schools.

2. Research Design

2.1 Research aim

The aim is to research the possibility of combining explorative and normative scenario planning in a combined method and consequently its potential impact on our context of corporate real estate portfolio strategy formulation. As mentioned in chapter 1, both theory and practice suggests that there could be demand for a new way of looking at the future. A scenario planning method that combines both explorative and normative scenario planning could fill this gap and potentially improve improve CRE portfolio strategies. This thesis therefore enters the forefront of this field, for recent research and experiments on this have mostly been performed in the context of land use, forestry, and water futures, as well as being limited to experiments with a single method (Dean, 2019; de Bruin et al., 2017; Milestad et al., 2014).

The goal is to firstly establish definitions of explorative and normative scenario planning, as well as identifying how the two compare. Secondly, a framework ought to be developed on how scenario planning is used within CRE portfolio strategy formulation. Thirdly, design criteria are set out and through a process of research through design can experiment with different ways of potentially combining XSP and NSP in a united CSP method. Finally, this method will be subject to a simulation and expert panel evaluation in order to see how the CSP method could impact our practice.

From this point on, the following definitions will be used as to not cause any further confusion. When writing about the scenario planning methods and approaches, this thesis will refer to explorative scenario planning as XSP, normative scenario planning as NSP and combined scenario planning as CSP. Whilst Corporate real estate, CRE from hereon out, can covet a wide array of properties, this research will treat CRE solely as office buildings, for this is the most relevant for the testing of the new CSP method.

2.2 Research questions

The main research question for this thesis is the following:

"Can explorative scenario planning and normative scenario planning be combined in a single method and what could be its impact on corporate real estate portfolio strategies?"

1. How do explorative scenario planning and normative scenario planning compare to each other?
    1. How were these methods developed?
    2. How are produced scenarios used?
    3. What is the methodology used?
2. What are corporate real estate portfolio strategies?
    1. How are corporate real estate portfolio strategies formulated?
    2. What internal and external factors influence the formulation of corporate real estate portfolio strategies?
    3. How is scenario planning used in formulating corporate real estate portfolio strategies?
3. How can explorative and normative scenario planning be united in a combined scenario planning approach?
4. How would a developed combined scenario planning method impact the context of corporate real estate portfolio strategy formulation?

The methods of data collection, analysis, and other information that is relevant for the execution of this research will be further elaborated in chapter 5.

3. Literature Review

3.1 Definitions

Before further diving into this thesis, it is important to state some clear definitions, for this literature review as well as later empirical research have made it clear that there is very much a lack of definitions in the field of scenario planning.

Explorative scenarios – explorative scenarios describe possible futures for the world that takes place around an organisation. Explorative scenarios are therefore sometimes interchangeably referred to as context scenarios. These scenarios present futures that can 'overcome' an organisation, which in turn allows for an organisation to only make strategies that react to these scenarios. For example, I am planning a trip to Madrid, but I cannot influence the weather; therefore I make scenarios, which could lead me to make a strategy in which I take more breaks during the heat. I therefore am reacting to a possible future via my strategy.

Normative scenarios – normative scenarios present possible futures of the world that take place due to certain actions and different values an organisation can hold. Normative scenarios are target oriented and provide futures in which these targets have been achieved, be it in normatively different ways. For example, I am planning a trip to Madrid, but there are multiple ways to get there; I therefore analyse my budget and consider other values such as time or ecological footprint to eventually draw up four scenarios in which I achieve the same goal, namely reaching Madrid, but in different ways such as flying, driving, or taking the train.

Visions – visions are defined as the images of different futures that an organisation can have. For example, an automobile company may have a vision to be the first major company that solely produces hydrogen sportscars. In the case of this thesis, visions are simplified normative scenarios.

Strategies – in this thesis, strategies are seen as a list of different steps that are to be taken to reach the desired target or vision. Taking the example of the previous definition; whilst it can be the vision of this automobile company to be the first hydrogen sportscar manufacturer, they need a strategy of buying out, research and other steps that need to be taken, before they can achieve this.

3.2 Scenario planning

Over the course of performing the literature review, one thing has clearly emerged: there is such a multitude of scenario planning methods that it would almost be impossible to cover each and everyone of them. Like stated in the introduction, Bradfield et al. (2005) described the field of scenario planning as a methodological chaos. Over the years since the work of Bradfield et al. (2005), attempts have been made to bring more order to this field, for example by Börjeson et al. (2006) who aimed to provide a first step for a user guide on how to develop scenarios. However, despite attempts, Amer et al. (2013) and a decade later Cordova-Pozo & Rouwette (2023) report that the field of scenario planning is still filled with the aforementioned methodological chaos.

Does this mean that there is absolutely no structure to be found whatsoever? Certainly not, as stated in chapter 1, there is a certain amount of consensus in categorising scenario planning, namely in the three different scenario planning schools: the intuitive logics school, la prospective school, and the probabilistic modified trends (PMT) school (Amer et al., 2013; Bradfield et al., 2005; Cordova-Pozo & Rouwette, 2023). As also stated earlier, preliminary research also found that of these three different schools, only the scenarios of the intuitive logics school and the la prospective school are of value in formulating strategies. Therefore, in this part of the literature review, these two schools will be further investigated and end with a comparison to see their immediate advantages and disadvantages.

3.2.1 Intuitive logics school – explorative scenario planning

Military beginnings

The first modern scenario techniques were developed after WWII and were influenced by 19th century military strategists such as Helmuth von Moltke and Carl von Clausewitz. The new geopolitical balance that emerged after the war made the need for a new way of thinking very clear. The initial methods that were developed found good up take by the US Air Force and other branches of the US military during the 50s. With increasing complexity when it came to Defence systems and strategies, scenario techniques needed to be developed further. The intuitive logics school finds its modern roots in the work of Herman Kahn during his time at the RAND corporation, a non-profit think tank that pioneered scenario planning in collaboration with the US Air Force and the Douglas Aircraft Company during the 1950s and 60s (Phadnis et al., 2022. p.47).

Development by Shell

In business, the first company to use scenario planning extensively was the Royal Dutch Shell. The central figure who pioneered this work for Shell, was Pierre Wack, a planner from the Shell's French sister company, Shell Françoise. In 1967, Wack performed his initial 'year 2000' study, which aim was to explore the possible futures for the oil industry by the year 2000 (Bradfield et al., 2005; Metze, 2023). The initial way of creating scenario was relatively crude when compared to today: Wack and his team created two scenarios, instead of the now familiar 2x2 matrix, the first scenario showed a world which was based on the then recognised view that oil prices would increase about six percent per year, like had happened in prior decades. The second scenario painted a world where the Organisation of Petroleum Exporting Countries (OPEC) would form a cartel against the US, thereby driving up oil prices (Phadnis et al., 2022). While these scenarios were worked out in further detail, these scenarios were in essence relatively simple; one scenario extrapolating the current business as usual, while the other portrays an entirely different world view. This did not however diminish any of the value of this first scenario exercise; in 1973, when OPEC placed an embargo on a large part of the western world, oil prices skyrocketed and most other major oil companies where caught off guard, with the exception of shell, who anticipated such a crisis could happen. After this proved the success of using scenarios within their business, Shell expanded the use of scenario planning within the company. And with the success from Shell, other companies followed suit: "By 1980, between 35 and 50% of Fortune 1000 companies reported using some form of scenario planning for their strategic long-term decision-making" (Phadnis et al., 2022. p.49). The popularity of this method therefore also meant that the method of scenario planning through the intuitive logics school is also frequently dubbed as scenario planning *'in the Shell tradition'* (van den Berg et al., 2021). It is also this same success that this school enjoys that has spurred the methodological chaos: there seem to be as many ways of scenario planning as that there are people using this technique (Bradfield et al., 2005).

On the basis of Wack's work, his successor, Peter Schwartz further developed this method and transformed it into the most widely used method of scenario planning, which got named the intuitive logics school. The aim of this method, according to Schwartz, is not to forecast to future, but to create foresight: one aims to explore potential and equally possible futures (Phadnis et al., 2022). Therefore, in this thesis, when referring to explorative scenario planning (XSP), it also refers to the intuitive logics school of scenario planning.

Methodology

Like stated earlier, there are a lot of different ways of performing explorative scenario planning, with methods ranging from 5 to 12 to even 40 steps (Bradfield et al., 2005; Phadnis et al., 2022; Postma & Liebl, 2005). It is therefore nearly impossible to name a single way 'true' method of performing

explorative scenario planning. However there are certain steps and data gathering methods that are most widely used when performing such scenario planning.

Common steps and methods

At the heart of explorative scenario planning lies the assumption that decisions made in firms and organisations are rooted in the relationships that can be found between political, economic, social, technological and environmental factors (Amer et al., 2013). Understanding these factors, drivers and underlying relationships is at the core of this school. This means that one of the first steps ought to be a thorough analysis of external factors. In order to structure this, a STEEP or PESTEL analysis is usually performed. Stakeholder analysis and other generic tools such as brainstorming are also commonly used in order to perform this analysis (Amer et al., 2013; Bradfield et al., 2005; Cordova-Pozo & Rouwette, 2023; van den Berg et al., 2021). Data input is of mostly qualitative nature: most used sources are literature study, interviews, workshops, as well as different Delphi methods (Amer et al., 2013; Bradfield et al., 2005; Cordova-Pozo & Rouwette, 2023). When it comes to participants in the entire process, it can be seen that this type of scenario development is carried out by a team of individuals from the company in question. When services of external experts are needed, usually they are used for either designing and facilitating the exact way of how the scenarios will be developed or for bringing in specific knowledge desired by the team (Bradfield et al., 2005).

When driving forces and trends have been identified, the next step usually is to cluster these in order to gain a better oversight (Postma & Liebl, 2005). Once this has been done, these clusters can than be ranked on the amount of uncertainty and impact they have (Cardoso & Emes, 2014; Postma & Liebl, 2005). There does not seem to be one specific way on how the ranking of each cluster should be performed, however, there are indications that it is best to perform this in a workshop setting in order to have multiple views on this. After this has been performed, the two clusters with the most impact and the highest uncertainty will function as the basis for the two axis of a 2x2 matrix. From these two clusters, the specific driver or trend that is the most relevant for the development of the scenarios is extracted and will serve as a spectrum on one of these axis. For example, if in a scenario for Shell, the cluster concerning electric vehicles (EV) would be of highest impact and uncertainty, one looks within the cluster and claim that EV demand has specifically the highest impact and uncertainty, one would take this as a basis for one of the axis and make it into a spectrum such as 'EV demand rises' versus 'EV demand falls'.

Having selected two axes based on the highest impact and uncertainty, a 2x2 matrix is then created from which individual scenarios are further developed. What is created resembles different narratives or stories, which are not only in text form, but also supported by images or (fake) newspaper clippings (Bradfield, 2005). When creating these narratives, it is important that they make sense. In their literature review, Amer et al. (2013) found that in order to create valid scenarios, five criteria should be fulfilled. First of all, the scenarios should be plausible, otherwise the scenario exercise is not of any use. Second, the scenarios have to be consistent, meaning that other base factors within the narrative have to remain the same. For example, in a scenario concerning oil demand and EV demand, a base factor such as how the economy acts should remain the same; it would be inconsistent to switch the business cycle per scenario. Third, produced narratives need to be relevant and deliver new insights about the future to help with decisions and strategizing. Fourth, scenarios ought to challenge the current views. Scenarios such as these were developed initially to help management think differently as demonstrated by Wack in the 70's (Metze, 2023; Wilkinson et al., 2013). Fifth, the scenarios should differentiate from each other; having all four scenarios as variations of each other is not of much use.

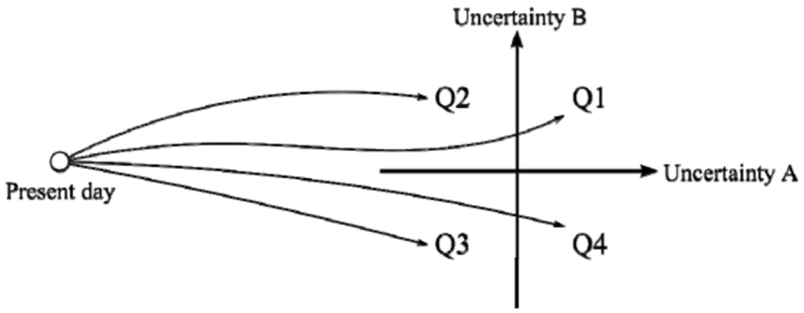

figure 3 result of explorative scenario planning via a deductive approach (Cardoso & Emes, 2014)

The final result of this scenario planning can be seen in figure 3. From the present day, four different futures are explored, based on the two highest uncertainties that would also have the most impact.

Seeing versus seeding the future

When investigating how scenario planning was used within business, using shell as an example, the work of Wilkinson et al. (2013) puts forward two different ways of how scenarios were used in relation to strategic vision and strategy formulation, namely *seeing* the future and *seeding* the future.

Seeing the future refers to using scenarios to create a new way of understanding the future. This was the was the manner in which Shell used scenarios from 1965 to the mid-1980s. The scenarios build by shell in the early 70s were meant to contrast to and challenge the assumptions and way of thinking that the majority of the senior group executives were holding. These scenarios were only used to convey new ways of thinking, they were neither discussed, nor used for strategy formulation (Wilkinson et al., 2013).

Seeding the future however is centred around the idea that scenarios are used as decision support tools as well as strategy formulation. From the mid-1980s up to today, scenarios developed by shell are linked to strategy formulation, eventually growing into decision support tools that are linked to real options theory. This use of scenario planning is aimed at creating visions as well as performing external analysis, allowing the company to choose strategic options based on the analysis of the world and its competitors. Also in this period, intuitive logics style scenario planning was becoming more linked to quantitative models, the main method of creating the initial scenarios was still rooted in interviews and workshops.

Despite the popularity and success that XSP has enjoyed, it has its drawbacks. Whilst explorative scenario planning is built to deal with uncertainty, its main disadvantage according to Postma (2005) is that "…scenarios do not prevent management from being surprised" (p.167). This has not so much to do with the fact that scenario planning wrongly claims that the scenarios would be the definitive future, but simply the fact that frequently events happen that were not in the realm of possibility, or simply excluded to keep the scenarios internally and logically consistent with each other. It shows a flaw that scenario planning does not yet have an answer for: if one wants to have coherent scenarios, one has to make certain assumptions about the future, therefore excluding inconsistencies. Meanwhile, one of the main upsides of this school according to Bradfield et al. (2005), is the fact that it is relatively simple to perform; the team that would be developing these scenarios consist mostly out of regular employees, only having experts on certain topics on board when truly necessary. This is mostly due to the fact that XSP relies heavily on desk research with some other qualitative data input such as interviews with aforementioned experts.

Conclusion

In conclusion, the evolution of explorative scenario planning from its military origins to its widespread adoption in business, notably by Royal Dutch Shell, has been a fascinating journey. The post-WWII era highlighted the need for innovative thinking in the face of geopolitical changes, leading to the development of scenario techniques influenced by military strategists. Shell's pioneering work, starting with Pierre Wack's 'year 2000' study, marked a significant turning point. Initially crude, scenario planning at Shell proved its worth during the 1973 oil crisis, setting the stage for widespread corporate adoption. Peter Schwartz further refined the method into the intuitive logics school, emphasizing foresight over forecasting.

The two distinct phases of scenario usage—seeing the future and seeding the future—illustrate the dynamic nature of this strategic tool. From challenging assumptions in the mid-20th century to actively influencing strategy formulation and decision-making in the modern era, scenario planning has become integral to business planning. The methodology, though diverse, revolves around understanding external factors through analyses like STEEP/PESTEL, stakeholder analysis, and qualitative data gathering. The creation of 2x2 matrices based on impact and uncertainty allows for the development of plausible, consistent, relevant, challenging, and differentiated scenarios. Despite methodological variations, the success of XSP has contributed to its widespread adoption in shaping the strategic decisions of numerous organisations by exploring potential and equally possible futures.

3.2.2 La prospective school – normative scenario planning

The *La prospective school* of scenario planning emerged when French philosopher Gaston Berger founded the *Centre d'Etudes Prospectives* during the 1950's, who developed this method as a response to repeatedly failing methods of forecasting (Bradfield et al., 2005). The main goal of Berger and the Centre was to create a scenario planning methodology that could draw up "...positive images or 'normative scenarios' of the future and to lead these images into the political arena where they could serve as a guiding vision to policy makers and the nation, providing a basis for action" (Bradfield et al., 2005. p.802). In this thesis, the la prospective school is therefore referred to as normative scenario planning (NSP).

Despite the death of Berger in 1960, the Centre d'Etudes Prospectives enjoyed great success and used the la prospective method to take a closer look at the futures for public issues such as regional planning and education. The method was reported to be used firstly by DATAR, the French governmental office for regional planning and development, during the mid 60's. It was also DATAR who was of great importance when it came to further developing this method during the late 60's and the 70's (Amer et al., 2013; Bradfield et al., 2005).

During the late 70's, the method was further improved upon and expanded by French economist Michel Godet, who incorporated more probabilistic approaches into this method (Amer et al., 2013; Bradfield et al., 2005; Phadnis et al., 2022). These included "...morphological analysis for scenario building, Micmac for identifying key variables, Mactor for analysis of actors' strategies and Smic-Prob-Expert for determining the probability of scenarios..." (Bradfield et al., 2005. p. 803). This created a mix of both qualitative and quantitative methods being used in this style of scenario development.

Within the Dutch context NSP is mostly used by the public sector as well, specifically the planning bureau for the living environment (Planbureau voor de leefomgeving, PBL). Recently, the PBL published a report that used this type of scenario planning: the spatial exploration 2023 (Ruimtelijke Verkenning 2023) was a normative scenario planning exercise which focussed on possible futures concerning the spatial planning of the Netherlands in 2050 (PBL, 2023).

Methodology

In stark contrast with XSP, normative scenario planning has a clear methodology when it comes to formulating these scenarios, despite its further evolution with the work of Godet. Durand (1972) put forward that developing normative scenarios consists of four parts, namely the base, external context, progression, and images.

The base is concerned with analysing the current situation. This foundational aspect does not involve assembling all elements of reality, whether quantifiable or not, nor is it a detailed, unchanging depiction of the present state. Instead, it represents a dynamic system of interconnected elements, with the system itself linked to its external surroundings through meaningful relationships. The selection of elements and relationships is contingent upon the specific scenario under construction, ensuring alignment with the desired narrative.

External context refers to everything outside the base. The base itself is not sealed off from the outside world; it is part of a wider social, economic, political, and diplomatic context, and likely a national or international context as well. However, Durand (1972) also points out that one should be selective in what parts of the external context should be studied, otherwise "...we might easily lose sight of the essential and emphasise secondary aspects" (p.327). He therefore suggests that one should focus on the external constraints that give a good representation of the exogenous environment.

Progression is about attempting to simulate the time and events between the present and the future, based on the findings in the base and external context. This 'historical simulation' as Durand (1972) names it is neither a mechanistic, nor a mathematical model. It is an iterative process in which the findings from the base and external context analysis are used to build towards a desired future, requiring constant adjustments and flashbacks within the process. It is also a relatively specialised task; it should be performed by a team of experts that have performed this method earlier and are familiar with their domains. This means that if connections on industry for example ought to be discussed, there should be someone in the team with knowledge on this specific topic. These simulations ought to be done for every normative scenario that eventually forms; if four scenarios need to be created, than this process will be performed four separate times. However, from the 80's onwards, Godet has introduced more computer modelling into this process (Godet, 1986).

From this process, finally the images, the scenario narratives, are formed. Durand (1972) states that it is important to also develop images at intermediate stages, for example if scenarios are made for the year 2050, it would also be wise to form images of 2030 in order to see if there are any discrepancies or if certain aspects in the progression stage have to be reevaluated. The final images present the normative scenarios that can serve as examples for policymakers.

This entire process can be depicted as in figure 4. Scenarios are formulated to which one can work towards, but in order to do this, one has to work through the current situation, external context and have to keep looking at how such a scenario has to evolve to eventually end up at our desired scenarios.

figure 4 Normative approach to scenario development (Cardoso & Emes, 2014)

This system of base, external context, progression and images still holds strong, also outside of France. The method of scenario development as used by PBL for drawing up the spatial exploration 2023 functions in a similar fashion. The PBL method also starts out with an analysis of the current situation (the base) and follows this up with an analysis of the external context (PBL, 2019). This is however is done by PBL via the creation of context scenarios: it defines possible parameters that are of influence for creating the normative scenarios, with metrics such as demographics, state of the economy, etc. Then the progression is carried out by a team of researchers who perform workshops, write essays and use computer modelling to further form the future. The images eventually are the presented scenarios.

The methods of data gathering in the la prospective school are generally a mix between qualitative and quantitative methods. The aforementioned probabilistic methods developed by Godet are combined with qualitative data such as interviews, literature studies and Delphi studies (Amer et al., 2013; Bradfield et al., 2005; Cordova-Pozo & Rouwette, 2023). The team that performs this type of scenario development mostly consists of a lot of external experts instead of regular employees from the company. This is due to the more complex analyses that have to be performed or specific software that has to be used (Bradfield et al., 2005)

Scenarios as blueprints

The most important principle in the la prospective school is the notion that the future can be created and modelled instead of being predetermined temporal continuity. Scenarios that are therefore developed by this school aim not only to show potential futures, but to function as a blueprint for a future to work towards. This is also reflected in the way scenarios are used in France: it aren't so much companies that use this way of scenario planning, but the public sector (Amer et al., 2013).

This is also the case within the Dutch context at the PBL. In an exploratory interview with one of the head researchers at PBL who also worked on the spatial exploration 2023, it became clear that the value of performing normative planning lies in its long-term nature and the fact that it can form a good basis for answering strategical questions. Also, due to the more holistic approach of normative planning, it becomes clearer much sooner where problems are that these scenarios aim to answer. Another important aspect that was mentioned was within the use of these scenarios for policy making. It is common that politicians and policymakers think about problems and solutions in a relatively black and white way: its either option A or option B. Normative scenario planning produces multiple futures that can show politicians and policymakers that option A and B could be possible; it challenges their way of thinking.

In short, normative scenarios currently are used mostly in the public sector and have stayed relatively close to what Gaston Berger and his Centre d'Etudes Prospectives had intended: to provide futures that shake up the mindset of politicians and can serve as long-term planning blueprints for policymakers. This therefore also means that using normative scenarios is both beneficial for product as well as process.

3.2.3 Explorative versus normative

Having delved deeper into both scenario planning schools, this thesis can now compare them based on their historical development, methodology, and how the scenarios are eventually used.

Historical development

Answering sub-question 1.1 on how these two different methods were developed, it can be seen that development of these schools, both occurred around the same time, during the late 50's and early 60's (Amer et al., 2013; Bradfield et al., 2005; Phadnis et al., 2022). The reasoning behind their origins was

relatively different: while XSP was the reaction of dealing with a changing geopolitical world order and later to external uncertainties in business, NSP emerged due to repeated failure of and dissatisfaction with the then used forecasting approaches.

Culturally, differences between explorative and normative scenario planning can also be observed. When it comes to this, Bradfield et al. (2005) refer XSP to the USA centre, whilst NSP belongs to the French centre. Looking at the origins of XSP however, the USA centre would be a large generalisation; certainly, initially XSP finds its roots in the US Department of Defense, but it was further developed at Royal Dutch Shell, an Anglo-Dutch company, by Pierre Wack, a Frenchman. Despite this irony, there are definitely differences between the two. The explorative scenarios, particularly the early work performed in the US where on a more global scale, whilst normative scenarios tended to focus on socio-political issues that were important for the future of France specifically.

This cultural difference can also be seen when looking at the different sectors where scenarios are used. Whilst originating from the US military, 'American' style explorative planning has been adopted en masse by the corporate world, especially after the success Shell enjoyed with this method and its handling of the 1973 oil crisis (Amer et al., 2013; Bradfield et al., 2005; Metze, 2023). Meanwhile, French style normative planning originated in the light of the public sector and has since then always remained in the domain of the public sector, finding only limited use in the corporate world (Amer et al., 2013; Bradfield et al., 2005).

Methodology

XSP is characterized by its flexibility and diversity, encompassing various methods with a range of steps, making it challenging to establish a single, universally accepted approach. At its core, this methodology believes that organisational decisions are rooted in the relationships among political, economic, social, technological, and environmental factors.

In terms of data gathering, qualitative sources such as literature studies, interviews, workshops, and Delphi methods are predominantly used (Amer et al., 2013; Bradfield et al., 2005; Cordova-pozo & Rouwettte, 2023). The process involves collaboration with a team from the company, occasionally supplemented by external experts for specific knowledge or facilitation. The identification of driving forces and trends leads to clustering, followed by ranking based on uncertainty and impact. This forms the basis for constructing a 2x2 matrix and subsequent narrative development. A set of criteria, including plausibility, consistency, relevance, challenge to current views, and differentiation, ensures the effectiveness of the created scenarios.

Meanwhile, NSP usually follows a structured four-part methodology, involving the base, external context, progression, and images (Durand, 1972). The base phase entails analysing the current situation, focusing on dynamic and interconnected elements chosen based on the scenario's narrative goals. The external context considers everything outside the base, emphasizing selectivity to avoid losing focus on essential aspects.

The progression phase involves a non-mechanistic historical simulation, with constant adjustments and flashbacks. This process requires a specialized team of experts. The final step results in forming scenario narratives or images, with intermediate stages analysed for potential discrepancies. Computer modelling, introduced by Godet (1986), plays a significant role in the later stages.

NSP combines probabilistic methods with qualitative data from interviews, literature studies, and Delphi studies (Amer et al., 2013; Bradfield et al., 2005; Cordova-pozo & Rouwettte, 2023). External experts often play a significant role in the process because of more complex analyses and software

that has to be used (Bradfield et al., 2005). Within XSP, the use of experts is limited and the team consists mostly of regular employees who perform desk research as input for the method.

Both methodologies acknowledge the importance of considering external factors. Explorative scenario planning emphasizes a thorough analysis of these factors, while normative scenario planning emphasizes selectivity. Additionally, both methodologies involve an iterative process, with adjustments and revisits to earlier stages to enhance the robustness of the scenarios. Team collaboration is integral to both approaches, with internal teams or external experts ensuring a comprehensive and informed approach. In summary, while both methodologies share certain aspects, such as the iterative nature and the consideration of external factors, they differ significantly in their overall approach, data gathering methods, and the structure of their processes. Explorative scenario planning is more flexible and diverse, while normative scenario planning follows a structured, four-part process with a greater emphasis on selectivity and historical simulation.

Use of scenarios

Explorative scenarios, exemplified by their use in companies like Shell, primarily aim to create a understanding and explore potential futures (Wilkinson et al., 2013). In the period from 1965 to the mid-1980s, Shell employed scenarios to challenge existing assumptions and the mindset of senior executives. These scenarios were initially developed not for strategy formulation but to convey novel ways of thinking. Over time, they evolved into decision support tools and became linked to real options theory. XSP emphasizes strategic vision and strategy formulation.

In contrast, normative scenarios, as advocated by the la prospective school, propose that the future can be actively created and modelled. These scenarios function not just as a display of potential futures but as blueprints for actively shaping the future (Amer et al., 2013). Normative scenarios find extensive use in the public sector, unlike their explorative counterparts, which are more commonly employed by businesses like Shell. The focus is on long-term planning and providing policymakers with multiple futures, challenging their binary thinking.

Despite these differences, both types of scenarios share commonalities. Both contribute to the process of strategy formulation through product and process (Amer et al, 2013; Wilkinson et al., 2013). In product, both schools of scenario planning contribute to a more robust strategy and vision, with the normative school being more focussed on the long-term. In process, both scenarios serve to challenge existing mindsets. Explorative scenarios challenge assumptions and thinking within businesses, whilst normative scenarios, especially in the public sector, shake up the mindset of politicians by presenting multiple futures and challenging binary thinking.

In summary, while explorative scenarios primarily focus on creating understanding and supporting decision-making within businesses, normative scenarios have a broader purpose in actively shaping the future, especially in the public sector. The overlap lies in their role in long-term planning, their capacity to challenge existing mindsets, and the holistic approach they bring to understanding and solving problems

Taking these two schools, one can see that whilst their very distinct through sectoral use and methods, they have quite some overlap. Cardoso and Emes (2014), attempting to break through the aforementioned methodological chaos, developed a framework to aid in the choice of scenario method with regards to time and complexity (see figure 5). From this it can be seen that in certain questions, both methods could be of use, such as questions on operational defence. From this, one can also see that the main three scenario planning schools can be seen as a spectrum, with the PMT school on one end and intuitive logics on the other, with la prospective overlapping with both.

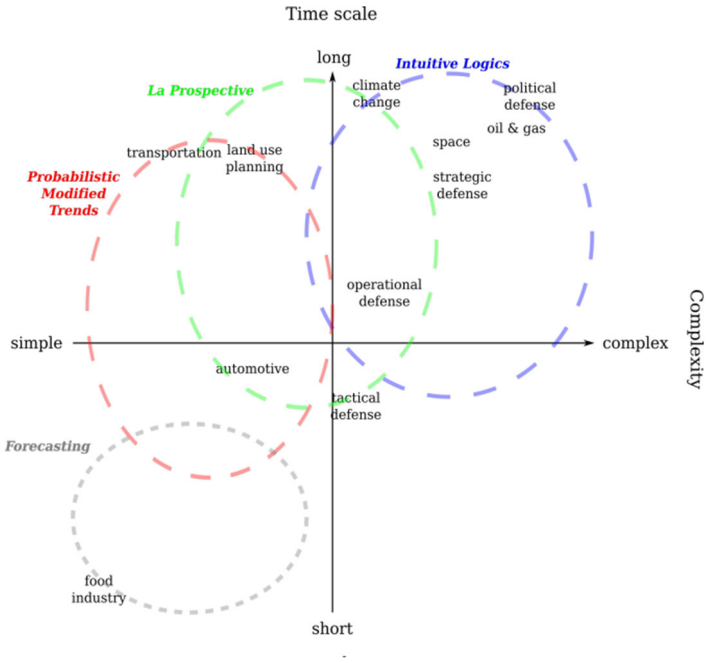

figure 5 Example of a Framework for Scenario Planning Process Selection (Cardoso & Emes, 2014)

3.4 Corporate real estate portfolio strategies

The context in which this research takes place is that of corporate real estate portfolios and in particular its strategic planning. This part of the literature review aims to answer the question on what corporate real estate portfolio strategies are. This means that corporate real estate portfolios first ought to be defined and their role within the wider business be explained. Next this chapter researches how CRE portfolio strategies are formulated and the internal and external factors that influence the resulting CRE portfolio strategies during the formulation process.

3.4.1 Defining corporate real estate portfolios

Before looking at its portfolios, this thesis first needs to define wat corporate real estate is. Glatte (2021) defines corporate real estate (CRE) as "...all forms of properties that corporates need for the execution of their core business..." (p.6), adding that the type of property is not of importance, as long as it fulfils the needs of the corporation that uses it. This means that CRE has a very wide range of property types; from factories to petrol stations, from offices to warehouses.

The practice that deals with CRE is corporate real estate management (CREM), which Pfnür (2014), as cited by Glatte (2021), defines as "...all property-related activities of a company whose core business is not real estate. CREM deals with the economic procurement, support, and utilization of the properties of production, trading, and service companies as part of their corporate strategy" (p.1). When focussing on the strategy part, it follows from figure 6 that this thesis has to deal with CRE portfolio management.

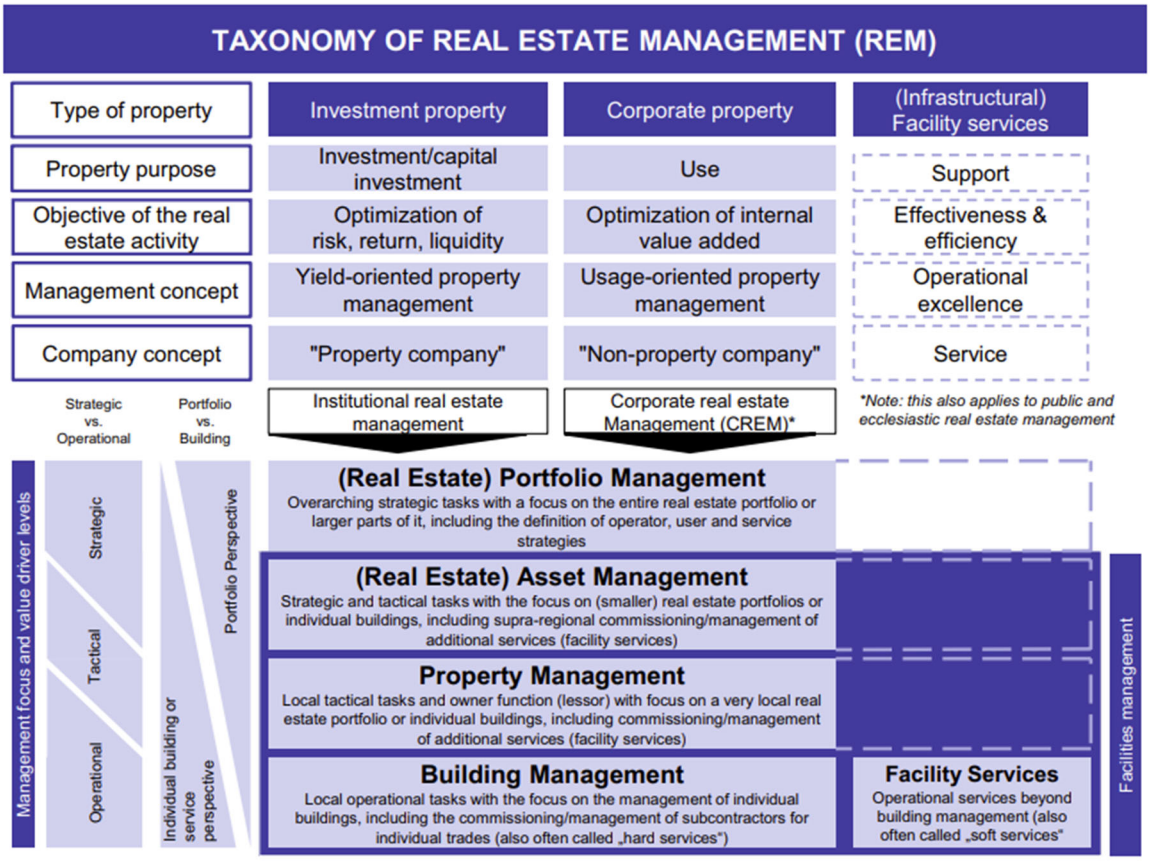

figure 6 taxonomy of real estate management (Glatte, 2021)

3.4.2 The role of CRE portfolio strategies within a business

But how does CRE portfolio strategy fit in the wider framework of a business? To get a clearer view of this, the framework of Henderson and Venkatraman (1989) on strategic information management has been adapted to show how the CRE portfolio strategy aligns with the business strategy and its position within the business as a whole (see figure 7).

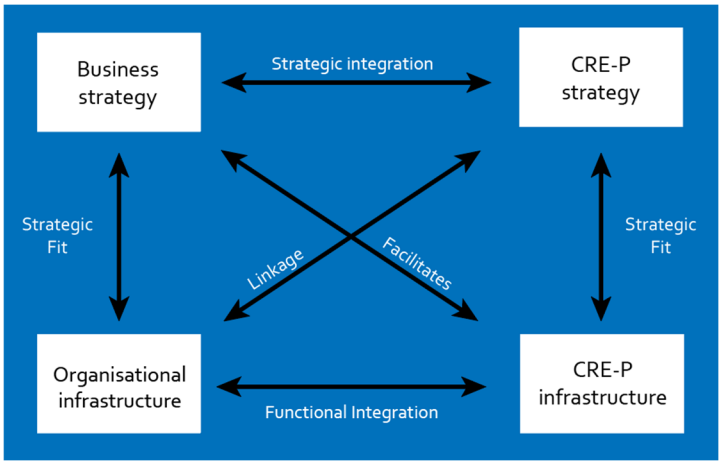

figure 7 the place of CRE portfolio strategy within a business. Adapted from Henderson & Venkatraman (1989)

When considering the business strategy in this model, this encompasses defining the overall direction and objectives of the business; its goals, competitive positioning, and value proposition that an organisation aims to achieve in its market or industry for a set period of time. In our model, the CRE portfolio strategy refers to how a company plans to use its real estate assets to support its business goals. This includes decisions that need to be made by a CRE portfolio manager, such as acquisition or sale of assets, extensions or cancellations of lease contracts, or other necessary investments. Organisational infrastructure, according to Henderson and Venkatraman (1989) consists of two elements, namely processes and structure. Processes are procedures, operational activities and workflows that drive the organisation, something that is impacted by the CRE portfolio infrastructure. Structure meanwhile refers to organisational culture, roles and hierarchies, here the goal for the CRE-P infrastructure is to enhance the way that people can work. Finally, the CRE portfolio infrastructure refers to the hard assets that support the business; the actual offices, stores, warehouses, and factories. The CRE portfolio infrastructure needs to be a strategic fit to the new CRE portfolio strategy.

Within the original strategic alignment model of Henderson and Venkatraman (1989), the CRE portfolio strategy and CRE portfolio infrastructure were actually IT strategy and IT infrastructure, respectively. In the work of Glatte (2021), the relation between the business strategy and CRE portfolio strategy is seen somewhat differently, portraying that the CRE portfolio strategy would be subordinate to the business strategy. This can be seen as rather simplistic and jumps over the sophistication as found in the model of Henderson and Venkatraman (1989): The power of their model lies in the fact that the CRE portfolio strategy in our case is inherently linked to the business strategy and not subordinate to. In a moment of reflection, Glatte (2021) does admit that he portrays it maybe to black and white:

> "On closer inspection, a purely top-down hierarchy between business and CREM does not seem particularly appropriate, but rather an interaction between clearly defined requirements of the core business on the one hand and their impact on real estate realities on the other." (Glatte, 2021, p.12)

Further considering the model as put forward in figure 6, the idea of value creation by CREM as put forward by Appel-Meulenbroek and Haynes (2014) connects with the linkage between CRE portfolio strategy and organisational structure. They state that CREM creates value in two different ways; through exchange value and use value. Exchange value is focused mostly on increasing efficiency, for example in ways of cost reduction, whilst use value is focused on increasing effectiveness, such as increasing worker productivity or increasing sales and reputation. In this case, it can connect the concept of use value to linkage between the organisational infrastructure and the CRE portfolio strategy.

In conclusion, the CRE portfolio strategy is positioned within the business as put forward in the model as adapted from Henderson and Venkatraman (1989) (fig. 6). The CRE portfolio strategy therefore has relations with all stated parts of the business, such as its strategy, organisational infrastructure, and CRE portfolio infrastructure.

3.4.3 CRE portfolio strategy formulation

Knowing that CRE can span a very wide range of property types, there is no silver bullet when it comes to CRE portfolio strategy formulation: it really depends on the context. This became quite clear during an exploratory interview with a director at CBRE: within consulting, how a strategy exactly is formulated is dependent on the wishes of the client as well as context . However, the process of developing CRE portfolio strategies and the type of activities that go into this has been widely studied. A clear framework on this is provided by Appel-Meulenbroek & Haynes (2014), who adopted the strategic thinking map as put forward by Swayne et al. (2006). This framework states that strategizing is a continuous process, consisting of three distinct phases: strategic thinking, strategic planning and strategic momentum (see figure 8). As becomes clear from this, strategy formulation is at the heart of this idea of strategic thinking.

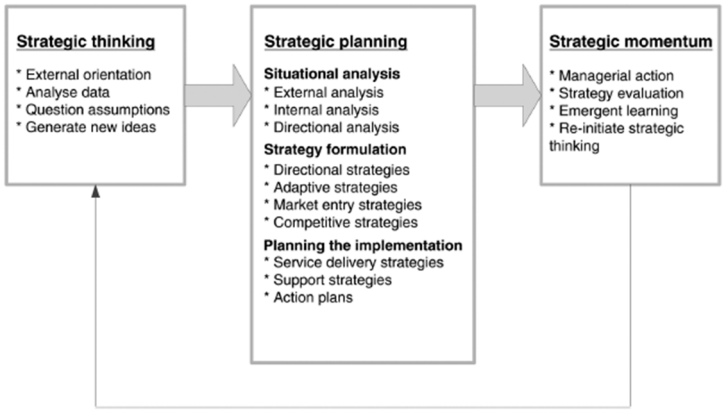

figure 8 Strategic thinking map as developed by Swayne et al. (2006)

The framework as depicted in figure 7 does appear to align with practice. From an exploratory interview with one of the directors at CBRE, it became clear that the first step is all about collecting and analysing the data. All information concerning contracts, turnover and other necessary data; it is important in the first stage to get a good view of the current situation. This eventually follows into the cluster of strategic planning, where further situational analysis is performed as well as the actual strategy formulation. Part of the situational analysis it is possible to perform a scenario planning analysis. Having performed these analyses and having formulated a strategy, it is common to first stage a pilot project; making major adjustments to the CRE portfolio of a company can be a very costly endeavour, therefore the interviewee claims that it is very important to also show outside of a strategy

document that a strategy can be successfully implemented, function as planned and generate the desired outcome.

Internal and external factors

As part of the analyses that needs to be performed, relevant internal and external factors need to be collected. Internal and external factors can be defined as put forward in figure 6: the business itself, with aspects such as CRE portfolio infrastructure, business strategy, CRE portfolio strategy as well as organisational structure are all within the realm of direct control of the business. Therefore, everything that can be controlled or influenced by the business can be classified as internal. This therefore also means that everything outside the control of the business can be classified as external.

Whilst internal factors are always of importance in relation to the CRE portfolio strategy, looking at the adapted framework of Henderson and Venkatraman in figure 6, and can be relatively easily collected and analysed, this cannot be said when it comes to external factors. From an exploratory interview, it came forward that the type of external factors that need to be considered and analysed really depend on the company in question and its properties. Appel-Meulenbroek & Haynes (2014) state that, despite every case resulting in different external factors that need to be investigated, it is important to approach the analysis of external factors in a structured manner. To this end, they suggest the use of PESTEL analysis to identify political, economical, social, technological, environmental and legislative external factors. Once identified, these factors can be used within a SWOT analysis to see how these factors either can provide strengths, weaknesses, opportunities as well as threats for the CRE portfolio.

Therefore, it can stated that internal factors that need to be considered are concerned with what the business can directly influence and steer, such as the business strategy, the organisational infrastructure as well as the CRE portfolio structure and strategy. Whilst external factors depend on the context, external factors can be structurally using a PESTEL analysis.

Scenario planning in CRE-P Strategy formulation

In their paper, Appel-Meulenbroek & Haynes (2014) also point towards scenario planning as a potential tool when performing situational analysis, specifically directional analysis. By stating that scenario planning is about 'thinking the unthinkable', Appel-Meulenbroek & Haynes (2014) seem to refer to the use of explorative scenario planning, which as discussed in chapter 3.1 is the most common method within the business world.

The way the use of scenarios are proposed by Appel-Meulenbroek & Haynes (2014) is in the form of strategy validation: strategies are developed separate from the scenarios, and these scenarios are solely used to see if the developed strategies would hold up in those situations. Using scenarios in order to validate strategies is one of the ways of how they can be used in strategizing (Mortlock & Osiyevskyy, 2023). Besides strategy validation, scenario planning can be used in other ways when it comes to strategizing. The main ways this is achieved are through developing strategies, improving decision-making, improving organisational learning, providing a basis for strategic planning, and improving communication and discussion (Amer et al., 2013; Appel-Meulenbroek & Haynes, 2014; Börjeson et al., 2006; Bradfield et al., 2005; Cordova-Pozo & Rouwette, 2023; Dewulf & van der Schaaf, 2004; Postma & Liebl, 2005; van den Berg et al., 2021). Mortlock and Osiyevskyy (2023), besides strategy validation and testing, also added option analysis, innovation, and nimbleness. While al these traits apply to strategizing in general, they can also all be used for strategizing within the domain of CRE. It can therefore see that scenario planning adds to both the product as well as the process within strategy formulation

4. Conceptual Design

4.1 Framework

In order to get a better overview on what this research is about, a conceptual framework has been developed which shows how different concepts are connected and how sub-questions are related to the different concepts and each other (see figure 9). The main research question for this thesis is as follows:

"Can explorative scenario planning and normative scenario planning be combined in a single method and what is its impact on corporate real estate portfolio strategies?"

In order to answer this, different sub-questions have been developed as well:

- SQ1 – How do explorative scenario planning and normative scenario planning compare to each other?
- SQ2 – What are corporate real estate portfolio strategies?
- SQ3 – How can explorative and normative scenario planning be united in a combined scenario planning approach?
- SQ4 – How would a developed combined scenario planning method impact the context of corporate real estate portfolio strategy formulation?

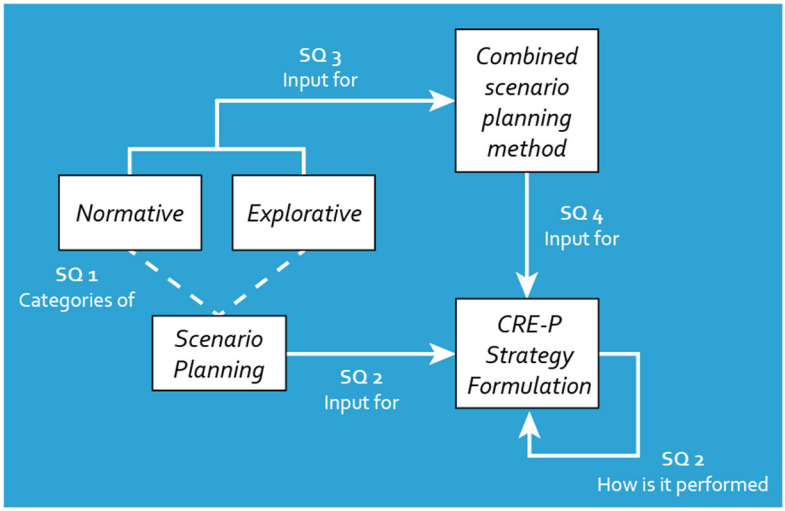

figure 9 conceptual design of proposed research

The first sub-question is important for finding out how scenario planning is used in strategizing as well as how both schools are positioned within literature. The comparison of the two is on how they were initially developed, how their methodologies work and how their scenarios are used. These are important factors for comparing the two schools; it shows in how far they are related and share commonalities through history, methods and use.

The second sub-question is concerned with two concepts, namely the relationship between scenario planning and how this is used within CRE portfolio strategy formulation, as well as how CRE portfolio strategy formulation is actually performed, how the CRE portfolio strategy fits in the wider framework of the business as well as defining CRE portfolio.

The third sub-question is concerned with elements of the two scenario planning schools and how they can best be combined for their goal, namely CRE portfolio strategy formulation. For this, sub-question four is of importance, for there the designed method will be simulated and its products presented before an expert panel.

4.2 Literature gap

When presenting the main research question of this thesis to literature, it was shown that, despite not being done frequently, this thesis is not alone in exploring the combination of explorative and normative scenario planning; Dean (2019) states in his literature review on scenario planning that in the past decade, multiple attempts have been made to combine the two methods (Kok et al., 2011; Van Berkel & Verburg, 2012; Milestad et al., 2014; Van Vliet & Kok, 2015).

Kok et al. (2011), researching the combination of scenario planning methods within the context of the future of European fresh waters, found that it was possible to combine exploratory scenarios with backcasting methodology. Backcasting within their research is defined as "...inherently normative and developed either participatory or using desk research, and mostly with important quantitative aspects"(p.2). The method consisted of first developing four exploratory scenarios and afterwards four backcasting scenarios which were each based on a different exploratory scenario. From this, 'robust elements' were developed; these are similar to no-regret measures and therefore have potential in all exploratory scenarios.

However, in critique of their own method, Kok et al. (2011) stated that their method is not immune to methodological challenges and other issues. Specifically the point where exploratory and backcasting scenarios touch each other is where problems arise, for using different exploratory scenarios (and therefore different contexts) as a basis for the backcasting scenarios lead to inconsistencies in outcomes. For example, the outcomes of one of the backcasts was more positive than the exploratory scenario on which it was based. In another backcast, a split between water-rich and water-poor countries that was stated in the exploratory scenario was not present. Not only does this show that there is a disconnect taking place between what could be (explorative) and what one wants to be (normative/backcasting), it also shows a slight positive bias towards one wants to happen.

What is interesting to note is the fact that Kok et al. (2011) and subsequently others that based their work on this, did not discuss this combined method itself. According to them, they "...describe an attempt from the community that has its roots in exploratory scenario development to combine these with a backcasting approach" (Kok et al, 2011. p.2). Despite not citing directly whose attempt this is based on, the work of Carlsson-Kanyama et al. (2008) approaches this very closely. They described their used methodology as a backcasting approach, combined with a methodology "...similar to that developed by Royal/Dutch Shell" (Carlsson-Kanyama et al., 2008. P.2). However, whilst Carlsson-Kanyama et al. (2008) state that their approach of involving stakeholders in their method is in line with a longer standing futures study tradition, they do not make it clear how this method was developed; they only state that they chose to integrate the Shell method of scenario planning into a backcasting approach, but not why they chose to integrate it in this fashion. It is therefore unknown how and why this specific combined approach, which has been the basis for more combination experiments in the decade following the research of Carlsson-Kanyama et al. (2008), came into being.

Following Kok et al. (2011), Milestad et al. (2014) used this method based on backcasting and framed it as as "... an entire process, from problem and target formulation, via scenario development to analysis of the scenarios in relation to present conditions..." (p.61). In their research, they integrated backcasting through participatory workshop sessions, developing scenarios using the inputs of the participants. De Bruin et al. (2017) in their later research concerning scenario development for the Dutch forestry sector used a similar framework as Milestad et al. (2014) by gathering the desired outcomes on certain topics from the participants.

Van Vliet & Kok (2015) built further on previous works by Kok et al. (2011) as well as Milestad et al. (2014), specifically in the context of water strategies. Here they again worked by combining explorative scenarios and backcasting which eventually would create similar 'robust elements' as previously mentioned. Their research acknowledged the fact that normative scenario elements, specifically in the form of participatory backcasting are of much added value.

When it came to the context of such experiments, it was seen that these mostly took place within the domains of forestry (De Bruin et al., 2017) and land use (Milestad et al., 2014), as well as water strategies (Van Vliet & Kok, 2015) and water futures (Kok et al., 2011). Within the context of CRE portfolio strategy no research on combining XSP and NSP in whatever form has taken place. Scenario planning research within this context has mostly taken place in the form on how scenario planning in general can be used, as can be read in chapter 3.4.3.

From presenting the main research question of this thesis to the literature, it can be observed that, whilst research has been performed on combining explorative and normative scenario planning, this has mostly been done via the same framework of first developing exploratory scenarios, after which backcasts are based on individual exploratory scenarios, from which 'robust elements' are derived as input for strategy or policy. Even then, it is still unknown how this specific combined approach has come into being. What has also become clear is that research on combining explorative and normative scenario planning has not been performed within the realm of corporate real estate, let alone in the domain of corporate real estate portfolio strategies.

One can therefore say that in literature, not only is there a gap when it comes to different ways of combining explorative and normative scenario planning, but also its implications within the context of corporate real estate portfolio strategies.

5. Methodology

5.1 Research framework

The proposed research is divided up into four phases (see figure 10). Phase I is concerned with figuring out the fundamentals when it comes to XSP and NSP (SQ1), as well as how CRE-P strategy fits in the wider framework of businesses, their formulation, and how scenario planning is used in formulation (SQ2) .Phase II is where the method design (SQ3) will take place, using the results from phase I as its primary input. In phase III the main focus is on testing the developed combined scenario planning method will be tested. It is important to note here that the developed method will be tested (SQ4) through a simulation. Finally, in Phase IV, the data gathered from phase III will be synthesized and will lead to the conclusion on what the potential strengths and weaknesses are of the developed combined scenario planning method.

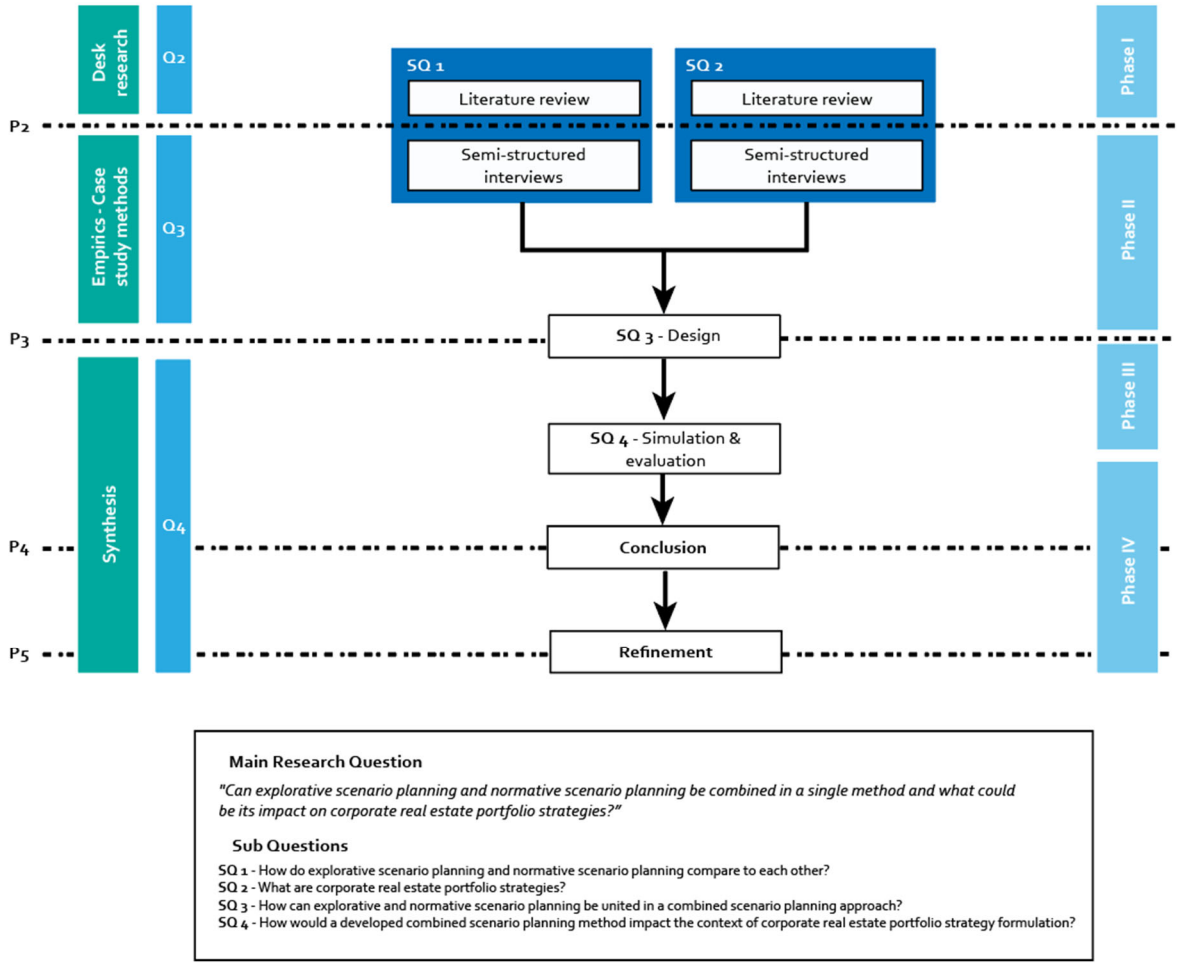

figure 10 research framework for this thesis

5.2 Methods & techniques

In this research, two type of methods are used, namely desk research and case study methods. Phase I uses a combination both methods, whilst phases II and III make use of case study methods.

The desk research part of this study will be in the form of a literature review. The literature review is conducted in a structured manner, using Google Scholar and Scopus as its main search engines. Different search queries, making use of Boolean operators and field codes are to be used to gather

the necessary literature. Besides making use of such search engines, the snowball method is also used: scanning literature for other referenced literature which may be of interest.

When it comes to case study methods, the main techniques to be used are semi-structured interviews (SQ1, SQ2 & SQ4), design (SQ3) and a simulation of which is evaluated by an expert panel (SQ4).

Interviews
Initial exploratory interviews performed during phase I delivered a great deal of extra input for SQ1 and 2 and helped to further position this research heading towards P2. It was therefore decided that on top of the literature review already performed for both, that semi-structured interviews should be performed to add an extra layer of depth and a link towards how theories and methods are actually practiced. Choosing semi-structured over structured interviews has the advantage of allowing the experiences of interviewees to come forward as well as to keep asking questions that were not initially drawn up before the interview. The interviews for SQ1 and 2 will be around 45 to 60 minutes in length and are to be recorded and transcribed, all with the correct permissions. The interviews for SQ4 will be covered in the paragraph on the workshop session.

Research through design
The findings from SQ1 and SQ2, concerning the scenario planning methods and CRE-P strategies respectively, will serve as initial input for the design of the CSP method. From this input, a new scenario planning method, combining elements from explorative as well as normative scenario planning, will be attempted to be developed. In order to design this new CSP method, some design consideration will have to be drawn up to be fulfilled; the design needs to be steered to a certain goal. This method of development seems to be in line with the concept of research through design. This is a method that proposes to use design systematically in search for a possible solution (Nijhuis & Lousberg, 2020). This means that to answer SQ3, SQ1 and 2 first have to be performed to get to know our design elements, after which design considerations for this new CSP method are to be set out, and then attempt to develop different iterations of the method to see how NSP and XSP can be united into a combined scenario planning approach.

Simulation
SQ4 is concerned with testing how the in SQ3 developed CSP method impacts the formulation of CRE portfolio strategies. This will be done by fully performing the designed CSP method in a real context. In the case of this thesis, this simulation will be performed in the context of the global office portfolio of a major Dutch bank. The results from this CSP method, that being input for the CRE portfolio strategy, will be subject to evaluation by a panel of CRE portfolio managers. The evaluations that follow from this serve as the answer to this last sub-question.

5.3 Data collection
This thesis will require the collection of various types data from different sources. In order to provide a better view of the data that will be collected during this research, an overview has been made as depicted in table 1 (next page).

Research question	Method	Technique	Data type
SQ1	Desk research	Literature review	Papers, books
	Case study methods	Semi-structured interviews	Audio, transcriptions
SQ2	Desk research	Literature review	Papers, books
	Case study methods	Semi-structured interviews	Audio, transcriptions
SQ3	Case study methods	Research through design	Design iterations of CSP method
SQ4	Case study methods	Simulation run	Complete simulation run of the developed CSP method
		Panel evaluation	Evaluations of scenarios and strategy documents by expert panel

table 1 produced data types according to research questions and their used methods and techniques

5.4 Data management plan

During this research, quite a lot of data will be produced and collected, such as audio for transcription and in the workshop produced materials. In order to safely store and properly handle this data, a data plan has been. For further details, the exact data management plan is further outlined in Appendix 4.

5.5 Ethics

This research will be working with human participants during the workshop session as well as the proposed semi-structured interviews. This means that I will have to ask consent and ensure a certain degree of anonymity. During the interviews, it could very much be possible that certain experts prefer to not openly be named in the final transcriptions or the eventual thesis report, due to sensitive information or other (personal) considerations. It is therefore important to guarantee the participants that if they prefer so, can stay anonymous, this could also allow participants to speak more 'freely' giving eventually more information. The same goes for the use of data as input for the workshop. If data for the workshop is taken directly from non-public sources of a stock exchange listed company, it could have large implications for everyone involved.

I can therefore say that the most important ethical considerations are concerned with participant anonymity and consent, as well as the use of company data.

6. Output

6.1 Objectives and deliverables

The goal of this research is to develop and test a new combined scenario planning approach that can aid in both the process as well as product of corporate real estate portfolio strategy formulation. This means that this thesis has four objectives: firstly, the current scenario planning methods need to be investigated and compared. Second, it is important to explore how CRE portfolio strategies are formulated and how it fits within the wider business. Thirdly, a new combined scenario planning approach, consisting of both explorative and normative scenario planning, needs to be researched and possibly developed. Finally, this thesis needs to assess how this new method impacts our field of CRE portfolio strategy formulation. In table 2, I have put every objective with the planned deliverables.

Objectives	Deliverables
1. Investigating and comparing current scenario planning methods	• Overview of the development, methods and use of scenarios as performed by the different scenario planning methods
2. Exploring CRE portfolio strategy formulation methods and how its framed within the wider business	• Business framework with the positioning of CRE portfolio strategy • Overview of CRE portfolio strategy formulation and how scenario planning is placed within this process
3. Researching a new combined scenario planning method	• Develop a list of design criteria based on SQ1 and SQ2 • Three different iterations of a CSP method, based on the criteria • Further developed scenario planning method sharing both explorative and normative scenario planning methods
4. Evaluating the performance of the new CSP method	• A simulation run of the new CSP method to show how the method would work in practice • Feedback and answers to questions by expert panellists based on the simulation run

table 2 Objectives and their respective deliverables

6.2 Dissemination & audiences

The findings of this thesis can serve as a valuable foundation for researchers exploring the usefulness of explorative scenario planning compared to normative scenario planning when used in formulating CRE portfolio strategies. The overview that this research provides on the differences between explorative and normative scenario planning and their usefulness in both the process and product of strategy formulation can be very beneficial for CRE managers, aiding them in improving their strategies. In the realm of CRE, the target audience includes CRE managers, but also strategy experts as well as the team working on said strategies.

7. Empirics – input from experts on scenario planning and CRE portfolio strategies

Having reviewed the literature on both scenario planning and CRE portfolio strategies in chapter 3, this chapter aims to expand our knowledge to fully answer sub-question 1 and 2 by performing semi-structured interviews with experts in the field of scenario planning as well as CRE portfolio managers.

7.1 scenario planning practice

In relation to sub-question 1, I have interviewed four experts in the field of scenario planning. As stated in chapter 5.5 the participants will be anonymised and are therefore, referred to as SP expert 1, SP expert 2, SP expert 3, and SP expert 4. The selected participants all have over 20 years of experience in working with scenario planning methods and represent both scenario planning methods; SP expert 1 and 4 are specialised in NSP through their work at different Dutch governmental organisations, whilst SP experts 2 and 3 have specialised in the direction of XSP.

7.1.1 Fundamentals – Explorative scenario planning

Extremities

Out of the gate, all four SP experts agree on the fact that explorative scenarios should be relatively extreme; that is to say that it should be looking for the limits of what could be possible. Not only is this better for stimulating discussion in the strategizing process, this also allows for finding better opportunities in the private sector. The importance of this was demonstrated by a study performed by SP expert 2 for a cheesemaking company. SP expert 2 was asked to consider the future of the cheese industry and potential sales and eventually found that one of the possible scenarios could be that the next generation does not want to eat any cheese and only wants to consume vegan alternatives. According to SP expert 2, this caused quite a stir and at first the scenario was deemed unrealistic and something that should be dismissed. However, after more discussion, the company decided to actually further investigate the possibility of producing vegan cheese alternatives, which eventually led to this company now successfully selling their vegan cheese in supermarkets throughout the Netherlands. This again supports the use of scenario planning as an important tool for discussion and supports the claim of Appel-Meulenbroek & Haynes (2014) that scenario planning is about 'thinking the unthinkable', exactly like SP expert 2 states (appendix 1).

Past the 2x2 matrix

When discussing explorative scenarios in the interview with SP expert 2, it came forward that when working with explorative scenarios, there are more methods in which these can manifest besides the 2x2 matrix as is suggested often in literature (Amer et al., 2013; Cardoso & Emes, 2014; Postma & Liebl, 2005). SP expert 2 makes in this the distinction between archetypical scenarios and incident scenarios:

> "Archetypical scenarios are usually these 2x2 matrices or morphological methods which produce 2, 3, 4, 5 stories. These need to be plausible, relevant, and surprising. The scenario set needs to be plausible, I need to be able to imagine them happening, they also need to possible, not per se preferable or probable…meanwhile, incident scenarios are the scenarios where we ask ourselves the question beforehand on what to do if something like this would happen…Incident scenarios cover things that are relatively improbable, but have a high impact" (SP expert 2, appendix 1)

The use of other morphological methods is also supported by SP expert 3, who stated that such methods bring more depth into these scenarios. When it comes to the incident scenarios, SP expert 2 showed me an example of incident scenarios he made in 2012 in the view of Dutch National security

(see figure 11). An upside of this method is the fact that these scenarios can be updated relatively easy. For example, in figure 11, nucleair incident (*nuclear incident*) is seen as zeer ernstig (*very serious*) but also as zeer onwaarschijnlijk (*very improbable*). However, with new intelligence information and other events taking place, the classification of this incident has moved further right towards being more probable.

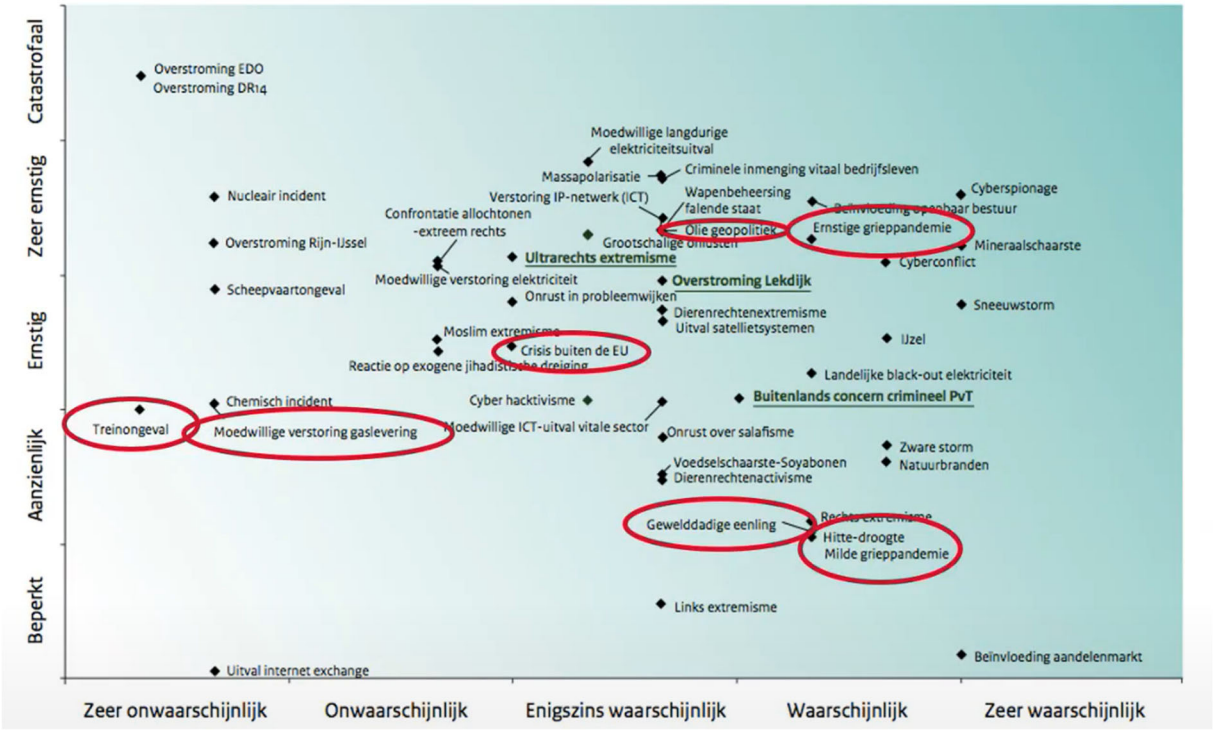

figure 11 Incident scenarios as developed by SP expert 2 in 2012 (SP expert 2, appendix 1)

Working with incident scenarios instead of archetypical scenarios can be very useful in a CSP method that could potentially be used in a CRE context; it could allow for a simpler approach which focusses on large key events that could influence a CRE portfolio instead of the longer process of developing archetypical scenarios.

Conclusions

What has become clear from the interviews in relation to explorative scenario planning is that it is important to make the scenarios as extreme as possible; the produced scenarios should be plausible and possible, but not probable nor preferable. It has also become clear that there are more ways of performing explorative scenario planning than has been touched upon by the studied literature. Specifically incident scenarios could form a very valuable part of a new CSP method due to their ability to be relatively easily updated.

7.1.2 Fundamentals – Normative scenario planning

From the interviews, it became clear that there is discussion surrounding normative scenario planning. Between the interviewed experts, this went as far as one expert claiming that normative scenarios cannot be seen as 'true' scenarios.

Normative scenarios – or visions?

When asked about how he views normative scenarios, SP expert 2 starts off by stating that he does not recognise normative scenarios as 'true' scenarios. The only scenarios that are actual scenarios

according to him are explorative scenarios, and follows this up by demonstrating this through an anecdote:

> "Let's say that I want to plan a trip to Paris. I can say that I want to have a sunny week in Paris, but that's only something I desire. That would be my normative scenario. However, I have no control over the weather, therefore I can only wish for a sunny trip to Paris. What I can do however is make scenarios for the different kinds of weather I could have during my trip to Paris, and make preparations for this. If one of my scenarios tells me it could be raining, then I could take an umbrella with me as a preparation." (SP expert 2, appendix 1)

That normative scenarios are not scenarios and explorative scenarios are, has therefore to do with what one can influence and what one cannot. What can be influenced are, according to SP expert 2, either normative options or visions. For example, if I want to go to Paris, I can choose my mode of transport; I can fly, drive, or take the train, depending on my budget, time, or other values. However, like in the example, I cannot choose the weather. What cannot be chosen or influenced, better stated, what for me are external factors, are therefore the basis for scenarios. This way of thinking is also in line with statements made by SP expert 3, who also makes the distinction between futures that 'happen to you' and futures that 'you want to happen'. The futures you can influence and want to happen are the normative scenarios, whilst those that 'happen to you' are the explorative scenarios.

SP expert 2 follows this up by how this is reflected in the use of normative scenarios in the public sector. Normative scenario planning is usually used by policymakers who want to create a vision of what the future should look like in regards to certain themes or domains. The mistake that is made however in formulating these scenarios according to SP expert 2 is a certain overconfidence in how much the future is actually 'makeable' (*maakbaar*).

Putting the 'makeability' of the future in a wider context, SP expert 2 claims that how organisations think about how 'makeable' the future is depends on whether they are in the public or the private sector. The public sector, like stated earlier, overestimates how makeable the future is. Meanwhile, the private sector tends to underestimate how 'makeable' the future is. SP expert 2 claims however that the latter is usually due to companies not wanting to take any extra responsibilities concerning their actions and strategy in relation to the future.

When it comes to this discussion on whether normative scenarios should be called scenarios and not visions, it is important to note that only SP expert 2 mentioned this linguistic discussion. SP experts 1 and 3 did not find this of any issue. It is worthy to point out however that these other two experts started their careers with normative scenario planning.

Normative and explorative scenario planning – a natural connection

Moving away from the discussion on whether normative scenarios are actual scenarios, this part moves to a different approach. SP expert 3 stated that "…when formulating strategies, that it is very frequent, almost natural even, that explorative scenario planning automatically takes on a somewhat normative character" (SP expert 3, appendix 1).

SP expert 3 personally thinks, whilst clearly stating that this is not covered in current literature, that when performing scenario planning as part of strategy formulation, it would be best to first develop explorative scenarios in order to explore what the most important external factors are and its

uncertainty. However, when starting to discuss these scenarios, it automatically gets a more normative twist: when discussing the future that 'happens to you', one immediately starts thinking about the future that 'you want to happen'. It is this step that, according to SP expert 3, makes it not more than logical that normative and explorative scenarios have such a natural connection; from thinking of what could happen, one starts to think about what one wants to happen.

However, this is where one also arrives back at the discussion on whether normative scenarios are actual scenarios. The step that is made from explorative scenarios (the future that 'happens to you') to normative scenarios (the future that 'you want to happen') appears more to be a step towards making a strategy instead of more scenarios.

Normative scenario planning through the PBL method – already a CSP method?
SP expert 1 is specialised in normative scenario planning, specifically through the method as developed by the PBL (*Planbureau voor de leefomgeving – Netherlands Environmental Assessment Agency*). This method of scenario planning is very much in line with what literature writes about the la prospective/normative style of scenario planning. First the current situation is modelled, then the external environment is examined. From this, model calculations follow and finally the scenarios themselves are drawn up. This is very similar to the la prospective steps with the base, context, progression, and the images.

However, where this PBL method becomes extra interesting in relation to this thesis is how the external environment is examined; this is done by formulating context scenarios. For its latest study, the spatial exploration of the Netherlands, the PBL made two different context scenarios (see figure 12)

Veronderstelde autonome ontwikkelingen	Contextscenario Meer	Contextscenario Minder
Bevolkingsontwikkeling	• Het aantal inwoners van Nederland neemt tot 2050 toe tot ruim 20,5 miljoen (3,4 miljoen extra inwoners ten opzichte van 2018).	• Het aantal inwoners van Nederland neemt tot 2050 toe tot circa 18 miljoen (0,6 miljoen extra inwoners ten opzichte van 2018).
Economische ontwikkeling	• Het aantal banen in Nederland neemt tot 2050 toe met 1,5 miljoen.	• Het aantal banen in Nederland neemt tot 2050 af met 0,2 miljoen.
Technologische ontwikkeling	• Snellere ontwikkeling en verspreiding van nieuwe technieken.	• Langzamere ontwikkeling en verspreiding van nieuwe technieken.
Internationale samenwerking	• Meer samenwerking.	• Minder samenwerking.
Mondiaal klimaatbeleid	• Wereldwijd ambitieus en effectief beleid. • Hierdoor blijft de mondiale temperatuurstijging in 2100 tot 1,5 à 2°C beperkt.	• Wereldwijd minder effectief beleid. • Hierdoor stijgt de mondiale temperatuur tot 2100 met 2 à 3°C en neemt daarna verder toe.

figure 12 context scenarios from the Spatial Exploration of the Netherlands. (PBL, 2023. p.50)

These two scenarios approach external factors that can influence the normative scenarios as 'autonomous developments', and state that these are the factors "…that the Netherlands as a country has no to little influence on, but do have spatial effects" (PBL, 2023. P.49). Looking back at the statements made by SP experts 2 and 3, it can be seen that these are futures that 'happen to us' and

one has no influence on. Therefore one can say that these truly are explorative scenarios. This does pose the following question however: if normative scenario planning uses explorative scenarios in order to create normative scenarios, is normative scenario planning in itself already a combined scenario planning method?

The answer to this question would be that normative scenario planning is not already a combined scenario planning method. Performing the context analysis is an inherent and important part of any NSP method; without it, the rest of the NSP method cannot take place. Changing just one part of this method would not immediately make it a new combined method. Besides this fact, when the SP experts were asked about the possibility or advice for developing a CSP method, no SP expert mentioned that NSP was a combined method in itself and only encouraged the development of an actual combined method.

Conclusion

From the interviews, it was seen that multiple discussions surround NSP. What this research has come to find is that the most important distinction between explorative and normative scenario planning lies in how much influence one has over the future. If one cannot influence the future and therefore 'happens to them' we are talking about explorative scenarios. Meanwhile, if one can actively influence the future and create a future that 'we want to happen', one talks about normative scenarios. This confirms the proposition made in the introduction that NSP aligns with Positivist theory whilst XSP aligns with Postmodern theory.

Whether normative scenarios should be called scenarios is still up for debate and seems to be more a linguistic choice and part of the discussion on how 'naturally' NSP follows XSP. The interviews also posed the question if NSP via the PBL method was not a form of CSP, this notion has been rejected however due to the nature of NSP as well as statements from the SP experts.

7.1.3 Methodology and techniques

Methodology and techniques – XSP

From the interviews, it has become clear that there is no single method of performing explorative scenario planning. As seen in chapter 7.1.1., there are multiple ways how XSP scenarios can come about, ranging from archetypical to incident scenarios. However, SP expert 2 does give us a sequence on how data for these studies are to be gathered and also by what techniques.

Initial data gathering is mostly done by performing interviews, workshops, desk research as well as the use of AI (*Artificial Intelligence*). After this has been done, one can work on analysing the relations between the different variables to eventually perform some model calculations to allow for quantifying the scenarios. From this, you can then start to think about and discuss different model and parametric uncertainties. Once this has been done, you can start to think about the future which is about storytelling and formulation. This is a more imaginative and creative process and therefore requires different resources; storylines from literature and movies can be useful as well as interviews and workshops. All as long as it provides a good basis for creative thinking and story telling. Eventually this can than be quantified again so you end up with scenarios that have some numerical values in them. SP expert 3 agrees with the use of desk research, interviews as well as workshops for gathering the data. He stresses the importance of using experts in developing the scenarios. When he gets asked to develop scenarios, he performs this in co-creation with the client; for he is the expert in scenario planning and can support the process of scenario development, but he is not the expert on the topic the client wants scenarios developed on.

Looking at the different data sources used, SP expert 2 stresses the importance of what one is working with; one is concerned with epistemological foundations, for one only has data about the past, whilst the future is only based on model calculations. Trends are therefore also fundamentally part of the past, for they are based in [historic] data. This raises the question on how one can foresee the future if one bases these on trends, which are inherently based in historic data; the moment start developing the scenarios, they could potentially already be outdated. However, as this is inherent to scenario planning, one would have to accept that this is a flaw one can only try to patch by potentially repeatedly and frequently updating scenarios. Frameworks for updating such scenarios is something that is being studied in literature (Van den Berg, 2021).

Methodology and techniques – NSP

Like stated in chapter 7.1.2., the PBL method of NSP uses the same four steps as the more traditional la prospective NSP method. However, where this method takes a different approach is with the techniques it uses as well as how the final product is handed over and explained. The method used by SP expert 4 in the studies for the RIVM roughly follow similar steps.

Looking at the techniques, it was observed that these are about the same as in XSP; desk research, interviews, modelling, as well as workshops are all part of the toolbox. However, the sequencing is where the PBL method is interesting. According to SP expert 1, when PBL starts with a large scenario planning study, they usually start of with performing workshops to gather initial input. Referring to the spatial exploration study SP expert 1 was one of the head researchers for, these workshops consisted of government officials from different levels of government (national, provinces, municipalities) to sit down together to discuss and draw on maps how they would reach certain goals and how this should be done spatially. The maps and other (verbal) input from these workshops is then synthesized and serves as the first basis for the scenarios. After this, the PBL team performs desk research and conducts interviews with experts they find interesting for different topics they are covering. When all the necessary data has been gathered, the research team then starts to calculate their different models. When asked if surveys could be a valuable tool to gather data for their model calculations, SP expert 1 answered that he does not find it interesting to use such data; for creating interesting scenarios, it is better to investigate the extremes. Besides this, any potential 'wisdom of the crowds' pales in comparison to the large public datasets the CBS (*Centraal Bureau voor de Statistiek – Central Agency for Statistics*) publishes which they use for their modelling.

The methodology used by the RIVM is centred around three main questions: (1) What is coming our way? (2) What does that mean for the health of our population? (3) What should do about it/what are the challenges? This resembles the steps used classically by NSP, of creating a base, looking at the context and then formulating futures. The normative aspect of this method, according to SP expert 4 is mostly seen in the direction of certain solutions:

> "You can say from a very liberal perspective: well there have always been differences, and always will be, so it's not that bad. In that case, we have to ensure that all major deaths are helped, but other people really have to take care of themselves and make their own choices. From a more solidarity perspective you would say: public health is top priority, so we must do everything we can to prevent anyone becoming sick. How you approach such things really depends on which value you find important." (SP expert4, appendix 1)

The techniques used by the RIVM are of similar nature as the PBL, however, they do not use workshops to gather their initial information. The stakeholder workshops of the RIVM are more meant to see how certain solutions are received by the general public.

Inquiring on what is the most time consuming, it becomes apparent that, while workshops take time to organise and perform, by far the most time-consuming aspect of both the PBL as well as the RIVM methods is performing al the different model calculations. This heavy focus on model calculations also appears to be a part of the scenario planning method that is typically Dutch according to SP expert 1: "...that is something that we mostly do here in the Netherlands, because we have good open access to the data we need, whilst in other countries such data is either missing or costs a lot of money" (appendix 2). The entire study took 2,5 years and had a dedicated team of 25 people who worked on this.

What is also extra to the PBL method is how the eventual end product is handed over. According to SP expert 1, it used to be the case that the PBL would publish a scenario report, give a few presentations and that was the end of it. Recently, they have started with 'communities of practice'; these are workshop sessions to help politicians and policymakers to understand scenario planning and how the results of the study should be used. For now it are mostly the larger municipalities that have some experience with working with the future, but the smaller municipalities still have quite a way to go.

Conclusions

From these interviews, multiple things in relation to the used methodology and techniques in XSP and NSP can be concluded. On the side of XSP, it was seen a that no single method of performing scenario planning has emerged; there is only agreement on the techniques that should be used for gathering the data. Comparing the techniques used in both XSP and NSP, one sees that these are very similar t each other; even the modelling does not seem to be mutually exclusive to NSP, something that was not covered in studied literature. The NSP method, specifically that of the PBL appears to be in line with the methodology as covered in chapter 3.2.2. What is different however are the communities of practice that are organised afterwards in order to help politicians and policymakers to work with scenario planning and the results of such studies.

7.1.4 Scenarios and their use

Use of XSP scenarios

When it comes to strategizing, the most added value, according to SP expert 2, is found in the different options that can be taken based on the scenarios. He points towards three different measures. Firstly no-regret measures, which are measures that can be taken no matter which scenario eventually turns out to come true. Secondly one can consider start/call options and thirdly one has stop/put options. The call options have proven their worth in explorative scenario planning through the successes at Shell who, during the oil crisis in the 1970's, made massive profits through creating and exercising call options, predominantly on North Sea oil and natural gas. SP expert 2 also pointed out that these scenarios can be interesting for researching in what ways the sphere of influence of an organisation can be grown in order to further influence its external context; instead of being a playball of market forces, how can the company become a market force? For the translation of scenarios into options and strategies, it is also important to have the scenarios not only in written language, but also have them quantified.

SP expert 3 had a different approach to the use of XSP scenarios, namely the fact that, due to the mentioned 'natural connection' in chapter 7.1.1.2, normative elements automatically plays a role in the strategizing process when one has first developed the explorative scenarios. According to him, these elements play two roles in strategizing. Firstly, it defines the core values from which is reasoned; are we going purely for profit, or do we go for an entirely green portfolio? Secondly, it influences how you value different societal trends/shifts; if you believe in progressive thinking, you are more likely to heavily invest in new (unproven) technologies instead of someone who thinks more conservatively.

The main problem however according to him is that the normative beliefs or ideas are not always known by the different actors who are part of the strategizing process, which can make the discussion more difficult. Despite this, it is the firm belief of SP expert 3 that these scenarios should mostly be used for triggering discussion, as the actual strategy choices should be made higher up.

Use of NSP scenarios

The statements of SP expert 1 and SP expert 4 seems to confirm the literature; the scenarios as produced by the PBL and the RIVM NSP methods are used as input for new policies and are made with policymakers in mind. However, in addition to just the policy makers, the PBL focusses on policy makers in a broader sense of the word; politicians, companies, lobbyists, NGO's, etc. Meanwhile, the RIVM also focusses extra on use by universities, colleges as well as other professionals in the different layers of Dutch government. The key on how to use these scenarios, specifically those of the PBL, appear to lie in the fact that one should not pick just one scenario; its strength lies in picking multiple elements from different scenarios to make better and more robust policies. It appears to be a common mistake to choose a single scenario however. The reason SP expert 1 gives that this mistake takes place is twofold: on one hand, scenario planning does not communicate and thereby mobilise crowds as easy as a simple number or slogan would. On the other hand, politicians, before normative scenarios have been made, already have set out a certain direction they want to go with their policies, so normative scenarios can only reveal more inconvenient truths. SP expert 1 relates this to an example on the energy transition:

"Take for example the energy transition. If there is being said that this should be done entirely by solar and wind, than the other options become a sort of taboo. Meanwhile we say, why wouldn't you capture some CO_2, use some nuclear power and also use hydrogen. We want to explore all alternatives, including their up and downsides. However, not everyone is waiting on this; suddenly inconvenient truths arise" (SP expert 1, appendix 2).

It also became apparent from the interview with SP expert 1 that the scenarios should serve as input for documents that have a legal basis. In the case of the PBL and their spatial exploration, this would concern omgevingvisies (*physical environment visions*). Aiming to have the scenarios enshrined into legal documents this way ensures their actual use.

7.1.5 Influencing the future

What all SP experts agreed on was the use of scenario planning as an important tool for stirring discussion. This is in both XSP and NSP the process that adds the most value when used for strategizing. The added value through discussion and triggering management to think differently is also what is supported by literature (Amer et al., 2013; Wilkinson et al., 2013). How much management welcomes this mindset however is a different story. Because, while all SP experts also agree on the fact that scenarios, independent of type or school, are good at confronting management with new ways of thinking, they also agree on the fact that management is not always to keen on being confronted. This makes scenario planning, besides the fact that according to all SP experts most people struggle to comprehend this method, even more difficult to use. It is interesting to hear this from experts in the field, as this problem was not covered in the studied literature.

Writing about the future influences the future

Focussing on the upfront rejection of scenario planning as a method, it can be seen, to a certain extent, the confirmation of critical realist theory; namely that the moment one states or publishes something concerning the future, it will inherently influence said future. A notion that connects well with the paradox of observing systems as put forward by Luhmann (1995). In practice, that means that the scenarios are of such a confronting nature, and therefore have such influence on the future,

that other stakeholders in the process feel the need to interfere with creating the scenarios or prevent publishing at all.
A great example of such interference came through SP expert 2; whilst discussing that it is important to stretch the realm of possibility when formulating scenarios and the fact that scenarios should be plausible and possible, but not per se preferable or probable. SP expert 2 provided an example of a study where this caused a lot of stir up with actors who did not want certain scenarios written down:

> "...we made scenarios for the high water protection programme (*hoogwaterbeschermingsprogramma*, red.), which contained scenarios for the port of Rotterdam, and the ministry of economic affairs was part of the project. We said that we could imagine that the port of Rotterdam between now and 2030 could shrink. We then got summoned by the ministry [of economic affairs] that we weren't allowed to write this down, because that wasn't desirable. Thereby they were acting as if the scenario wasn't plausible" (SP expert 2, appendix 1)

Another example of other stakeholders interfering with scenario studies due to its influence on the future was also provided by SP expert 2, who recently worked on a report of the potential shrinkage of Schiphol Airport. He stated that, just as reported by the NOS (2024), KLM had pressured the Royal Schiphol Group into not publishing this report. The stated conclusions, despite being better for the Schiphol group, would be a disaster for the business model of KLM.

Whilst these examples were from XSP, in NSP, something similar can be noticed according to SP expert 3. When discussing normative scenario planning with SP expert 3, we went over the PBL method of scenario planning. SP expert 3 was familiar with the method that the PBL has used for its latest study, but had critique concerning the results, as he saw those as too realistic. According to SP expert 3, this has to do with the context the researchers are doing their work in; whilst it is never explicitly mentioned, policymakers and politicians always have some hand in what the scenarios in the end will portray. It is therefore this hidden influence that has a negative influence on this method. He supports this by stating that the PBL scenarios are an evolved version of scenarios the CPB (*Centraal Planbureau – Bureau for Economic Policy Analysis*) used to make:

> "The CPB did this by making four scenarios based on 2 axis: individualism versus collectivism and high economic versus low economic growth. You could then project the current political order on to this matrix. So high economic growth combined with individualism was more the liberal world view, the VVD scenario. Collectivism and high economic growth was the PvdA (*Partij van de Arbeid – The labour party*, red.) and Groenlinks (*Green party*, red.). That way, nobody could say that the CPB was a politicised organisation, because no choice was made; there was a scenario for everyone. The PBL does this a bit different nowadays. Take for example the scenarios from the spatial exploration of the Netherlands for 2050, there they work with a morphological method and those contain some sliders such as people, planet, profit, but also low and high economic growth. It is a bit more subtle than what the CPB used to do." (SP expert 3, appendix 1)

When asked why there is potentially such influence from policymakers and politicians on this research, SP expert 3 states that this has to do with government investments:

> "This has to do with the fact that these scenarios are used to test government investments in relation to societal values. And if these bandwidths become too big, then these investments don't fit in one of these scenarios, so you have to reject those investment proposals" (SP expert 3, appendix 1).

SP expert 4 also agreed that writing about the future in this way also impacts the future. That is also partially why they decided to communicate their study through so-called 'common ground' actions. This was also done with the political situation of the time in mind: when performing the study, it was still quite unclear what kind of cabinet would be in place, so to ensure the study would still be relevant and could aid for the future, they decided on making actions that could be used in all cases; rathe resembling no-regret measures.

From this it becomes clear that scenario planning is such a powerful and revealing method that this causes such resistance to its conclusions, that other actors involved in the scenario planning process have an urge to still steer the scenarios in certain directions. This demonstrates the power of scenarios and their influence on the future; merely publishing such a study can have drastic consequences.

What to communicate

As seen in the previous chapters, XSP and NSP differ from each other; different methods, techniques, as well as use of scenarios. The fundamental difference however, lies in the story they want to tell about the future. Knowing now that scenarios produced by either method have a great influence on the future, even to such extent as to trigger stakeholders to prevent publication, it is important to realise how differently they communicate in relation to the future.

To illustrate this, let us go through a story that originated around the same time as both XSP and NSP, namely the 1965 comic by René Goscinny and Albert Uderzo, *Asterix's tour of Gaul (Le Tour de Gaule d'Astérix)*. In this story, Asterix and Obelix are tasked with a race around Gaul (modern day France) in order to provide a banquet which would lift the Roman siege of their village. Picture the following: you, the reader, and I are Asterix and Obelix in this very situation, let us compare XSP and NSP.

XSP scenarios are the various outcomes that could occur during the race. Before Asterix and Obelix embark on the race, they can envision all sorts of potential events that might take place during their journey through Gaul. Perhaps they will encounter bad weather, traverse difficult terrain, or even engage in battle with Roman soldiers seeking to sabotage their race. These are all things that are out of their control, they can only make strategies to react to these futures that overcome them.

NSP can be seen as the plans and objectives that Asterix and Obelix establish before commencing the race and the different ways they could achieve this. Prior to setting off, they contemplate what they wish to accomplish and how they can achieve it. They may set themselves goals such as winning the race, proving the courage of the Gauls whilst losing the race, or sabotaging the Roman competition. They are now considering the things that are in their control and thinking of ways on how to achieve what they themselves are setting out; they are acting towards a desired future, and the factors they consider are in their control and therefore try to actively shape their future.

From these two examples, the fundamental differences between how XSP view the future and what one should do, versus how NSP approaches this can be observed. However, as shown by how much scenarios can influence the future, one ought to know that neither can fully represent the future. The moment one writes and publishes their scenarios, one has already influenced the future; the future

neither overcomes us, nor is fully steerable. A scenario planning approach that respects this notion is therefore justified.

Let us now say that Asterix and Obelix use CSP when making a strategy for their race around Gaul. They are not only thinking about the future they want to achieve (as is in NSP) but also how to do this, despite the uncertain events that could take place during their journey. This for example would mean that if their normative scenario is to win the race, they not only think about how to do this in the first place, but also how they can do this, despite the events that could take place, such as a Roman ambush. This would mean that one has a method that respects the fact that the future neither overcomes us, nor is fully steerable.

7.1.6 Combining explorative and normative scenario planning

When asked about developing a scenario planning approach that combines both explorative and normative scenario planning, all three SP experts reacted positively and saw it as a plausible development. When asked for advice on developing this CSP method, all three SP experts gave different advice.

SP expert 1 noted that in a combined scenario planning method, its important to avoid the process of 'certainification'; the scenarios should always be on the extreme side and in a way unlikely to happen. It shouldn't be dumbed down forecasts. Within the light of the PBL method he stated that if the last step of the PBL method is adapted for a time horizon of 10 years, it could be interesting for the private sector. In relation to CRE, SP expert 1 also said that an opportunity within a mixed method could lie in that it could help positioning a company towards the outside world from a value point of view. What is the role that the company (and for that matter the portfolio) wants to play within the possible developments happening in the rest of the world? SP expert 1 also stressed the importance of defining a clear scope to prevent the study from becoming too big.

SP expert 2 showed a great interest in such a combined method and saw its value as to improve the current explorative scenario planning methods. He stated that for a combined method, it is important to consider what is contextual, what is 'self', and what is transactional'; i.e. what can I not influence, what can I influence and what is sort of in between. With this, SP expert 2 referred to a framework from Van der Heijden (2005), depicted in figure 13 as shown in the interview.

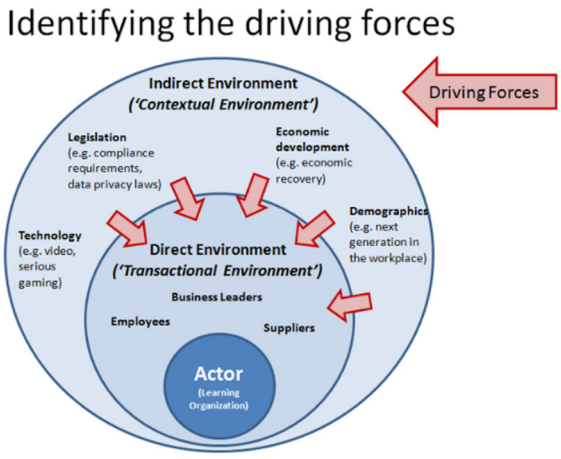

figure 13 Adapted framework of Van der Heijden (2005) as shown by SP expert 2 (appendix 1)

SP expert 3, besides being positive on the development of a CSP method, gave advice also in relation to the context of CRE to which this CSP method aims to be tailored. The combination of explorative and normative can be very useful due to the fact that real estate always has to deal with normative

aspects, as it addresses the physical environment in which we live. Also within this light he stated that it could very well not always be the best idea for a company to choose for no-regret options based on scenarios. According to him, this is something that can work well in the public sector, due to policy makers and politicians wanting to keep themselves out of the wind by acting defensively. Within the private sector however, it is more interesting to take more risks instead of playing it safe. Also, like SP expert 1, it is stressed to have a clear defined scope of what you want to achieve with the scenarios and even warns for over-use of scenarios. Stating that sometimes common sense is enough or simply a decision needs to be made; if it is already known which buttons need to be pushed, making scenarios is unnecessary. Also like SP expert 2, one should also ask the question how much these scenarios actually 'happen to you' and therefore to truly see what is contextual, transactional and what is within own reach.

7.2 CRE Portfolio Strategies

With regards to sub-question 2, I have interviewed three CRE portfolio managers and strategists in order to gain a better understanding of how CRE portfolio strategies are formulated, the dependent internal and external factors, as well as how scenario planning plays into this process. Having reviewed the literature on this in chapter 3, this chapter will answer sub-questions 2.1, 2.2 and 2.3. Considering chapter 5.5 of this thesis, the interviewees have been anonymised and will be referred to as PM (Portfolio Manager) 1, PM 2, and PM 3. PM 1 works as a portfolio manager for a large pharmaceutical company, which portfolio consists mostly of offices as well as some laboratories and factories. PM 2 was the head of global real estate for a major Dutch bank, focussing on the office stock. PM 3 is chief strategist at a publicly listed Dutch commercial real estate company, focussing on commercial properties such as shopping malls.

7.2.1 CRE portfolio strategy formulation

Strategizing process

From the interviews, it became clear that every manager had their own way of formulating their CRE portfolio strategy. However, it became clear that despite their different methods, the same steps were still undertaken. Namely an analysis of the portfolio in its current state, front-end processes such as establishing goals in relation to the business strategy, stakeholder management and alignment, and finally strategy testing.

One of the difficulties that became apparent through the interviews was gathering the vast amounts of data to get a good overview of the current state of the portfolio. Both PM1 and PM2 encountered this problem and state that this is the most time consuming part of the entire strategizing process. According to PM1 and PM2, this is foremostly due to the fact that a lot of data is simply missing; either it does not exist, or a different department is working with a different system, causing it to go missing. PM3 meanwhile did not seem to encounter this problem concerning data collection. This problem therefore also appears to be dependent on the company and the portfolio which is being managed.

When asked on the importance of the business strategy for formulating the portfolio strategy, it became clear that this is quite important. PM1 did not go very much in depth on the business strategy, however he did imply that at the time the company was busy with a process of cost-cutting, which also included the CRE department. Whilst not being the most detailed strategy, it signals that the business strategy has a great deal of influence on how the CRE portfolio strategy is to be formulated. PM2 stated that the most important influence of the business strategy can be seen in how the company is organised and the operations it may decide to keep or stop. Both have a direct impact on the necessary amount of CRE. PM3 also underpinned the importance of the business strategy, but mostly in a financial sense; part of the business strategy was lowering the LTV (loan-to-value) ratios

as well as growing the profits per share. These goals in turn corresponded with different KPI's, IRR's and other measurements on the portfolio level.

Getting a grip on the business strategy is important for developing goals and targets that the CRE portfolio ought to reach. Both PM1 and PM2 explicitly stated that a good front-end process of setting goals and defining the scope is of the essence; it is very important to create clear objectives to what the portfolio strategy should achieve. PM1 added to this that if this is done correctly, stakeholder management further down the line becomes a lot easier.

What all managers seem to agree on in the later stages of the strategizing process is the fact that stakeholder management tends to take up the most time. In relation to the strategy, this is a two-way street; on one hand the PMs have to align everyone with the new strategy to try to get it approved, but on the other hand, the new strategy also has to align with the majority of everyone their preferences. Especially PM3 mentioned this, for he also has to convince the board of directors as well as the shareholder of the new strategy and at the same time align their preferences.

As a final step before definitive implementation, PM1 mentioned that firstly a test case is done to see if the strategy can work. This is due to the high costs that come with large strategy changes. PM2 and PM3 did not specifically mention performing such a test case.

7.2.2 Internal and external factors

Internal factors

When discussing important internal factors for strategy formulation, the interviews showed deviation between the different PMs. However, this concerned factors of the portfolio that sometimes be influenced by the PMs themselves. PM1 stated that the internal factors have to do with the general priorities that a business has:

> "What has the company committed to its employees? What has it committed to its leadership? What has it committed to other stakeholders? Because that will ultimately determine how the real estate strategy should be implemented" (PM1, appendix 2).

PM1 also relates these overall priorities with the business strategy, stating that the question needs to be asked whether a company is in growth mode or cost-cutting mode. Besides this, another factor he mentioned was sustainability, also within the context of what the company has committed to its employees and their shareholders, stating that this is becoming more important because this is being reported in the annual statements.

PM2, managing offices on a global level, mentioned the importance of the local working culture and cultural differences in general as an internal factor. When asked further on the role of these cultural differences, this appeared to be twofold; the local working culture has to do with how much people still use the office. For example, the Dutch offices are relatively empty due to a high tendency to work from home, whilst the east Asian offices are almost always full. Internal factors that PM3 named were the IRR as well as the wider business strategy.

External factors

Considering external factors that influence the formulation such strategies, PM1 and PM2 put forward factors that have a direct impact on the assets themselves, both through use as well as financing. Factors named include the development concerning hybrid working, interest rates, and market developments. PM2 gave an example of the importance of especially the latter:

> "We bought the building next to this one [where we are now]. That has been developed, a newly developed project. The idea was at first that we would be leasing the building from the developer, but the developer suddenly says with these increasing interest rates that he is pulling the plug. Well, then we were in that situation; what were we going to do now?" (PM2, appendix 2)

PM1 also mentioned market conditions specifically in relation to leasing buildings and especially in relation to the availability of space. He gave an example of a company that is looking to cut back on costs, but has to do so in market conditions that favour the landlords. This means that you are very likely to struggle to implement your desired cost cutting strategy.

Next to these factors named by PM1 and PM2, PM3 specifically named the development of consumer preferences as one of the most important factors. Specific metrics het watches out for example are consumer spending and income level, for this influences the amount of turnover shops can expect. This is specifically a relevant factor for PM3 for he deals mostly with retail real estate instead of the office real estate that PM1 and PM2 are handling.

7.2.3 Scenario planning and strategy formulation

Current use of scenario planning in CRE portfolio strategy

When the portfolio managers were asked if they use scenario planning when formulating CRE portfolio strategies, they provided mixed responses, however still pointing towards the use of 'what-if' type scenarios.

PM1 and PM3 both stated that they use what-if type scenarios for primarily financial analysis. PM1 does this by outlining all financial considerations in a 20 page document. This includes information such as NPV impact over the duration of the contract, required capital investment, annual expected costs, etc. From this, multiple what-if scenarios are drafted, and eventually options for the strategy are selected based on that. The main reason PM1 gives for only performing this form of scenario planning and not explorative scenario planning are that financials play a more important role in driving decisions. Next to this, PM1 also poses an interesting argument; namely that due to companies having to act quickly, that there is little use for long-term forecasting and such considerations. He does not however that this is mostly the case for a lease-based portfolio. For portfolios that contain a lot of owned assets, this could be more useful. This notion fits in with the statements made by PM 2, who acknowledges the value of long-term thinking and scenario planning, but warns for the fact that there is kind of a paradox currently going on in CREM, namely the fact that on one hand companies aim for more flexibility, whilst also trying to tackle long-term challenges such as increasing sustainability. PM 2 also added the same concern when it comes to leasing as PM1, giving the example of the new main HQ of the bank she works for: This is one of the few buildings that the bank has in possession of, so long-term planning for that was valuable. With leases however, one is really dependent on the market and simply the availability of different types of buildings. Contrary to PM1 and PM2, PM3 stated that long-term planning does play a large role for the portfolio due to ESG as well as Paris Proof ambitions.

PM2 stated directly that she uses 'what-if' type scenarios, but put less financial emphasis on its use and provides a clear example:

> "Now in the case of hybrid working, I work a lot with scenarios on 'what if' we return more to the office? What if this isn't the case? What type of office do we then have? That of course really influences your [office] demand, so in that case I work with scenarios" (PM2, appendix 2).

PM3 hinted at the use of explorative scenario planning, but mostly keeps this limited to a few external factors; the amount of e-commerce, interest rates, changes in shopping behaviour. The focus however remained on financial what-if style scenarios with drafting average, worst and absolute worst-case scenarios considering their income. This is specifically something that the accountants want to get a hold on according to PM3. What was also interesting to see is that this was the only respondent wo seems to perform scenario planning for both internal and external factors, stating that whilst considering different external scenarios such as concerning the economy and interest rates, they also turn to internal scenarios to see how they can react if certain buttons are pushed.

8. Designing a combined scenario planning approach

Chapter 8 aims to answer sub-question 3: *How can explorative and normative scenario planning be united in a combined scenario planning approach?* To answer this question, this chapter has been divided into three parts: first I will go over design considerations in order to develop a CSP method with CRE portfolio strategizing in mind. Second, I will design three possible iterations of a CSP method, with different weights of both XSP and NSP in the CSP method. Third, one of these iterations is chosen and further developed in order to be test its impact on CRE portfolio strategy formulation in chapter 9.

8.1 design considerations

To ensure that a potential CSP method is developed to be used in the field of CRE portfolio strategy formulation, it is important to set out what such a method should address. To this end, the portfolio managers that were interviewed in chapter 7 were also asked what they would find useful in such a new CSP method. This direct input is combined with other problems that the portfolio managers encounter in their strategizing process. Besides the input from the interviewed portfolio managers for this, this chapter will also use the responses of the SP experts on combined scenario planning from chapter 7.

Input from portfolio managers

What would be useful for a potential CSP method differed per respondent. PM1 stressed the importance of setting out clear priorities and decision criteria at the beginning of the scenario planning process. Having this clearly defined prevents one from being overwhelmed by information. In light of the fact that normative scenarios provide futures that also achieve goals and targets, setting such clear priorities could be very important.

PM2, following up on the paradox taking place in CREM at the moment as described in chapter 7, suggested that a new method should be able to do two things: firstly, it should make clear which buttons could be pushed in relation to the portfolio. This could be factors such as increasing sustainability, flexibility, headcount, etc. Secondly, it should be able to account for external factors such as market developments.

PM3 also suggested that the most value of a CSP method would it in such a way that long term drivers are consistently a part of the scenario planning process. Besides this, he also urges for a certain amount of realism in the scenarios. Contrary to the idea of 'thinking the unthinkable' PM 3 states that it is more relevant to look for the extremes within a certain bandwidth:

> "...if I would say in a scenario that the inflation would be 30%, that would be very favourable for us, as most rents are indexed through inflation, but it just isn't realistic, so you want to stay relatively close to reality and I think that in many scenarios that are created you are more often too positive than too negative." (PM3, appendix 2)

Whilst this is relevant input for a CSP method, it should be noted that scenario planning at its core is about looking for the extremities and thereby stirring discussion. However, what the statements of PM3 do show is the importance of quantification of scenarios to see what the impact could be.

On of the problems that arose from the interviews was stated in chapter 7, namely that two of the three portfolio managers encountered problems with gathering the necessary data and claimed that this was by far the most time-consuming process. Besides this, it was also noted in all interviews that strategy formulation is quite a long process, taking around 6 to 8 months on average. What has also

been suggested by both PM 2 and PM 3 is the use of AI (*Artificial Intelligence*) in order to combine the two different ways of scenario planning, as well as to simplify the method.

List of considerations

Considering the input from both the portfolio managers as well as the SP experts, this research arrives at the following list of considerations for a potential CSP method that could be used in CRE portfolio strategy formulation:

1. Considering the time spent on collecting (missing) data, a CSP method should try to either re-use this data, or to keep the amount of new data necessary for performing the method limited
2. Given the time spent on the entire process of strategy formulation, this method should be able to be applied with the least amount of fte as possible and as quickly as possible
3. The potential method should be easy to carry out; as most people struggle to comprehend scenario planning and portfolio managers currently use it in select ways, the potential method ought to be understandable and applicable
4. The results of the method need to be able to be clearly communicated; it should result in concrete steps that CRE portfolio managers can understand and implement as part of the strategy

8.2 designing – three iterations

Following the design criteria set out in chapter 8.1, I have designed different iterations of a combined scenario planning method. To create these different versions in a structured manner, I have focused on the ratio of how much either XSP or NSP has an influence on the to be designed CSP method (see table below).

		Explorative Scenario Planning (XSP)	
		Large influence	Small influence
Normative Scenario Planning (NSP)	Large influence	Equal weight	NSP>XSP
	Small influence	XSP>NSP	Equal weight

table 3 Influence of XSP and NSP in the different design iterations (own work)

From this it can be seen that there are three different outcomes and therefore three different iterations we can fundamentally make: one can design an iteration in which XSP outweighs NSP, a version in which NSP outweighs XSP and finally a version in which both methods are given equal weight.

8.2.1 CSP iteration I – XSP>NSP

The first iteration is based on the idea that in the combined method, XSP has a larger influence than NSP. To achieve this, inspiration has been taken from the PBL method of NSP. In this method, the context analysis necessary to make the normative scenarios is performed by drafting two context scenarios. This is done relatively simple by dividing them up into scenario high and scenario low. In this proposed CSP iteration, inspiration was taken form this, but instead of developing two context scenarios that lead to normative scenarios, this iteration develops two normative scenarios and test these scenarios on four separate developed explorative scenarios. (see figure next page).

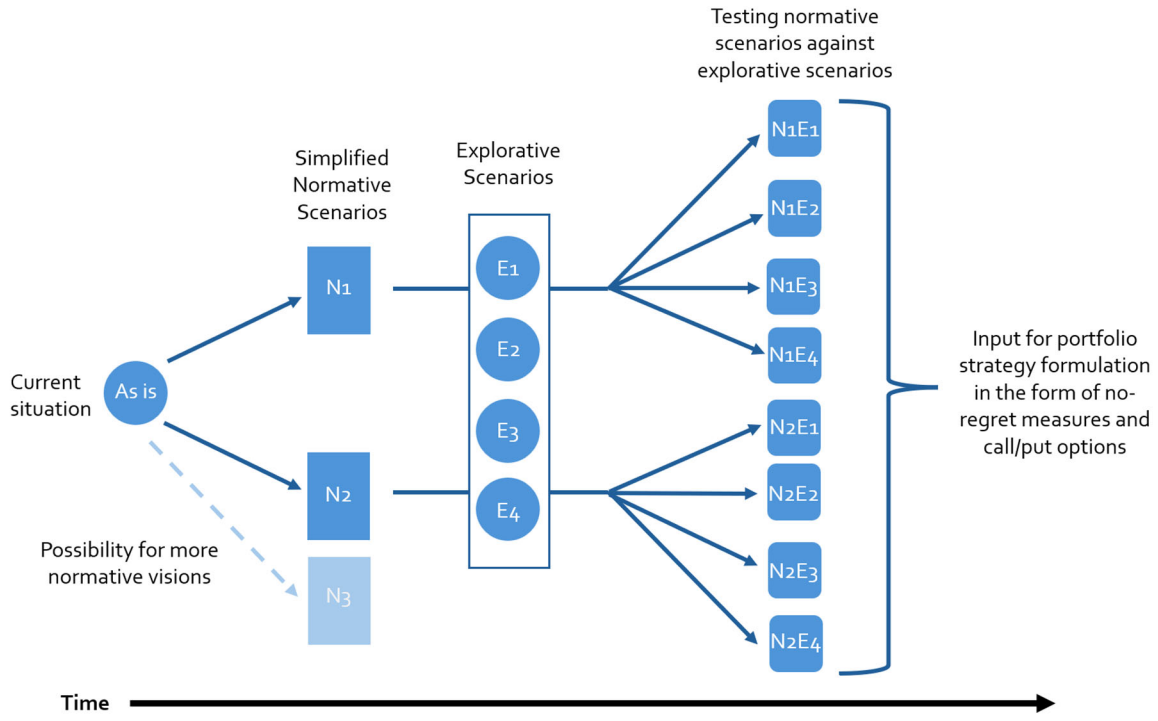

figure 14 Iteration I: XSP>NSP

This iteration consists therefore of 5 different steps:

1. Analysing the current state of the portfolio and defining internal and external factors that influence the portfolio. This is both quantitative and qualitative; what is our current headcount? How much office area do we currently have? Besides quantitative factors, we also need to focus on qualitative factors and analyse where the company is currently heading: what is its business strategy? What are the company values? what kind of long-term goals does the company have? etc. This step has two goals: firstly to identify what aspects of the portfolio we do and do not have influence over, second is to be able to quantify the scenarios to allow for easier translation into options and other measures for a strategy.
2. Based on what is identified in step 1 as factors that are in our control, two different normative scenarios are developed. This could for example be a normative scenario of the company that focuses on company growth, versus one that is focussed on a downsizing. In this step we can already quantify the changes in headcount and needed office area.
3. Based on the external factors that were found in step 1, explorative scenarios are developed in the form of a 2x2 matrix, resulting in 4 different scenarios in total.
4. The 2 normative scenarios get 'tested' against the 4 explorative scenarios. This way one can see how these normative scenarios would play out, depending on what happens with the external context. This results in 8 different versions of the future.
5. From the now 8 different versions of the future one can see what measures could be taken that are favourable in all scenarios (no-regret measures) but also to create different call or put options.

Given the design considerations, this first iteration seems to incorporate most of them. The first step addresses the (re)use of data and aims to use data that needs to be gathered mostly as input; the only step where extra data and information is needed is in step 3 when the explorative scenarios need to

be modelled. The results of this method are also aimed to be clearly communicated; it exists either of no-regret measures, call options, or put options.

There are still two points for improvement however. Firstly the amount of time spent on applying this method is probably relatively long, due to the fact that the explorative scenarios need to be fully drafted. Secondly, this iteration is still not as easy to carry out, for this iteration still ask managers to perform a full XSP process, as well as both testing the normative scenarios against explorative ones and making a translation step from the 8 different futures to the actual measures.

8.2.2 CSP iteration II – XSP<NSP

In this second iteration, I drew up a method wherein NSP has more influence than XSP. To this end, this method calls for fully developing normative scenarios and than combining these with incident scenarios (see figure below). With incident scenarios focussing on certain high-impact and low-probability events that take place, they take less time and resources to draft. Combining this with fully developed normative scenarios, NSP takes on a larger role in this method than XSP.

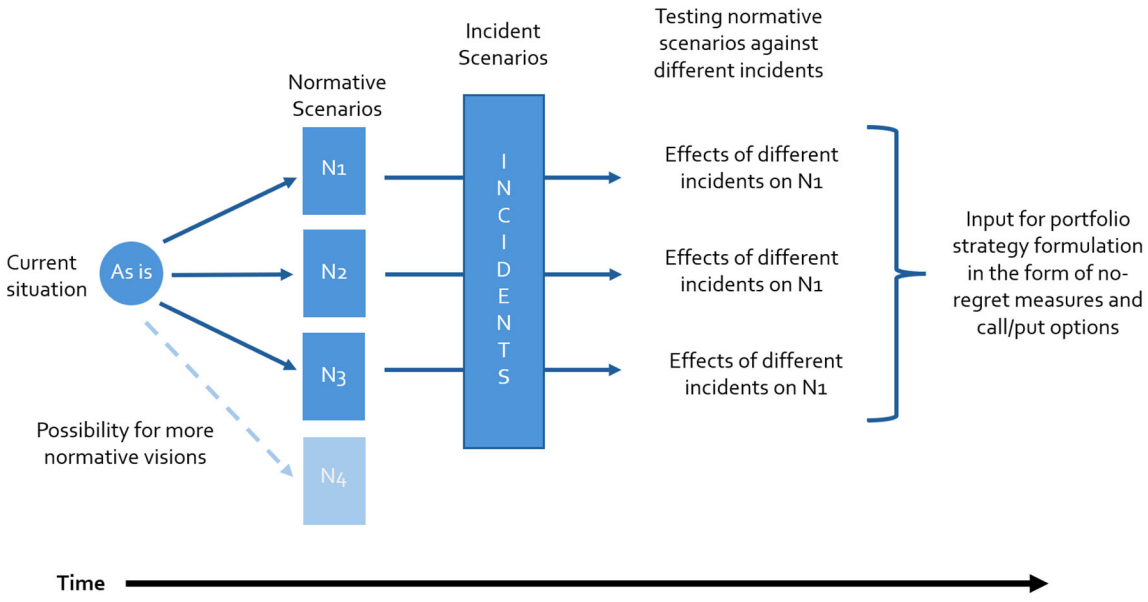

figure 15 Iteration II: XSP<NSP

This iteration consists of the following 5 steps:

1. Analysing the current state of the portfolio and defining internal and external factors that influence the portfolio. This is similar to step one as mentioned in chapter 8.2.1
2. Formulating normative scenarios concerning the portfolio using the internal factors found in step 1. The method that is used for this follows the same steps as described in chapter 3, namely the base, the context, the progression and the images.
3. Formulating incident scenarios; this consists of looking for high-impact and low-probability events that could occur that and considering what their impact could be on the portfolio.
4. The normative scenarios are tested against the incident scenarios. From doing this, one can see how each normative scenario reacts to each one of the scenarios, as every incident will have a different effect on each different normative scenario.
5. On the basis of step 4, different measures can be considered based on the different outcomes.

Considering the earlier stated design considerations, this method has some issues to overcome. The biggest obstacle when it comes to the issue on extra data, ease of operation and time spent on performing the method lies in the performance of a full NSP process. As discussed in chapter 3 and 7, a full NSP study usually takes a lot of time and a specialised research team, making this a large challenge for a portfolio manager to overcome. Besides this, there is also the translation step that needs to take place from the scenarios being tested against each other and eventually leading to measures for a strategy. The difficulty in this lies in the fact that one is only testing via incidents; very specific events that take place of a high-impact but low-probability nature. This means that if one can draw measures from this as strategy input, it will only relate to these black swan type of events, which in turn questions the usefulness of this method.

8.2.3 CSP iteration III – XSP=NSP

This third iteration concerns a potential CSP method that assigns equal weight to both XSP and NSP. In this version, one fully develops normative scenarios in relation to office demand, as well as separately develop explorative scenarios in relation to office demand (see figure below).

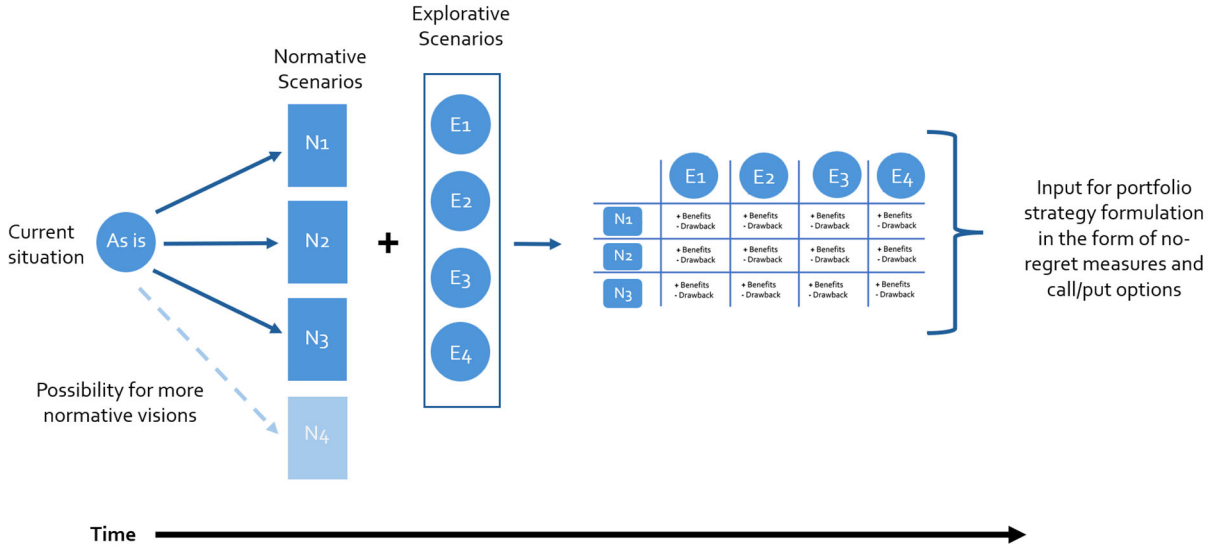

figure 16 Iteration III: XSP=NSP

This iteration consists of the following 6 steps:

1. Analysing the current state of the portfolio and defining internal and external factors that influence the portfolio. This is exactly the same as step 1 proposed in both chapter 8.2.1.
2. Developing normative scenarios with scope on the office demand using the internal factors found in step 1. The method that is used for this follows the same steps as described in chapter 3, namely the base, the context, the progression and the images.
3. Developing explorative scenarios in relation to factors that influence office demand. The factors found in step 1 are used and combined with additional data and develop them in the form of a archetypical 2x2 matrix.
4. The scenarios as developed in step 2 and 3 are now tested against each other in an adapted form of a cross-impact matrix. An example of this can be seen in figure x, where the explorative scenarios are projected as a blackjack hand given to us in a casino and the normative scenarios being our options. From testing these normative scenarios against the explorative scenarios, one can quantify our potential losses our gains by following through with one of the normative scenarios.

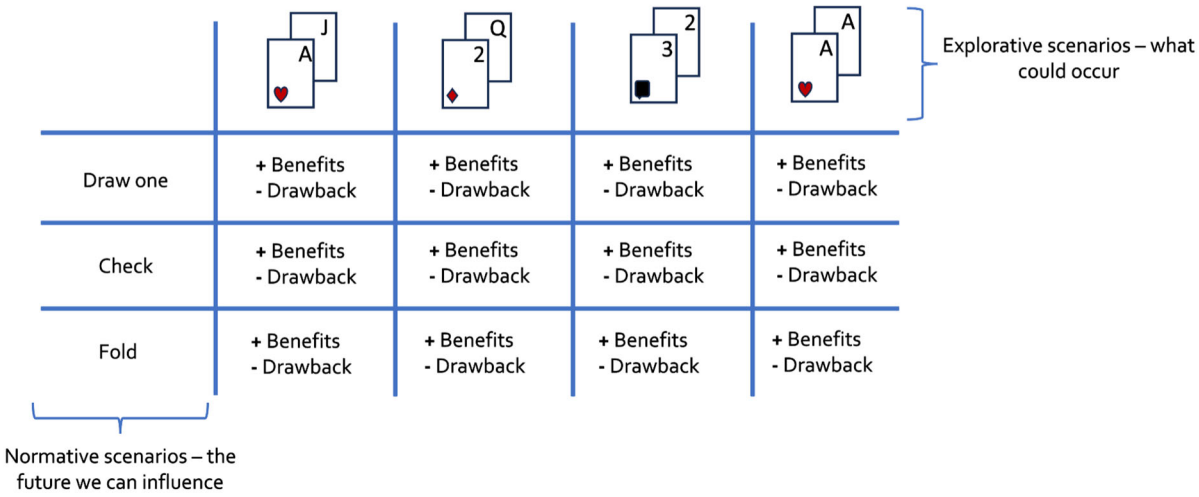

figure 17 example of how explorative and normative scenarios can be tested against each other in iteration III

5. From the matrix in step 4, we will most likely see that certain combinations are very similar or identical to each other. From this, one can create a certain amount (in the example of figure x it are 4) of final scenarios that can encompass all these options.

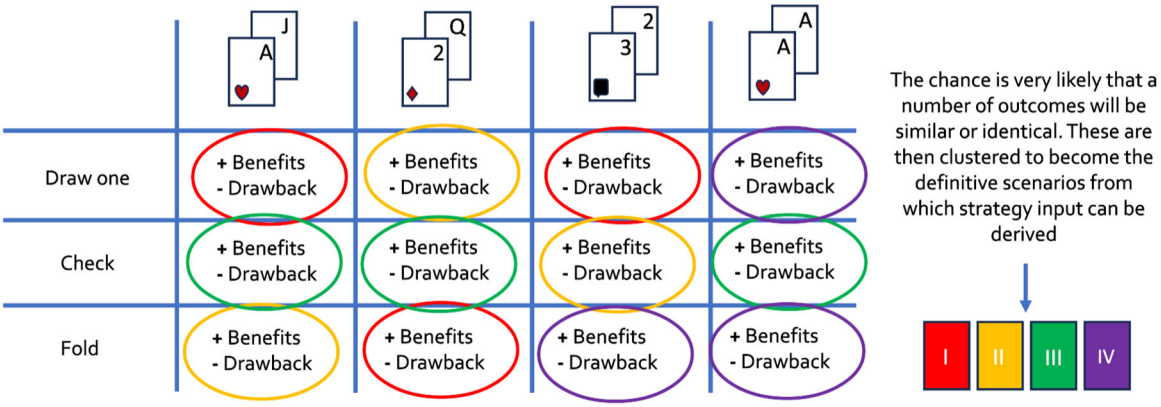

figure 18 demonstration of how outcomes of the test can be distilled into only four scenarios

6. Based on the final scenarios developed in step 5, measures are drafted that could be taken such as no-regret measures and different call or put options.

Looking at the design considerations, it can be seen that there are quite some challenges with this iteration. First of all, due to both performing a full NSP process as well as a full XSP process, a lot of additional data is needed. Besides the additional data, the time spent on this process as well as the relative ease of carrying this out are under pressure; normally only performing either of these two already takes a lot of effort to perform. The final results, while being clear through being no-regret measures or call/put options, only come forward after the relatively difficult translation process from the comparisons and distillation from the matrix in step 4 and 5.

8.3 Design - the combined scenario planning approach

These three different designs were considered for further development into a to be tested method, thereby showing that it is possible to combine explorative and normative scenario planning. To this end, the three different iterations were presented to two CRE portfolio managers to receive further

feedback. On the basis of their comments as well as how each iteration addresses the design considerations, it was decided to continue the development of CSP iteration I. The choice for iteration I was based on how well the iterations performed when considering the design considerations as set out in chapter 8.1. The testing can be seen in the table below.

	Iteration I	Iteration II	Iteration III	Best fulfilled by
1. Minimise new data	Simplified normative scenarios require less data input than fully developed ones. When developing explorative scenarios however, a lot of other data is required.	While relatively less data is needed for developing incident scenarios, as these cannot be chosen as easily as more general explorative scenarios, normative scenarios require a lot of data.	Fully developing both normative as well as explorative scenarios requires most data out of all three iterations, however, explorative scenarios could still be chosen instead of developed	**Iteration I**, for simplified normative scenarios require less data and explorative scenarios can be chosen, which minimises the need for new data
2. least amount of FTE and as quickly as possible	Only developing simplified normative scenarios and choosing for explorative scenarios saves time; distilling from all different outcomes remains a challenge	Development of normative scenarios is a relatively time-consuming task and some effort is also required in developing the incident scenarios, as it is relatively more difficult to find such scenarios when compared to more general explorative scenarios.	Similar to iteration II, developing normative scenarios requires relatively more FTE. However, the explorative scenarios can be chosen. The question remains how quickly managers could work through the cross-impact testing	**Iteration I**, for the fact that explorative scenarios can be chosen and only simplified normative scenarios have to be developed, therefore requiring less FTE and time
3. As easy and understandable as possible	According to managers most likely to be understood and applied due to less complicated normative scenarios and ability to choose instead of develop explorative scenarios	Incident scenarios stand closer to the 'what-if' style scenarios as used by portfolio managers. The challenge remains however in the full development of normative scenarios.	Whilst testing in a cross-impact matrix seems straight forward, distilling identical scenarios from such matrix is seen as challenging. Developing normative scenarios remain challenging in general.	**Iteration I**, developing normative scenarios is estimated by portfolio managers to be relatively difficult, so only having a simplified version of this improves ease of use
4. Clearly communicates results	All iterations communicate results in the same way, namely through a list of possible no-regret measures as well as call/put options			**All iterations**

table 4 CSP iterations tested against the design considerations

In a continuous loop of improving this method and receiving feedback from two CRE portfolio managers, an 8-step method has been developed which integrates both explorative and normative scenario planning in one single method (see figure 19).

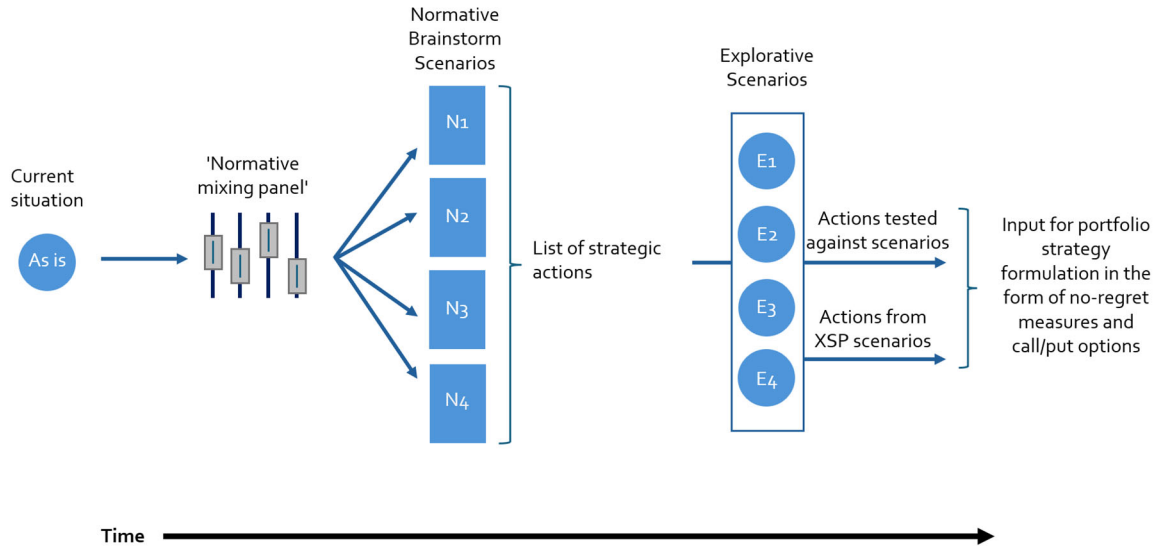

figure 19 The developed CSP method following iteration I

Step 1 – Analysing the current situation (portfolio and the company) 'as-is'

The first step is concerned with gathering qualitative data concerning the CRE portfolio as well as the company. The goal of this step is to identify the factors that one can influence and therefore allows to actively steer the portfolio. The qualitative data that is to be collected is concerned with factors such as the business strategy, targets and goals, the current CRE strategy, the used CRE concepts, remote working policies, and company values. External factors that could become internal factors, such as the use of certain technologies, should also be considered.

Step 2 – Developing a 'normative mixing panel'

Based on the data from step 1, different switches and their respective minimum and maximum values are chosen. The number of sliders is recommended to not exceed 4, as more sliders would give to many potential options to develop scenarios on, which in turn impairs the ease of use of this method. The reasoning behind using only minimum and maximum values is to combat what PM 1 named as 'certainification': this is preventing that scenarios that are first developed relatively open and creatively from turning very likely and obvious. Using only minimum and maximum values instead of a third neutral setting stimulates more extreme thinking.

Step 3 – Brainstorming different normative scenarios based on the mixing panel

In a brainstorm session, portfolio managers can play around with different settings of the mixing panel. This can be done in a group setting with other stakeholders that are involved in the strategizing process or individually, optionally using a large language model, such as ChatGPT as a sparring partner. Important for these normative scenarios are the goals and targets that have been found in step 1: not only to these targets provide the time horizon for these normative scenarios/visions, but in these scenarios, these targets will need to be met. Not only allows this for more consistent normative scenarios/visions, but also stimulates creating measures that would lead to these targets being achieved.

Step 4 – Creating measures from the normative scenarios/visions

From the normative scenarios/visions, one now develops different measures. This is similar to how policy is developed from the normative scenarios such as those from the PBL. These measures serve as input for the final strategy. To give an example: the strategy could be to increase the ESG score of the CRE portfolio by forfeiting their worst properties. In this case, a potential measure to take that helps achieve this could be to oblige staff to work 2 days remotely, decreasing the amount of needed office space. This way, portfolio managers are forced to think creatively about different strategy options on how the targets or goals for the portfolio and the company can be reached.

Step 5 – Developing a list of normative strategic actions based on the normative scenarios

Depending on the context of the application of this method, the user can either decide to choose explorative scenarios that were already developed by another organisation, or to develop these scenarios themselves. This decision should be based on how much resources can be spent on the process. In the case that the user decides to choose already developed scenarios, it is important that these scenarios are relevant in relation to the company and its portfolio. To this end, three factors are to be considered:

1. **Time Horizon** – this should be similar to that of the drawn up normative scenarios/visions to ensure consistency.
2. **Recent study** – the used study should have been produced relatively recently. This has to do with the inherent flaw of explorative scenarios; namely that they are already outdated when they are produced. So to minimise this effect, the study should preferably be no older than 1 year.
3. **Sector** – the chosen study must align with the sector of the company for which the scenarios are to be used; picking a scenario study on the financial sector whilst using this method for a real estate developer is not of any use.

If it is decided to develop the scenarios themselves, it is advised to adopt the following method adapted from Postma & Liebl (2005), as this is a relatively short and simple 5 step method, improving the ease-of-use for this method.

I. STEEP-analysis of external drivers and trends
II. Clustering found drivers and trends
III. Drafting an impact-uncertainty matrix based on trend clusters
IV. Selecting the 2 highest impact and highest uncertainty clusters as basis for the axis for a 2x2 matrix
V. Drafting the four scenarios based on the 2x2 matrix

Step 6 – Testing normative actions against explorative scenarios

The measures drafted in step 5 are tested to observe if they work in each different explorative scenario. The goal is to split the developed measures up into two different groups: no-regret measures and call/put options. If a measure works in all different explorative scenarios, it can be considered a no-regret measure. On the other hand, if a measure only works in certain scenarios, call or put options can be developed.

Step 7 – Developing additional actions from the explorative scenarios

From the explorative scenarios, measures can also be developed. For consistency, this should also be done in the form of no-regret measures and call/put options; this allows for easier communication of the final results.

Step 8 – Listing all measures

The concluding final step is to bundle the actions put forward in step 6 and 7 in a single document. This list with actions can then be used further in the process of strategy formulation.

9. Simulation

This chapter describes a simulation run of the CSP method that has been developed in relation to sub-question 3. The aim is to test the method in relation to sub-question 4: *How would a developed combined scenario planning method perform in formulating corporate real estate portfolio strategies?* This way, the potential impact on CRE portfolio strategies can be assessed. To accomplish this, the method will be tested step by step and its results ben evaluated by a panel of experts, consisting of CRE portfolio managers. The evaluations from this expert panel will be used in answering sub-question 4.

9.1 Simulation run

To show how this method would be put into practice, I have decided on performing a simulation run of this method. This was done by choosing a test case and simulating the use of this method in that context. This therefore also means that this is not an in-depth case study; it only illustrates how this method would perform when it is used in practice. The focus is therefore on the method in relation to making portfolio strategies instead of the specific actions that come forward from this.

For this simulation run, the chosen test case was that of a major Dutch bank that is looking to change its global office portfolio strategy. To this end, this CSP method will be performed as if I were the CRE portfolio manager of this major Dutch bank.

Step 1 – Analysing the current situation (portfolio and the company) 'as-is'

The first step is concerned with gathering data that concerns the portfolio and the company. The goal of this is to identify the different factors that one can influence and are therefore of interest for developing the 'normative mixing panel' in the next step. The focus here lies on internal factors, but external factors that could become internal factors, such as the use of certain technologies, should also be considered.

In this case, the following data was gathered and assumed:

- **Business strategy:** The main focus lies in providing superior customer experience whilst prioritizing sustainability by directing more funding to projects that help achieve climate goals. This is combined with a focus on online banking services for individuals and small businesses, whilst larger clients get a more personalised treatment. The bank's four strategic priorities include (1) seamless digital services, (2) scalable technology and operations, (3) maintaining safety and security, and (4) unlocking the full potential of their employees.
- **Targets & Goals:** Most targets and goals (with a clear time stamp) are related to sustainability. The most important of this is to achieve net zero operations by 2035. As the CRE portfolio plays a large role in this, this is the most important target to keep in mind for this scenario strategy.
- **Current CRE strategy:** No clear CRE portfolio strategy. From conversations with one of its portfolio managers, it did become clear however that there is an emphasis on ensuring flexibility through contracts and subletting, as well as making efforts in attracting (as well as retaining) staff.
- **CRE concepts/organisation:** The bank in question has organised its real estate in four different categories: (1) Regional offices, (2) Hubs / Back Offices, (3) Wholesale banks, (4) Retail banks/Country HQ. These different types of offices and locations have their own needs. What also influences the demands for these offices is the location; as I am dealing with the

global real estate portfolio, regional differences do occur. The global portfolio covers every continent except for Africa and South America.

- **Remote working policy:** There is currently no clear remote working policy; employees come and go as they see fit.
- **Values:** Integrity is stated as the most important value. Sustainability is also heavily emphasized.
- **External factors of interest:** Following from desk research and conversations with other portfolio managers, it was found that the adoption of AI within banking could pose an interesting opportunity, both for further automating different tasks as well as for creating more personalised interactions with customers.

Step 2 – Developing a 'normative mixing panel'

Having gathered this information, a normative mixing panel can now be developed. With this mixing panel, I can structure the brainstorming in step 3. It is recommended to not use more than four sliders, as this would provide more options than is feasible to write out. It is also recommended to only use minimum and maximum values for the sliders, as a neutral option would provide normative scenarios relatively close to business- as-usual, which is what is to be avoided; we want to trigger ourselves to think differently about the future.

Following the gathered data and conversations with other portfolio managers, a normative mixing panel was formulated for this case where the following four factors were assumed to be the most important: the use of AI, staff size, the office concept and energy performance (see figure below).

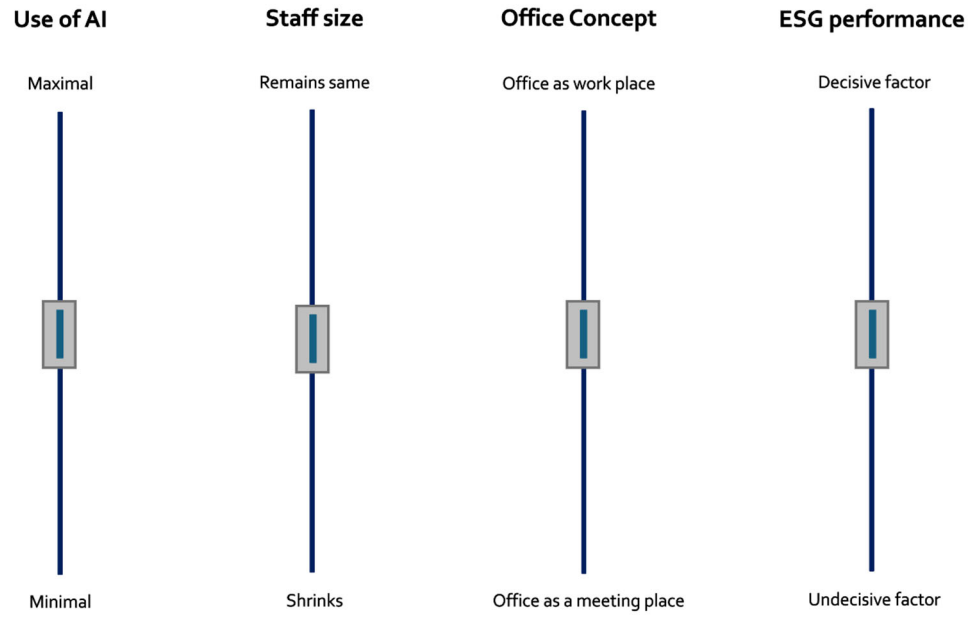

figure 20 the developed normative 'mixing panel' for this simulation run

Step 3 – Brainstorming different normative scenarios based on the mixing panel

With this normative mixing panel at hand, I can brainstorm about different normative scenarios for the bank and its portfolio. The main question here is: *what kind of future could the company have if we would steer it, based on how the mixing panel is set?*

When writing out the normative scenarios, it is important to keep in mind that all different scenarios should reach the same targets and goals, in our case a net-zero office portfolio in 2035. This also gives us the time horizon for our scenarios; past 2035 there are no goals, so for all intents and purposes, this method should end in 2035.

One can write out as many different futures as you would like; this panel would give you 16 different sets of normative scenarios. However, from the brainstorming, those that are naturally of interest would also suffice to work out. This brainstorming can be done in a group setting with other stakeholders that are involved in the strategizing process, but can also be performed individually together with an AI such as ChatGPT.

Using the normative mixing panel as developed in step 2, I have drafted four normative scenarios that paint different futures of the bank in 2035: *The Bank of 1's and 0's, The Human Bank, The Green Tech Bank,* and *The Old-School Bank*. These scenarios were written out at around 800 words, but for this simulation I will only present a part of the scenario to give a general idea of how this could look like.

The Bank of 1's and 0's

a scenario in which this bank has maximized the use of AI, staff has shrunk, the offices function as places of work and ESG is considered the least important

"In the quest for efficiency and cost saving, the remaining human workforce that compliments the AI is focused predominantly on creativity and innovations, tasks that AI cannot execute effectively. The bank has not eliminated job roles completely; rather, it has restructured them, with rote tasks automated and human resources redirected towards more intellectually demanding areas.

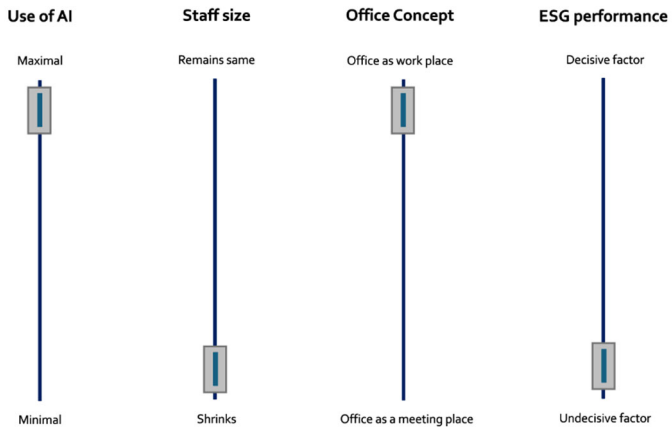

figure 21 The settings on the normative mixing panel for the bank of 1's and 0's scenario

The bank's offices in this scenario serve primarily as workplaces. The people who work here are mainly IT specialists who keep the bank's AI operational at all times, as well as most management staff. The offices are still busting hubs of activity, not because employees are compulsory to be physically present, but because they want to be. The setup is flexible, with a combination of open spaces for team projects and secluded spots for deep work, as well as attractive facilities such as a gym, daycare and even a sauna."

The Human Bank

a scenario in which this bank has minimized the use of AI, staff has remained the same, the offices function as meeting places and ESG is considered the most important

"Whilst all the other banks massively adopted AI, by 2035 the bank has gone a completely different direction by minimising the use of artificial intelligence in its operations. This was a conscious decision to place an emphasis on human-centred interaction and creativity. Personalised human service and development of tailor-made solutions are at the heart of every customer experience. Furthermore, the size of the staff hasn't changed. Rather, job profiles have evolved dramatically. Bank employees are now trained as relationship managers, dedicated financial advisors, and credit counsellors. They go beyond just transactions – serving as pillars of trust, reliability, and expertise for the customers.

In this version of the future, the bank's offices transformed into dynamic meeting spaces. Traditional transactional roles are moved away from the branches to central processing centres. In their place, the branches are re-imagined as community spaces. They offer consultation rooms for private banking, collaborative spaces for startups, and training rooms for financial workshops. These spaces foster interaction and nurture relationships, thereby deepening the bank's ties with its customers and the community.

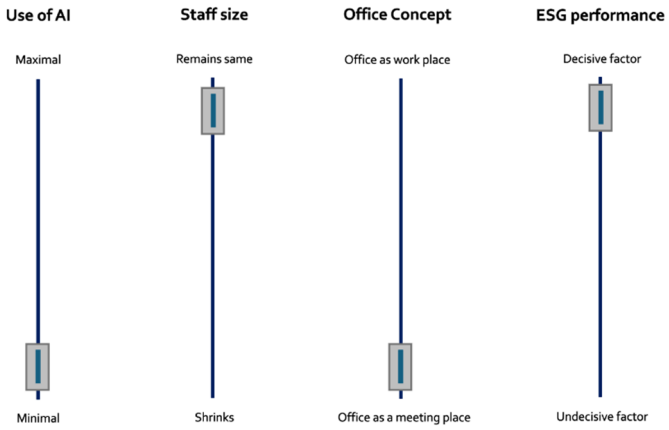

figure 22 The settings on the normative mixing panel for the human bank scenario

The Green Tech Bank

a scenario in which this bank has maximized the use of AI, staff has shrunk, the offices function as meeting places and ESG is considered the most important

"By 2035, the bank has propelled into a future where Artificial Intelligence (AI) stands at the core of its operations. The AI infrastructure is robust, intelligent and calibrated to handle a myriad of tasks. From processing transactions and sorting client inquiries to fraud detection and risk management, AI systems have effectively shouldered these intricate tasks. The upshot is a dramatic streamlining of operations, weaving in remarkable efficiency and productivity.

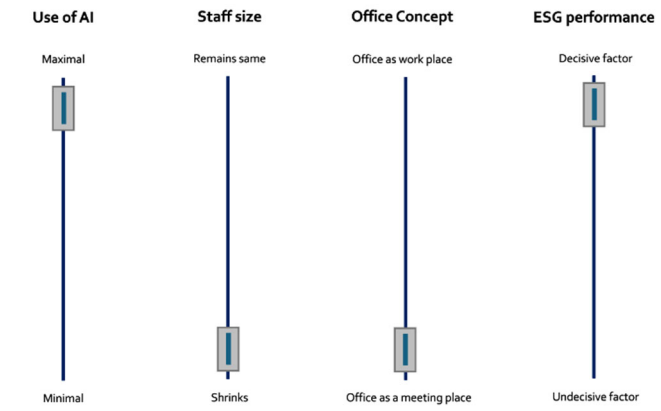

figure 23 The settings on the normative mixing panel for the green tech bank scenario

In this future, the bank's offices transitioned from places of work to hubs of interaction, collaboration and innovation. Traditional transactional roles have been largely automated, freeing up the space and time for team discussions, brainstorm sessions and personalized customer consultations. Forex experts, mortgage advisors, investment gurus, all come together in the bank branches, using the bank's space not for everyday operational tasks, but to meet and connect with customers on a deeper, more meaningful level."

The Old-School Bank

a scenario in which this bank has minimized the use of AI, staff size has remained the same, the offices function as places of work and ESG is considered the least important

"By 2035, the banking landscape has evolved quite differently from what many predicted. The use of AI in operations is minimal, starkly contrasting the general trends in the industry. However, this wasn't a result of being left behind. Instead, it was a deliberate choice, sharply resonating with the bank's vision of being a 'people-centric' institution.

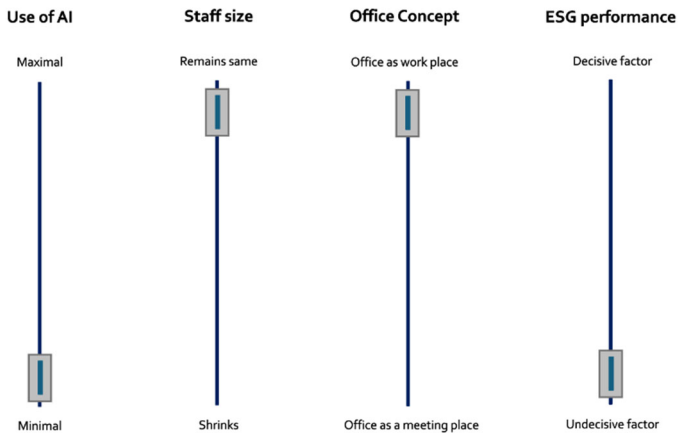

figure 24 The settings on the normative mixing panel for the old school bank scenario

The wide-spread offices still function as traditional workplaces. Squadrons of dedicated professionals fill the cubicles, corridors, and meeting rooms, shaping the bank's future with each working day. The certainty of AI's absence results in manual processing, filing, financial conversations, and advisory services. The hum of humanity fuels the workspace, a stark contrast to the silent efficiency of AI-led establishments."

Step 4 – Developing a list of normative strategic actions based on the normative scenarios

Normative scenarios normally aid in policy making. In a similar fashion, I have used these normative scenarios for formulating different actions that can be taken as part of the larger strategy. This has been achieved by reading each scenario and developing actions that are to be taken to make each scenario a reality. The central question in developing these actions has therefore been: *What has to be done to make this normative scenario a reality?* One can therefore say that we first start with the desired outcome (the individual normative scenarios) and then think of ways of how said outcome can be achieved.

The Bank of 1's and 0's

1. Consolidating or selling portions of the current office portfolio to reflect the reduced demand for space and to meet net-zero targets
2. Creating more flexible and open concept workspaces
3. Offices located near (fin)tech clusters
4. Creating an attractive working environment to attract (IT) specialists

The Human Bank

1. Redesigning the office as to be a meeting place.
2. Designing more facilities for receiving customers.
3. Equipping the building with more energy-efficient lighting and further improving energy performance.
4. Introduce monitoring systems to keep track of resource usage, emissions, and other sustainability factors.
5. Promote working from home policies
6. Creating spaces for start-ups/incubator projects
7. Offices should be located near population centres and public transport connections

The Green Tech Bank

1. Consolidate the offices in a few places and try to use excess heat from servers as heating
2. Redesigning the office to be a meeting place
3. Explore the opportunities for retrofitting existing buildings

4. Promote working from home policies
5. Offices should be based near high quality public transport centres

The Old-School Bank

1. Implement more flexible workspaces
2. Little changes should be made to the current CRE portfolio
3. Creating an attractive working environment to retain staff
4. Offices are to be located near central business districts

Step 5 – Choosing or developing explorative scenarios

For this simulation, it was decided to work with already developed scenarios instead of developing these myself. Therefore, to find relevant explorative scenarios to use in this simulation, three requirements set out for this step are to be met: namely that the **time horizon** should be in line with that for the normative scenarios, that it is a **recent study** (preferably not older than 2 years) and that it covers the **relevant sector**.

This search eventually lead to the *Banking in 2035: three possible futures* scenario study as performed by Economist Impact (2022), which met all requirements: the time horizon is the exact same as for the normative scenarios, the study is from September 2022 and is therefore at the time of writing still relatively recent and it discusses the sector in question, namely banking. The study by Economist Impact (2022) portrays three different scenarios, summarised below:

1. **Transformed banks regain trust –** envisions a future where traditional banks face significant disruption from fintech start-ups and big tech firms. By 2035, these challengers have become dominant players in Europe and the US, offering superior customer experiences through trusted smartphone apps and frictionless mobile payments. To survive, traditional banks have adopted new business models focused on innovation and customer trust. Customers are empowered with more control over their money and data through clear disclosure requirements, leading to better-informed financial decisions. This scenario highlights the importance of trust, data protection, and competition in shaping the future of banking.
2. **Climate action paradigm shift -** presents a future where substantial collective action on climate change occurs by 2035. The world is on track to limit global warming to 1.5°C above pre-industrial levels, averting the worst effects of climate change. This achievement is attributed to significant adjustments in individual lifestyles, business operations, and societal interactions. The digital revolution plays a crucial role in helping societies meet climate goals. This scenario underscores the importance of global cooperation and innovative solutions in addressing the climate crisis and shaping a sustainable future.
3. **A fragmented world** - envisions a fragmented world in 2035, characterized by geopolitical tensions and a lack of global cooperation. This scenario highlights a multipolar order where power is dispersed among various regions and alliances, leading to increased competition and uncertainty. In this future, banks face challenges navigating diverse regulatory environments and geopolitical risks. The lack of unified global governance poses obstacles to addressing shared challenges like climate change and economic instability. This scenario underscores the importance of adaptability, resilience, and strategic decision-making for banks operating in a fragmented and uncertain world.

Step 6 – Testing normative actions against explorative scenarios

To systematically test the normative actions against explorative scenarios, an excel was developed in which the actions were set out against the three scenarios as developed by Economist Impact (2022). The actions were given a range of three different scores; positive if they would work in the explorative scenario, neutral if it was not clear or would require further specification, and negative if it was clear that they would produce undesirable results. Actions that scored positive in all scenarios were assigned as no-regret measures, whilst actions that only in some scenarios scored positive were assigned as call/put options. There were also actions that only scored negative and neutral. These have been assigned as regret actions and are to be avoided for potential use in a strategy.

The results from this testing can be seen in the table on the next page. This testing resulted in 5 actions that can be considered as no-regret measures, 8 actions that serve best in the form of call/put options, and 2 actions that are deemed as potential regret actions.

Actions	Scenario 1: Transformed Banks regain Trust	Scenario 2: climate action paradigm shift	Scenario 3: a fragmented world	TYPE OF ACTION
Consolidating or selling portions of the current office portfolio to reflect the reduced demand for space and to meet net-zero targets	Positive. This action aligns with the scenario of digital transformation, where less physical space might be needed.	Positive. This aligns with the sustainability and remote work trends, and contributes to net-zero targets.	Positive. This could reduce operational costs and aligns with the net-zero targets mentioned.	NO-REGRET
Creating more flexible and open concept workspaces	Neutral. This doesn't impact the scenario directly but could improve employee collaboration and innovation.	Neutral. This could improve collaboration, but doesn't directly address climate goals.	Neutral. While potentially enhancing collaboration, this doesn't directly influence the decentralization or regionalization trends in the scenario.	INDECISIVE
Offices located near (fin)tech clusters	Positive. It could facilitate partnerships and innovation outlined in this scenario.	Neutral. Might stimulate innovation and collaboration, but doesn't directly address climate goals.	Positive. It could facilitate partnerships and adaptability in the changing geopolitical landscape.	OPTION
Creating an attractive working environment to attract (IT) specialists	Positive. It aligns with the capability needs in the scenario.	Neutral. Important for digital transformation, but doesn't directly impact climate goals.	Positive. This could enhance the bank's ability to compete in the technology-driven aspects of the scenario.	OPTION
Redesigning the office as a meeting place	Neutral. This seems to address trends in remote work, but isn't directly relevant to this scenario.	Neutral. Could contribute to a shift in work models, but doesn't directly align with climate transition	Neutral. This doesn't directly address the trends in the scenario but could support a changing work culture.	INDECISIVE
Creating more facilities for receiving customers	**Negative. This seems counterproductive given the strong move towards digital-only banking described.**	**Negative. This might result in increased energy use and can contradict the move to digital services noted in the scenario.**	Neutral. This might not directly support the global fragmentation but could serve regional customers better	REGRET
Equipping the building with more energy -efficient lighting and further improving energy performance	Positive. Although positive for sustainability, it doesn't directly impact this particular banking future.	Positive. This contributes directly to energy efficiency and aligns with the climate goals.	Positive. This aligns with the goal of improving sustainability and reducing operational costs.	NO-REGRET
Introduce monitoring systems to keep track of resource usage, emissions, and other sustainability factors	Positive. Good for sustainability but not directly impacting this scenario.	Positive. Monitoring is crucial for managing and reducing environmental impact.	Positive. Supports sustainability and could provide valuable data for decision-making.	NO-REGRET
Promote working from home policies	Positive. Aids in digitisation efforts and reducing need for physical space.	Positive. Reduces commute-related emissions	Positive. While aligned with digital transformation, this doesn't directly address the geopolitical shifts in the scenario.	NO-REGRET
Creating spaces for start-ups/incubator projects	Positive. Can support fintech partnerships.	Neutral. Positive for innovation and finding solutions, but not directly related to climate goals.	Positive. It could facilitate innovation and partnerships in a fragmented global landscape.	OPTION
Offices should be located near population centres and public transport connections	**Negative. Contradicts the digital shift and a digital, remote-first model.**	Positive. Reduces travel-related emissions.	Neutral. While potentially beneficial for accessibility, it doesn't directly align with the global shifts or digital transformations described.	OPTION
Consolidate the offices in a few places and try to use smart coupling such as using excess heat form servers for building heating	Positive. Good in terms of sustainability, but doesn't affect the digitalization aim.	Positive. This directly contributes to energy efficiency and net-zero targets.	Positive. This can improve efficiency and sustainability.	NO-REGRET
Explore the opportunities for retrofitting existing buildings	Positive. While it's positive for sustainability, it has no direct impact on the digitalization.	Positive. Retrofitting is a direct action to increase energy efficiency.	Positive. Supports sustainability and could align with any local or regional regulations.	OPTION
Little changes should be made to the current CRE portfolio	**Negative. Doesn't align with expected changes.**	**Negative. Inaction might hinder progress towards achieving climate goals.**	**Negative. The scenario suggests significant change in the economic landscape that might require strategic alterations in real estate portfolio management.**	REGRET
Offices are to be located near established central business districts	**Negative. The scenario suggests a reduced need for physical presence.**	Neutral. This depends on if the commute to these areas is sustainable and the buildings are energy efficient.	Neutral. While beneficial for prestige and accessibility, this doesn't necessarily impact the geopolitical and technological shifts described in the scenario.	REGRET

figure 25 outcomes of testing the normative actions against the explorative scenarios

Step 7 – Developing additional actions from the explorative scenarios

Based on the three scenarios that have been put forward by Economist Impact (2022), additional actions have been developed that could potentially be used in the portfolio strategy of this bank. The

central question in the development of these actions was: *how can we best react to this explorative scenario?* These have also been categorised into no-regret measures and call/put options.

No-regret measures

- Adopt environmentally-friendly office practices such as energy-efficient appliances and green building certification, aligning with global climate goals.
- Install smart building technologies to increase energy efficiency and improve office maintenance.
- Develop a selective location strategy, favouring tech hubs and growth markets across developed and emerging economies.
- Increase focus on both cyber and physical security to protect sensitive data and establish trust with customers and employees.

Call/put options

- Scenario 1:
  - Choose office locations closer to fintech partners and innovation ecosystems to profit from increased focus on technology.
  - Upgrade the office environment with high-grade technology. This will aid collaboration in a largely digital and data-driven working environment.
- Scenario 2:
  - Ensure that existing and future buildings are certified as energy-efficient. Consider certifications like LEED or BREEAM.
  - Accessible Location: Chose office locations that are easily accessible via public transport to reduce employee reliance on carbon-intensive personal vehicles.
- Scenario 3:
  - Global Diversification: Given the rise of BRICS+ countries, position and spread office real estate across key growing markets around the globe, not just in established (western) financial centres.
  - Flexibility in Lease Structures: With the potential economic volatility due to geopolitical tensions, having flexible lease structures could provide opportunities to quickly adjust real estate footprint.
  - Invest in Digital Infrastructure: With the maturation of digital currencies and payment systems, there will be a greater need for sophisticated digital infrastructure within office spaces.

Step 8 – Summarizing the actions from step 6 and 7 in a final potential action list

To conclude this simulation, all developed actions are summarised; both the tested normative actions as well as the actions developed directly from the explorative scenarios.

No-regret measures

- Consolidating or selling portions of the current office portfolio to reflect the reduced demand for space and to meet net-zero targets
- Promote work-from-home policies
- Adopt environmentally-friendly office practices such as energy-efficient appliances and green building certification, aligning with global climate goals.

- Install smart building technologies to increase energy efficiency and improve office maintenance.
- Increase focus on both cyber and physical security to protect sensitive data and establish trust with customers and employees.
- Equipping buildings with more energy-efficient lighting and further improving energy performance.
- Introduce monitoring systems to keep track of resource usage, emissions, and other sustainability factors
- Consolidate offices in a few places and try to use smart coupling such as using excess heat from servers for building heating.
- Explore the opportunities for retrofitting existing buildings

Call/put options

- Offices should be located near (fin)tech clusters **(for S1+S3)**
- Move more into cloud services to accommodate the bank's AI **(for S1+S3)**
- Creating an attractive working environment to attract (IT) specialists **(for S1+S3)**
- Creating spaces for start-ups/incubator projects **(for S1+S3)**
- Offices should be located near population centres and public transport connections **(for S2)**

9.2 Expert panel evaluation

An expert panel consisting of 4 portfolio managers were asked to evaluate the simulation as put forward in chapter 9.1 and answer a set of questions as described in appendix 3. The names of the panellists have been anonymised and are in this segment referred to as EP 1, EP2, and EP3.

When the panel was asked about the ease-of-use of the developed CSP method, the answers were mixed. While EP 2 stated that the method has potential to function depending on the scenario its used in, the outcome and its quality still very much depend on how the normative and explorative scenarios are either chosen or developed. EP1 mostly stated that the overall method still appears quite labour intensive, but suggested that the use of predefined scenarios based on the sector or asset class could help streamline this method, thereby partially addressing the concerns of EP 2. The statements of EP1 do however point out that the method has failed one of its own design criteria, namely keeping the amount of needed time to a minimum. EP3 pointed out that the first part of the method up until the formulation of the normative strategic actions was rather intuitive, it was however the testing part and the confusion on the multiple different scenarios being used that decreased the ease of use.

Despite the ease-of-use being less than hoped, this simulation did demonstrate the practical performance of the method. EP 3 found that the examples made sense, and the practical performance still felt relatively intuitive, he did however state that it would be better to also present the regret measures, as to show what not to do. Despite this, it was stressed by the other panellists that to actually see the real life performance and to base their choice for or against the use of this developed method, it is necessary to apply the method in an actual organisation. EP 1 remarked that it is very much possible that if applied in the real world, organisational limits could have an impact on the use of this method. EP 2 still stressed, like with the ease-of-use, that this simulation was largely successful due to well chosen and developed scenarios.

Even though all panellists stated that they would use scenario planning in general, the choice for the developed CSP method still was not as clear; only EP 3 would directly choose for this CSP method, but also with the note that he would want to combine the method with other analyses. Other panellists

had questions on "…how you would ensure that you have covered a wide enough range of scenarios" (EP1, appendix 3), as well as data concerns. On the latter, EP 2 stressed that if not enough data on the portfolio as well as the market is available, he would choose a different method.

The expert panel was also asked of what they thought would be the impact on developing CRE portfolio strategies with the CSP method as demonstrated. While EP2 could not answer this due to lack of real world testing, EP1 made a comment regarding the role of other stakeholders in the process:

> "What you actually encounter in practice is that different power balances between global and local real estate teams and actors have a significant influence on the eventual decisions being made. These decisions can deviate significant from the strategy a global team defines." (EP1, appendix 3)

This demonstrates that, whilst the method could very much be of use in the initial product, that being the strategy itself, it could very well not withstand the forcefield that is part of the process of strategy formulation. Here, the concept of management preferring not to be surprised or confronted could play a role.

EP3 found that the larges impact of this current method is: "…that it brings a wide range of relevant factors and objective evaluation into determining the portfolio strategy." (appendix 3). He did however state that: "…I also think that by using this method, many local considerations and variations are left out of the analysis" (appendix 3). This partially underlines the statements made by EP1 on the fact that the considerations that come from this method could clash with what local teams in other parts of the world think.

When asked for suggestions on how to improve this method, different answers were given. EP 2 for example would find it interesting if all different possible normative brainstorm scenarios were developed and processed, giving us 4! total normative brainstorm scenarios. EP1 on the other hand focussed more on the improvements for ease-of-use, suggesting that a toolbox should be created to have real estate managers navigate the method more efficiently. EP3 meanwhile put the focus on making the analysis more localised; suggesting that it would be wise that "…this method could propose strategic actions might work for some locations and businesses units, but not for others" (appendix 3). On top of this, EP 3 insisted on complementing the CSP method with additional analyses, such as occupancy analysis and workforce surveys, supporting this with an example:

> "…if you would know from the local context(s) that the supply of green buildings is extremely low, this could have an implication for the portfolio strategy as a whole, because you would need to take that into account if you would still want to focus on sustainability" (EP3, appendix 3).

Finally, on the question how the CSP method could have an impact on CRE portfolio strategy formulation after it is improved, most panellists still preferred to see some examples of real world application before providing statements on this. EP3 however was already convinced that "Combining this methodical and structured approach with practice would make it a very strong method" (appendix 3). Some other panellists, such as EP1, stated that it could be a very good decision and discussion support tool, because it allows CRE teams to improve their arguments and provide evidence on why certain actions as part of the strategy are proposed.

10. Conclusion and Discussion

10.1 Main conclusion

This thesis has aimed to answer the following question: *"Can explorative scenario planning and normative scenario planning be combined in a single method and what could be its impact on corporate real estate portfolio strategies?"*. By answering this question, this thesis has explored if this could be a potential way to create a scenario planning method that aligns with critical realist theory, and what this could mean for our field of corporate real estate portfolio strategizing.

From this research, it can be concluded that it is possible to develop a scenario planning method that unites both explorative and normative scenario planning. This is in the form of a CSP method that consists of the 8 different steps as described in chapter 8 and seen in the figure below.

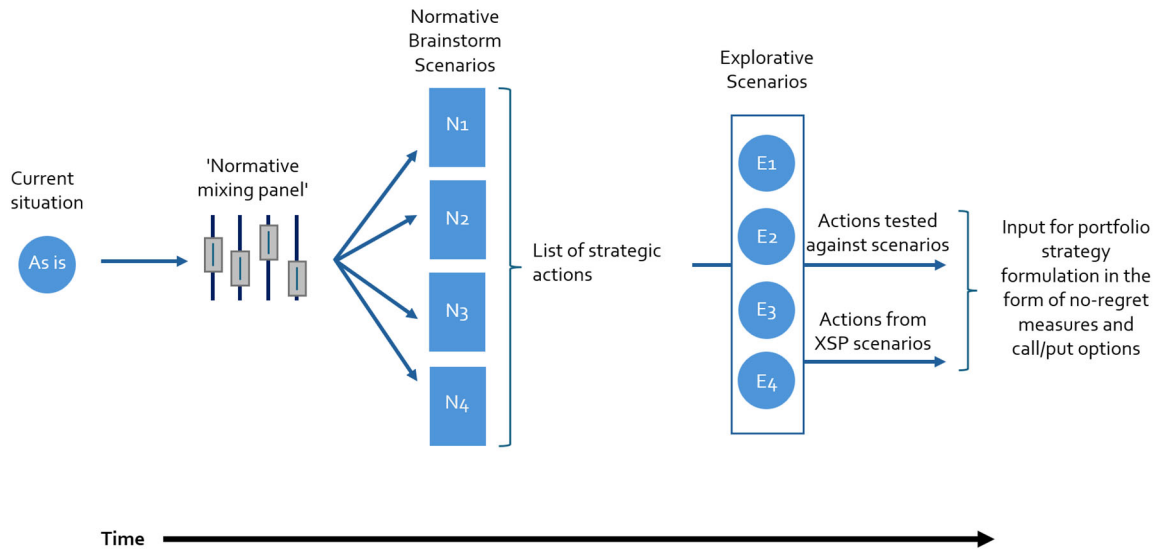

figure 26 The developed CSP method

When it comes to the potential impact of such a method on corporate real estate portfolio strategies, expert panel evaluation of the simulation run shows that while there is agreement on the practical performance of this method, it does need further improvement. Important points that ought to be addressed are to increase the ease-of-use of this method, as well as to perform real world test cases with this method. It was agreed however that this method could have an impact on the CRE portfolio strategy formulation by means of adding no-regret measures, as well as providing argumentation and a basis on which different actions as part of the strategy can be taken.

10.2 Scenario planning conclusions

Development of XSP and NSP

Looking at the development of both XSP and NSP, it can be concluded that whilst they both emerged during the same period, the late 1950s and early 1960s, they did so for different reasons: XSP responded to geopolitical changes and business uncertainties, while NSP arose from dissatisfaction with existing forecasting methods. Culturally, XSP is linked to the USA, originating in the US Department of Defense and later developed by Shell with input from Frenchman Pierre Wack, focusing on global issues. Conversely, NSP, associated with France, centred on socio-political issues relevant to France. XSP has been widely adopted by the corporate world, especially after Shell's success in the 1973 oil crisis, whereas NSP remains primarily in the public sector.

Use of scenarios

Combining the literature review with input from practice, one can draw a conclusion concerning how scenarios are used. It was seen that XSP scenarios are used in a way that confirms the notion of 'seeding the future' (Wilkinson et al., 2013); it has not only become a tool that stirs valuable discussion, it is also a decision support tool and can play a great role in strategy formulation through forming the basis for no-regret measures, as well as put/call options. It was also seen that its use still very much lies in the private sector.

In contrast, normative scenarios, function as blueprints for actively shaping the future and serve as input for policies, as was confirmed by Amer et al. (2013) as well as SP expert 1. Here it is important to not choose a single scenario to base policy of, but to combine different elements from different scenarios to create more robust policy.

As mentioned earlier, scenarios, both from XSP and NSP, have as main goal to stir up discussion and to challenge the current way of thinking. Where they differ from each other is the fact that NSP is focussed on creating scenarios to be used in policy making, whilst XSP scenarios are more to be used within business. This is also where a deviation into making call and put options was seen, something that the public sector tends to neglect.

Communicating about the future

Based on literature as well as the input from the SP experts, this research can conclude that one of the main strengths of scenario planning in general lies in the stirring of discussion and triggering management to think differently. However, it was also concluded that management does not always want to be confronted with new inconvenient truths that could arise form performing scenario planning studies. This was to such an extent that in both XSP and NSP, there are examples of other organisations trying to influence the process or either the publication of such studies.

This is where this research also reaches another conclusion on scenario planning, especially in relation to postmodernist theory as posed by Gong (2024) as well as positivist theory put forward by Melnikovas (2018). As was demonstrated by the unwillingness of certain parties to have scenario studies published or changed, it has now become clear what kind of influence scenario planning has on the future; namely that even thinking or discussing the future, has an impact on said future. This therefore confirms the paradox of observing systems as put forward by Luhmann (1995). This conclusion therefore also poses that there is a balance between postmodernist and positivist theory: the future does not simply fully 'overcome us' as postmodernist theory poses, but it is also not steerable to the degree as positivist theory poses.

Methods & techniques

Concerning the methods and techniques for both XSP and NSP, it can be concluded that practice largely confirms the studied theory.

It can be concluded that XSP has various methods with different steps and sequences, which has meant that there is no single and universally accepted established XSP approach. Concerning data gathering, practice has shown that techniques such as literature study, interviews as well as workshops are dominant. However, interviews also showed that model calculations are also used as well as AI input. Delphi studies were mentioned in literature, but do not appear to be used by the interviewees. Despite the abundant mentions of the 2x2 matrix, interviews have shown that there are also other methods of constructing explorative scenarios, such as incident scenarios. Whilst it was argued in chapter three that within XSP the use of experts is limited, that this is not necessarily the case. As SP expert 3 pointed out, expert input on subjects can be very valuable. What is still the case

however is the fact that the team consists mostly of regular employees who perform desk research as input for the method

Meanwhile, it can be concluded that NSP is characterised by a clear four step method, consisting of the base, where the current situation is modelled, the context, where external factors that influence the base are considered, progression, consisting of a repeated process of historical simulation, which finally results in the images in the last step. The PBL method as put forward by in the interviews aligns with this method, only adding an extra aftercare step in the form of the communities of practice. NSP combines probabilistic methods with qualitative data from interviews, literature studies, and workshops. However, Delphi studies were not mentioned as a method of data gathering, contrary to studied literature. External experts often play a significant role in the process because of more complex analyses and software that has to be used as was demonstrated by the large team that the PBL had to conduct this study.

XSP as well as NSP underscore the importance of considering external factors. However, they differ fundamentally in how the future is addressed. XSP sees the future as something that 'happens to you'; it is impossible for an organisation to influence this and is purely based on external factors. NSP on the other hand sees the future as something 'you want to happen'; an organisation does have influence in its future. NSP only minimally considers external factors through its context step, whilst XSP only considers external factors. It can therefore be said that through methodology, these two methods, XSP and NSP, are fundamentally different from each other, both achieving different types of futures.

How to combine

Considering sub-question 3 on how XSP and NSP could be combined, the research-through-design process as described in chapter 8 pointed towards the variant in which the influence of XSP outweighs that of NSP as the most promising, through both continuous feedback, as well as fulfilment of the design criteria as set out in chapter 8. Combining this with the view of this thesis on critical realist theory, this research therefore states that a CSP method that aligns with critical realist theory has a larger focus on the future being outside of our control than in our control.

10.3 CRE portfolio strategy conclusions

How are they formulated

Drawing conclusions on how CRE portfolio strategies are formulated, one sees that practice supports the reviewed literature of chapter 3. The four steps that came forward out of the interviews, namely analysis of the current portfolio, establishing goals and defining scope (front-end) , stakeholder management, and strategy testing, are very similar to the framework that is provided by Appel-Meulenbroek & Haynes (2014). This framework, adapted from Swayne et al. (2006) (see figure 7), consists of three distinct phases; strategic thinking, strategic planning and strategic momentum. Analysis of the portfolio 'as is' is part of the strategic thinking phase, whilst the front-end is part of the strategic planning phase. Stakeholder management as well as a pilot project are part of the strategic momentum phase.

Internal and external factors for the portfolio

From this research, it can be concluded that the internal and external factors that influence the formulation of CRE portfolio strategies as posed by the reviewed literature align with the findings from practice.

Looking at the internal factors, it can be concluded that the factors mentioned by the interviewees overlap with the adapted framework of Henderson and Venkatraman (1989) as seen in figure 6. The

importance of the business strategy was mentioned by all. Organisational structure was also mentioned in various ways, such as the cultural differences that make an impact as well as how operations are structured.

External factors, it can be concluded, were dependent on the company and their type of real estate, as was foreseen in chapter 3. However, there were some factors that all portfolio managers agreed on, such as market conditions and interest rates. That PM2 stated that hybrid working was an external factor was of interest; one would say that the amount of hybrid working would mostly be company policy, so this could still be up for debate.

Use of SP in CRE portfolio strategizing

Concluding how scenario planning is being used in formulating CRE portfolio strategies, one sees quite a difference from studied literature. Whilst all respondents used some form of scenario planning, this was not per definition explorative scenario planning, but more in the direction of what Börjeson et al. (2006) states as 'what-if' scenarios: " What-if scenarios investigate what will happen on the condition of some specified near future events of great importance for future development. The specified events can be external events, internal decisions or both external events and internal decisions" (p.726). Despite this, PM3 also pointed towards the combination of scenario planning for both external as well as internal factors, hinting towards the potential use of a combined scenario planning method.

Reflecting on how scenarios are used in relation to formulating CRE portfolio strategies, it can be seen that they are mostly used through option analysis as is in line with Mortlock and Osiyevskyy (2023). Besides this, scenarios also provide a basis for strategic planning and improve decision making. What was noteworthy however is that one of the portfolio managers asked the question on whether trying to approach portfolio question on a long-term basis was actually useful, especially within the light of organisations having to act quite fast as well as the dominance of lease-based portfolios.

Impact of CSP on CRE portfolio strategies

The expert panel's evaluation of the CSP method revealed mixed feedback on its ease-of-use, noting its labour-intensive nature and the importance of well-chosen scenarios. Despite demonstrating practical performance in simulations, the panel stressed the need for real-world testing to fully assess its effectiveness. While scenario planning was generally supported, data concerns and scenario comprehensiveness raised doubts about the specific CSP method. Suggestions for improvement included developing more scenarios, creating a toolbox for ease-of-use, as well as aiming to make the method more localised. Adding the 'regret' measures to the total list of measures would also make for a stronger case on what not to do. Ultimately, the method shows promise as a decision and discussion support tool, but practical refinements and validation through real-world application are necessary.

10.4 Discussion

Method

As mentioned in chapter 4.2, this thesis has not been the first attempt at combining explorative and normative scenario planning (De Bruin et al., 2017; Kok et al., 2011; Milestad et al.,2014 Van Berkel & Verburg, 2012; Van Vliet & Kok, 2015). However, what was also discovered is that these experiments all follow the same method as was first proposed by Carlsson-Kanyama et al. (2008), who provided little to no explanation on how and why their specific method came into being. This thesis took a different approach with a greater emphasis on the design of such a method and what it should account for. Especially for the context of CRE portfolio strategy, which has lacked experiments on combining explorative and normative scenario planning.

Whilst the method developed by Carlsson-Kanyama et al. (2008) lacked further substantiation, the method as developed in this thesis certainly is not the most optimal method and needs further improvement if this method wants to be widely applicable.

When it comes to the development of this method, it should be noted that many other iterations and other developments were possible. However, due to limited time (and wordcount), it was only possible to experiment with the three iterations as described in chapter 8 and only develop one of them. This was all done in a cycle of experimentation and feedback by portfolio managers. The design criteria that formed one of the starting points for this research-through-design process were not fulfilled properly when considering the comments made by the expert panel; the ease-of-use, which stands in relation to time spent on application, still has ways to go, and the amount of data needed to perform this method was not as limited as hoped. Despite the expert panel evaluation showing that this CSP method is not fully ready, it did show that there is great interest for it as a strategic discussion and decision support tool.

I therefore highly encourage anyone of interest to start experimenting and developing their own CSP method, especially outside of the context of CRE portfolio strategies, where this described method was mostly tuned for.

Philosophy

One of the conclusions of this thesis, namely that scenario planning studies demonstrate the paradox of observing systems as put forward by Luhmann (1995), poses that there is a balance between postmodernist and positivist views on the future; the future neither fully 'overcomes us', nor is fully steerable, it is somewhere in between.

Whilst this research now understands that there is a balance between the two, I cannot immediately state that both postmodernist and positivist views of the future are wrong. Positivist views of the future, according to Melnikovas (2018) called for active steering towards certain futures, hence NSP was created with its focus on creating visions to act upon for use in policymaking. Postmodernism meanwhile, stating that the world is of such complexity that it cannot be steered according to Gong (2024), called for 'thinking the unthinkable' and allow for a response to this, therefore XSP was created. Even in light of this thesis, these methods can hardly be discarded: for their respective intents and purposes, they function well and are tried an trusted methods ever since their inception. However, whilst acknowledging their usefulness, the balance between postmodernist and positivist views of the future should signal us that there may be a better way of understanding and considering the future. Critical realist theory as described by Patömaki (2006), and subsequently a CSP method that operationalises this theory, could therefore be the balanced approach between postmodernism and positivism.

Inherently, the discussion between postmodernism, critical realism, and positivism in context of the future is a matter of how steerable we think the future is. It is a discussion on how much uncertainty one can and wants to tolerate in regards to the future. Therefore, we arrive at the main reason on why we cannot definitively state that only one school of thought is correct; the amount of steerability (and therefore inversely uncertainty) that we have and can exercise is largely bound by external context.

In a context in which we are in a position to exercise a lot of power and therefore steer the future in regards to the external context (for example as politicians or government planners), it is not more than fair that we would act with a positivist worldview and therefore would want to develop futures

that we can actively steer. Meanwhile, the reverse also holds true: if we are in a position where the external context leaves us with little steerability and therefore high amounts of uncertainty, as is usually the case in the private sector, it is logical to think and act on the future from a postmodernist perspective. If we would find ourselves stuck in the middle between these two situations, it stands to reason that the balanced approach found in critical realist theory and its operationalisation through a CSP method could very well be the right approach.

From this, we can see that it is the amount of power over the external context that decides the correct approach. It is therefore also difficult to take the position on what would be the most optimal way of understanding and considering the future. However, considering the outcomes of the interviews with the SP experts and especially on how parties either over or underestimate their own influence of the future, there is a case to be made that critical realism generally is closer to reality than either postmodernism or positivism.

11. Reflection

11.1 Research

Literature study

The literature study as performed for SQ1 and SQ2 largely took place before the P2. The search for literature, especially in relation to SQ1 on scenario planning was off to a great start, for I had already some previous experience with scenario planning working for Dr. Karel van den Berghe. Already familiar with the basics, this gave me a great opportunity to delve deeper into the various methods, techniques and its uses. However, due to the advanced take on scenario planning that was possible, there was a rather large tendency to overcomplicate certain things in writing. I am therefore also very thankful for the role both Herman vande Putte and Karel van den Berghe, as well as some great friends, played in order to help me keep it simple and understandable.

Interviews

As part of SQ1 and SQ2, I also performed in-depth, semi-structured interviews. This has been very valuable for the research. Not only gave this the opportunity to verify the current state of theory with what was happening in practice, it also provided great additional information on how the method is applied and what its consequences are. I also found that the chosen form (in-depth + semi-structured) was the best choice for interviewing these experts. It gives the opportunity and the time to get to the bottom of certain subjects, giving more advanced information on the subject at hand. When time progressed and more interviews being performed, it allowed for more interesting questions related to more recent results and findings, making for even more interesting interviews.

When it came to the interviewees themselves, I successfully managed to find a great variety of experts who had the time and were willing to sit down for an interview. Having performed more such interviews in my spare time as chief editor of a magazine, I know that this is usually the hardest part. In the context of scenario planning, I have been able to interview the most forefront people in the field, and was able to find a balanced representation of both XSP and NSP. For the portfolio managers I also got prominent people in their organisations for an interview, with a great variety of CRE. Whilst the focus eventually was put on office CRE, it was rather valuable to also discuss retail real estate with the Chief Strategy Officer of a Dutch publicly listed company.

Research-through-design

The research-through-design process as needed for SQ3 provided a nice bit of grounded theory for this thesis. The continuous cycle of designing based on the information of SQ1 and SQ2, and receiving feedback from portfolio managers was of great value in this. It must be said however that with this method, the amount of different possibilities for a design approach infinity. The three design iterations therefore should not be seen as the only three possibilities. Given more time for this thesis, the research-through-design process could have provided a lot more variants, some of which maybe even more suitable than the method eventually developed in this thesis. This also presents the up and downsides of this method; whilst it can produce many variants, it also takes a lot of time to develop the different variants. Therefore, in regards to this thesis, I encourage others to also start experimenting with new designs in order to find a more optimal design.

Expert panel

For SQ 4, an expert panel was selected to evaluate the simulation run of the developed CSP method. While this panel consisted of portfolio managers with multiple years of experience as well as master degrees in their field, some bias could have occurred. The expert panel consisted of portfolio managers who all work for CBRE, but work on different portfolios, ranging from banking to the oil industry. Whilst some bias could occur due to being employed in the same environment, the feedback

was still of great value for this research. However, it should be stressed that a larger pool could further have improved results.

Document analysis
Before the P3, I started working on a document analysis in relation to sub-question 1. This was to gain a better insight into how the actual products compare between the two, and the initial version counted around 6.000 words. I eventually decided against using this document analysis as input for my thesis, despite the time and effort that had gone into writing this. It should be known that I wrote this document analysis in a time where my research was as the gordian knot; overly complicated and in desperate need to be untangled. Eventually, I realised that this document analysis mostly served its purpose as a sword to cut this gordian knot. After completing the initial version, it was clear again where I was with my research and how I was planning on further structuring and synthesizing it.

11.2 Findings

Scenario planning
This thesis was a great opportunity to evaluate the current state of scenario planning, both in theory as well as practice. It has shown that, for a few exceptions, practice still largely confirms theory. I do think however, that one of the most important findings has been on how one should approach the future; it does not solemnly 'overcome us', nor is it fully steerable. The mere fact that we write and discuss the future through scenario planning already has an impact on the future. To me, it shows that we not only have to react to what comes in the future, but also act towards the future. It is neither 1 or 0, it is both at the same time. It shows the potential of a third, more balanced way, of viewing the future, which this thesis has been able to operationalise through the developed CSP method.

CRE portfolio strategy
Like with scenario planning, this thesis presented a great opportunity to evaluate the current state of both the theory as well as practice behind CRE portfolio strategy formulation. Also here confirmation of theory in practice was observed. Bridging this with scenario planning however, it was seen that portfolio managers did not use it as often as literature suggests, and then mostly in the use of 'what-if' style scenarios; the difference between XSP and NSP was not known by any. It was interesting to observe that whilst there is quite some literature on the use of scenario planning within the context of real estate, the actual application of scenario planning remains questionable.

CSP method
Like said earlier, whilst the developed CSP method shows potential in the context of CRE portfolio strategy formulation, it must be stressed that this is not the only possible method; given more time and more experiments, a more optimal iteration probably exists. However, concerning the current developed method, it does show that it is indeed possible to unite XSP and NSP in one method, and can therefore operationalise critical realist views on the future, providing the missing scenario planning method as stated within the introduction.

11.3 personal reflection

At the time of handing in this thesis, my P2 presentation was 111 days ago. In these 111 days, I have not only written a thesis I am proud of, but also furthered my personal goals as stipulated in my P2 presentation.

My main goal, to deepen my understanding of scenario planning, is one that has definitely succeeded. Whilst I already had some experience with this method, I have learned a more than I ever thought I would learn about scenario planning, especially within this time frame. It has allowed me to master

not only the methods of scenario planning, but also the philosophies behind them, as well as allowing me to develop a new method.

My other goal was to get a further grip on developing strategy. This has gone hand in hand with my other goal, namely to gain more field experience concerning corporate real estate. Through the literature study, interviews with portfolio managers, as well as my internship at CBRE, I have gained great insight in how this part of our MBE field now works and the important role that strategy plays. I would therefore also sincerely like to thank my CBRE mentors Daan Lutjeboer and Rik Vermoolen for helping me with this thesis as well as providing the time and resources for me to work on my thesis during my internship.

Personally, I am quite pleased with the findings and conclusions of this thesis. It could potentially be the prologue of further and even deeper research into this field and new way of operationalising the future. I cannot wait to see what the future holds.

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