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Abstract

Foresight in corporate contexts includes generating futures knowledge (FK) – understanding of possible, probable and preferable futures of the macro and micro environments of the company. But how do foresight experts interpret the effects of external trends and phenomena to corporate strategies? How do they translate to executives what change in the operating environment the organization means for the business and its future, and why does it happen as it does? These are the questions I aimed to study in this thesis. The practice of futures knowledge interpretation (FKI) is not examined in-depth in the field of futures studies, even though this is a crucial part of applying foresight and ensuring it is valuable to companies. Prior research, expert articles and theoretical papers offer piecemeal advice on best-practices, tools and approaches. In addition to the practice, there exists a gap in understanding the capability of FKI.

To help bridge these gaps and to draw a more holistic picture of how FKI is made and what impacts its success, I reviewed multiple different academic studies, research papers and books by experts. As my primary research, I interviewed in-depth ten experienced Finnish foresight practitioners. After summarizing their input and combining it with relevant prior research results, I had another round of talks with eight of the interviewees to validate the outcomes.

The study produced a set of core characteristics of FKI, that describe what it is functionally and ideally as an activity. FKI can be understood as 'disciplined imagination', synthesizing experience, knowledge, analytical frameworks, cognitive ability for systemic and logical thinking, and intuition. Here, interpreters use tools that both increase creativity in making novel connections between the external futures and the organization's strategy and assist in structured analysis of said connections. In addition, I identified several organizational, personal and input-related factors that impact the success of FKI as part of strategizing. Finally, I also suggest an initial description of the ideal capabilities, expertise and traits of interpreters.

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| Key words | foresight, futures knowledge, strategy, sense-making, interpretation |
| Further information | Tomi Heikkinen (heikkinentomi@gmail.com) |





**UNIVERSITY
OF TURKU**

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Economics

INTERPRETATION OF FUTURES KNOWLEDGE FOR CORPORATE STRATEGY DEVELOPMENT

Master's Thesis in Futures Studies

Author:

Tomi Heikkinen

Supervisor:

Professor Toni Ahlqvist

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1 INTRODUCTION

“Purpose [of scenarios] is to gather and transform information of strategic significance into fresh perceptions. This transformation process is not trivial- more often than not it does not happen. When it works, it is a creative experience that generates a heartfelt "Aha!" from your managers and leads to strategic insights beyond the mind's previous reach. I have found that getting to that management "Aha!" is the real challenge of scenario analysis. - - It happens when your message reaches the microcosms of decision makers, obliges them to question their assumptions about how their business world works, and leads them to change and reorganize their inner models of reality.”

– Pierre Wack, 1985

“The test of a first-rate intelligence is the ability to hold two opposed ideas in mind at the same time and still retain the ability to function.”

– F. Scott Fitzgerald, 1936

Strategic foresight processes and practices, i.e. how knowledge about futures is created and made actionable in corporate organizations, are items of research that have received considerable attention in the field of futures studies (e.g. Horton 1999, Voros 2003, Rohrbeck 2012, Hammoud and Nash 2014, Peter and Jarratt 2015, Dufva and Ahlqvist 2015a, Lehr et al 2017, Dadkhah et al. 2018). Multiple experts argue that a key element of foresight creation is the sense-making or interpretation of futures knowledge (Horton 1999, Voros 2003, Uotila et al. 2005, Uotila and Melkas 2007, Könnölä et al. 2012) that concerns the perceived uncertainty in the organization’s external environment (Milliken 1987) and is valuable for strategizing and building organizational resilience (Rohrbeck 2012). Furthermore, visioning and making sense of implications suggested by past, present, and alternative futures is considered one of the core competences of foresight experts (Hines et al. 2017). Yet, the utilization of futures knowledge can be hampered by a ‘black hole of interpretation and implementation’ where futures knowledge is not absorbed into strategy processes (Uotila and Melkas 2007, 1119). While sense-making as a topic of organizational studies has been widely studied from both organizational, individual, behavioral and capability perspectives and their combinations (see e.g. Daft and Weick 1984, Huber 1991, Weick et al. 2005, Weber and Glynn 2006, Duchek 2019), there is a lack of detailed understanding of how interpretation is done in the context of foresight and how this ‘black hole’ could be addressed. The topic of how sense-makers answer the foresight users’ questions of what futures knowledge means for the users or their organization, or more specifically what the impact of possible futures to the organization is and how should they act, is often overlooked and under-researched. For example, Voros (2003, 14) presents a generic foresight process where interpretation is about answering

the question of ‘what really is happening’ and uncovering deeper insights about analyzed future uncertainties. Voros’s interpretation is about probing the causalities of uncertainties that both occur and have an impact in the environment external to organizations. Having a diametrically opposite perspective, Horton’s (1999, 6) view of the foresight process is centered on interpretation as contextualization: answering the question of ‘what does this mean for our organization’ and ‘what the implications of uncertainties are for us’. Although both include the task of answering the question ‘what should we do then’ in their foresight processes, Voros excludes contextualization from the foresight creation phase of his model and assumes the answers naturally stem from foresight as outputs, whereas Horton considers this issue an integral part of foresight creation itself.

Furthermore, studies and concepts covering foresight processes and sense-making of futures knowledge lack detail that would help practitioners analyze and improve their own contextualizing type of interpretation.

For example, Tapinos and Pyper (2018) identify a gap in research about how individuals ‘do’ foresight and make sense of the future in practice. Supported by a case study of foresighters, they outline a process for individual foresight and sense-making, where outcomes and impacts of future uncertainty are evaluated. Here, outcomes are estimations about how an uncertainty manifests, whereas impacts are identified through the different factors that the uncertainty affects. However, similar to the ‘Vorosian’ logic, their emphasis is on understanding the wider, general implications of uncertainties instead of contextualizing the implications to the organization for which the individuals work.

In another example, Vecchiato and Roveda (2010) note that foresight scholars have mostly focused on analyzing so-called ‘state’ uncertainties, i.e. the uncertainties related to the evolution of environmental drivers of change themselves. Instead, they argue that firms’ future success depends on their ability to a) anticipate ‘effect’ uncertainties - the implications of drivers of change to their competitive capability – and to b) assess ‘response’ uncertainties – choosing how to cope with drivers of change and their implications. However, their practical recommendations for practitioners about performing interpretation, that is, anticipation and assessment of effect and response uncertainties, are limited to framing the effect analysis to the competitive industry structure and value chain of the firm in lieu of Porterian strategic thinking (Porter 1985), and to focusing interpretation efforts to changing the mental models of decision-makers.

In a third example, O’Brien and Meadows (2013) study how scenarios and scenario planning are used in the context of corporate strategy development. While assessing scenario implications for the organization is one of three main activities they identify, their recommendations are limited to the usage of tools and frameworks such as SWOT, TOWS, Futures Group scenario method, SRI process, and competitive and core competence analyses. Similarly, Hines and Bishop (2013) present the “Houston way” of fore-

sight creation and provide a detailed if technical process for contextual implications analysis where one performs “a transition from the description of the world “out there” to a focus on what it means for the client “in here” (ibid., 46). However, the technical ‘best-practices’ of the “Houston way” along with existing literature about foresight interpretation beg multiple questions: How do individuals perform contextualizing interpretation in reality? How is successful interpretation defined and what makes successful interpretation? What individual and structural characteristics and capabilities support or hinder interpretation and its success (in terms of content, process & means, quality, utility, impact and so on), and why? These are the questions that provide the foundation for my thesis.

Noting how Horton claims “interpretation, the most crucial step in the whole [foresight] process, is poorly understood, and has few theoretical techniques” (1999, 7), I pose two main research questions:

- 1) How foresight practitioners interpret futures knowledge for the use of strategizing
- 2) Why interpretation occurs as it does

I use both to better understand the contextualization of foresight. Its use in strategizing provides a practical frame for studying “Hortonian” futures knowledge interpretation. To answer my questions, I study the practice of interpretation and factors of its success from *practitioner* and *systemic* perspectives. I agree with Tapinos and Pyper (2018, 292) that foresight is often examined as an impersonal, organizational activity and a research gap exists for understanding better the individual practice. Simultaneously, I explore the interpretation as contextualization in more depth so that practitioners, using my findings, can assess and improve their own ways of working and value to their organizations. The systemic perspective complements the practitioner perspective and I use it also to avert reducing the behavior of foresight interpretation into a simplistic, linear process. Such reduction leads to illustrations that are uninformative and of little utility for developing one’s behavior, whereas a systematic perspective allows for more deeper, fuller analysis of interpretation both as an activity and capability. Additionally, as the individual behavior does not happen in a vacuum and is part of a system, my intention is to understand the environmental factors that affect interpretation and drive its role and purpose in the wider organizational system context. Furthermore, for scoping reasons my thesis focuses on corporate strategizing or strategy making as a context of foresight use and does not include e.g. third sector or public policy-making. The empirical research of the thesis is based on the in-depth interviews ten experienced foresight practitioners who are either in-house analysts or external consultants. It contributes to strategic foresight practice by providing practical understanding of methods, tools and capabilities and systemic factors that impact interpretation and its success, and to futures studies academia by providing new insights about the practice of foresight creation at an individual level.

2 REVIEW OF EXISTING THEORY AND EMPIRICAL EVIDENCE

My objective is to explore how futures knowledge is interpreted by individuals in organizations and how it is used for corporate strategizing. I pursue this goal by combining my new qualitative insights with existing theory and empirical evidence. I break the objective into three main concepts that frame the review of relevant academic literature. Starting with *futures knowledge*, I discuss in detail the different types and definitions of knowledge and its relationship with foresight. Based on chosen scope and existing literature, I present a definition and understanding of futures knowledge.

From futures knowledge, I move to discuss *interpretation* in general and *futures knowledge interpretation* in particular. To understand the individual practice of futures knowledge interpretation in organizations, I first review theories and empirical evidence from the field of foresight. Then I cover topics of organizational sense-making and sense-giving, and organizational learning to complement the insights from the futures studies field. To understand the reasons driving the ways futures knowledge interpretation is done the way it is, I review academic literature regarding the purpose and objectives and measurement of futures knowledge interpretation in organizations. Additionally, I explore the existing theoretical and empirical understanding of individual and structural capabilities, enablers and barriers related to and affecting foresight and interpretation, and as discuss different desired and real outcomes of futures knowledge interpretation. Finally, I suggest a definition of futures knowledge interpretation and argue how interpretation can be viewed as a individual capability as well as an activity.

As the third and last key concept, I explore the literature on *strategizing*. I briefly present different definitions of corporate strategy, compare processes and approaches of strategy-making and the relationship of strategizing and foresight. To explore how strategizing could impact the practice of futures knowledge interpretation, I discuss how these approaches vary in their demands for foresight and futures knowledge interpretation. I conclude this section with the definitions of corporate strategy and strategizing that I use in the empirical part of the thesis.

2.1 Futures knowledge

2.1.1 *Types and definitions of knowledge*

In order to define futures knowledge, one must begin with a conceptualization of knowledge itself. At the outset, this invites one to ponder philosophical questions such as

the objectivity and subjectivity of knowledge and limits of human knowing and ability to know. Scholars and philosophers have presented a multitude of different typologies and perspectives of knowledge and its nature, such as positivist, rationalist, realist and post-modernist (Fisher 2010, 17-26). While thoroughly covering a discussion about epistemology ranging back thousands of years might risk becoming long-winded and something beyond the objective and limits of this thesis, some demarcations and decisions are required. The main context of this thesis is in organizational human behavior and it positions (a particular type of) knowledge as an input for this behavior, emphasizing the practical utility of knowledge. Knowledge is something that individuals operationalize and develop in organizations. Therefore, given these specifications, the thesis focuses on the practical application of knowledge and thus practice-oriented typologies of knowledge instead of the more deeply philosophical discussion of epistemology. This choice necessitates a definition for future knowledge as an input for behavior in organizations. In other words, what is knowledge in an organizational setting?

Ackoff (1996) described a hierarchy of knowledge in which the level of refinement defines the mode knowledge or content of learning has. *Data* is the simplest, lowest form of what one can learn and consists of “symbols that represent objects, events, and/or their properties” (ibid., 2). Data is produced through observation, and data that is processed to be useful becomes information. *Information*, according to Ackoff, is contained in descriptions and primarily answers to questions about *what* to do. *Knowledge* however is about knowing *how* to do something and thus is contained in instructions and learned particularly through experience. At the next level is *understanding* – knowing *why* – that is contained in explanations for knowledge, information and data. It is about assessing causes and factors and identifying the intentions or intended outcomes behind the behavior of entities that can display choice. Last, Ackoff defines *wisdom* as the “ability to perceive and evaluate the long-run consequences of behavior” (ibid., 4) or in other words, to understand the effects and effectiveness of one’s actions. While data, information, knowledge and understanding could be seen as value-neutral, wisdom-as-evaluation includes the notion of normativity and portrays wisdom as the making of value judgments. Ackoff suggests wisdom can be seen as action or an ability, whereas knowledge and understanding are ‘objects’. Similarly defining knowledge as an object, the so-called resource-based view on corporate management identifies knowledge as a firm’s *resource* and source of sustained competitive advantage (e.g. Barney 1991).

An off-shoot of the resource-based view school of thinking is the dynamic capabilities perspective on corporate strategy, where knowledge is viewed as a firm’s asset, something that can be integrated, built and reconfigured by the firm to improve its ability to compete (Teece, Pisano & Shuen 1997, 515), while knowledge creation itself is a dynamic capability of the firm (Eisenhardt & Martin 2000, 1107). However, Moss (2001, 219) posits that knowledge could be understood both as a static product (e.g. documents)

and as a dynamic process ('know-how' and routines). While explaining his view of sense-making and its relationship with knowledge, he argues that meaning is produced as in a constant state of flux between the employed resources and capabilities. Here, capability and 'dynamic process' are not activities or behaviors per se, rather, knowledge about how to act, or in short, know-how.

Considering the resource and dynamic capabilities theories together with Moss's views and reflecting back to Ackoff's hierarchy, I suggest data and information can be considered as 'knowledge-as-resources', whereas knowledge (learned through experience) and wisdom (an activity) can be seen as 'knowledge-as-capabilities'. This separation is similar to Ancient Greek philosophers' definitions of two main types of knowledge: *episteme*, translated roughly as knowledge, and *technê*, translated as skill, craft or art – knowledge-how (Fantl 2017). Interestingly, understanding, 'know-why' falls between the two definitions. In one hand, understanding consists of having knowledge *why* something is and thus exhibits the characteristics of being a resource. On the other hand it is a subjective interpretation and something akin to a capability because it by its nature facilitates the acquisition of knowledge (Ackoff 1996). Understanding, together with wisdom, per Ackoff's definitions, are interpretations. However, if I intend to define futures knowledge as an input for behavior in organizations, such is what Ackoff would refer to as data and information.

2.1.2 Futures knowledge: its nature and manifestations

This thesis explores the use of a particular type of knowledge: of futures and uncertainties. But is futures knowledge an oxymoronic term? While there is no one determined future that can be known beforehand, people still imagine possible futures or future phenomena, discuss their plausibility, how they might emerge, and even consider the probability of different futures, and make decisions about their immediate actions based on such 'knowledge' (Bell 1997, 73, de Jouvenel 2004, 12).

When reflecting on this dilemma, Dufva and Ahlqvist (2015b, 252) consider futures knowledge to be about "justified contingent plausibilities": justified by logical and rational analysis, being contingent on multiple interconnected factors and present actions, and deemed plausible by human perceptions and judgment. Furthermore, to them futures knowledge is perceptions of futures that emerge as clusters of connected concepts and are personal to each individual and dependent on the context in which the individual operates (Dufva 2015, 13, Dufva & Ahlqvist 2015b, 252).

Because the future does not exist yet, knowledge about futures is particularly grounded upon and driven by human perception. In addition, that perception is not used to assess individual phenomena and factors in a vacuum. Instead, perceptions are knowledge of the

combination of factors, their uncertainty and forces that influence them (Tapinos & Pyper 2018, 296-7). Ahlqvist and Uotila (2020, 10) propose a relational theory of futures knowledge: according to them, understanding weak signals (as a type of futures knowledge) is not only dependent on the context of the signal and factors that affect it, but also on the position of the person who generates and disseminates it and the mechanics how the signal transforms within *and across* contexts. Put differently, the content of knowledge about a futures object (e.g. weak signal, trend, or event) is determined in part by the bounded framing of the observer and by the boundaries and evolution of the contexts in which they are viewed.

If futures knowledge can be characterized as position and context-dependent human perceptions of clusters of connected concepts, what types of futures knowledge exist in practice? How does organizational futures knowledge manifest itself? In his study of how organizations create knowledge, Nonaka (1991) popularized the concepts of tacit and explicit types of knowledge. Whereas explicit knowledge is formal, documented and easily communicated, tacit knowledge is its opposite: personal, difficult to formalize and communicate. It “consists of mental models, beliefs, and perspectives so ingrained that we take them for granted” (Nonaka 1991, 165). Thus, concrete examples of explicit futures knowledge could be scenarios, images of the future, weak signal and wild card analyses, and megatrend analyses, competitor intelligence, or any documentation of future-related environmental uncertainty made using various tools of strategic foresight.

But if tacit futures knowledge concerns personal, intangible mental models and beliefs, are they also ‘ingrained’ or rather, dynamic? When Dufva and Ahlqvist (2015b, 252) suggest futures knowledge to be ‘justified contingent plausibilities’, one can argue that cognitive schemes about the future cannot be fixed but by nature are in constant flux, not only because new understanding is constantly created through socialization, combination, internalization, and externalization (Nonaka & Toyama 2003, 4-5) but because future itself cannot be known. Of course, this flux can be affected – even clogged – by personal biases and information limitations. In addition to tacit and explicit types, knowledge could also manifest as self-transcending (Uotila and Melkas 2007). This type pertains to an “ability to sense the presence of potential, to see what does not yet exist” (ibid, 1120). The degree of novelty and articulation separate it from tacit knowledge: It is knowledge of the imagination, or tacit knowledge before it is embodied by an individual (ibid.), thus particularly relevant for foresight, where creativity is used to create futures knowledge. It is closely related to the what Dufva and Ahlqvist (2015b, 254) call ‘out-of-radar’ knowledge, a form of futures knowledge that is not activated through analytical reasoning but by speculative imagination and what might initially seem irrelevant but often is an important source for novel insights about futures.

2.1.3 *Futures knowledge about environmental uncertainty*

When applying futures knowledge in the context of organizational and strategic decision-making, it becomes crucial to define what futures knowledge concerns. Individuals imagine and analyze the future, but the future and uncertainty of *what* specifically? Part of strategic decision-making is to understand the *environmental factors* and related uncertainties affecting the organization now and in the future. The environment can be defined as outside the immediate authority of the organization, such as institutions, other organizations and individuals that the company cannot directly control, but only influence to various degrees (van der Heijden 2005, 113-5). This environment that is external to the company can also be divided into micro- and macro-environments (Vecchiato 2012, Tapinos 2012). Micro includes elements such as competitors, customers, suppliers, and partners, i.e. parties that the company has a tangible relationship with. The latter includes elements in the political, economic, social, legal and (natural-)environmental landscapes which can manifest themselves as organization and institutions but also as less tangible trends and phenomena. Naturally, a company with considerable monetary and social capital could consider e.g. legal institutions and national governments their micro-environment through their tangible relationships that are built on extensive lobbying and networking, but for the purposes of simplicity, I maintain this separation.

Is it sufficient for strategic decision-making to then only understand the uncertainty of micro- and macro-environments and how these play out? Milliken (1987) argues that there are three types of environmental uncertainty that people in organizations experience as they aim to make sense of, and act based on, changing external conditions. First, people experience *state uncertainty* when their environment, a component of that environment or the relationship of environmental components is perceived to be unpredictable, in other words, the future state of their environment is uncertain. Second, even if an organization can moderate its state uncertainty, it might experience *effect uncertainty*. Here, people cannot sufficiently determine the implications of changing environmental factors to their own organization. They might be uncertain whether there is any impact, or about its nature, severity, and timing. Finally, organizations can also experience *response uncertainty* when they must choose how to act based on changing external conditions. Here, the organization has a limited understanding of what response options are available to it, how useful or valuable each is and what are the internal and external consequences if they are implemented (ibid). In each case of uncertainty, I also note that challenge is not only people's inability to estimate the probabilities of future possibilities, but also to imagine them in the first place.

Differentiating between resource, capability and activity-based perspectives discussed in section 2.1.1 allows for a starting point for more specific definition of futures

knowledge, and I conclude this section with this. The definition includes its nature, types, different manifestations and what it concerns, as seen above. Put together, I view *futures knowledge* as an organizational resource, and knowledge of justified contingent plausibilities (Dufva & Ahlqvist 2015b, 252) that exists as a cluster of connected concepts about environmental factors (Dufva 2015, 13; Dufva & Ahlqvist 2015b, 252; Tapinos and Pyper 2018, 296-7) that are dependent on the position of the observer and the context in which the factors are perceived to exist (Ahlqvist and Uotila 2020). It manifests as tacit, explicit and self-transcending types of knowledge (Nonaka 1991, Uotila and Melkas 2007). Because future cannot be known, it is knowledge about uncertainty. In the organizational context, relevant futures knowledge concerns macro and micro environmental uncertainty, especially the so-called ‘*state*’ uncertainty (Milliken 1987).

If it is viewed a resource, its utilization could then be viewed as an activity or a capability. Utilizing futures knowledge emerges as a dynamic process, ‘know-how’, or Ackoffian understanding and wisdom. This leads to my discussion about interpretation of futures knowledge.

2.2 Interpretation

2.2.1 *Futures knowledge interpretation as an activity*

Foresight as an activity is Ackoffian wisdom since creating knowledge about futures is among others to perceive and assess the long-time effects of human actions and their effectiveness. It has been defined as a type of practice or ability by several scholars and researchers of its field. For example, Malaska (2017, 19) simply considers foresight as “applied futures research carried out to provide tools for decision-making”, while Rohrbeck, Battistella and Huizingh (2015, 2) expand the definition for the corporate context, describing foresight as “identifying, observing and interpreting factors that induce change, determining possible organization-specific implications, and triggering appropriate organizational responses.” Foresight could even be seen as a dynamic, strategic and continuous practice that strives to create specific futures knowledge for different contexts and needs of an organization (Dufva and Ahlqvist 2015b, 264-5). However, I am interested in the activity of and ability related to interpretation and contextualization of futures knowledge: these are components of Malaska’s, Rohrbeck et al.’s and Dufva and Ahlqvist’s broad definitions. If interpretation is part of foresight as an activity, what is it and *how* is it done?

2.2.1.1 Interpretation as part of foresight

Futures studies literature has no lack of different processes and frameworks for futures knowledge creation and utilization¹. Among this wealth of approaches, Voros (2003) provides a description of the generic, linear foresight framework (figure 1, left side). The process begins with intelligence gathering for analysis about the external environment from multiple sources. Analysis organizes the input data and seeks to answer the question ‘what seems to be happening’. It is the starting point of what Voros considers foresight. Analysis is followed by interpretation, where the key question is ‘what is really happening’: here, the aim is to uncover deeper insights and structures via means of e.g. systems thinking and critical analysis. Third and last step in foresight is prospection, or purposeful forward looking, and answering the question ‘what might happen’. Different alternative views or scenarios of the future are created and examined. Outputs of foresight, i.e. analysis, interpretations and prospectations, are then used to affect strategy-makers’ perceptions of the future and expand the range of strategic options. They assist in answering the question ‘what might we need to do’. Finally, and separate from foresight, action decisions are made, and strategy is created (Voros 2003).

¹ See e.g. scenario planning as the art of the long view (Schwartz 1998), peripheral scanning as an organizational learning process (Day and Schoemaker 2005), the ‘rye bread model’ of knowledge creation (Uotila et al. 2005), future oriented technology analysis (Eerola and Miles 2011), horizon scanning and ‘facing the future’ (Könnölä et al. 2012), scenario planning with integrated perceived environmental uncertainties (Tapinos 2012, OODA model reinforced scenario planning (O’Brien and Meadows 2013), Framework Foresight and ‘the Houston way’ of foresight creation (Hines and Bishop 2013), real options thinking based scenario planning (Dortland et al. 2014), futures knowledge creation as knowledge type conversions (Dufva 2015), and the process model for corporate foresight (Dadkhah et al. 2018).

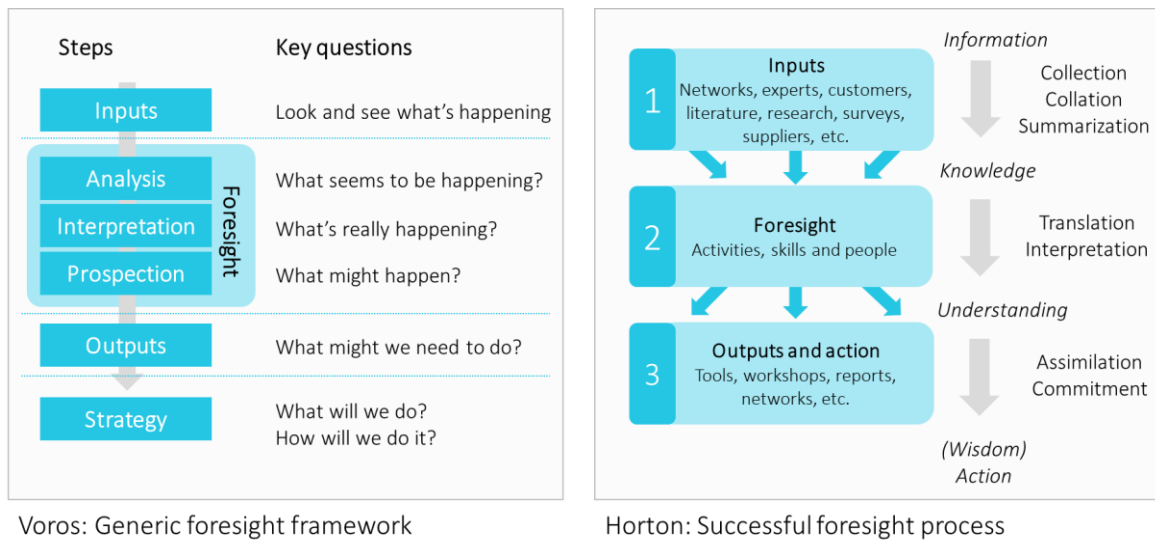


Figure 1. Foresight processes with different approaches to interpretation (adapted from Voros 2003 and Horton 1999)

In Voros's view, the sense-making of the underlying reasons and drivers of external phenomena is emphasized. It is about understanding the what and why behind external uncertainties. This is dramatically different to what for example Horton (1999) believes the purpose of interpretation to be. She too illustrates a generic and linear foresight process description (figure 1, right side).

To Horton, interpretation of foresight inputs, i.e. summarized futures knowledge from the external environment, is about translating the inputs "into a language that is understood by the organization" and "teasing out the implications of the various possible future views for a particular organization" (Horton 1999, 7). The purpose of futures knowledge interpretation, instead of uncovering 'what is really happening', is understanding 'what does it mean for us'. Horton's view of interpretation accurately portrays the analysis of 'effect' uncertainties which Milliken (1987) point out and is similar to Hines and Bishop's (2013) description of contextual implications analysis where one performs "a transition from the description of the world 'out there' to a focus on what it means for the client 'in here'" (ibid., 46).

'Hortonian' interpretation is also what Rohrbeck et al. (2015, 2) define as foresight's task to determine possible organization-specific implications of change inducing factors. As highlighted by Rohrbeck et al. (2015) and Horton (1999), the interpretation of the implications of change or future-related uncertainty precedes considerations of suitable responses, whether they are changes to strategy or how the organization can prevent, divert or facilitate the change in the micro- or macro-environment (Burt 2007, 733). In all cases, it is interpretation that produces the understanding of effect implications in order for individuals to determine whether a response is required. I find it notable, however, that Horton's pragmatic framework disregards the prospection aspect of foresight, where

imagination and creativity are used to answer ‘what if’ questions and generate new options for strategic decision-making.

By underlining the importance of recognizing implications and making it explicit for the foresight process, Horton un.masks a ‘black box’ element in the process that Voros in his model assumes exists and contributes to strategic thinking. By scrutinizing interpretation, outcomes of foresight are not only disseminated forward and the focus is not on how to effectively communicate them to others, but rather on ensuring they are relevant, useful and valuable. The same black box is eloquently yet unwittingly pointed out by Burt (2007) who discusses Pierre Wack’s seminal articles on scenario building and planning:

Wack argued that the process of identifying predetermined elements would help managers re-define their view of the business environment, by seeing new insights about such (previously hidden) systemic structures and relationships. If understood, these systemic structures and relationships would *reveal* specific challenges and opportunities which would then be the basis of [corporate] planning. (ibid., 734, italics added).

But this begs the question, how does this ‘revealing’ happen and how individuals make it happen? Beyond offering very general questions for practitioners to uncover implications and encouraging the use of third parties when interpreting futures knowledge, Horton (1999) offers no practical guidance, tools and techniques that would assist in interpretation. While she argues that interpretation is the phase that produces most value to organizations, she admits that interpretation as a process is poorly understood and suffers from a lack of theoretical techniques (ibid., 7). While analytical frameworks can facilitate articulating sensed external change, future developments and their implications (Teece 2007, 1320), comprehensive or structured bodies of insight for interpretation are far and between in futures studies literature.

For example, while a variety tools and approaches for contextualizing the implications of external drivers exist, O’Brien and Meadows (2013) report that there exists little research on their relative benefits and shortfalls. They simply suggest using the SWOT matrix for imagining how futures can affect the internal strengths and weaknesses of the organization and opportunities and threats that external factors pose to it. Yet, as a framework for causal thinking, SWOT simplifies issues and provides no ability to assess issue development across a timeline. It provides little support for in-depth, systemic interpretation of issues and their implications, such as assessing the severity of threats, their timing and timescale, how important is the effect of a given threat, what affects the manifestation of a given opportunity, or how they affect existing strategies or business performance in detail, and so on.

Hines and Bishop (2013) present a detailed, technical description of a foresight creation and utilization process and provide another example from academic literature about performing foresight interpretation with the help of frameworks. When the process reaches a stage where the analysis of the implications of possible futures begins, they recommend first to determine the categories in which the implications are assessed, i.e. contexts such as firm functions, stakeholders or markets. The implications of alternative futures and changes they bring about are then analyzed using the Futures Wheel, which is a tool for brainstorming and documenting the first- and second order effects of future phenomena and trends. While the Futures Wheel can be used to assess both state and effect uncertainties, it sets the external driver as the center piece of analysis.

The ‘Business Idea’, proposed by van der Heijden (2005, 63-90), is an example cognitive framework that makes the organization the focus on the analysis instead and serves as a backdrop against which to perform interpretation of the external driver’s effects. The Business Idea is a combination of the essential elements that form the “success formula of the organization” (ibid., 60). These are the societal/customer value created by the company, the ‘Distinctive Resources and Competencies’ that the company owns and enable it to deliver its value, the unique competitive advantage the company exploits, and the reinforcing feedback loops where the aforementioned elements are configured and organized in a way that provides self-sustaining generation of resources and competencies, competitive advantage and ultimately societal and customer value. In van der Heijden’s approach, environmental uncertainty and change is then interpreted in the context of these elements and what their relationship is with change and alternative futures.

2.2.1.1.1 Interpretation as part of scenario development

Scenarios are a key method of foresight, and as socially built narratives about the future can provide a framework for interpretation (Wright 2005, 89-90). What kind of interpretation insights, tools and techniques do different scenario approaches then offer to practitioners? Below, I review and discuss several contributions.

In his seminal book on scenario planning, Schwartz (1998) echoes Horton’s thesis about interpretation by arguing that ‘rehearsing the implications’, i.e. acting out the action options of the company in each scenario, is the most important step in the scenario development process. To Schwartz, ‘rehearsal of the future’ is performing simulation, running through the imagined futures as if they were reality. Simulation is similar to what van der Heijden (2005, 119) calls ‘wind-tunneling’ where scenarios are used as test-beds for imagining how action alternatives would play out in different futures. However, simulation requires that people in the organization must believe the reality, that is, managers suspend their disbelief in foresight (Schwartz 1998, 193-7). By suspending disbelief, the managers

adjust their initial beliefs about the plausibility of future change and extend their willingness to assess the implications of uncertainty their existing mental models do not allow for. To achieve suspension, Schwartz recommends using role-play: e.g. in a corporate setting, managers can represent different stakeholders of a market in an imagined situation, and in a game-theoretic fashion, strategize and act out their decisions in turn. Like in a simulation, the managers could then see how a situation or change-inducing factor ‘plays out’ (and if it then leads to previously unthinkable outcomes) in market and what kind of effects it has on their organization.

In another example of applying wind-tunneling to interpretation of external uncertainties, Lehr, Lorenz, Willert and Rohrbeck (2017) propose a model for scenario-based strategizing. Here, scenarios of the company are based on exogenous factors whereas its strategy options are built from endogenous factors. The locus of interpreting the implications of scenarios is in evaluating the robustness of each strategy in each scenario. The intent is to understand which strategy is the best or worst in a given scenario, and the criteria used for evaluation are the strategy’s feasibility, suitability, and acceptability (Lehr et al. 2017, 218-9). While Lehr et al. do not offer further in-depth techniques and practical guidance for deconstructing the criteria and facilitating the strategic discussion where the shared views are created, their approach provides a general framework for scenario/strategy simulation and wind-tunneling.

Ralston and Wilson (2006, 139-40) suggest that the contributions and implications of futures knowledge (namely in the form of scenarios) for corporate decision-making are fourfold: they highlight opportunities for the company and alert about threats, they suggest needs for new action options and changes to strategies, and they act as test beds for evaluating the resilience of existing strategies and possible alternative strategies. Like Schwartz, Ralston and Wilson instruct organizations to ‘rehearse the future’ with scenarios. It involves visualizing the strategic implications of the scenarios by posing a number of questions to the management:

- “In your capacity as a decision-maker, if you knew this scenario were going to occur, what opportunities and threats would you face”
- “what strategies would you implement if you knew this scenario were going to occur in order to best take advantage of the opportunities and remove the threats” (ibid. 142)

During scenario development processes, Ralston and Wilson recommend holding rehearsal workshops, where decision-makers are immersed in the scenarios and they identify opportunities and threats within each scenario and ideas for potential action options or strategies. After this, most salient opportunities, threats and action ideas are chosen, and the process moves to determining decision recommendations. Though Ralston and Wilson discuss scenario planning, the same approach could be applied in the implication analysis of any type of futures knowledge. However, I note this approach does not address

the issue of resilience of existing strategies and suffers from the same weaknesses as generic SWOT analyses mentioned above. Also, though scenarios act as a springboard for opportunities and threats, their approach relies on the creativity of the decision-makers without providing a mental framework for imagining implications to business, such as the ‘Business Idea’ proposed by van der Heijden (2005).

In a theoretical paper, Tapinos (2012, 341) proposes that scenarios should be developed based only on macro-environmental uncertainties, whereas corporate strategies should consider both micro and internal uncertainties. Here, strategists should then consider the implications of macro uncertainties on micro and internal environments using two simple impact matrices: the microenvironment is modelled and impacts assessed using the Five Forces industry structure logic, while the internal is examined through the sustainability of the most important resources the company uses to achieve competitive advantage. Based on this analysis, strategic options for action are then developed. Tapinos recommends using the TOWS matrix as a framework, where threats and opportunities are interpreted from scenarios. In addition, Tapinos suggests that micro-environmental implications analysis and the strengths and weaknesses of the organization should not be based on the present but rather considered according to their future sustainability in each scenario. Like Lehr et al. (2017), Tapinos suggests using robustness analysis with the criteria of feasibility, suitability and acceptability to evaluate the fit between strategic options and different future scenarios. Compared to e.g. Ralston & Wilson (2006), Lehr et al. (2017), van der Heijden (2005) and Hines & Bishop (2013), Tapinos’s proposed model provides strategists with more comprehensive approach to interpret all levels of perceived environmental uncertainty (Milliken 1987) with dedicated frameworks. Here, scenario development addresses ‘state’ uncertainty, implications analysis via models of micro- and internal environments help interpret ‘effect’ uncertainties, and strategy option robustness analysis interprets ‘response’ uncertainties.

2.2.1.1.2 Interpretation as part of environmental scanning

Experts on scenario thinking offer some insights on how to perform interpretation, but what practical contributions do practitioners of other widely used means of foresight offer? Day and Schoemaker write extensively on environmental scanning and weak signal analysis, or ‘scanning the periphery’ of both the company’s current environment and its futures, as part of foresight (see e.g. Day and Schoemaker 2004, 2005). One of their key arguments for successful scanning for futures knowledge is asking the right questions that *reveal hidden opportunities and threats*. These questions should be open-ended and cover the past, present and the future. In addition, the organization should be willing to accept less precise answers (Day and Schoemaker 2005).

Day and Schoemaker (2004, 133-140) propose that peripheral scanning, i.e. understanding weak signals, is a looped organizational learning process, where interpretation of weak signals drives action, which in turn generates learning and adjustments, which then have an impact on the mental models used in interpretation. They propose means to improve the quality of weak signal interpretation, urging companies to develop both internal and external channels for *dialogue* and to aim to *establish multiple hypotheses of the meanings of weak signals*. The point is to suspend the urge reach a quick judgment and avoid trying to reach a consensus on one meaning and imposing “too much order on an inherently ambiguous picture” (Day and Schoemaker 2004, 138). This, according to Day and Schoemaker, helps challenge existing mental models and increase creativity in interpretation.

2.2.1.1.3 Empirical evidence of futures knowledge interpretation in practice

As seen in previous two chapters, theoretical papers and contributions of experienced practitioners provide a starting point for examining and understanding futures knowledge interpretation in detail. Yet, the insights are brief and piecemeal: while some practical tools and techniques to facilitate interpretation are available, none provides a comprehensive framework and they are often directly related to the used foresight creation method. Similarly, existing case studies and exploratory research yield only limited insight on the *practice* of futures knowledge interpretation in corporate contexts.

Vecchiato and Roveda (2010) claim that the efforts of most foresight scholars focus on understanding the ‘state’ uncertainties or how the external drivers of change evolve. They argue that this is inadequate: companies’ future success depends as much on interpreting ‘effect’ uncertainties, that is, how drivers of change affect the companies. In their case studies of Starbucks, Luxxotica, Kodak Eastman and Nokia, one of their objectives is to uncover the most appropriate analytical framework for grasping the organizational implications of external drivers of change. Their scope of understanding implications is limited to two areas: the industry structure (as defined by Michael Porter’s Five Forces framework) and the value chain of the industry. In other words, the implications are explored by assessing how external drivers change the competitive landscape and position of the company, and how they affect the company’s and its competitors ability, including necessary resources and competences, and activities to create value to their customers.

Other scholars have pointed out specific shortcomings of the Five Forces and industry structure as tools for analysis of dynamic, uncertain environments. First, the boundaries of the dynamic industry are blurred (Teece 2007, 1325) and constantly evolving and uncertain themselves (Vecchiato 2012, 439-440), thus making scoping the analysis and

framing the context difficult. Second, Five Forces downplays the importance of new technologies as direct influencers of the industry structure and the role of innovation and learning in defining the structure itself (Teece 2007, 1325). Instead, in the Five Forces analysis technologies and innovations are relevant insofar they produce substitute products. How innovations and learning disrupt the “rules of the game” endogenously – from within the industry – in many possible ways is overlooked (Teece 2007, 1325). Nevertheless, when anticipating the ‘effect’ uncertainties, Vecchiato and Roveda (2010) argue that the real challenge is not to detect the drivers of change and to predict how they will evolve, but to “reshape the strategic beliefs of managers” (ibid., 1532). From these reshaped mental models emerge discontinuous strategies that are required to successfully respond to drivers that inflict discontinuity in the environment.

‘Reshaping the strategic beliefs of managers’ resembles also what Ramirez, Österman and Grönquist (2013) illustrate in their study on how early warning scanning about changes in the environment together with scenario techniques can be used to frame the attention of top management to possible futures and how they might unfold. Ramirez et al. argue that *sensing the business environment and its opportunities* is one of three dynamic capabilities a company can have, and that sensing has six different cognitive aspects, i.e. six cognitive behaviors or acts that constitute sensing: imagining, experiencing, patterning, framing, reframing and highlighting. *Framing* is about the application of frames of shared understanding to making sense, whereas *reframing* is about “considering several meanings with parallel use of various frames” (ibid., 826). Arguably, these two aspects could be viewed as key tasks of interpretation, where the outcomes are development of shared frames and creation of shared understanding – possibly even ‘reshaped strategic beliefs’ - through comparison and reflection of parallel frames and meanings. In their research of early warning scanning and scenario techniques in two global companies, Statoil and Nokia, Ramirez et al. (2013) find that futures knowledge and frames provided by scenarios and early warning signals enable and enhance strategic conversations about suitable responses to external change. Also, having multiple different scenarios offer senior management the opportunity to reframe decisions about strategy for each specific scenario, and turn managerial attention to peripheral issues and frames outside the dominant frame of thinking. However, their case studies do not detail how framing and reframing are achieved in detail, i.e. how it is facilitated, and what are their success factors and necessary competences.

Practical foresight research offers a number of different approaches for contextualization, but very limited insight on their application. For example, Battistella and de Toni (2011) develop a methodology for assessing the company’s strategic fit with the future, called “the methodology for future coverage”. The approach measures the coherence between the company’s product and service offering, its vision, and the external change(s) relevant to the company. Here, the vision implies the desired future state of the company

as articulated by the senior management and documented in internal and external documentation, while the future is mainly framed as weak signals and trends within the company's industry and wider PESTE environment. The purpose is to understand how well equipped the company is to meet the imagined future. Battistella and de Toni's analysis of coherence between trends and the company's vision resembles closely what this thesis views as futures knowledge interpretation for the use of strategizing, particularly since the analysis is designed to measure "to what degree strategy is effectively aligned with trends and megatrends" (ibid., 1030). It is an application of two of the contributions of futures knowledge as noted by Ralston and Wilson (2006): it helps to analyze the resilience of the company and understand needs to change strategies and adapt to changing conditions. However, Battistella and de Toni *do not detail how to perform the coherence analysis*. Coherence is determined by comparing "the different characteristics of the trends–vision - - relationships" (Battistella and de Toni 2011, 1037). Here, characteristics of the vision are somewhat ambiguous, whatever make up the desired future of the company, while characteristics of the trends are the possible developments in the company's chosen environment. For the comparison itself, the corporate stakeholders provide the necessary expert input and this input is gathered in interviews that are either open-ended or supported by questionnaires. Battistella and de Toni do not share any tools, techniques or sets of questions, nor any discussion of factors that might affect the coherence analysis.

A number of researchers examine the practice of corporate foresight and the value it can create. Hammoud and Nash (2014) explore qualitatively which foresight methods do foresight practitioners use and perceive as most successful in for-profit corporations. Five most cited methods are scenario planning, trends analysis, environmental scanning, weak signals analysis, and workshopping. Hammoud and Nash determine the general steps in foresight processes and identify what they call 'anticipating change' as the phase where observations and assumptions about the future are turned into meanings – what they mean for the company. Of how 'anticipating change' happens and how it is successful, the study offers only a few insights: recommendations include emphasizing "the outputs of the process and 'hide the machinery' of foresight creation" (ibid., 9) to make it simpler and straightforward to analyze implications to the company, using 'the same language' as corporate managers to "translate foresight concepts and project results into action steps managers can understand and implement" (ibid., 18) and using visuals, such as models, images and videos when presenting foresight results to make the futures more tangible to managers. They report that corporate practitioners use PESTE or VSTEPP (where V stands for values) frameworks for as ways to gauge the impact of external factors to their and their customers' businesses. Hammoud and Nash also categorize ways foresight benefits the company, including e.g. future shaping, increased flexibility and challenging of existing assumptions, better awareness of business opportunities and risks, and thrusts to organizational realignment. These all indicate that futures knowledge interpretation – or

meaning creation – has successfully occurred. Yet, *how* practitioners have achieved to create these benefits is not studied.

Peter and Jarratt (2015) examine how long-range planning is performed in two case companies. Their research provides general, technical descriptions of how foresight is created in both companies but does not investigate in detail how foresight is interpreted for the benefit of strategizing. However, they examine how corporate culture enables and hinders foresight use and its value to the organization. Based on findings in one of the companies, they identify flat hierarchies of management, a culture of openness to new ideas, top management encouragement and sponsorship, and the performance of internal futures agent networks as some of the key drivers of beneficial foresight practice. In the case company, the network has actors who are intimate with daily business, participate voluntarily and their participation is independent of other corporate hierarchies. It both formally and informally stimulates continual conversations and idea sharing about environmental uncertainties which then feed into the company's strategy development activities.

In a case study of a professional services company specialized in forward-looking analysis, Tapinos and Pyper (2018) investigate how individuals 'do' foresight and make sense of the future without formal foresight methods or tools. They define forward-looking analysis (FLA) as a sense-making process, and sense-making as something that "focuses on the interpretation of uncertainty and explanation of how managers make sense of unexpected triggering events" (ibid., 293). In their study, they analyze different activities within FLA. After individuals have created foresight about the outcomes of uncertainty, they interpret the impact of the outcomes by considering the factors affected by them. These factors are identified previously and described in a system of relationships affecting the central uncertainty and its outcomes. The interpretation itself – what the implications are – is a product of the *individual's experience* and *disciplined imagination*, while the quality of the foresight output is "dependent on the *capability* of the analyst to create systems of relationships, and their *access to information*" (ibid, 299, italics mine). Given the nature of work of the interviewees in the case study company as it is described by Tapinos and Pyper, I view the approach they use for interpretation as more 'Vorosian' than 'Hortonian', that is, understanding the wider implications of uncertainties to their systems or relationships with other factors. Arguably, their insights about the factors of interpretation – experience and disciplined imagination together with analyst's capability and access to information – are applicable to both types of interpretation. However, differing from both Voros and Horton, Tapinos and Pyper explain interpretation to be a part of continuous sense-making process instead of being an individual, non-recurring phase of a foresight process. They argue that interpretation and enactment constitute sense-making and that both occur continuously in an iterative way every time information about the

uncertainty is captured, understood, and when foresight outcomes and impacts are assessed. However, beyond using a systems analytical perspective in interpretation, the case study does not provide practical insights about how to perform interpretation and improve its quality.

An alternative way to perform corporate foresight is to start by framing the questions about what implications future has for the organization as the basis for foresight work. In other words, the practical and often immediately business-relevant questions, e.g. a strategic decision needed to be made in the near future, scope the frame of foresight generation (Schwartz 1998, 100-101). Heger and Rohrbeck (2012) illustrate this with their case study about a telecommunications company exploring a new business-field in search of business growth. Here, starting point questions include e.g. what product properties and services the company should offer in the new field, who are the relevant actors in the value network and how might they behave in the future, how will the market of the business-field evolve, and does it have the potential to be financially viable. Generating foresight to answer these questions frames the entire process to the purpose of interpreting newly gained futures knowledge for decision-making about entering the new business-field. Heger and Rohrbeck draw a map of the entire process, and specifically point out two steps where results of competitive and scenario analysis are interpreted. However, in their study, any practical insight on how interpretation and implications assessment occur is not shared. Instead, they discuss general antecedents of successful foresight work, including having interdisciplinary working teams to ensure the process enjoys multiple perspectives.

In conclusion I argue that a critical review of conceptual frameworks, practitioner accounts and empirical evidence of foresight practice reveals that the futures studies field offers general and technical descriptions of foresight processes where interpretation – particularly the ‘Hortonian’ kind – is not studied in depth but rather superficially. While providing a handful useful approaches and tools, it is up to the interested to collect piecemeal notes and advice to try to build a comprehensive, practically applicable view of *how to perform* interpretation successfully, especially in a way that is not dependent on what foresight technique was used to create the futures knowledge. Could other theories and studies in other fields assist in offering practical guidance, ways of working and tools for futures knowledge interpretation?

2.2.1.2 Interpretation as organizational sense-making

Organizational sense-making theory examines how people make sense of things and organize by interpreting ambiguity and rationalizing human behavior and enacting those

interpretations in a recurring cycle that happens episodically (Weick 1995, Weick, Sutcliffe & Obstfeld 2005, Weber & Glynn 2006, Sandberg & Tsoukas 2014). Sense-making is about putting stimuli into existing frameworks (Starbuck & Milliken 1988, 51), or linking external cues with personal cognitive structures (Weick 1995, 49-54). It is about translating events and developing shared understandings and conceptual schemes (Daft & Weick 1984, 286). Events trigger sense-making as people notice ambiguity, surprises or discontinuities (Weick et al. 2005, 409-10, Sandberg & Tsoukas 2014, 11). In an effort to maintain order and make sense of what is happening, they bracket, label and categorize the events, guided by their existing and coincidentally evolving mental models. This is not only for simplifying the world and making it understandable, but also to enable communication of the events with others (Weick et al. 2005, 413).

In his seminal, widely cited work (Weber & Glynn 2006, Sandberg & Tsoukas 2014), Weick outlines seven attributes that separate sense-making from other explanatory processes: he argues that it is a process that is grounded in identity construction, is enactive of sensible environments, social, ongoing, focused on and by extracted cues, is driven by plausibility rather than accuracy, and is retrospective (Weick 1995, 17). Weick's initial analysis and subsequent critical assessment and further development by other thinkers break down the act of sense-making to detailed components, but does this analysis provide insight how to perform and to improve futures knowledge interpretation, and if yes, what insights are they?

Perceived identity, their current image of themselves and their future image are key to how people make sense and interpret issues (Gioia and Thomas 1996, 370, Weick et al. 2005, 416). While mental models used in sense-making are part of one's self-beliefs, sense-making affects mental models and subsequently one's identity. Identity becomes particularly salient in sense-making where the triggering event challenges one's self-image, posing questions of who am I, who are we, what are we doing, and why does it matter (Weick et al. 2005, 416). When strategizing, imagining the futures of the organization becomes arduous unless people are able to connect the future with the present concerns and historical paths of the organization, and reinterpret and rethink who they are as an organization and how they have arrived at their current situation (Kaplan and Orlikowski 2013, 975). Therefore, I claim that interpreting futures knowledge becomes a matter of not only definition of external cues, but also definition of self, as far as self is a perception of who we are now, what we are doing, and what has led us to this present. Interpreting effect uncertainties and resolving response uncertainties should not only be viewed as a technocratic pursuit of 'hard' answers about the futures, but a 'soft' act of social introspection as well.

Organizational sense-making is applying stimuli to mental frameworks. Weick argues that sense-making is part enactment, because "in organizational life, people often produce

part of the environment they face” (Weick 1995, p. 30). Consequently, people’s own activity creates the stimuli they receive (ibid.). In a feedback loop, interpretation leads to action that leads to interpretation. I view Weick’s argument as social constructivist: the environment cannot be analyzed as a separate from the sense-makers: sense-makers, through their actions and interpretations, help create the environment they inhabit, but their perceptions and how they frame their understanding helps create it as well. For practitioners interpreting futures knowledge, the insight is that knowledge of future possibilities cannot be understood as an objective input only. Rather, it is constrained and constructed by human assumptions, perceptions and ultimately by their actions.

This dynamic also highlights how sense-making is not solitary behavior but a social process (ibid., 39). Organizational sense-making is socially influenced, because interpretations and decisions made by individuals are contingent on what on the actions and perceptions of others (ibid., 39). Here, the social context does not only constrain individual sense-making. Instead, the organization itself primes, edits and triggers sense-making, by providing social cues, through social feedback processes, and by “posing puzzles for sense-making through endogenous institutional contradiction and ambivalence”, respectively (Weber & Glynn 2006, p. 1648). In an organizational context, sense-making can be seen to include sense-giving, where the sense-making and meaning construction of others is being influenced towards a specific end (Gioia and Chittipeddi 1991, 444), which I argue is, essentially, social enactment. When coupled with sense-giving, sense-making becomes an iterative, sequential, and potentially reciprocal – social – process (ibid., 442, Sandberg and Tsoukas 2014, 24).

Interpretation produces the understanding of effect implications in order for individuals to determine whether a response is required. Response uncertainty in turn relates to what the possible implications of certain responses are, and what the organization should then choose to do. If relevance of environmental factors that produce state uncertainties are determined through the act of contextualization, what determines which of the environmental factors are contextualized in the first place? In other words, how do foresight practitioners and decision-makers both decide what is relevant enough to require interpretation among all possible futures signals? How does one know what to contextualize if the act of contextualization itself reveals what is relevant and required further attention? Weick’s (1995, 49) argument that sense-making is *focused on* and *by extracted cues* addresses this dilemma, though does not answer it. ‘Focused on’ simply means that people notice cues from events and objects before making sense of them. ‘Focused by’ indicates how noticing is driven by the various properties of the cue that make them stand out in the first place, such as novelty, frequency, unexpectedness, extremity, and suddenness etc., or by cues that people are situationally or personally primed to be attentive towards (ibid., 50) Furthermore, context “affects what is extracted as a cue” (ibid., p.51), but also how cues are interpreted. However, ‘context’ here can be thought to apply to the cognitive

frames individuals use in sense-making as well, and not only the organization or its environment.

Weick et al. (2005, 415) argue that sense-making is not about getting the truth right, but rather about building a plausible narrative of what is happening. Following Weick et al., I suggest plausibility, not accuracy, is what drives decision-making, even though e.g. Verity (2003, 193) points out that corporate managers typically want to base their decisions on fact-based recommendations, accurate information and soundly estimated probabilities. However, factual accuracy regarding an environmental uncertainty is relative and as argued previously, even subjective to individual perception. This is particularly salient to futures knowledge, where total accuracy is impossible to gain. To Weick, accuracy is a secondary importance to action, meaning that it is more important to begin interpreting with limited information than to wait for “the” interpretation to emerge (Weick 1995, 54-55). This way, I believe interpreting as a process produces both initial understanding of effect implications but also reveals further questions that require additional futures knowledge and further contextualization. Armed with such a mentality of on-going sense-making, foresight practitioners and decision-makers alike can also constantly maintain their focus on futures signals that are vital to the context of the organization.

The final characteristic which Weick attributes to sense-making is that it is retrospective (Weick 1995, 24). I argue this is contradictory to the purpose and nature of foresight and futures knowledge interpretation, namely because futures have not occurred, and they cannot be experienced and retrospectively made sense of. Sense-giving however, when viewed separately from sense-making, has a future orientation insofar it aims to influence the sense-making and enactment of others (in the future) (Gioia and Chittipedi 1991, 433). Yet, I suggest sense-giving is more about influencing organizational response and less about understanding implications, which is in the realm of sense-making. Its purpose is not to analyze but to lead to action. Other scholars however argue that sense-making can be prospective when individuals and organizations try to understand the nature of change and impact of future actions and non-actions (Gioia and Chittipedi 1991, 433, Gioia, Thomas, Clark and Chittipedi 1994, 378). The question that arouses discussion in the academic field (Tapinos and Pyper 2018, 295) is then whether prospective sense-making is ‘future-perfect’ and a form of backcasting (retrospection of realized imagined futures or imagining that the future has happened and ‘retrospectively’ making sense of what has happened) or forwards looking, future-oriented sense-making where the future is invented instead of reasoned (Tapinos and Pyper 2018, 295, Gephart, Topal and Zhang 2010, 276, Kaplan and Orlikowski 2013, 967). Nevertheless, I suggest that to a practitioner, the argument about the “correct” direction of cognition (whether it is future perfect or future-oriented sense-making) seems to be purely semantical. Rather, for foresight practitioners the most relevant is whatever perspective that works best in a particular context.

While organizational sense-making theory provides little insight into how to perform and improve futures knowledge interpretation in practice, it still sheds light into its core aspects. I argue that understanding these is critical to measuring and developing one's interpretation capability and how one performs interpretation. Akin to sense-making, it is cyclical and continuous, it constructs identities, and it is social and political. Furthermore, it is focused on plausibility and action instead of accuracy. Finally, it is influenced by the actions and context of the organization and its members themselves and not only by the futures knowledge it is based on. When moving beyond organizational sense-making, what other theories and frameworks could provide insights into the practices of interpretation?

2.2.1.3 Interpretation as organizational learning

If an aspect of futures knowledge interpretation is sense-giving in a social setting, I view interpretation also as pedagogic, or striving for teaching and learning. By influencing and challenging personal frames of cognition of individuals and enriching knowledge for their use, it contributes to *organizational learning* (e.g. van der Heijden 2005, p.161). Organizational learning is a diverse field that studies how organizations, through their members, acquire and use knowledge and alter their behavior, achieve transformation and affect their relationships with their environment (see e.g. Daft and Weick 1984, Huber 1991, Henderson 2002, Bontis, Crossan and Hulland 2002, Crossan and Berdrow 2003). I hypothesize that how individuals and organizations learn could then provide insights on the activity of futures knowledge interpretation.

What types of organizational learning exist? To Argyris (1977, 116; 1999), organizational learning can occur via single- and double-loop learning. Single-loop learning refers to the organization's ability to detect and learn from its errors so it can maintain its current policies and its pursuit of its present objectives. When an organization questions and revises the underlying policies and objectives in the face of erroneous behavior that cannot be corrected using single-loop learning, it performs double-loop learning. Thus, when futures knowledge interpretation provides understanding, or "answers" and hypotheses, about future environmental uncertainties for strategic decision-making, in my view it is effectively providing single-loop learning. However, when foresight and interpretation pushes the organization to critical self-reflection about assumptions, beliefs and mental models, and facilitates critical thinking, it engages individuals in transformative learning (Henderson 2002, 203), akin to double-loop learning. Such learning leads to reframing which in turn helps develop totally new, insightful perspectives for interpretation. Thus,

I argue that interpretation contributes to both types of learning. Understanding interpretation particularly as an effort at double-loop learning hints at why it can be so difficult for individuals.

How does futures knowledge interpretation fit in with organizational learning? Crossan et al. (1999) develop a framework for organizational learning that describes it as a dynamic process. The dynamics are a result of assimilation, where what is learned feeds back from the organization toward individuals, and exploration, where new insights and ideas are ‘fed-forward’ by individuals toward the wider organization. The concurrence of feedback and feedforward creates a tension between maintaining stability and inducing change (ibid.) which highlights why organizations struggle to renew themselves strategically as they face discontinuous change in their business environment (Crossan and Berdrow 2003, 1088). In their model, learning itself is comprised of four processes: *intuiting*, *interpreting*, *integrating* and *institutionalizing* and through these processes learning occurs across individual, group and organizational levels. They consider intuition as (past) pattern recognition (Crossan et al. 1999, 526). Personal experience is required for developing pattern recognition as experience is used to seeing patterns and foreseeing how the pattern develops. However, two types of intuition exist: *exploitative*, or past pattern oriented, and *explorative*, or future possibilities oriented (ibid., 526; Crossan and Berdrow 2003, 1090).

To Crossan et al. (1999, 526), *explorative intuition* is entrepreneurial, creation of new insight, new patterns, new connections, whereas *exploitation* is supported by expert intuition providing insight for past pattern recognition. I argue this distinction is important for developing interpretation practices of futures knowledge, because it suggests that explorative, futures intuition is not an experience-based ability like exploitative, expert intuition. Instead, exploration is about innovation and change, and its key abilities are making novel connections and perceiving new and emerging relationships and discerning yet unidentified opportunities (Crossan et al. 1999, 526)².

Crossan et al. (1999, 528) view interpretation as a conscious process of learning and sharing of individual intuitions. When interpreting, “individuals develop cognitive maps about the various domains in which they operate” and interpret stimuli according to their cognitive maps (ibid., 528). This can result in different interpretations among individuals,

² This distinction raises the question about the importance of contextual experience in performing interpretation in a corporate strategizing setting: if novel, explorative intuitions are the aim of interpretation, does one require contextual experience e.g. about the industry or the company, or is it even harmful to the outcomes? I return to this dilemma in the analysis of the primary research of this thesis in chapter 5.4.2.

which are then shared in a wider group process (ibid., 528). However, viewing interpretation as an act of sharing is markedly different to how other theorists see interpretation primarily as knowledge processing (see e.g. Daft and Weick 1984, Horton 1999). For them, sharing is an obvious by-product and part of the process and their emphasis is instead on sense-making and determining implications of what is or can happen. It is then possible that intuition itself (as determined by Crossan et al. 1999, 526) includes some initial interpretation (when understood as sense-making and implications analysis), whereas interpretation-as-sharing (per Crossan et al. 1999) resembles more what Gioia and Chittipedi (1991, 446) describe as sense-giving. This poses two questions: is interpretation inherently a personal learning activity, and does interpretation happen when intuitions are shared or are the interpretations simply then only 'given'?

Crossan et al. (1999, 528) argue that when intuitions are shared and stimuli are interpreted, group interpretive processes resolve problems that result from equivocal interpretations. But is the result a group interpretation, or an interpretation by an individual that was 'given' to others? I argue their argument does not point to a clear conclusion. Also, while Crossan et al. (1999, 528), like Daft and Weick (1984, 291), argue that group interpretation decreases equivocality of individual interpretations by creating and refining a common language, I suggest it can also *increase* their equivocality by uncovering multiple plausible explanations and perspectives and shedding light to differences between cognitive frames. It is therefore actually the process of integration, that follows interpretation, where shared understanding and coherence required for further decision-making and action is developed (Crossan et al. 1999, 528-9). Integration resembles the concept of sense-giving, a separate aspect of sense-making. These suggest, in my view, that interpretation, as far as they are part of organizational learning, ultimately is a personal activity, not shared.

Furthermore, Crossan et al. (1999) point out two notable challenges that can affect interpretation and integration. First, shared understanding of novel ideas might not be achieved without shared action and common experimenting (ibid., 533). In other words, shared experiences might align cognition and mental frames and thus support achieving shared understanding and learning. For futures knowledge interpretation (and integration of interpreted implications) I feel this poses an interesting dilemma: how to mutually experience (and learn about) the futures, uncertainties and their implications *before* they have occurred? The second challenge affecting interpretation is how institutionalized learning can act as a barrier to both intuition and experimenting: to mitigate this, members of the organization should "step back from proven objective successes and allow unproven, subjectively based experiments" (ibid, 533). Explorative learning can also thus require 'unlearning', i.e. intentional discarding of misleading, obsolete information and behaviors and constraints to behavior that can open the way for new learning (Huber 1991, 102).

Finally, metaphors are valuable tools in translating and verbalizing individual intuitions, because they are means to transfer information from a familiar domain to new, unknown domains (Crossan et al. 1999, 527). Interestingly, Crossan et al. (1999, 527) hypothesize that metaphors are the only way of communicating explorative intuitions.

In summary, a brief exploration of the field of organizational learning provides the practice of futures knowledge interpretation with a number of concepts and notable considerations. The dichotomy of single and double-loop learning (Argyris 1977, 1999) provides a helpful way of structuring the intention and depth of interpretation. The framework of organizational learning (Crossan et al. 1999) offers a way to articulate the dynamic of interpretation: how it relies on the pattern recognizing, explorative intuition of a foresighter or a manager, and notes that this is an ability not honed by experience but rather a creative skill. Albeit intuition is creative, interpretation however is about developing mental models in a specific context (ibid., 528), which indicates how developing intuitions into interpretations requires both creativity and context awareness and knowledge. The framework illustrates how interpretation occurs at individual and group levels, and how integration (developing shared understanding) is a connected but separate process from interpretation due to its social nature and due to how interpretation itself does to necessarily lead to coherence and consensus. Theories of organizational learning also highlight how important metaphors, shared experiences and unlearning are to foresight contextualization (Crossan et al. 1999, Huber 1991).

In this section, I've attempted to answer the question if interpretation is part of foresight as an activity, what is it and *how* is it done? Based on the critical review of theory and empirical research of fields of foresight, sense-making and organizational learning, I have developed a view of the core characteristics of foresight interpretation. Instead of identifying a process, I have distinguished a number of attributes that characterize it as an activity. These are included in Table 1.

Table 1. Summary of core characteristics of futures knowledge interpretation

| | |
|---|--|
| Uses cognitive frames, assumptions and beliefs | Starbuck & Milliken 1988, Weick 1995 |
| Aims at sense-making & sense-giving | Weick 1995, Gioia & Chittipedi 1991 |
| Social and participatory | Weick 1995, Burt et al. 2017, Chermack 2004 |
| Intuitive and experience-based | Crossan et al. 1999 |
| Creative, using 'disciplined imagination' | Wack 1985, Crossan et al. 1999, Weick 1989 |
| Combines futures with present concerns and historical paths of the organization | Kaplan & Orlikowski 2013 |

| | |
|---|--|
| Grounded in identity construction | Weick 1995, Weick et al. 2005, Gioia and Thomas 1996 |
| Enactive of sensible environments | Weick 1995 |
| Focused on and by extracted cues | Weick 1995 |
| Driven by plausibility rather than accuracy | Weick 1995 |
| On-going | Weick 1995 |

An important aspect of *how* interpretation is done is *what tools* individuals use. Based on the review I have compiled a summary of tools foresight practitioners and managers can utilize when performing interpretation in practice (Table 2).

Table 2. Summary of tools for futures knowledge interpretation

| FRAMEWORKS | |
|---|--|
| SWOT | e.g. O'Brien and Meadows 2013 |
| TOWS | e.g. Tapinos 2012 |
| The Business Idea | van der Heijden 2005 |
| Five Forces | e.g. Tapinos 2012 |
| Value chain | e.g. Vecchiato and Roveda 2010 |
| PESTEC | Hammoud and Nash 2014 |
| Futures Wheel | Hines and Bishop 2013 |
| Company's vision statements and strategy documentations | Battistella and de Toni 2011 |
| TECHNIQUES AND TOOLS FOR FREE-FORM IDEATION | |
| Interrogation, asking questions | e.g. Day and Schoemaker 2005, Ralston and Wilson 2006 |
| Simulation, wind-tunneling & roleplay | e.g. Schwartz 1998, van der Heijden 2005, Lehr et al. 2017 |
| Coherence analysis | Battistella & de Toni 2011 |
| Visuals | e.g. Hammoud and Nash 2014 |
| Metaphors and analogues | Crossan et al. 1999 |
| Shared experiences to learn about the future | Crossan et al. 1999 |

These tools are used and recommended by various scholars particularly from the field of futures studies, but they include also ideas from the field of organizational learning. In the review I identify two different approaches to futures knowledge interpretation and divide the tools into two classes: 'hard' *frameworks* that structure thinking and 'softer'

techniques for *free-form ideation* that facilitate the use imagination. In my view the discussion on interpretation as part of scenario development (chapter 2.2.1.1.1) and environmental scanning (chapter 2.2.1.1.2) highlights two approaches for interpretation of effects: first, using frameworks to conceptualize the business and/or strategy and pinpoint and determine the effects with their help (van der Heijden and Lehr et al. as examples) and second, using freeform ideation to explore possible effects (Ralston and Wilson and Day and Schoemaker as examples). Frameworks help structure thinking and conceptualize all relevant aspects of the business, while freeform ideation might lack the structure, but through use of creativity can uncover areas and forms of effect that preset frameworks do not include. This separation, I argue, provides a helpful perspective to understanding different tools available for practitioners. Of course, the separation of the tools does not imply only one should be used at a time: in a case-by-case basis, practitioners must choose between framework-based interpretation or freeform ideation, or use their combination, as they perform interpretation of effects.

2.2.2 Drivers of futures knowledge interpretation

After exploring what foresight interpretation is and *how* is it performed from the perspectives of theory and empirical evidence in futures and organizational studies, the focus turns to discussing *why* is interpretation performed the way it is. What affects the nature and style of interpretation, based on existing understanding of theory and practice?

When answering this question, I first consider the purpose and objectives of futures interpretation and how it is measured. My logic is that the reasons why interpretation is performed will determine its nature and content in part, as does the perception and opinion of what constitutes ‘successful’ or ‘valuable’ interpretation. As the context of foresight and interpretation in this thesis is corporate strategy and strategy formulation, purposes and objectives of corporate strategy formulation affect those of interpretation, but I explore this perspective in detail in chapter 2.3 (*Strategizing*). However, given that futures knowledge interpretation is a part of foresight creation and utilization, understanding why foresight is created and how ‘good’ foresight is evaluated in corporate settings can provide insight into what makes ‘good’ or ‘ideal’ futures knowledge interpretation.

2.2.2.1 Purpose and intended use of interpretation

The general purposes, objectives and measurement of foresight have been extensively discussed in academic futures studies literature (see e.g. Bell 1997, Hines 2003, Piirainen, Gonzales & Bragge 2012, van der Steen and van Twist 2012, Rijkens-Klomp 2012,

Rohrbeck 2012, Rohrbeck and Schwarz 2013). In a corporate setting, van der Heijden (2005, 160) argues that the first and probably the most critical question for scenario planners and foresighters is determine the purpose of foresight: why are we doing it? The intended uses of foresight could be summarized in three main areas: *increasing awareness of external change*, *problem-solving* and *problem-finding* (Hines 2003, 32). Interpretation, when framed as answering the question “what does the futures uncertainty mean for our company”, is loaded with the objectives of raising awareness and increasing management understanding. However, such a purpose is vague, and while it can help produce valuable insights in itself, it is disconnected from any specific, pre-existing need of the organization. As discussed previously, questions of strategic decision-making that explicitly require contextualization can act as a launch pad for corporate foresight creation, e.g. how will a new market evolve or how customer needs change in the future (see e.g. Rohrbeck 2012, Heger and Rohrbeck 2012, Ruff 2015) and what are their implications to our current and future business. This represents the *problem-solving* value of foresight interpretation. Being practice-oriented than academic, foresight done for corporate strategy-making is generally case-specific and its purposes thus vary based on corporate objectives. However, there is also the art of *problem-finding* which involves asking the right (open-ended) questions about the futures of the company and its environment instead of focusing on finding the right solutions to pre-determined problems (Hines 2003, 32). Here, interpretation is key as it translates nice-to-know knowledge about futures into unexpected insights about the implications of futures to an organization.

Furthermore, purposes and intended uses can be also examined from organizational learning perspective, as discussed in chapter 2.2.1.3: the aim can be to reshape mental models or provide ‘answers’ (e.g. van der Heijden 20005, Rohrbeck 2012, Heger and Rohrbeck 2012, Ruff 2015), or in other words, to achieve either double or single-loop learning (Argyris 1977; 1999). In addition, the aim can be to build necessary decision-making coherence and consensus among individuals or instead to encourage equivocality of views and breadth of action options (e.g. Crossan et al. 1999).

Of course, the purpose of interpretation could also be examined from the perspective of the types of implications to the business (i.e. effects; opportunities, threats and positives, or consequences to organizational resilience), as I note in chapter 2.2.3 (*Outcomes of futures knowledge interpretation*). However, performing interpretation to uncover certain types of implications does not exclude performing it for different intended uses. Quite oppositely, each intended use area can include any type of implication, and vice versa. Answering “why are we doing it” does not necessarily determine the answer to the question “what are we getting out of it”!

2.2.2.2 *Quality and utility of interpretation*

If desired outcomes of foresight and interpretation are case-specific or even unexpectedly found, but one wants to understand what makes ‘ideal’ interpretation, could one determine general yet measurable aspects in the nature and content of foresight and interpretation work? Piirainen et al. (2012) propose a comprehensive framework for evaluating foresight. The main dimensions regard the utility of foresight, how it is delivered, its technical quality and ethicality. These dimensions are observed from the perspectives of inputs to the foresight process, the process activities, its outputs and its sustained impact. It is worth noting that the measurement framework implies that foresight is an activity performed through projects and not a capability. Regardless, their model (that includes 66 individual metrics) has at least three questions that I argue can be used to help define generally ‘valuable’ futures knowledge interpretation. First, is the interpretation of the analysis *plausible* and does it *allow for further prospection*, in other words, does the contextualization of environmental uncertainty allow for imagining sensible strategic options for the organization or can the contextualization logically lead to option definition? Second, have the often-hidden *assumptions* that limit sense-making and imagination been *identified*? Third, does the interpretation *inspire trust* among stakeholders and decision-makers? These questions should help practitioners measure their interpretation work quality, but they do not provide a comprehensive framework. Complementary perspectives are required.

Rollwagen, Hofmann and Schneider (2008) present a practitioner-based point of view on delivering impactful foresight results and suggest criteria for foresight’s success in business. These include a number of content and process related principles, of which several are relevant for measuring and enabling successful foresight interpretation. The first criterion for content is the *plausibility* of futures knowledge in the eyes of foresight users. Rollwagen et al. argue plausibility requires rigorous and systematic scrutiny of uncertainty, even if it becomes time-consuming. To achieve plausibility, they give following recommendations:

- 1) look for quantitative data such as indicators to support the conclusions in foresight statements;
- 2) establish internal consistency of futures knowledge with systematic cross-checking of results, e.g. using cross-impact matrices;
- 3) use ‘real world’ cases close to the users’ expertise areas as convincing examples of futures knowledge and its relevance; and
- 4) present the gradual materialization of change and its effects to foresight users by specifying timelines and paths instead of presenting changes as a simplistic on/off, unrealized/realized dichotomy

The second criterion is *convenience* and how futures knowledge should be delivered in easily understandable way, e.g. by using language and terminology that the organization uses in their daily operations. The third is *inspiration* and how futures knowledge should have novelty value and inspire frame-breaking thinking. Final fourth criterion for foresight content is using *appropriate time horizons*: even if the organization tends to view its operations only in short term, foresight practitioners should cover short, medium and long-term changes and uncertainties to understand their business-relevant implications more fully and to be able to challenge the present logics of the organization. Put together, futures knowledge that is plausible, convenient, inspiring and uses appropriate time horizons should provide the best possible soil for fruitful interpretation.

As for process-related criteria, Rollwagen et al. offer seven principles. Delivery of futures knowledge should be *structured*, e.g. by using conceptual tools such as mental maps, to allow for transparent examination of the logic and assumptions that produced the results. Impactful foresight requires *highest possible level of interaction* between foresight practitioners and rest of the organization, both through process integration and organically. This way foresight ‘comes alive’ in the organization and practitioners have constant awareness of the needs of the decision-makers and can deliver futures knowledge that has strategic fit. Furthermore, networking is required to *identify and include individuals on the business side* to act as promoters of futures knowledge and foresight activities. Networking is also required for *ideational entrepreneurship*, where foresight practitioners market their ideas in and outside the organization so that people become interested in futures knowledge and are integrated into foresight work. *Communication of futures knowledge should be innovative* in two ways. First, despite using language that the organization easily understands, foresighters should use new expressions and words to describe external change and their implications. This way, knowledge gains stickiness among people and provokes and reframes thinking. Second, in order to be more memorable, futures knowledge should be communicated in novel forms and mediums, e.g. using sounds and visuals, blogs, videos, virtual reality etc. instead of relying on written reports. Practitioners must also remain *persistent* even if business executives seem uninterested in futures knowledge, and they must *synchronize* their work with the schedules and calendars of the organization so the insights support business activities when they are most needed. In summary, delivery of futures knowledge in accordance with above seven principles should ideally enable successful interpretation.

While Rollwagen et al. offer means to develop the groundwork for foresight interpretation, Van der Steen & Van Twist (2012) provide a deeper, complementary view of the concept of fit between decision-making and foresight. In practice, they argue, while decision-makers desire clarity, simplicity and solutions, foresight instead delivers complexity and reframes and uncovers problems. Furthermore, they argue that (public) policy-making is influenced by various political and organizational cues, such as tacit

knowledge, expectations, norms, assumptions, and ambitions that people observe and adhere to as they make policy. Foresight often lacks *appropriateness* to the reality of policymaking and its complex, mutually influencing organizational and political processes and thus is disconnected with said reality. In response, van der Steen and van Twist (2012, 482) suggest that foresight should answer to political cues: it should be e.g. helping win political battles, putting issues to political agenda, and identifying potential political risks. They argue it should also fit with organizational cues: for example it should amend or falsify existing policy theory, provide arguments for policy selection, and allow reflection on and reframe existing policy theory and organizational paths. Here, foresight is instrumental: it is measured by its value-in-use and by its connectivity and ‘fit’ to decision-making, however pragmatic and political both literally and figuratively. In my view, the implications of this to futures knowledge interpretation are stark. If companies’ strategizing is affected by similar cues, interpretation naturally should not be considered to be a simple exercise in cognition and causal and systemic thinking, rather, it should adhere to whatever political and organizational cues exist in the company. Paradoxically while it should be used to reframe existing theories and beliefs, identify risks and expand thinking, to be useful, interpretation should fit with the company’s political and organizational cues. The emancipating activity itself becomes very much bound and directed by these cues.

As a final example of applying foresight measurement to understanding ideal foresight interpretation, Rijkens-Klomp (2012) argues that foresight measurement should also consider the experienced added value for foresight users that is driven by their motives. In addition to raising awareness of implications of future uncertainties, manager use foresight to *set the agenda for strategic decision-making* on one hand and on the other to *increase rational thinking and transparency of the assumptions* that affect strategic option formulation and decision-making. Following Rijkens-Klomp’s findings, I argue ‘good’ foresight interpretation should then help determine the agenda by informing the discussion about which uncertainties and their implications require response(s) or continued monitoring. Furthermore, just as Rollwagen et al. (2008, 342) call for structured ways of working in generating and delivering foresight results, as a sense-making exercise that includes causal and systemic thinking and strives for shared understanding, foresight interpretation should increase the rationality and transparency of decision-makers’ cognition in the process.

In this chapter I’ve reviewed different academic contributions to the measurement of foresight in an attempt to uncover drivers that impact how futures knowledge interpretation is performed. My logic here is that measurement highlights critical and valuable characteristics of the interpretation activity. While ‘valuable’ and ‘ideal’ futures knowledge interpretation and contextualization is ultimately defined by the case-specific objectives of corporate strategizing, in Table 3 below I provide a summary of its ideal

qualities identified by research, when it is primarily understood as an activity and not as an output (i.e. interpretations) for corporate decision-making. I propose such metrics can serve as a mirror to reflect how interpretation succeeds and how to develop it in practice.

Table 3. Desirable qualities of futures knowledge interpretation as metrics for success and performance development

| | |
|--|---|
| ‘Fit for purpose’: business need driven | e.g. Schwartz 1998, Rohrbeck 2012 |
| Plausibility of the futures knowledge which the provides the basis for interpretation | Rollwagen et al. 2008 |
| High level of convenience and innovation in and the ability to inspire of its communication to decision-makers | Rollwagen et al. 2008 |
| Level of analytical structure of the futures knowledge and the interpretation | Rollwagen et al. 2008 |
| Extent of interaction between foresighters and decision-makers during interpretation | Rollwagen et al. 2008 |
| Support in imagining sensible strategic options | Piirainen et al. 2012 |
| Ability to inspire trust among stakeholders | Piirainen et al. 2012 |
| Ability to increase stakeholder rationality and transparency and identify their oft-hidden assumptions | Rijkens-Klomp 2012, Piirainen et al. 2012 |
| ‘Fit’ with political and organizational cues and processes – the social boundaries – of decision-making | Van der Steen & Van Twist 2012 |

2.2.2.3 Barriers and enablers of interpretation

Notions of social boundaries raise the question what individual and structural enablers and barriers relate to and affect foresight and its interpretation. I argue understanding these is important because it helps uncover reasons why contextualizing, prospective interpretation is performed the way it is and provides means to determine how to improve the chances to succeeding in interpretation in practice. In this chapter, I explore these individual and structural factors that earlier academic literature has identified. Table 4 below summarizes my findings. (Please note that some of the findings are discussed in previous chapters)

Table 4. Summary of systemic factors (enablers or barriers) affecting futures knowledge interpretation

| | |
|--|--|
| Access to information | Tapinos and Pyper 2018 |
| Available technologies for communication | Sandberg and Tsoukas 2014 |
| Cognitive biases, incl. Bounded rationality, attribute framing, risky framing, overconfidence, creeping determinism, groupthink & peer pressure, confirmation bias | Meissner and Wulf 2013, Day and Schoemaker 2004, Mackay and McKiernan 2004 |
| Emotions and issues of self-image, incl. perceptions of competence, strength, and long-term security | e.g. Siilasmaa and Fredman 2018, Wack 1985, Schwartz 2018 |
| Existing frames of thinking in the organization | e.g. Weick 1995, Day and Schomaker 2004, Hines 2003 |
| Foresight's correct 'distance to business' | Hines and Gold 2013 |
| Flatness/rigidness of hierarchies of management | Peter and Jarratt 2015 |
| Incentivization of futures thinking | Rohrbeck 2010 |
| Management's curiosity towards the periphery | Rohrbeck 2010 |
| Management's need for solutions vs. uncovering options | Hines 2003 |
| Overall mood in the company, incl. crisis, devolution of cognition and scapegoating | Pergel and Psychogios 2013, Siilasmaa and Fredman 2018 |
| Politics and power dynamics among stakeholders | e.g. Sandberg and Tsoukas 2014 |
| Providing management with uncertainty and possibilities vs. certainty, risk and probabilities (management dislike for ambiguity) | Day and Schoemaker 2004, Verity 2003 |
| The openness to new ideas in the organizational culture | Peter and Jarratt 2015, Burt et al 2017 |
| Time, money & stakeholder attention | Verity 2003, Raspin and Terjesen 2007, Hines and Gold 2015 |
| Top management encouragement and sponsorship | Peter and Jarratt 2015 |

Like all activities in an organizational context, foresight and subsequently futures knowledge interpretation compete for, and are often in short supply of, key organizational resources, namely time, money and attention (Verity 2003, 192; Raspin and Terjesen 2007, 120; Hines and Gold 2015, 103). When foresight is applied and interpretation is performed, they are challenged by a number of organizational and individual, behavioral and attitudinal hindrances as indicated by a number of scholars and practitioners.

Rohrbeck (2010, 157) points out three organizational barriers to applying foresight in strategic management and decision-making: First, the nature of futures knowledge is highly uncertain, whereas top management often wants empirical evidence and data-based, accurate forecasts and probabilities (Verity 2003, 193), leading to situations where the utility of futures knowledge is questioned from the get-go. This can result in that interpretation is never made. Second, managers are expected to make fact-based decisions, whereas futures knowledge uncovers possibilities and its interpretation increases the number of strategy options available to the company. Instead of having one common view, having multiple views of futures and potential strategies may reduce clarity and commitment to strategy choices and thus threaten coherence among senior management and the entire organization (Raspin and Terjesen 2007, 121). Furthermore, for managers, having alternatives instead of determined best courses of actions, and admitting uncertainty instead of having clarity can be a sign of incompetence in decision-making (Wack 1985, 139-140). Allowing equivocality and uncertainty when interpreting the organizational implications of evolving environmental factors can even be identified as a personal weakness among corporate top management teams (Siilasmaa and Fredman 2018, 81). Third and last, futures knowledge is seen as just another input and type of information, and its importance is overlooked (Rohrbeck 2011, 157).

Academic literature provides a number of psychological hurdles to interpretation. Interpretation is an exercise in identity construction (Weick et al. 2005, 416), both at personal and organizational level. As futures knowledge is interpreted in organizations, people can view it as intangible, abstract and even threatening to themselves (Hines and Gold 2015, 103). People's self-images are a basis for their performance and professional success, so if futures knowledge and its implication interpretations challenge their self-images, the contradiction can lead to resistance (Schwartz 1998, 236) and anxiety about whether or not one can survive and thrive in the future. When an individual or an organization strives to learn about futures with considerable implications to themselves, other negative psychological hurdles can include simple denial of presented knowledge, disregard of information sources which are not considered to be within the organization and over-reliance on (perceived) expertise within the organization (Pergel and Psychogios 2013, 194). Furthermore, when an organization is facing a potential crisis, analytical interpretation and response decision-making can be disrupted, leading to failures in identifying real threats and their implications, and the discussion can devolve into blaming and scapegoating (Siilasmaa and Fredman 2018, 83-103; Pergel and Psychogios 2013, 194).

In addition to cultural and psychological barriers, interpretation of futures knowledge, especially its quality, can be affected by a multitude of different cognitive biases (Bootz 2010, 1589). Meissner and Wulf (2013, 802) define cognitive biases as "deviations from rationality in human thinking that result from specific heuristics used for information pro-

cessing - - that lead to suboptimal decisions, which in turn have a negative effect on performance". When discussing futures thinking related biases, they highlight the framing bias or framing effect that "describes a reversal of preferences depending on the way in which a decision problem is presented" (ibid., 802). They discuss two types of framing bias: attribute framing, where the way a situation or a decision is framed (positively or negatively) affects the whether or not one takes action, and risky choice framing, where framing that focuses on gains increases risk aversion, and focus on losses increases risk seeking to avoid losses. To a rational decision-maker, the way situations and options are presented should not matter (Meissner and Wulf 2013, 802-3). Yet, I note that if all decision-makers suffer from bounded rationality, interpretations are never free of framing or risky choice biases. To the contrary, as seen before, sense-giving is an aspect of interpretation and it explicitly relies on mechanisms of framing and reframing. Therefore, I propose that absolute rationality might not be the objective, but rather having multiple, competing and complementing frames and interpretations.

Day and Schoemaker (2004, 138) also highlight behavioral and cognitive blinders that affect how individuals interpret futures knowledge, including mental filters, dislike for ambiguity, overconfidence, confirmation bias or penchant for confirming as opposed to disconfirming evidence, and groupthink. When thinking about futures, having multiple individuals provide inputs, interpret implications and craft narratives yields improved, wider understanding, yet at the same time peer pressure can make individuals conform their cognition style to fit with the that of the organizational culture (Verity 2003, 194) and thus facilitate groupthink. When interpreting implications, confirmation bias is harmful as it confounds rationality and limits thinking of alternative explanations while providing potentially false sense of security in one's own interpretations. Overconfidence bias, or 'hindsight bias', describes how believing strongly in one 'truth' of the future decreases the individual's ability to argue for other alternatives (Mackay and McKiernan 2004, 70). When interpreting, such a bias can make decision-makers jump to conclusions and disregard analysis of effect uncertainties in favor of response uncertainties.

Along with hindsight bias, Mackay and McKiernan (2004, 71) point out another "foresightful thinking flaw": creeping determinism. This refers to biased causal thinking of a chain of events that leads an individual to believe 'it could not have gone any other way' (Mackay and McKiernan 2004, 71). In other words, the individual dismisses alternative paths that might have emerged, or alternative ways certain events might have unfolded. Response-limiting path dependencies that might not actually exist are identified, or the relevance and rigidity of other path dependencies are overstated. Creeping determinism shows why narratives of the past and future are so powerful – once information is integrated into a plausible narrative, it is difficult to discount the information should further contradictory information emerge. I suggest that while creeping determinism is particu-

larly notable to interpreting environmental state uncertainties, the bias poses a risk to effect interpretation as well, because a misguided narrative of the future provides it with a weak, misleading knowledge basis. Furthermore, I suggest creeping determinism can interfere with both effect interpretation and strategic decision-making by sidelining novel futures knowledge and interpretations. If strategic decision-making in general and driving change in particular requires the ability to connect the future with the present concerns and historical paths of the organization (Kaplan and Orlikowski 2013, 965), creeping determinism excludes the imagining of alternative accounts of histories and subsequently hinders the organization's ability to build cohesive narratives of the past, present and future that could argue for new strategies and change.

As seen above, many different organizational-cultural, psychological and emotional barriers along with various cognitive biases hinder successful futures knowledge interpretation. If analytical interpreting and strategizing – defining effect implications and evaluating and defining response options – is time-constrained, managers tend to “rush into actions based on simplification of the complex situation and be unaware of the unintended consequences of such actions” (Burt et al 2017, 23). Instead, managers should be more ‘disposed to openness’ (ibid., 22-23). Openness disposition “refers to the tendency to seek either to hold open ambiguity, complexity and uncertainty, or look for closure, simplification and surety when engaging in strategic conversations” (ibid., 16) and helps avoid “premature rejection of options and requires a managerial mind-set that understands that knowledge arises out of interaction rather than on the basis of preconception and pre-planning.” (ibid., 23). By engaging in scenario conversations, Burt et al. (2017, 23) found that managers become “more disposed towards holding multiple views, remaining more fluid about timescales and being open to multiple modes of responding to insights yielded by strategic dialogue with colleagues”. Of course, such conversations where interpretation also occurs and where openness disposition is cultivated, cannot take place if managers do not have the necessary time to share their views! This highlights how important reserving the necessary time, means and attention is for successful futures thinking and contextualization.

How can one mitigate the challenges posed by different organizational-cultural, psychological and emotional barriers along with various cognitive biases, and cultivate an openness disposition? Based on a review of relevant academic literature in this and previous chapters, I suggest that practitioners can acquire and utilize several different skills and capabilities, which Table 5 summarizes. (Please note that the table includes findings discussed in earlier chapters as well.)

Table 5. Summary of the means and enabling capabilities of futures knowledge interpretation

| | |
|--|---|
| Ability to feed others' curiosity | Hines 2003 |
| Articulation skills, storytelling | e.g. van der Heijden 2005, Miller 2007, Schwartz 1998 |
| Cognizance of stakeholder values and views | e.g. van der Heijden 2005 |
| Conversational skills | e.g. Burt et al 2017, Ruff 2005, Schwartz 1998 |
| Counter-factual reasoning | Mackay & McKiernan 2004 |
| Critical thinking and self-reflection | e.g. Henderson 2002 |
| Fluency in the language of colleagues | e.g. Rollwagen et al. 2008 |
| 'Hiding the machinery' of foresight | Hammoud & Nash 2014 |
| Individual's experience and 'disciplined imagination' or 'rigorous imagining' | Tapinos & Pyper 2018, Miller 2007 |
| Natural curiosity about a broad range of issues and sensitivity to change | Savage & Sales 2008, Miller 2007 |
| Networking internally and externally | Ruff 2005, Peter & Jarratt 2015, Rollwagen et al. 2008, Hines 2003, Rohrbeck 2010 |
| Openness: using multiple sources of information receptively, multiple concepts when developing ideas and sense-making, viewing situations from multiple perspectives and considering alternative action options openly | e.g. Montuori 2000, Burt at al. 2017 |
| Positioning of foresight and foresighters in organizations | Hines and Gold 2013 |
| Reframing to manage negative emotions and turning attention to opportunities | Savage & Sales 2008 |
| Systems thinking | Savage and Sales 2008, Montuori 2000, Tapinos & Pyper 2018 |

Having decision-makers engaged in structured foresight is a first step in ensuring successful interpretation. The ability to engage decision-makers is affected among others by how the individuals performing interpretation are positioned in the company as foresight practitioners (Hines 2003, 23-24). Positioning refers to how these practitioners and their work are viewed by others in the organization, and what kind of approach they assume

when presenting futures knowledge to others. For example, they could be politically savvy insiders who are well-networked internally and who have evolved into futurists due to their own interests, or are can be ‘inside-outsiders’, employees who are curious and externally networked and strive to challenge thinking and mental models in the company (Hines 2003, 23-24). Positioning affects the tactics and means practitioners can use to engage their colleagues and decision-makers into futures thinking and strategic conversations, as does how institutionalized foresight is in the organization and what is the foresight practitioner’s ‘distance to business’ (Hines and Gold 2013, 102). Distances to business is defined as how involved foresight practitioners are with the daily operations of the company, e.g. are they integrated into business units or functions with roles that demand a major share of their time and attention, or are they independent of line business, not committed to the interests of any particular unit or function (Hines and Gold 2013, 102). Institutionalization refers to how embedded foresight, and subsequently moments of interpretation, are into the organizational structure: are they in the management’s regular meeting agendas, is foresight designed to feed insight into other company processes such as R&D and marketing, and are there employees whose role is to perform foresight and facilitate interpretation (Hines and Gold 2013, 102).

In terms of engaging decision-makers to structured foresight and interpretation, I argue that there is no one best positioning strategy, or distance to business. Rather, context matters: While closeness to business might make practitioners experts on the substance of the business and the industry, in strategic conversations covering business units and functions beyond those where practitioners are embedded, their closeness might be considered a source of bias to people from other units. And while distance to business might provide objectivity to foresighters and facilitators, it creates a knowledge gap with the needs and realities of business that can particularly hurt interpretation efforts.

To manage the dilemma of proper distance, Ruff (2015, 46) suggests practitioners who work inside the companies to participate in parallel foresight projects serving different internal customers. This way, they can maintain intellectual and professional flexibility and share best practices and insights across projects. While positioned as an independent team of experts, Ruff (2015, 46) also suggests practitioners to maintain close relationships with internal customers to build their industry substance expertise. Yet, the dilemma of proper positioning is not to say foresight should not be institutionalized in companies. As part of developing the dynamic capabilities required to create sustainable competitive advantage, Teece (2007, 1323) recommends embedding scanning, interpretative and creative processes that make up foresight inside the organization, rather than relying on the cognitive and creative skills of a few individuals. Beyond building essential processes, ways of working and structures, enabling valuable foresight and interpretation in organizations requires a particular culture (Rohrbeck 2011, 79-81), where individuals are both motivated and able to share futures knowledge internally and to listen to external sources,

to diffuse ideas and insights informally (*ibid.*, 79-81). In such a culture, top management is curious towards the periphery of their business environment and they are willing to test and challenge their assumptions (*ibid.*, 79-81). Key in building such a culture and institutionalizing foresight and interpretation is incentivization, i.e., tangible and intangible rewards provided by the organization to individuals that encourage and motivate futures thinking, environmental scanning and creative futures knowledge contextualization.

Sandberg and Tsoukas (2014) critically review a substantial body of sense-making literature and list major constituents of the sense-making perspective and identify a number of situational factors that can affect sense-making either positively or negatively. First, the social context in which sense-making occurs “binds people to actions that they must justify ... affects the saliency of information, and ... provides the norms and expectations that constrain explanations” (Weick 1995, 53). Second, language, including discourse, narratives, rhetoric etc. is both a tool for and a factor of sense-making. The other factors are the identities of individuals in organizations, cognitive frames, emotions, politics and power dynamics in the organization, and technology that is used for knowledge management and communication within the organization. While their review provides no practical insights for developing futures knowledge interpretation, it offers practitioners a framework for piecing together a bigger picture of various systemic factors affecting interpretation and its success.

Individuals who perform foresight and interpretation successfully have certain enabling meta-skills and characteristics. To be able to adjust to change, manage environmental uncertainty and thus ensure organizational resilience, organizations require ‘conceptually complex’ managers with sharp anticipatory and interpretive skills (Montuori 2000, 69; Savage and Sales 2008, 28-29). Such managers use multiple sources of information receptively, use multiple concepts when developing ideas and sense-making, view situations from multiple perspectives and consider alternative action options openly (Montuori 2000, 69). To build sharp anticipatory and interpretive skills, three competences should be developed: sensing the future, whole systems thinking, and reframing (Savage and Sales 2008, 28-31; Montuori 2000, 68-69). Future-sensing requires natural curiosity about a broad range of issues and having constant open dialogue about ideas and strategic alternatives that integrates futures thinking into the organization’s method of operation (Savage and Sales 2008, 31). Systems thinking as a mechanism for sense-making and interpretation focuses the attention to understanding wholes and mutually affecting relationships between factors that make up the system instead of individual factors and can illuminate driving forces and their effects to the organization that might not be identified via causal thinking (*ibid.*, 31; Montuori 2000, 68). Finally, leaders use reframing to manage negative emotions – fear, apathy and cynicism about the future and its implications – and turn attention and attitudes towards unperceived opportunities for innovation and action (Savage and Sales 2008, 32). Such leaders also are strongly networked to insightful

individuals inside and outside the organization and this way expand their issue-broad and substance-deep knowledge base of their external and internal environments (Rohrbeck 2011, 77-78). Management's capability for futures thinking can also be referred as futures literacy (Miller 2007). Being futures literate involves having the ability to be sensitive to external change over time and to articulate explicitly one's assumptions about change (how and why is it happening) and being proficient in 'rigorous imagining', i.e. being logically consistent in building futures knowledge but not letting preference and probability constrain the imagining of possibilities (ibid., 348).

In addition to developing a number of meta-skills and characteristics, individuals performing futures knowledge interpretation can utilize supporting means and techniques to improve its quality and process.

First, interpretation benefits from dialogue and participation with others. These decrease bounded rationality among individuals and help create shared mental models and language which to use in framing and understand issues in the organizational collective (Chermack 2004, 304-5).

Second, individuals should be cognizant of their dialogue partners and how they think and what they value. Van der Heijden (2005, 163) suggests a list of questions to consider when preparing to convene with decision-makers, including for example:

- Are they analytically and quantitatively oriented? Do they come from an engineering culture? Or are they intuitive and qualitative, with a background possibly in history, philosophy or psychology?
- Are they optimists or anxiety ridden?
- Are they linear or systems thinkers? Do they think in terms of events following each other in a sequence, or do they look for causal interlinkages?

To a foresight practitioner, such understanding helps to reframe management thinking and facilitate constructive dialogue about implications of external uncertainty.

Third, they should feed the decision-maker's appetite for curiosity for futures knowledge during the dialogue, especially with decision-makers inexperienced with futures thinking (Hines 2003, 30). Here, simplifications of reality and simple foresight tools should be utilized initially when presenting futures knowledge and framing and reframing issues. Only as further follow-up questions arise and management begins to appreciate the complexity that the knowledge presents, more complex foresight and interpretation tools and approaches should be used (Hines 2003, 30).

Fourth and final, to combat cognitive biases, namely overconfidence and creeping determinism, that hinder interpretation and identification of outcomes and implications of uncertain factors, practitioners can use counter-factual reasoning. When engaging in counter-factual reasoning, individuals consider alternatives to an outcome by asking what-if and if-then questions, imagining both positive (comparatively better outcome) and negative (worse) counter-factuals to outcomes, and elaborating the reasons for their

views (Mackay and McKiernan 2004, 72-3). As the purpose is to prevent hindsight bias and creeping determinism, counter-factuals are used to “reduce the causal potency of antecedents leading to an outcome” (ibid., 72) Counter-factual thinking should be deliberate, self-conscious and rigorous and expose ‘comfortable, stereotyped’ thinking (ibid., 74). Here, analogies to other past or present outcomes used for argumentation and persuasion are particularly useful for influencing thinking and perceptions (ibid., 74).

2.2.3 *Outcomes of futures knowledge interpretation*

In the review of existing literature, I’ve examined the theory and empirical evidence about interpretation as a part of foresight, sense-making and organizational learning. I’ve discussed futures knowledge interpretation both as an activity and a capability, and I’ve explored the existing literature of individual and systemic enablers and barriers to successful interpretation in an attempt to provide a basis for understanding the wider systemic whole of the activity and capability. At this point it is valuable to ask: what types of implications to business should managers and foresight practitioners aim to uncover through interpretation, and more generally, what are the desired outcomes futures knowledge interpretation? What are the practical outcomes that managers expect to get when they ask “what does this mean for our business”?

Opportunities and threats, pointed out by SWOT analyses and similar frameworks, are implications that constitute a possible *effect* on an organization and call the organization to action if they are deemed relevant to the organization’s objectives. Issues only become opportunities or threats when applied to the context of an organization, so determining them as such implies that their immediate effect is recognized and thus contextualization has occurred. For example, for a meat producer, the trend of decreasing pork consumption constitutes a threat to its pork sales and production. However, focusing on opportunities and threats alone does not allow for comprehensive understanding of the effects of change, because opportunities and threats by their nature imply that a response is required. All contextualized issues are relevant if they either have a positive or negative effect to an organization, since logically no effect implies no relevance, or put differently, an issue is meaningful for the organization. Therefore, all contextualized issues can be defined as opportunities, threats or, what I suggest, *positives*. While an issue might be seen as an opportunity to the organization, by definition it must be seized. This in turn implies that the organization must be proactive. Threats can realize themselves and their impact whether one acts or not. However, *positives* do not imply proactiveness since the benefits can manifest without action by the organization. For example, the increasing consumption of pork might present the meat producer with the opportunity to increase their revenues, but it also has the (quite) possible positive effect where the producer’s current levels of

revenue are secured in the future and taking action or revising strategy might not be necessary. Yet, this positive might hide a risk to the meat producer: increasing demand might attract new competitors that challenge the organic business growth. *Thus presumed effect, not need for action, is what ultimately determines the relevance of an issue for an organization*, especially if action is assumed to imply a change to what the organization is, to its existence and how it operates.

Interpretations of the opportunities, threats and positives for an organization provide understanding of the resilience of the organization and its chosen strategies. However, it can also provide understanding of *future* resilience and robustness of future strategies, namely by what e.g. Schwartz (1998, 192) and Ralston and Wilson (2006, 151) refer to as ‘rehearsing the future’ and ‘using the futures as test beds’ for strategies and strategy alternatives, respectively. In such cases, the effects of futures to one or many imagined states of the company can be speculated upon.

Following the environmental uncertainty logic presented by Milliken (1987), in addition to effects, another type of implication that futures knowledge interpretation can provide is a *response* implication. Here, evaluating the relationship of strategy alternatives and potential futures not only provides understanding of the resilience and robustness of the company and/or its strategy alternatives in the future, but also of the outcomes and consequences of the strategies, i.e. responses, to the company itself *and* to the external macro- and micro-environment. Even though response implications are based on evaluations of strategy and are not about interpreting futures knowledge per se, response implications require a context of the futures, or understanding of the futures, to be justifiable. In other words, strategy alternatives cannot be evaluated without futures knowledge and how futures influence a given alternative. In conclusion, effect and response implications are equally relevant in the framing of this thesis as both can be scrutinized when answering the question “what does this futures knowledge mean for our business”.

In addition to immediate practical and tangible outcomes such as *intended uses of interpretation* and different *types of implications* discussed above, should the outcomes be understood in other ways as well? What should managers and foresight practitioners aim to achieve with interpretation?

Table 6. Outcomes of interpretation

| The products: Types of implications produced | |
|--|--|
| Effect implications: Opportunities, threats and positives; understanding of current and future resilience of the organization and its strategy | e.g. Day and Schoemaker 2004, 2005, Ralston & Wilson 2006 |
| Response implications: assessment of strategic options and their robustness | e.g. Ralston & Wilson 2006, van der Heijden 2005, Lehr et al. 2017 |
| Outcomes and benefits | |
| Learning and unlearning | e.g. Crossan et al. 1999, van der Heijden 2005, Huber 1991 |
| Challenged cognitive frames | e.g. Day and Schoemaker 2004, Hines 2003 |
| Shared understanding | e.g. Daft & Weick 1984, Crossan et al. 1999, Weick 1995, Ramirez et al. 2013 |
| Coalescence to one view or expanded horizons of many views | Crossan et al. 1999, Weick 1995 |

When answering this question, academic literature suggests multiple outcomes that go beyond the practically valuable products of interpretation. These are shown in Table 6 above together with types of implications interpretation produces. While it should lead to *decision-making* and *action*, many scholars argue that its primary contributions are *shared understandings* of issues and concepts. Weick however recommends practitioners to “be cautious about overestimating the extent to which social sense-making means simply shared understanding.” (Weick 1995, 42). Some argue that individuals should *learn* while they perform interpretation, while others suggest that its desired outcome are *renewed mental models*. Interestingly, and potentially paradoxically, there are those who argue that interpretation as a process should generate *multiple interpretations* by facilitating framing and reframing, even though some *coherence* and *consensus* are required before managers can progress to decision-making. However, could maintaining multiple (even contradictory) frames and interpretations of state and effect uncertainties be defined as consensus, or is establishing one particular shared frame and interpretation required? In my view, this dilemma of coherence and clarity vs. variety and ambiguity is particularly salient in the context of strategizing, where the managers of a company must define actions options, interpret and assess response uncertainties and choose the best courses of action.

2.2.4 *Futures knowledge interpretation as an activity and a capability*

As a conclusion to this section, I define to *futures knowledge interpretation* primarily as the human *activity* that contextualizes futures knowledge about environmental state uncertainty for the benefit of knowledge users (Horton 1999, 7). Futures knowledge interpretation does this by creating understanding (in the literal Ackoffian sense) of effect uncertainties (Milliken 1987, 137; Vecchiato and Roveda 2010, 1527) as far as they are connected with and based upon related state uncertainties. Interpretation in the context of futures thinking can also be used for creating understanding of response uncertainty that concerns the effects and outcomes of strategic actions taken by an organization (Milliken 1987, 137-8; Vecchiato and Roveda 2010, 1531-2). When defining interpretation more generally, it is about individuals linking external cues with personal cognitive structures (Weick 1995, 4) and translating events, giving interpretations to others, and developing shared understandings and conceptual schemes (Daft & Weick 1984, 286; Gioia & Chitipedi 1991, 444). It is also a conscious process of learning where intuitions as products of individual interpretation are explained to one's self and others (Crossan et al. 1999, 528).

However, is the definition of interpretation as an activity sufficient? I've examined the concept of futures knowledge interpretation from the perspectives of foresight, sense-making and organizational learning. These all include the concept of interpretation as part of their processes, but these process descriptions are generally conceptual and abstract. The lack of comprehensive understanding of futures knowledge interpretation as a structured, practical process in existing literature poses the question: is it futile to try to describe interpretation as a formal, rigorous process, and is it simply applied intuition? Or should interpretation be viewed as a capability rather than activity? Would such a perspective yield more insights on how to interpret futures knowledge in a way that creates value for strategizing? And would such a perspective be more of utility when investigating how to improve interpretation in companies?

The capability perspective in corporate management and strategy development has been extensively discussed in the field of management theory. It emerged from the resource-based view of companies and their competitive advantage (e.g. Barney 1991), and gained further recognition from the concept of corporate core competences (e.g. Hamel and Prahalad 1994) and the learning and emergent schools of strategic thought (e.g. Quinn 1980 and Mintzberg et al. 1998, 189). The capability perspective is used to understand how companies utilize and manage their assets to their benefit, such as to grow, compete or maintain resilience. When companies operate in *dynamic markets*, where technologies rapidly change and the behavior of stakeholders is volatile, they require particular capabilities to maintain their competitiveness, called *dynamic capabilities* (Teece et al. 1997, 1319). These are the capacities "(1) to sense and shape opportunities and threats, (2) to

seize opportunities, and (3) to maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the business enterprise's intangible and tangible assets" (Teece 2007, 1319). Because foresight by its definition is integral for sensing and shaping opportunities and threats and it enhances and combines an intangible asset, knowledge about futures, to sustain an organization's competitive advantage, it is unsurprising that many academics and practitioners of the field have referred to foresight as a capability (see e.g. Rohrbeck 2011, 2012, Rhisiart, Miller & Brooks 2015, Järvi 2019). Therefore, interpretation itself could be viewed as an aspect of a dynamic capability, or a capability. My review of existing theory around foresight, sense-making and organizational learning has provided insights about skills, practices and capabilities around successful futures interpretation. What then specifically constitutes the capability to interpret futures knowledge? What are the 'building blocks' of a capability to contextualize effects of state uncertainties and assess implications of strategic responses?

Based on review of existing theories and empirical research on necessary individual capabilities to enable futures knowledge interpretation (see chapter 2.2.2.3), I define the futures knowledge interpretation *capability* as a combination of the abilities to imagine, think critically, reason causally and think in systems. It is the capability to imagine and identify and gauge the interconnections of factors, and articulate the relationship of interconnected factors to the company and its strategic choices and communicate them in a way that facilitates in turn the imagination, critical thinking, causal reasoning and systems thinking of others. Imagination and systems thinking are required for intuition, creativity and making novel connections between concepts. Critical thinking both creates the urgency to be curious, creative and motivated to interpret and renew own assumptions, beliefs and cognitive frames and as a practice enables interpretation and renewal. Causal reasoning is required to building logical narratives of how implications emerge and responses can unfold and for sense-giving, i.e. reframing, influencing and constructing coherence among individuals.

2.3 Strategizing

Corporate strategizing or strategy making provides the context in which I study the activity and capability of futures knowledge interpretation. While the (positive) impact of foresight to strategic decision-making has been widely studied (see e.g. Rohrbeck 2012, Vecchiato 2015, Ruff 2015, Rohrbeck and Kum 2018), I am interested in the opposite: how strategizing determines and affects futures interpretation through scoping, requirements and by its way of manifestation. In the following literature review I first discuss definitions of corporate strategy and strategizing, and then move on to examining the relationship between futures knowledge interpretation and strategizing and futures knowledge

and strategy. When strategizing provides a context in which futures interpretation occurs, questions of how does strategizing affect futures interpretation and what should interpretation take into consideration to be valuable for strategizing arise, and I intend to explore these.

2.3.1 Definition of corporate strategy

It is no small task to try to exhaustively define what is strategy in the corporate context, and it is not in the scope of this thesis to attempt it. However, I pursue to understand different theoretic conceptualizations of corporate strategy and the act of making corporate strategy to conclude on a working definition of strategy and strategizing that I can operationalize in the empirical section of this thesis. My aim is also to find out if the different definitions set differing demands on foresight in general and futures knowledge interpretation in particular. In other words, if my aim is to explore futures knowledge interpretation in the context of corporate strategizing, I have to ask do the different ways and approaches to strategy and strategy making affect interpretation differently, or require different means and approaches of interpreting futures knowledge. If yes, the act of futures knowledge interpretation and the practice of interpretation capability should then take them into close account.

Mintzberg, Ahlstrand and Lampel (1998) provide an in-depth overview of major schools of thought that have defined Western-led strategy management since the end of World War II. Each of the ten schools offer a different, if not fully unique, perspective into strategy formation. Mintzberg et al. analyze each according to their root dimensions (e.g. their sources, base disciplines and intended and realized messages), basic process characteristics, and how they view change and the nature of strategy. The schools of thought Mintzberg et al. discuss are what they call design, planning, positioning, entrepreneurial, cognitive, learning, power, cultural, environmental and configuration schools. They describe the first three as being more focused on how strategy *should* be formulated, whereas the next six are more concerned with how strategy *is* formulated in reality. The tenth, configuration, is school that integrates many aspects of all the other schools and views strategy formation as transformation, where the strategy formation process takes whatever form is most suitable for the lifecycle of the company in question. French (2009) also reviews the main approaches to business strategy making, pointing out seven different schools, but classifies them into three groups according to their epistemological paradigms: to him, planning, design, positioning, resource-based and contingency have modernist epistemologies, whereas learning school has post-modernist and the emergence school has critical epistemologies. The variety of strategy schools illustrated by Mintzberg et al. and French indicates that strategy, neither as a concept, or as an activity,

has no single clear definition. For example, Mintzberg et al. (1998) list how strategy has been seen as a plan, pattern, position, perspective and ploy.

While I do not aim to apply any specific school of strategy formation or strategic thinking as a context for studying futures knowledge interpretation, but aim to conceptualize and study strategy-making in various real-life cases, it is necessary to try to identify some core characteristics of strategy formation. These are characteristics that I view to be common to all schools or that can be used to define strategy in all different real-life cases. First, Rumelt (1979, 196) argues that the focus of strategy is on the relationship between a firm and its external environment. Here, the strategy resolves the relationship by finding a fit between them (e.g. Wilson 2000, 28-9; Battistella & De Toni 2011, 1029-30; Lehr et al. 2017, 214). Second, strategy involves not only change, but also reproduction and maintenance (Jarzabkowski 2005, 5). Third and last, Chandler (1962) describes strategy as the outcome of intentional behavior: as the determination of the goals and objectives of a company, selection of actions to reach said goals and objectives, and the allocation of resources required for carrying out the actions. Similarly, direction setting for a company, resource allocation, and monitoring and control of organizational action are what Jarzabkowski (2005, 47) calls conventions of strategy or rules and guidelines for formulating and implementing strategy. Strategy is reduced to formulation and implementation also by Eisenhardt (1999, 65) who, quoting *the Economist*, sees strategy as strategic decision-making, answering the organization's questions of "where do we want to go" and "how do we get there". While some strategy schools such as emergence might deny the intent in strategy formation and downplay the significance of direction and goal setting, and learning schools might deny the linearity of strategy making such definitions imply, these characteristics are specific yet general enough, thus actionable, when scoping the concept of strategy for my purposes.

Having established a working definition of strategy for the use of the empirical study, the question remains: do the different schools pose differing demands for foresight in general and futures knowledge interpretation in particular?

2.3.2 Strategy, foresight and futures knowledge interpretation

Do different conceptualizations of strategy demand different logics or approaches to futures knowledge interpretation? Discussion in the field of corporate strategy seems to show that the questions boil down to two: *can* one perform foresight as part of strategy formation and *should* one do it.

Literature provides multiple potential reasons why adopt futures thinking as part of strategy making. For example, scrutinizing possible future opportunities allows firms to gain first-mover advantage should they attempt it (Vecchiato 2015) and to develop blue

ocean strategies and foresee and innovate markets where no competition exists (Kim & Mauborgne 2005). Companies should become 'strategically agile and practice 'strategic sensitivity' that involves anticipating change together with experimenting, using futures knowledge to gain perspective to one's own business and constantly engaging in dialogue about the need for strategic renewal (Doz and Kosonen 2010). Furthermore, futures knowledge interpretation contributes to effective strategic decision-making: better interpretation capability develops collective intuition among management teams that in turn enhances their ability to see opportunities and threats sooner and more accurately (Eisenhardt 1999, 72). Investment in futures thinking as part of strategy making can also help by stimulating strategic creativity and innovation (Peter & Jarratt 2015, 57), providing triggers that require response by the company, assisting in identifying new resources and promoting strategic discussions that can lead to strategic changes (Rohrbeck 2012, 443).

In addition, futures thinking as part of strategic decision making is shown to overcome cognitive biases. For example, based on empirical evidence, Hillman et al. (2018, 482) argue that scenario thinking mitigates the managerial bias of overt focus on positive developments and dismissal of negative possibilities. In addition, when engaging in shared sense-making of futures possibilities, people reduce their perceived uncertainty of the future (ibid., 483) However, Bukszar (1999, 107) claims that inherent biases in futures thinking decrease the perceived uncertainty of the environment more than what its actual uncertainty is, and argues that by emphasizing the role of foresight in strategizing, the role of flexibility and adaptability is overlooked. Thus, he promotes strategy as a "balance between foresight and flexibility" (ibid, 105).

However, if adaptability and flexibility are prioritized instead, and executives understand strategy-making more as emergence and retrospective learning rather than planning, design and positioning, do such executives have a role for foresight and futures knowledge interpretation? The design and positioning schools view environment as something to be analyzed and objectively understood in order to determine how to create competitive advantage, while the learning and emergence schools view the external environment with an inside-out perspective where the environment can be socially constructed and reinterpreted and the future can be created (McKiernan 2006, 10,13). This difference in perception of the external environment naturally reflects in the role of foresight and the underlying purposes for its use: the emergence school downplays anticipation of environmental implications, emphasizing reaction and reality construction instead. The emergent school emphasizes how learning through action produces the (winning) strategy instead, or at least is the method for developing strategic thinking that leads to best outcomes. In other words, trial and error leads to learning which leads to success, making the strategy 'emerge' from practice. Foresight from the outset seems more suitable for the planning/positioning schools of strategizing, because foresight is not necessary for emergence. Quite the contrary, foresight is unhelpful, even harmful if it uses resources

required elsewhere, and its role is questionable. Here, foresight, as far it pertains to attempts at planning and forecasting, should not be performed. It is useful only as far as it helps the desired future to emerge.

However, while planning and positioning schools can be criticized for inflexibility and overt reliance to plans and intentions that rarely become reality, emergence and learning schools have their own points of critique. For example, “[the emergence view of strategy] does not address why managers select some experiments or directions over others, when the tactics might work and when they might not, or how managers decide what other tactics might be useful” (Kaplan & Orlikowski 2013, 991). Fidler (2011, 541) argues if a company accrues talent and strategizes on the basis of what it has experienced and learned alone, there is “no inherent capacity for foresight build into the system” . While he calls utilizing hindsight as insights for future action laudable, he also points out focus on this makes the firm vulnerable to discontinuous change where past learnings are made useless (ibid., 541). I can point out other challenges of the emergence approach as well: How does a company practicing emergent strategizing ensure a cohesive strategy emerges? What if experiments and reactions do not lead to sustained high business performance, and resources run out? And what if a collective process of emergence produces unwanted or even destructive outcomes?

Still, in real life practice, I argue that strategy making often strikes a balance between different approaches and schools. Mintzberg et al. (1998, 367) admit that “every strategy process must combine various aspects of the different schools” . Other scholars agree and present ideas how to achieve a balance: Similarly to Bukzsar’s (1999, 106) recommendation of ‘balance between foresight and flexibility’, Cunha et al. (2006) present a mode of foresight called ‘planned emergence’ that assumes companies can “combine high levels of flexibility with structure necessary to avoid chaos” (ibid., 948). Hamel and Prahalad (1989), discussing the success of Japanese manufacturers in their competition versus US manufacturers in the 1980s, argue that companies should determine their strategic intents but at the same time keep their strategies, i.e. means, flexible. Finally, Meissner and Wulf (2015) propose the ‘strategic scenario approach’ as a practical example of the role of foresight, when integrated into linear strategizing, shows how to combine the planning and environmental schools of strategy and embed increased flexibility into strategies. These examples are blends of the thinking of emergent and non-emergent schools. In such strategy making contexts, futures knowledge is created and interpreted through a mixture of low-cost probes into the future, using strategic alliances with partners and clients, futurists and other experts, frequent internal meetings and launching experimental products (Brown & Eisenhardt 1997, 16-21). Thus, I argue futures knowledge creation and interpretation as part of strategizing are *both* induction and deduction: both direct, hands-on experience based learning and indirect, cognition-based imagining. Ultimately, futures

knowledge and its interpretation provide the significant content for planning based approaches to strategizing, while inspiring learning and providing direction and coherence for emergence.

2.3.3 *Strategizing and futures knowledge interpretation*

After establishing the main characteristics of strategy and discussing the role of foresight and futures knowledge interpretation with strategy and strategic thinking, I turn to strategizing, strategy making and strategy as activity. Given that I focus on futures knowledge interpretation as an activity, to relate it with strategy, strategy making and strategizing I have to conceptualize them as activities as well. Here, Jarzabkowski (2005, 3) proposes strategy to be viewed as practice, by focusing on human action and how strategists “think, talk, reflect, act, interact, emote, embellish and politicize, what tools and technologies they use, and the implications of different forms of strategizing for strategy as organizational activity” (ibid., 3). To her, strategy is an activity that is context-specific and difficult to generalize and arises from the actions and interaction of people at many levels, not only by or among top management. Viewing strategy as practice can settle many key contradictions of different schools of strategy if strategy is understood as “a flow of organizational activity that incorporates content and process, intent and emergence, thinking and acting - - as reciprocal, intertwined, and frequently indistinguishable parts of the whole” (ibid., 8).

What role does foresight and futures knowledge interpretation have in strategizing, when the latter is viewed specifically as human action and as a flow of organizational activity? While Jarzabkowski (2005) does not articulate their relationship, a study of temporal work in strategy making by Kaplan and Orlikowski (2013) offers a perspective. In their study, they discuss “how do managers negotiate and resolve differences in interpretations of the past, present, and future to make strategy” (ibid., 968). Based on their findings, they argue that managers “could not enact new visions for the future without constructing *strategic accounts* that articulated how such futures connected meaningfully to a history of the company and to current internal and external pressures. This process invariably comprised not only reimagining the future but rethinking the past and reconsidering present concerns” (ibid., 966, italics added). They view these as a set of practices and call them ‘temporal work’. In addition to reimagining, it requires negotiation and tension resolution among individuals and their interpretations of past events, present stakes and future possibilities (ibid., 978). Strategic accounts, even provisional, are necessary for decisions and action, and they are settled upon by linking “interpretations of the past, present, and future in ways that appear coherent, plausible, and acceptable” (ibid., 965). Settled upon does not infer consensus, rather, accounts are stable enough to

allow for definitive action while remaining open to later reinterpretation (*ibid.*, 978). Kaplan and Orlikowski highlight the role of influencing in temporal work when they report that strategic accounts of interpretations are achieved only through skilled action involving mobilization of collective action and convincing others about a particular articulation of temporal interpretations (*ibid.*, 980). Thus, as a part of strategic decision-making and driving action, not only does interpretation of future knowledge involve imagining and elucidating future possibilities and influencing the interpretations of others, it concerns the interpretations of the past and the present, and arguably, not only those of the company but also the relevant external environment. Role of futures knowledge interpretation is therefore central in both strategy making and its enactment.

If futures knowledge interpretation has distinct core characteristics, is there a process or flow of interpretation describing how it happens and specifically how it integrates with strategic decision-making in practice? As interpretation is on-going and iterative by nature, I consider depicting it as a linear process as impractical. Combining the levels of perceived environmental uncertainty proposed by Milliken (1987) with the general definition of strategy this thesis uses (Rumelt 1979, Chandler 1962, Eisenhardt 1999) provides a foundation for illustrating the flow of interpretation and its connection with strategizing. The model I construct for this purpose is cyclical, illustrating the on-going and iterative nature of both interpreting and strategizing and it has no single starting point: interpreting as part of strategizing can begin from either futures or business contexts, and at each step, interpretations from other steps can be revisited and reimagined. However, the flow follows a line of reasoning with a clear direction, where interpretations are made in a way that promotes logical thinking, objectivity and deliberation. The model is visible below in Figure 2.



Figure 2. Flow of futures knowledge interpretation as part of strategizing

In the flow, interpretation can begin from the futures context or the business context. In the model, “what is happening” illustrates the interpretation of state uncertainty, or uncertainty related to macro- and micro-environmental factors, their path dependencies, current states and possible futures. This represents the futures context. Effect interpretation, i.e. posing the question “what does the state uncertainty mean for us” and arriving to the answer(s) about the implications, follows the state uncertainty interpretations. Effect interpretations should then inform the question “what can we do”, where answering the question provides the strategy alternatives, whether these concern objectives and vision, action options or resource allocations. This represent the business context as a starting point for futures knowledge interpretation. In an emergence school fashion, a company can choose to dismiss state and effect interpretations and step into the flow here by imagining desired futures for itself. Whatever the approach, discussion of the options, even if it is superficial, should then flow into response interpretations, where (future) outcomes of alternatives are assessed and compared with or without the support of a futures context (e.g. a scenario of the micro or macro environment) and the strategists ask “what should we do” and make the final strategic decisions. These decisions have intended and unintended outcomes and effects in the macro and micro-environments, and thus the flow links back to the act of interpreting state uncertainties. For emergent strategic thinking, this loop also illustrates how organizations can learn by doing and experimenting. This conceptualization aims to combine the activity of futures knowledge interpretation with the main, generic components of strategy and the activity of strategizing. Critical is the

direction of the flow and how understanding of different types of uncertainty informs and reasons strategy-making in a specific, logical order. I examine how the reality of futures knowledge interpretation in practice applies and affects the flow in chapter 4.4.2.

In conclusion, for the purposes of this thesis, I loosely define *Strategy* as decision or decisions about the company's objectives, actions to reach the objectives and how it allocates organizational resources across a range of options (Chandler 1962) that involve change, reproduction and maintenance (Jarzabkowski 2005, 5) and are focused on the relationship of the firm, its environment and the fit between them (Rumelt 1979, 196; Wilson 2000, 28-9; Battistella & De Toni 2011, 1029-30; Lehr et al. 2017, 214). *Strategizing* is the flow of human activity in organizations of making strategy (Jarzabkowski 2005, 7), where decisions require strategic accounts based upon interpretations of the futures, present and past of the company and its environment (Kaplan and Orlikowski 2013, 965).

Also, in this chapter I posed the question of do different conceptualizations of strategy demand different logics or approaches to futures knowledge interpretation. While the choice of strategic school or perspective to strategy and strategy making might increase or temper managers' willingness to utilize foresight as part of strategy making, I claim it does not affect the mechanisms or practice of futures knowledge interpretation itself: strategic decision-making requires settled upon strategic accounts, built using interpretations of the future, present and past. However, different approaches impact the purpose and objectives of both foresight and interpretation: strategizing involving 'problem-solving' has different types and levels of strategic questions (e.g. should we enter the new market next year) than strategizing involving 'problem-finding' (e.g. what drives our business success in the next five years). Of course, the choice of approach also determines whether they are done *at all*.

2.4 Key definitions and summary

The literature review has produced definitions for the key concepts of the thesis. In this thesis, I define *futures knowledge* as an input and organizational resource, and knowledge of justified contingent plausibilities (Dufva & Ahlqvist 2015b, 252) that exists as a cluster of connected concepts about environmental factors ((Dufva 2015, 13; Dufva & Ahlqvist 2015b, 252; Tapinos and Pyper 2018, 296-7). It manifests as tacit, explicit and self-transcending types of knowledge (Nonaka 1991, 165; Uotila and Melkas 2007, 1120). Because future cannot be known, it is knowledge about uncertainty. In the organizational context, particularly relevant futures knowledge concerns environmental uncertainty, especially so-called 'state' uncertainty (Milliken 1987). Subsequently, I define *futures knowledge interpretation* as the activity that contextualizes futures knowledge of environmental state

uncertainty for the benefit of knowledge users (Horton 1999, 7). Interpretation does this by creating understanding (in the literal Ackoffian sense) of effect and response uncertainties (Milliken 1987; Vecchiato and Roveda 2010, 1531) as far as they are connected with and based upon related state uncertainties. In synthesis, I define *futures knowledge interpretation*, when applied for strategizing, as contextualization of perceived state uncertainties and imagining effect and response uncertainties that are systems of concepts. It is both an act of sense-making and sense-giving (Gioia and Chittipedi 1991, 446). It is an integral element of the generation of shared understandings (Daft and Weick 1984, 286) - strategic accounts – of future uncertainties, present conditions and past trajectories that occurs as part of an organization’s temporal work during strategy making (Kaplan and Orlikowski 2013, 965).

By putting together the literature review and key concepts of the thesis, I propose a theoretical model, if not a comprehensive theoretical framework, that presents futures knowledge both as an activity and capability in the context of corporate strategy making. In this model, the central elements are the *core characteristics* of futures knowledge interpretation and the *means* – frameworks, tools and techniques – necessary for practicing interpretation. Around them are the both the *purpose, intended uses* and the actual *outcomes* of futures knowledge interpretation, the *systemic factors* that either enable or hinder it, and the *meta-capabilities* required to practice it successfully. *Futures knowledge* is included in the model as an input for interpretation activity, while corporate *strategizing* provides the organizational context for the activity itself. The model (Figure 3) is illustrated below and it provides a starting point for the empirical half of the thesis.

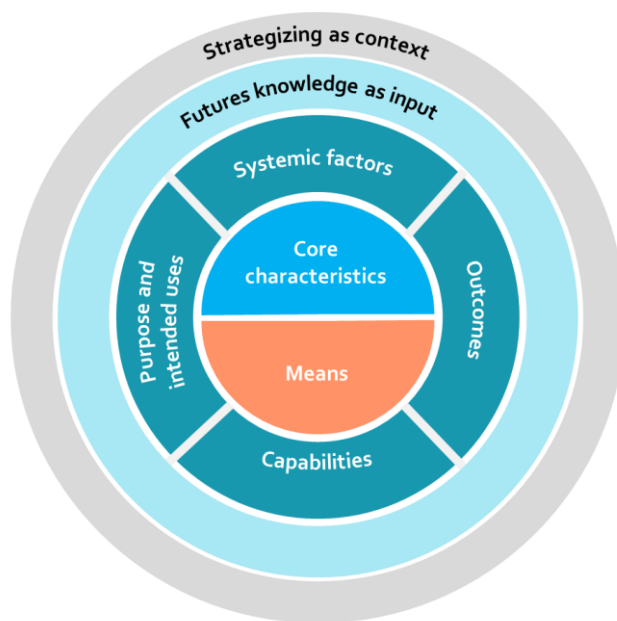


Figure 3. Summary of literature review: Understanding futures knowledge interpretation: a model of an activity and a capability

3 RESEARCH DESIGN

The literature review of fields of foresight, sense-making and organizational learning reveals that the theory and empirical evidence around futures knowledge interpretation is fragmented and has gaps in understanding the practice in detail from the perspective of individuals. The following section covers how I aimed to help overcome these gaps and challenges. I begin with the articulation of the purpose, objectives and research questions of the thesis. I then discuss the research aim and methods, present the analysis strategy and discuss the quality and limitations of the research.

3.1 Purpose, objective and research questions of the thesis

In my research, my purpose was to explore and describe the behavior and reasons behind the behavior of foresight practitioners as they respond to their colleagues' question "what does this futures knowledge mean for us and our organization" and "how should we act accordingly". By doing so, I strove to provide new understanding of how practitioners interpret futures knowledge for their colleagues' use as the make strategy. I scoped 'use' to consist of the context of strategizing or strategy making, and 'strategy' to cover any type such as business, corporate, marketing, supply chain, customer or brand strategies, or any school such as positioning or emergent. As interpretation is participatory and not a matter of linear sense-making and sense-giving, thus the foresight users, 'colleagues' of practitioners, can be involved in the interpretation. Ultimately, I strove to use the empirical study together with the literature review to provide an initial exploratory model for understanding, performing and succeeding in futures knowledge interpretation that is practically relevant and helpful for both foresight practitioners and managers as they strategize.

The main research question of the thesis was *how foresight practitioners interpret futures knowledge for the use of strategizing*.

However, there is value in understanding the reasons *why interpretation occurs as it does*. To explore these, I posed the following sub-questions

1. How is successful interpretation defined (in terms e.g. of its purpose, content, process & means, quality, utility, impact) and why?
2. What individual and structural characteristics and capabilities support or hinder interpretation and its success, and why?
3. Ideally, how should interpretation happen according to practitioners themselves?

Sub-question 1 explored the purpose and measurement of interpretation from the perspective of practitioners themselves and the customers of their futures knowledge and interpretations.

Sub-question 2 explored the different personal and structural factors that might play a role in the interpretation activities and their success. In addition, it uncovered reasons why interpretation in practice takes the forms it does.

Sub-question 3 built upon the main question and previous three sub-questions. Its purpose was to uncover insights about interpretation that the previous sub-questions have not been able to do through means of comparison.

My research plan gave secondary attention to the topic of content of interpretation. This is because the exact nature of the content – futures knowledge – is confidential due to its strategic importance or to being part of customer projects and thus is not shared even if data is reported anonymously by external 2nd or 3rd party researchers. Where information about *what* specifically is being interpreted was shared by research participants, I took it into account, but I did not investigate it in any structured way. Ultimately, given the gaps in current theoretical understanding, it was my view that *how* interpretation occurs and *what affects it* was more essential to be scrutinized than *what* is interpreted.

3.2 Research method and data collection

My thesis utilized a qualitative, exploratory research method, primarily because my aim was to understand the behavior of foresight practitioners and the reasons behind the behavior. Due to the nature of the research questions, the depth and breadth of information required to answer them and lack of existing holistic, tested and applied theoretical frameworks, a quantitative research method was not sufficient nor suitable for this study, even if it would have included mostly open-ended questions. Such method would have to be supported by some pre-defined variables that describe and structure the researched behavior and its antecedents and affecting factors. Instead, the thesis had the so-called grounded approach that allows for theories and issues to emerge from the research itself (Fisher 2010, 63). Furthermore, to maintain theoretical flexibility, I did not have initial hypotheses or theoretical or conceptual models that I tried to deductively prove or disprove or test in a real-life context. (The model of futures knowledge interpretation as an activity, presented in the previous section, served rather as a summary of the literature review and also a source of inspiration for the empirical half of the thesis.) The results were allowed to generate new evidence for the assumptions and posits of previously presented theories or challenge them.

Even though this thesis was an open-ended exploration of a phenomenon of human behavior, how it occurs, and the different reasons behind it, it was not purely an interpretative research, i.e. one that discounts objectivity and notions of objective reality altogether (Fisher 2010, 58-60). While I adhered to views of pluralism and complexity and agreed that a phenomenon can have multiple interpretations, my purpose was not only to dissect and compare interpretations, but rather to construct a kind of holistic interpretation from the different views that is useful to readers and practitioners as they pursue to reflect upon, understand and develop their own behavior. I had this goal despite having a limited data set and recognizing that my own subjectivity will compromise the thesis's objectivity. It should be noted that my attempt at objectivity here was not a stepping stone to reductionism, rather, it was about aggregating different views into a fuller image of reality that incorporates multiple, mutually complementary views. Arguably, some reduction was bound to happen. In a realist sense of research that strives for verifiability and generalizability of theories (Fisher 2010, 50-2), I aimed to provide results – though subjective and limited - that could be inductively generalized and whose prevalence could be quantitatively tested in later studies. Thus in summary, the methodological background of my thesis can be best described as a mixture of realist and interpretative research, the former due to its strategic objective of equipping practitioners with useful, potentially generalizable tools, and the latter due to its chosen data gathering and analysis methods. It appreciated a nominalist perspective, which might view objects as real and existing in reality, but considered their interpretations – how they are understood and defined – as socially constructed (Fisher 2010, 257). At the same time, my thesis examined whether or not a shared understanding of its unit of analysis, the behavior and capability of how foresight practitioners contextualize futures knowledge for the benefit of corporate strategizing, exists, and if yes, what it is.

For data collection, the study included ten qualitative, semi-structured interviews with organizational analysts/futurists and external consultants who have more than five years of experience in strategic foresight and futures interpretation. I chose this approach for a number of reasons: First, given that the study focuses on the behavior and expertise of practitioners, interviews provide me the opportunity to create rapport with them and spend necessary time to explore the topic together with the experts. Second, experts of the practice, given that they are the object of analysis of the study, can be expected to provide data of utmost relevance for the study and its questions. Third, the face-to-face qualitative interview method better allows for in-depth discussions and exploration compared to quantitative surveys, where the responses are limited by how respondents interpret the intention of the questions and cannot be iterated or supplemented with additional comments. Fourth, due my personal time and resource constraints, performing observational research, e.g. a longitudinal study, such as using ethnographic or action research methods, was not viable, though such a method could have e.g. alleviated the bias and

subjectivity problems of interviewee commentary that can compromise data accuracy and especially its reliability. Last, as the study did not build upon a pre-defined research framework or theory, I opted to a semi-structured interview method to allow for flexibility in data gathering instead of using a structured survey or interview design.

My intention was to increase both data accuracy and reliability with the number of interviews so that the study does not rely on only a few experts. I estimated that ten interviews were necessary for reaching data saturation, where researchers identify that having further interviews would not produce new valuable evidence. However, I adapted a type of Delphi research principle, where same experts are interviewed twice or more to co-develop the findings iteratively. Here, eight of the ten first round interviews were complemented with a second round of meetings, where I presented the initial findings to the interviewee and they had the opportunity to validate and build upon their earlier comments and responses, thus increasing the accuracy of the data. As a result, the number of discussions totaled eighteen. Also, the limit of three years of personal experience was set to ensure the participants have necessary experience to provide insightful commentary. For time and resources purposes, the study did not include the commentary of corporate managers, who could've provided complementary insights about how interpretation by futurists occurs and what makes 'valuable' or 'useful' futures knowledge interpretation.

For the first-round interviews, I provided the interviewees with the main research questions and definitions of each key terms in advance. Each interview lasted between 45 and 90 minutes and was supported by an interview guide (see Appendix 1) and visualization aids (pen and empty paper for the interviewee, and flip charts wherever they were available). The interview guide included six main questions that were all presented to interviewees, and several topics and viewpoints derived from existing literature that were presented as stimulating or follow-up questions whenever necessary. However, the aim of the interviews was to probe into the behavioral and cognitive processes of the respondents in-depth and let answers to 'what', 'how' and 'why' questions emerge un-structurally and naturally.

I sought the interviewees from Finnish and international companies that perform foresight as part of their strategic decision-making processes using my own professional connections and LinkedIn social platform. To manage the bias of my own background, the search also benefited from snow-balling, where interviewees themselves suggested additional interviewees for the study.

I conducted the face-to-face interviews between December 2019 and February 2020, in Finnish, and recorded them per the interviewees' agreement (one interviewee denied the permission for recording). The interviews in total lasted for 680 minutes and produced roughly 90 pages of transcriptions. To allow for open discussion, I handled the data from interviews anonymously, therefore each interviewee is identified in the analysis by their gender, title, role as an internal practitioner or external consultant, type of industry their

company operates in, years of experience in foresight, and the length of the interviewee (Table 7). It should be noted that I engaged as a consultant working for one of the interviewees, the Head of Capability Development, in the summer and autumn of 2019. This project included foresight creation and interpretation, and while documents or results from the project are not part of this analysis, the analysis still benefited from the shared experience of me and the interviewee: I was familiar with the real life cases the interviewee used to illustrate his points, the management practices of the company, the results of the project, and some of the managers who had engaged in futures knowledge interpretation in said project.

Table 7. Interviewees of the study

| Gender | Title | Role | Industry | Years of foresight experience | Length of interview |
|--------|----------------------------------|----------|---|-------------------------------|---------------------|
| Male | Research Scientist | External | Research and innovation services | 10+ | 1h 20min |
| Male | Director, Insight & Intelligence | Internal | Consumer durables | 5+ | 1h 31min |
| Female | Foresight consultant | External | Strategy, design, and technology services | 5+ | 1h 19min |
| Female | HR Manager | Internal | Motion and control technologies | 5+ | 59min |
| Male | Head of Strategic Foresight | External | Business design services | 20+ | 52min |
| Male | Senior Partner | External | Foresight and strategy consulting | 20+ | 45min |
| Male | Head of Capability Development | Internal | Construction | 5+ | 1h |
| Male | Information Specialist | Internal | Insurance | 15+ | 50min |
| Female | Head of Strategy | External | Business and service design services | 15+ | 1h 14min |
| Female | Partner, Lead Business Designer | External | Business and marketing consulting | 13+ | 1h 30min |

3.3 Data analysis

The analysis considered results from different interviewees as one cumulative set. I did no quantitative analysis, nor did I regard the interviewees as cases that could be analyzed individually or comparatively. My strategy was instead to construct a logical, evidence-

based narrative that provided answers to the questions posed by the research plan. In this setting, I pooled together individual interviews to represent an equivocal image of the perceptions, beliefs and experiences of foresight practitioners. In such an analysis approach, individual interviewees are only visible when they illuminate a certain topic or perspective or provide a case example. Despite aiming to provide a full if equivocal narrative of the results, wherever there emerged noteworthy contradictions and points of disagreement among the views of interviewees, I highlighted and discussed these. Points of disagreement and issues where multiple, complementary or contradictory views were presented also offered me fruitful opportunities to speculate on the “mechanisms” or causes (Fisher 2010, 261) affecting the perceptions, experiences and behaviors of different practitioners.

After the first round of interviews had taken place, I transcribed the commentary of the interviewees and cleaned it of filler words, so that all I could review and code comments of significance. From the 680 minutes of first-round interviews, I ultimately coded almost 400 ‘datapoints’: comments, quotes and insights that provided the basis of the analysis. I organized the data into main areas according to the research questions of the study and the model of futures knowledge interpretation that I had built based on existing theory and empirical evidence. Inside these areas, I grouped the data further into themes that had emerged organically, e.g. by grouping together multiple comments from different experts that covered the same topic or represented a similar point-of-view. Given how the nature of the research was exploratory, the organic emergence of themes was both natural and fruitful. The second round of meetings with interviewees aimed to validate the initial insights and increase the robustness of the findings and conclusions. Interviewees could elaborate on their own comments that the analysis has raised as noteworthy and provide input on the general insights and comments of other practitioners. I did not record their additional commentary, but I took notes and adjusted the initial analysis and conclusions accordingly.

3.4 Quality of the research

3.4.1 *Quality considerations*

Quality in qualitative research is assessed especially by looking at the validity of the research. As my thesis used exploratory methods, the notion of construct validity, i.e. ensuring the research can actually measure what it tries to measure, is not relevant in the specific quantitative sense: the research did not aim to measure its units of analysis. However, the analysis must still evaluate whether or not the concepts, terms and constructs I

presented to the interviewees were understood and perceived in a way the researcher intended, in other words, that the interviewees have actually provided commentary during the interviews that illustrates the researched concepts and behavior, and not something else. This evaluation can be done post facto, as the recordings of the interviews are reviewed, and data is managed and grouped for further analysis.

Being partly realist in nature, my research must consider its internal validity. As Fisher points out, “internal validity is concerned with whether the evidence presented justifies the claims of cause and effect” (Fisher 2010, 273). I could not use statistical means to prove the credibility and significance of causal relationships, but I instead intended to use logical argumentation and systems analysis principles to gauge the effect and systemic relationships between the concepts and factors that my study examined.

In addition to construct and internal validity, the thesis must consider population validity, or transferability, as part of its quality. “Transferability questions whether the generalizations or interpretations that a researcher has proved in a particular context apply equally well to other populations or other contexts” (Fisher 2010, 274). I defined the main research “population” or unit of analysis rather loosely, as corporate professionals involved or responsible for foresight contextualization in companies as they strategize, and this provided both benefits and challenges to generalizability. In one hand, loosely defined populations allow for investigating a wide group of individuals, making the results potentially relevant and personally applicable to a wide ‘user’ audience or wider base of ‘use cases’. On the other hand, specificity of the results can suffer, and the results of the analysis can be argued to be too ‘general’ and not detailed enough to be practically applicable and useful to any specific user audience or use case. I evaluate the realized transferability issues of my research later in chapter 6.2.2.

Human nature had to be addressed in the research. In particular, I had to be aware of the fact that, as I investigate human behavior through first-hand accounts and not through direct observation, individuals tend to rationalize their choices and behavior when they explain it to others. To assess their truthfulness, I considered repetition of a point or an insight across different interviewees as an initial sign of its credibility. Additionally, I reflected individual commentary to other interviewees’ views, findings from other studies and my own experience as a management consultant.

Given different quality considerations, how did I aim to strengthen the research validity and general quality of my thesis? Fisher (2010, 276) lists Winter’s principles for improving the validity of research findings: these are *reflexive critique*, *dialectical critique*, *collaborative resources*, *risk to one’s own values*, *plural structure*, and *theory, practice and transformation*.

Reflexive critique concerns the researcher’s transparency and objectivity, and the ability of the researcher to recognize how their own values and pre-existing beliefs affect their interpretation, and flesh these out for the reader (Fisher 2010). To enjoy its benefits,

I had to practice the principle during the analysis. This is true also to dialectical critique, which is about finding contradictions a) in the research findings between categorizations used to neatly structure things, and details of the things that challenge the structures and b) what studied individuals intentions and purposes and their actual behavior (Fisher 2010, 276). Both reflexive and dialectical critiques are principles that I intended to use when investigating the findings.

Collaborative resources mean involving multiple human perspectives into the research (Fisher 2010, 277), i.e. by having them provide research input or validate results. I designed this thesis with collaboration in mind, as findings and conclusions regarding the units of analysis, foresight practitioners, were validated with them.

Risks to one's own values is about the researcher's willingness to let the research process challenge the views and values they had when starting the process, including e.g. assumptions about the research material, the purposes of the research, and the original research plan (Fisher 2010, 277). I address these issues in chapter 6.2.2 of the thesis.

Plural structure means recognizing that the research question can be understood and the responses be given from multiple perspectives (Fisher 2010, 277), especially when studying an organizational context with multiple different actors and stakeholders, and this multiplicity should be recognized and reflected in the analysis. I have discussed the plurality of perspectives in a previous chapter (see 4.2) and I further cover the topic in the following chapter (4.4.2.).

Sixth and final of Winter's principles is theory, practice and transformation, and this refers to the need to have business and management theory with practical applicability and to have new theory tested in real life. Notably, the original and leading purpose of this thesis was to produce theory and insight that practitioners can directly utilize in their work, and I discuss the results post facto in chapter 6.2.2.

3.4.2 Limitations of the research

This research, like any, had its initial limitations. Its primary evidence, generated by exploratory research, cannot on its own argue for generalizable descriptions of its units of analysis. That is why in the synthesis I rely heavily on the comparison of new primary research evidence and pre-existing evidence from other, sufficiently related research.

While my thesis aimed to understand behavior of foresight practitioners and people involved in futures knowledge interpretation, due to its resource limitations and chosen research method it could not measure and study the *actual* behavior of individuals. I relied on first-hand accounts and reporting of individuals under scrutiny and cannot assess their behavior directly. Thus, so I cannot apply aforementioned dialectical critique in full: I was unable to critically compare what people say and what they do.

Another important limitation driven by resource limitations related to the principle of plural structure. The research of my thesis did not include the opinions and views of managers and other strategic decision-makers, who also are involved in futures knowledge interpretation. Further research supported by additional resources could pose the same research question and use the same methodology but focus the interviews on managers to produce complementary and possibly contradictory findings.

The research included experts from Finland, albeit with often very extensive global working experiences. It still is notable that the findings cannot be stated to be directly transferable to other cultures. Individuals working in other cultural spheres could have different views of the researched topics. However, transferability can be assessed when previously unearthed empirical evidence, collected from organizations around the world, was compared with the primary research of this thesis.

4 FINDINGS AND ANALYSIS

I begin the analysis of empirical evidence collected from expert practitioners with a review of the starting point, purposes and objectives of futures knowledge interpretation. Here, I analyze drivers that affect how contextualization is made. I follow with the findings related to the different outcomes of interpretation, in other words, what it produces for companies as part of their strategy making and how it benefits them. Then, I analyze the practitioners' notions of the core characteristics and different forms of interpretation. My intention here is to understand how practitioners define what foresight interpretation really is and how it happens as part of strategizing.

After building an understanding of the purposes, outputs and form of foresight interpretation in practice, I move on to consider the organizational, personal and input-related factors that affect the performance and success of interpretation in corporate contexts. Finally, I assess the practitioners' views of how to perform valuable futures knowledge interpretation. Here, my analysis focuses on ideal capabilities, expertise and traits of individuals that perform interpretation, and the practical tools, techniques and frameworks that experts use as they interpret or facilitate it.

4.1 Starting point, purposes and objectives of futures knowledge interpretation

The interviewees shared a striking unanimity about the starting point and purpose of interpretation. Clearly echoing the importance of understanding effect uncertainties and performing 'Hortonian' interpretation, all experts commented *that needs and strategic objectives of the organization* should drive both interpretation and futures knowledge creation at large. As a Lead Business Designer, who worked in a consulting role, said:

“I don't really believe in developing an image of the future first, and then thinking about what the implications of the future could be. For example Sitra's [The Finnish Innovation Fund] megatrend reports fall too far from industries and companies. The analysis has to be more tailored from the outset because without tailoring, you cannot get into business-critical issues.” (Interviewee, Lead Business Designer)

It was recognized that interpretation is always *context based*, and as a Head of Strategy elaborated, it can flow from business, futures, or problem contexts, meaning that the issue that requires interpretation, although relevant for the organization's future, might stem from inside or outside the organization. The context in which the interpretation is done

ultimately determines its value-in-use. A Director of Insight, responsible for market insight and foresight in a major consumer durables company, summed the thoughts of all interviewees as he pointed out that interpreting external factors and implications of futures produces only nice-to-know information, if there is no motivating use case for futures knowledge within the organization.

Futures knowledge creation and interpretation was performed as part of various business needs and use cases. Examples included turnaround strategy development for recently acquired businesses and brands, strategic organizational and competence development, and business vision development, strategic option formulation and strategic initiative planning. Interpretation was required in defining actions how to implement strategies, not only in defining strategies themselves. They were part of growth and new business opportunity search, but also of testing and anticipation (preparation), teaching (and learning), and making uncertainties visible and more tangible to managers. A Head of Strategic Foresight, who worked as a consultant, argued that “a company can manage only a few trends at a time and it has to make a decision what to focus on among untold hundreds of options”. For example, an energy company has to choose whether to focus on electric vehicles or solar panels, and whether it wants to become a hub of an electricity ecosystem or remain as a simple utility company. As part of foresight creation and use, interpretation plays a key role when a company makes such decisions: it has to interpret the effect uncertainties of different trends in a way that it identifies the most meaningful opportunities and risks to itself. Also, while some interviewees commented how company management might not be inclined or willing to invest time for foresight and interpretation, one consultant noted how having a clear business need as the starting point actually motivates management to engage in interpretation and futures knowledge creation.

Gap analyses that compare present and the future are types of interpretations. An HR manager, leading an internal foresight process in a multinational motion and control technologies company, pointed out how futures knowledge is used to gauge the gap between the company’s existing human resources and level of capabilities and those the imagined futures could require. However, a Head of Strategic Foresight noted that his clients do less and less such analyses. Instead of analytical comparisons, the purpose of interpretations is to effect change and drive decision-making.

“If management starts out from the current situation [in their company], they can’t observe what the future holds. That’s why you need a creative perspective of change; what new can we create to the present, and what do we maintain and remove [from the present]. Based on this, we can then think about a value proposition [for the client] the trend can make possible.” (Interviewee, Head of Strategic Foresight)

In discussions with a few interviewees, the issue of *problem-solving and problem-finding* as a dichotomy of purposes for foresight and interpretation was brought up. A Head of Strategy, who acted as a consultant, commented how the needs for foresight and abilities of companies to utilize it along this axis is market-specific: in Finland, there is much more problem-solving, because it tends to be more concrete, management thinking is more short-sighted, and the focus of management teams is in near-term profits and productivity. She also noted how the purpose (whether problem-solving or finding) depends on available resources, especially management team's time, because problem-finding usually is more time-consuming than problem-solving.

As a Foresight Consultant from a major strategy, design, and technology services company indicated, foresight and interpretation have different roles vis-a-vis different elements of corporate strategy:

“For vision development, foresight is a source of inspiration and sense of urgency and a way of expanding thinking. For strategic decision-making, futures knowledge is a context where to test different options. And in strategic initiatives and during execution, futures knowledge can provide the right timing to act.” (Interviewee, Foresight Consultant)

In other words, interpretation of futures knowledge aims to *provide the WHAT of the corporate vision, the HOW of strategic options, and the WHEN of strategy execution*. Going even further, a Head of Strategic Foresight, who spoke of effecting change instead of analyzing the present, summarized his thoughts about the purpose by stating that the end objective of sense-making is to build *a narrative of change*. Beyond developing an inspiring, engaging narrative for change, what other outcomes and products did the interviewees identify for futures knowledge interpretation?

4.2 Outcomes and products of futures knowledge interpretation

Presenting a very pragmatic view, a Research Scientist working as a consultant in a research and innovation services company concluded *that interpretation expands a company's understanding of possibilities and opportunities the future holds*, adding that good interpretation provides the 'extended present', and at least *one* new idea about future opportunities and other implications of external factors to the organization. But beyond supporting corporate decision-making processes and strategizing, interpretation was seen to have other products as well.

According to the experts, interpretation as a managerial activity, when it is successful, *reveals personal assumptions, values, identities, and grows hunger for change*. Through

affecting the culture of the organization, it *helps promote futures thinking for the entire organization*. Beyond *increasing awareness* of the environment and its changes, it also has an emotional impact by *increasing optimism and open-mindedness and breeding courage and willingness to act and experiment with strategic options* based on insights. It also produces *negative if useful emotions* by provoking irritation at organizational and/or industry-wide slowness to act, break path dependencies and change.

Several interviewees emphasized that interpretations (as products) should be *linked to existing corporate processes* and be actionable, that is, *lead directly to action*. As a Lead Business Designer commented:

”The outcome should be that the manager feels the thing [they’ve learned] is so important that it awakens a natural desire to act. That they see opportunities and how they somehow challenge the status quo. And this isn’t easy!” (Interviewee, Lead Business Designer)

A Head of Strategic Foresight added:

”Foresight interpretation should kickstart immediate execution. And the interpretations should be made in a way that indicate which corporate processes they concern.” (Interviewee, Head of Strategic Foresight)

Such ambition for futures knowledge interpretation goes beyond the issues of convenient and effective communication and how interpretations should be formulated in a way that allows for easy sharing within the organization and among its stakeholders, even though one interviewee highlighted this as well. If action – or at least provoking action – is one of the key products of interpretation, this only helps to highlight how crucial designing foresight work from the basis of business needs and use cases in the organization is.

However, does action require consensus when it comes to the interpretations? A Director of Insight admitted that interpretation, when performed as part of foresight and strategy processes as a distinct phase, rarely creates consensus, especially beyond the confines of the teams that ran the processes: outcomes are not always set in stone but are scrutinized after being made, as they are shared and when actions based on them are taken. Usual doubts include fears of actions being too radical, or oppositely, too limited to matter. Settling upon a shared interpretation and making a subsequent action decision can even be harmful, as an HR manager told:

“Due to all the challenges [affecting interpretation and decision-making], there’s a risk we choose a diluted option, the middle option, because we don’t dare to act differently.” (Interviewee, HR manager)

A number of interviewees stated that consensus about the implications of external factors is not a requirement, at least initially. The HR manager, coordinating an on-going foresight and strategy process, commented that:

“We can have multiple views about the future. We won’t necessarily reach one. I want that thinking is challenged and options are presented, and we won’t be satisfied with the first easy answer.” (Interviewee, HR manager)

In her case, dialogue about state and effect interpretations should instead *lead to new questions for iterative futures knowledge creation and interpretation*, and ultimately to defining a strategic direction for the company and a shared view of the desired future state of the company. But the commentary of the experts in general did not provide evidence or strong indication if converging on one shared interpretation is required or even preferable. While maintaining several interpretations of effects can educate the management about contingencies, one interpretation is easier to communicate and can be used to create cohesion in organizations, particularly in such where teams and functions have suffered from lack of futures knowledge or where teams and functions have dissimilar futures thinking abilities and access to futures knowledge. Similarly, no conclusion could be made whether maintaining alternative strategies, due to multiple alternative interpretations or one equivocal interpretation, is preferable or not. Though if action is the preferred product of interpretation, this implies that consensus at least on the strategic decision-making level is required, even if decisions and knowledge that has provided the reasoning for them is scrutinized and challenged at implementation stages.

4.3 Core characteristics and forms of futures knowledge interpretation

How do practitioners define what foresight interpretation really is and how it happens? I probed the core characteristics of interpretation by letting interviewees describe real-life cases and instances where they had performed foresight and interpretation, with the intention of trying to understand what issues seem to make up interpretation as an activity and behavior. Various views raised by the interviewees shed light into what futures knowledge interpretation is and more specifically what are its core characteristics. The findings are summarized in alphabetical order in Table 8 below.

Table 8. Summary of core characteristics of futures knowledge interpretation

| |
|--|
| Based on trust |
| Combination of intuitive, creative and analytical thinking |
| (Concerns) interpretation of effects |
| Critically reflexive |
| Dialogic, individual and social |
| Every-day behavior |
| Inspires personal responsibility |
| Involves multiple disciplines and personalities |
| Made ideally at the right time, when and where it can affect decision-making |
| Part of management processes and cycles |
| Participants approve uncertainty |
| Performed one truth at a time |
| Produces actionable results |
| Rethinks the past and present |

Opinions included no-nonsense, pragmatic views, including how it is contextualization of trends and phenomena and understanding what is happening and what does it mean for us. Interpretation is about turning perceived threats into opportunities, both concretely in terms of taking action and figuratively in terms of adjusting how to view issues. A Head of Strategic Foresight offered a very simple definition:

“It is about answering the question ‘what phenomena and services design your customer's life in the future?’” (Interviewee, Head of Strategic Foresight)

When describing her cognitive process when interpreting, an HR manager admitted that she analyzes the implications of one external factor at a time, as if the knowledge of the future of said factor was “true”, already happened, and then trying to imagine the implications to whatever context she was considering, e.g. the employee and competence base of her company. Supporting how interpretation happens “*one truth at a time*”, a Foresight Consultant described her methods when facilitating the interpretation of factor implications during scenario development work: she reported that in her experience, it was easiest for individuals to consider the implications of one set of drivers, a scenario, or one driver at a time, instead of trying to imagine the implications of alternative scenarios at the same time. In the latter situations, people tended to produce similar implications for considerably different scenarios!

Several practitioners talked about interpretation as a specifically *personal competence* and activity that is highly *subjective*, even though it requires organizational and structural support in the form of proper tools, forums and processes to be useful for individuals themselves and the organization at large.

Many also highlighted how interpretation is about *intuition* and is a *creative process*, and a *capability to imagine the implications*. It regards the question of innovation and how imagination can create value for the organization. As a Head of Strategy put it:

"You can't innovate by analyzing." (Interviewee, Head of Strategy)

However, some pointed out that interpretation is *a combination of intuitive thinking and analytics*. Analytics refers to structured methods of thinking and how information and data is utilized in general and to support intuitions in particular. Here, the purpose is about creating both creative and logically sound interpretations. Interpretation being a highly contextual, intuitive activity means also that its quality and processes used for it vary considerably from case to case and from person to person. Yet, and despite all its creative and intuitive core characteristics, practitioners still argued that it is at its best performed deliberately and diligently.

Interpretation is not only about simply making sense of implications. A few practitioners discussed how interpretation is *an act critical self-reflection and thinking about subjective things objectively*, or in other words, an attempt to step out of one's own 'box' of assumptions, values and role in the organization. A Head of Strategy described it as a practice of "changing meanings or strengthening existing meanings". Talking about how difficult the attempt is and at the same time highlighting the personal, reflective aspect of interpretation, a HR manager remarked how she sees people go through an "internal struggle" during processes of interpretation where people are faced with the task of recognizing and adjusting their previously held beliefs, redefining their professional identities and compromising between their own interests and those of the organization.

The struggle is made evident by other comments about the nature of interpretation. Several noted that *contextualizing implications of the future is also about rethinking and reimagining the present and history of the self and the organization* as well: as part of contextualization of futures knowledge, perceptions about present should be reviewed as well. Furthermore, it was stated that interpretation reveals path dependencies and ways how decisions had been made previously. A Director of Insight was happy to report that a successful round of foresight interpretation helped his colleagues redefine their understanding of the history of the company, and apply learnings gleaned from the "new" history to future actions.

If interpretation of futures knowledge is a creative and structured act, an attempt to step out of one's own box that involves rethinking the past and present as well, when and in what instances does it happen in practice?

Several practitioners highlighted that interpretation is ideally *made in time and space where it can truly affect decision-making*, preferably so where the time and space are built into strategy making processes. As an insight reflected on a past strategy process, foresight creation and interpretation were timed well because they enjoyed from a *sense of urgency* among top management: knowledge of what was happening and what it meant for us was required immediately. Sense of urgency is also a matter of being of being timely: a Head of Strategic Foresight reported that he regularly turns away potential clients because he feels changes in the clients' macro and micro-environments are already at a stage where interpretations and organizational reactions come too late. In other words, interpretation requires a motivating sense of urgency but also *correct timing*. Ideally, many practitioners would like to see foresight and interpretation done as a continuous, cyclical process. Here, performing the act of contextualization and having the mindset required allows for constant, iterative generation of new questions, futures knowledge and interpretations. In a same continuous fashion, previously made interpretations are reflected upon for learning purposes as futures emerge. Arguably, when an organization has a constant sense of urgency for generating foresight and interpretations, a continuous process can help in delivering outputs that are timely. However, all practitioners admitted that such a case is an ideal situation, and very few of them and their clients are able to achieve this.

Contextualization as part of strategizing is *not naturally consigned to processes*, were they *formal or not*, or *ad hoc or cyclical*, even though almost all practitioners reported strategizing as a major instance where interpretation of futures knowledge occurs. Practitioners listed a number of other different spaces and times as well. A Head of Strategic Foresight told he facilitates dialogue about key trends and their strategic implications to business with his clients in regular, quarterly top management sessions that usually last a day or a half. An Information Specialist, who worked in a major insurance company, shared how his top management gets quarterly strategic updates and foresight reports, and how during their brief reviews, the implications and whether or not external development requires action are discussed. In such cases, interpreting futures knowledge has become *an integrated aspect of top management's meeting cycle*, which based on other comments from experts, is hardly the norm. The Information Specialist also noted that market and competitor intelligence is also presented along with futures knowledge. Here, analysis of the present environment is reported together with analysis of the futures, which has both positive and negative effects. While top managers gain a fuller picture of the business environment, futures knowledge has to compete for their attention during a very limited timeframe when intelligence is discussed. In such situations, exposing top management

to both past and futures-based insights, those highlighting more current matters tend to overcome futures-based matters.

More mundanely, practitioners report that interpretation happens *when individuals meet and group, whether live or online*. This means among others lunch breaks, office spaces, workshops, meetings, and digital environments such as online discussion forums. The ‘every day’ nature of interpretation only highlights the fact that interpretation should not be understood rigidly as a process, or especially a stage within another process, but rather as *behavior*. Interestingly, while several experts felt that interpretation as cognition is very much *personal*, or made by individuals, the instances where it is reported to occur are all *social*. As a Head of Strategy said:

“I don’t believe in acting like a futurist guru. No one can define a future alone.”(Interviewee, Head of Strategy)

Echoing her, a Lead Business Designer argued:

“It’s not lonely work. It’s part of creating the future together.”(Interviewee, Lead Business Designer)

Based on commentary from all practitioners, it became evident that they see *dialogue at the core* of performing interpretation. An HR Manager described how sense is made during a shared journey. It was widely accepted that it is a *participatory*, joint effort that *involves more than less stakeholders of the company*, not including only top management, but middle managers, employees, owners, customers and others from the micro-environment of the company. However, whereas especially customers were used to validate interpretations, and the organization at large was able to provide input in the form of futures knowledge and its interpretations, consensus building about contextualizations happened in limited circles, particularly in management teams. This serves to illustrate the continuing contradiction between the drive for increasing participation and sense of commitment and the history of maintaining a culture of top-down decision-making in many organizations. An Information Specialist, responsible for producing strategic updates for top management, hinted at this reality when talking about how interpretations ideally happen: though senior managers are responsible for them, he felt it important that the results are shared widely in the organization, and are not limited to senior management’s eyes, as the rest of the organization provides input to the strategic updates in form of futures insights and recommendations. Moreover, in this case top management can be active in determining the content of strategic updates, if they so choose. Top management is expected to be able to interpret changing situations and react to them immediately on their own as they are presented with the strategic updates.

The reality begs the question, who then creates the interpretations, and subsequently, the future, in organizations? This is not an unimportant question, since a Director of Insight, when describing his view of how interpretation happens ideally, told that interpretations and decisions made based on them all enjoy shared commitment throughout the organization because they *inspire personal ownership* of the interpretations. Such ownership, according to the Director of Insight, is critical for successfully sharing the understanding inside the organization. Taking this logic further, I argue the *actionability* of interpretations, or the importance of linking interpretations to immediate action mentioned earlier, is also a function of personal sense of ownership of said interpretations.

Actionability and sense of ownership is closely related to another core characteristic of interpretation identified by the practitioners. As a Head of Strategic Foresight commented, making sense of futures knowledge requires *people with different expertise areas*, and in his case, a “top team of surgeons”, i.e. business consultants, visual designers, digital experts and service designers, *working together with their direct counter-parts within the client organization*, such as strategy directors, marketing managers, chief information officers and chief digital officers. Working in such a dynamic, foresight and interpretations are made with and instilled to key people inside the organization, making them more actionable, and a sense of personal ownership of the understanding of the implications is created as they are developed in their personal professional contexts.

Several interviewees felt interpretation should always be multidisciplinary, involving people with different expertise areas, but also *different mental models or ways of thinking*. This doesn't only help in interpreting often peripheral futures knowledge, that requires specialized subject matter expertise to be analyzed, but in breaking biased thinking. However, a Head of Strategy pointed out how successful interpretation requires a *shared sense of trust*, how it happens in open and transparent discussion, in states of flow where people are relaxed, free on inhibitions and have fun doing it. They are willing to be conversational, have open minds and develop ideas instead of only criticizing them. Thus, while interpretation seems to ideally involve people with differing mental models, they still must get along or even enjoy each other's company.

Trust is a subject that did not only come up in relation to personal relationships, but also in relation to mutual decision-making and the futures knowledge they are working with. A Director of Insight commented how in best cases, *individuals choose to live with the natural uncertainty of the external environment and its implications*, and rather aim to identify important contingencies that they must look for as futures emerge, and recognize that interpretations and decisions have been made with the best futures knowledge available.

Aiming for actionability, continuity, participation, sense of ownership and trust, among other core characteristics of interpretation, help understand why an Information Specialist argued that interpretation along with futures knowledge creation is ideally built

as an integral part of strategic decision-making. As a Head of Development working in a major construction company admitted, when they lack these characteristics, they are used to sub-optimize the performance of parts of the business and drive the interest of individual teams, functions or managers, instead of optimizing the whole company. However, before discussing the findings that concern the capabilities, means, techniques and tools to perform good or even ideal interpretation and ensure that all the core characteristics of interpretation come to life, the practitioners' views of the factors that impact the success of interpretation as an activity and its outputs are analyzed.

4.4 Factors impacting futures knowledge interpretation

The interviewed practitioners provided a total of 127 comments and opinions of different factors that in their view have an impact on performance and success of futures knowledge interpretation in corporate contexts. These findings are summarized in Table 9 below. The factors are summarized into three main themes: organizational factors, personal factors and input related factors. Organizational factors refer to structural, cultural, resource and space and time related issues affecting the performance of futures interpretation. Personal factors include emotional, cognitive and behavioral issues, while input related factors concern the quality, availability and organizational distance of futures knowledge to business and both perceived and actual path dependencies affecting foresight interpretation and subsequent strategic decision-making.

Table 9. Classification of factors influencing interpretation in companies

| Theme | Sub-theme | Description |
|-----------------------|---------------------|--|
| Organizational | Structural-cultural | The ways the organization's structure, culture, management, routines and processes impact individual and social futures knowledge interpretation |
| | Resources | Different resources and their availability |
| | Space and timing | Intangible and tangible spaces available for interpretation and its timing |
| Personal | Emotional | Factors related to emotions |
| | Cognitive | Factors related to ways of thinking and rationalization |
| | Behavioral | Factors related to behaviors of individuals |
| Input-related | Futures knowledge | Characteristics of futures knowledge as an input to interpretation |
| | Path dependencies | Real and perceived path dependencies and histories of the organization and the external environment as an input to interpretation |

4.4.1 *Organizational factors*

Though based significantly on individual capabilities, the results suggest futures knowledge interpretation is heavily impacted by the organizational structures, processes and cultures in and by which professionals operate.

Table 10. Organizational factors impacting futures knowledge interpretation

| Theme | Sub-theme | Factors |
|-----------------------|---------------------|---|
| Organizational | Structural-cultural | <ul style="list-style-type: none"> • Integration with other structures and processes, • incentive systems, • top management encouragement and support, • top management ways of working, • cultural focus on the short term, • freedom to think differently |
| | Resources | <ul style="list-style-type: none"> • Available time and funding, • managerial attention |
| | Space and timing | <ul style="list-style-type: none"> • Correct timing and demand for interpretation, • available forums and channels, • performing interpretations in correct ‘spaces’ in the organization |

The structural-cultural sub-theme of organizational factors includes a variety of different issues, which were not put into any order of importance by practitioners. These are listed in Table 10. General *lack of organizational processes to which tie-in results of interpretation, or the inability to integrate foresight into existing processes*, is a major hurdle. A Director of Insight from a large consumer durables company illustrated:

“The company doesn’t have a process for [adopting the results]. If the good work takes place where there is no process in which they can be used, the benefits are lost. The receiving processes are absent. The mandate to act is absent.” (Interviewee, Director of Insight)

An Information Specialist from a major insurance company added:

“Environmental scanning is often done as an afterthought, and linking it to organizational routines and cycles is difficult.” (Interviewee, Information Specialist)

Furthermore, the lack of integration to business processes might not be the only barrier, but there can exist gatekeepers, individuals with organizational power, who block futures knowledge and interpretations from flowing to processes and forums where action could be taken. The reasons for such behavior are manifold (and are discussed in the next chapter), but one of its structural drivers is *incentivization*.

Several interviewees talked about incentives, mainly how lack of incentivization hinders futures thinking. This lack discourages middle and senior managers from engaging in scanning of their changing business environment and making sense of its strategic implications. Incentivization can take tangible (e.g. money) and intangible (e.g. praise) forms to encourage behavior, but it can also be used to obstruct behavior. A Head of Development spoke of his corporate culture where *short term thinking*, cost managements and sub-optimization of operations are actively incentivized, due to a historical shared trauma of a near-bankruptcy over two decades prior, which in turn poses a serious barrier to long-term, explorative futures thinking. Similarly, *lack of support and encouragement from top management* can limit individuals to undertaking scanning and interpretation and worse yet, actively scope managers' and employees' attention to other areas. As an Information Specialist lamented, instead of providing even a little attention to imagining the futures, in his organization, day-to-day operations planning and 'putting out fires' come before everything else.

Part of top management encouragement is also whether or not it allows the *freedom to think differently*. An HR manager celebrated the situation in her company:

“That we're allowed to question in our organization is exhilarating... and uncomfortable!” (Interviewee, HR manager)

A Director of Insight noted how a fresh management team, having just replaced the previous team, was free to think beyond path dependencies and previous decisions and their logics. This allowed for objectivity not only in the management team, but also throughout the process which created a turnaround strategy for a brand the previous team had acquired.

Top management attention and ways of working affect how management contextualizes futures knowledge, and how practitioners are able to engage with them in dialogue about external changes. As a Head of Development pointed out, if top management meeting agendas do not include any time for in-depth discussions about the long-term future of the environment of the company, any interpretation cannot happen. However, other interviewees presented two examples of opposite cases where foresight (if not interpretation in depth) was on the executive agenda. An Information Specialist indicated that, in his company, top management has strategic updates quarterly. A Head of Strategic Foresight organized quarterly sessions with his client top management teams. In these cases,

time and space had been carved into the top management agenda. The level of integration of futures thinking and contextualization of implications into top management strategic agendas has a major impact, and it is closely related to the topic of *resources*, particularly *available time* as a factor. Carving some time out of the busy schedules of senior managers still might not be enough to fully benefit from foresight and interpretation. The Information Specialist complained:

“The higher you go in the organization hierarchy, the less you have time. Time is the most important resource.” (Interviewee, Information Specialist)

The Head of Development shed light on the reality of trying to help top management make sense when meeting them:

“Explaining the entire trail of thought [of interpretation] takes so much time, that you never have it. People literally have a fifteen-minute window of time to pitch their ideas.” (Interviewee, Head of Development)

Even a Head of Strategic Foresight, who reported to have considerable access to the management teams of his client organizations, noted how short on time management teams and boards of directors are when reviewing futures knowledge and contextualizing its implications.

“People have an attention span of eight seconds, so you have to tell things very briefly if you want to make them happen.- - You talked about key moments in your question: When meeting Boards of Directors I’m usually given fifteen minutes, or maximum thirty minutes, to present conclusions.” (Interviewee, Head of Strategic Foresight)

While financial resources were mentioned only as means to hire both internal talent and external support, available *time* was mentioned by all interviewers as a critical success factor for futures knowledge interpretation. Another resource, closely related to available time and at the center of making or breaking interpretation, is *managerial and organizational attention*. Attention can be understood as general attention towards foresight and the act of interpreting, and attention to specific factors and issues, or futures knowledge. While the above quote from a Head of Strategic Foresight serves as an illustrative example of the latter, an HR Manager shed light on the former definition, worrying about her top management’s ability to disconnect from their daily worries and tasks and to focus on futures thinking as she prepared a day-long futures workshop for her senior managers.

In addition to available time as a resource, a key time-related factor is the *organizational demand and timing for interpretation*. As already discussed in previous chapters, if there is no real demand for foresight for whatever reasons, or if the correct time to interpret, react and/or pro-act to changing environmental drivers has passed, interpretation has little to no value, or faces outstanding difficulties to prove its value. Whereas if the timing is correct and the demand exists, these bolster the interpretation effort massively. Here, both management attention towards interpretation and interpretation's perceived relevance as a task are magnified as well.

Space, both physical and figurative, where interpretation happens, was among the mentioned organizational factors. These include forums and channels in both the real and digital worlds where people engage and communicate with each other. Having them, and how well they served their purpose, determined whether they were an organizational enabler or a hindrance. For example, an Information Specialist regretted how increasing remote working had seemed to decrease the amount of live interactions between people, and how in these idle interactions, futures knowledge and interpretations were both made and transmitted. On the other hand, several interviewees noted how they've successfully used digital foresight tools to gather and crowd-source futures knowledge and facilitate joint sense-making.

4.4.2 Personal factors

In an attempt to classify and analyze different personal factors affecting interpretation activities in corporate contexts, I split them into three main groups: emotional, cognitive and behavioral, or those based on emotions, thinking, and action. Though inter-connected and impacting and driving each other in a systemic fashion, I cover these three separately in the following. The discussed personal factors are listed in Table 11.

Table 11. Personal factors impacting futures knowledge interpretation

| Theme | Sub-theme | Factors |
|-----------------|------------|--|
| Personal | Emotional | <ul style="list-style-type: none"> • Emotions, • attitudes (incl. openness), • self-interests, • company politics |
| | Cognitive | <ul style="list-style-type: none"> • Skepticism, • experiences and education, • biases, • cognitive frames and abilities, • subject matter expertise on foresight and relevant industry |
| | Behavioral | <ul style="list-style-type: none"> • Engagement with others and ways of communication, • level of involvement (of self and others), • jumping to conclusions |

Emotions and emotional responses were a major talking point with almost all interviewees. When futures knowledge and interpretations are presented to managers, the emotional responses can range from fear, anxiety and anger to irritation, excitement and even hype. Several interviewees noted how fear and uncertainty emerge especially as doubts about manager's *own* future in relation to the presented foresight and its interpretations. Here, own future concerns especially own role and capabilities to perform in the future. In these cases, doubts can also concern one's personal capability to engage in futures thinking and perform interpretation in general. As a Head of Strategy commented:

"Personal attitudes and emotions have a considerable influence in futures thinking and contextualization. If you're for example afraid of robotization, you don't want your company to invest in robotics, and you see only threats and no opportunities in it." (Interviewee, Head of Strategy)

Furthermore, the discussion with a Head of Development revealed how futures knowledge can create anxiety among the management audience if it is not presented in a way where its implications cannot be directly linked to a personal level, or interpreted at a personal level. Such cases highlight how uncertainty about manager's own position, role and success outweigh those of the organization's. Furthermore, if *personal* fears and doubts arise as a response to futures knowledge and its interpretations (that still could be elaborated at organizational level), managers can communicate those fears and doubt as being *organizational* in nature. For example, technological advances that drive changes

in processes and business models of a company might require personal capability development for manager, or worse yet, lead to a situation where the manager no longer can perform effectively. This fear for one's personal future is framed as a notion that the organization around the individual manager does not have the ability and/or readiness to adjust to said technological developments. Personal negative emotions are shrouded with organizational excuses, and this impacts how managers and management teams make sense, assess action options and their outcomes, and decide how to act.

If emotions hamper a manager's cognition, and his/her peers observe this, it disrupts mutual trust necessary for successful interpretation and joint decision-making. An HR Manager commented how in her globally operating company, a restructuring and merger of different regional offices had also created a new management team for the new regional business unit. The people in the team were unfamiliar with each other and their motives, thus the team suffered from lack of trust. Furthermore, some managers seemed to 'hide' behind their roles and positions, creating uncertainty among others whether such managers truly thought about the good of the whole unit, or merely looked after their functions. According to the HR Manager, the lack of transparency and trust posed a serious challenge to having open discussions about changes in the business environment and the future of the company.

Interpretation can lead to emotions that from the outset seem negative but can be constructive in terms of corporate resilience. For example, interpretation can fuel a sense of urgency to act. A Foresight Consultant referred to a project where her client team developed a set of scenarios for the future and assessed their state and effect implications. One client in the team was visibly motivated about the results, calling loudly for the company to take any measures possible to ensure that one of the scenarios would never happen. In another example, a Head of Development noted how an interpretation process had bred irritation among top management, exasperation about what the future could hold for the company and the company's inability to take prompt, decisive action accordingly. In others, the same process bred excitement: the futures knowledge and interpretations confirmed their assumptions and supported their long-held arguments that changes had to be made in the company.

According to the experts, emotions, particularly negative, were not something to be avoided. To a Head of Strategy, an emotional response from her client was at best a cue for further dialogue and fruitful interpretation. A Lead Business Designer welcomed anger, saying:

“Every now and then you *should* get a bit angry when you think about the future, because then you've reached a point where something reveals itself in your thinking and awakens a process. That something collides with an existing assumption and

makes you wonder [about both].” (Interviewee, Lead Business Designer, emphasis by the interviewee)

Using emotions to spur interpretation and drive organizational change can naturally backfire. As a Foresight Consultant pointed out, her clients often tend to get over-excited about individual trends, calling this ‘hype’. Here, over-excitement leads to situational blindness, narrow views and narrow interpretations about implications: individual trends become over-deterministic and the inter-relationships of external factors and the influence of other trends and anti-trends becomes less observed. Implications of ‘hype’, when they are identified, are exaggerated, and implications of other factors are downplayed. The consultant provided a practical example, where hype directly lead to jumping into conclusions, and the client team was unable to properly assess the business opportunities and implications to their customers the ‘hyped’ trend had. In this case, emotions fed biases. An HR Manager shared another example of how emotions fueled biases. Her organization had enjoyed several years of continued growth and good business results, and it had lulled the organization into a sense of security. Everyone was “going with the flow”, as she put it, and this had made especially senior managers uninterested in imagining alternative futures and their implications. This shows how contentedness with the current company trajectory and past results may encourage the desire to preserve the status quo and creates blind spots to factors that threaten the business.

Some interviewees talked about how some managers tended to hide behind their roles and positions, but how moments of foresight interpretation were fruitful when they chose to ‘come out of hiding’ and be open and transparent. As a Research Scientist put it, the manager’s persona matters much when interpreting, and has direct impact on how much the manager is willing to speculate. Openness concerns the manager’s willingness to listen to others, specifically outsiders and subordinates, and admit that they do not know everything that is relevant. It also concerns their readiness to consider breaking path dependencies and do things differently. When interpreting, a Lead Business Designer believed one of the main hurdles in interpretation was if her clients were willing to be playful, referring to using imagination instead of being content with the immediately credible, plausible possibilities that the future might hold. In such situations, to use imagination openly meant taking a risk of losing credibility in the eyes of others. Subsequently, the fear of losing credibility kept managers behind their professional roles.

Openness is not the only attitude affecting sense-making of futures and their implications. Along with openness, *curiosity* was named by many interviewees as a key attitude. How curious managers are about the future and the context from which changes emerge reflects in their ability and willingness to engage in interpretation. Closely related to curiosity is the pro-activeness of managers to change and develop themselves and their organizations. Several practitioners had identified that proactive managers were the most

fruitful dialogue partners when producing foresight. Such managers have what an HR Manager called a ‘winning attitude’ and are inherently motivated to improve themselves, think about futures and are willing to challenge existing ways of thinking and acting in the organization. Oppositely, other interviewees described their experiences with passive leaders to whom futures did not feel relevant, because the organization’s operations were focused on short term results, or the industry was so stagnant and slow that change would come only when said managers thought they’d already be retired, as a Head of Development elaborated. Some might be generally change resistant: a Lead Business Designer commented how she tended to believe that only a quarter of managers were open to change, while the rest were resistant by nature. This was also evident in the ways practitioners had experienced general hostility towards foresight as a practice: a Head of Strategy reported sometimes being hesitant to call her work foresight, due to attitude problems among her clients.

Another attitude that adversely affects interpretation is what A Director of Insight called the ‘not invented here’ attitude: knowledge and interpretations made by others, often by outsiders or people in other parts of the organization, is disqualified and overlooked for simply being made by someone other than the managers themselves or for whatever, usually irrational, reason. The ‘not invented here’ attitude can also manifest as a credibility risk: A Head of Strategic Foresight noted how if the same people are not involved in foresight creation, interpretation and strategic decision-making, the ones responsible for decisions and strategy execution tend to easily disqualify foresight and doubt interpretations.

When summing up the discussions of emotions and attitudes, the notion of self-interest in general and pursuing one’s own interests in strategic decision-making emerges as a major emotion-based factor. While serving one’s own interest is only natural, the commentary of the interviewees paints a stark picture of how assessing futures knowledge, making interpretations of its implications and deciding upon actions all become entangled with organizational politics. A Head of Development explained his recent experience of providing futures knowledge interpretations and action recommendations, noting how much he and his team had to tailor the approach used in the private presentations to suit the needs and personality of the individual stakeholder. In situations where his interpretations and action recommendations overlapped with action plans of other stakeholders, he had to go to great lengths to manage the conflicting interests and prove that his proposal actually served the stakeholders’ own interests better. His and the Director of Insight’s experiences show how internal developers want to take responsibility of overall business and operations development and how in their hands effect interpretations serve best as arguments for strategic action recommendations. Interpretations become increasingly political when a developer consciously makes the choice how to use effect interpretations in their narratives for change, in other words, whether they want to interpret effects

as possibilities or as risks and ‘sell hope or fear’. For such proactive, curious and ambitious leaders, interpretations serve their interests as well: specific implications become vehicles for driving change which is in their own interest.

Along with a sleuth of *emotional* factors, the interviewed practitioners identified several personal factors influencing interpretation related to *cognition*. While many are connected to emotions, these are characterized by how directly they affect thinking.

While none of the interviewees shared any experiences about management skepticism and disregard towards futures knowledge per se, a few highlighted skepticism and how it manifests as doubt about the relevance of futures knowledge. Even though determining relevance is critical for allocating precious time, resources and attention when performing foresight and interpretation, two interviewees shed light on how skepticism had warped cognition negatively. A Director of Insight described a case where his management was analyzing trends and signals and reimagining industry boundaries and their brand’s role in a future scenario where markets were dramatically redefined. Here, the management’s view of the company’s ability to influence trends and signals and their ability to compete against major global competitors in such a situation was hindered by their skepticism. Furthermore, considerations of business opportunities in such redefined markets were dismissed because some in the management felt their business was not in those or comparable markets today. In other words, skepticism, driven by perceptions of the current capabilities and realities of the company, actively bound management’s futures and strategic thinking. In another example, a Research Scientist told of a case where his clients had been engaged in futures thinking: after identifying a number of trends most relevant to the company and its industry, the client team decided to disregard trends that they believed the company by itself or through its connections could not affect. While it is seemingly pragmatic to focus efforts on matters one can try to manage, such practice leaves the company vulnerable to influences which the company cannot block but only react to, especially if they are not even monitored.

Skepticism is but one example of threats to cognition that affect interpretation. The Director of Insight elaborated on top management skepticism and how it blows over and becomes a bias: he noted how while management can recognize that a trend exists, they can still dispute its relevance by claiming it is happening to other companies and industries, and it doesn’t concern us because “our industry is different”. The ‘hype’ mentality mentioned previously is a type of overconfidence and another example of biased thinking. The Research Scientist, when going through another real-life example with a client team in the banking sector, mentioned how they felt Brexit to be an impossibility, or a wild card at best. Their light-heartedness blinded them from imagining the possibility of Brexit and its implications.

Several interviewees talked about how a person’s own culture, languages they speak, educational background and experiences all are ‘soft’ factors that influence how foresight

and its results are perceived and how one makes sense of their implications. As an HR Manager commented, personal background and the world one has grown in determines ways of thinking. As a top management futures workshop was approaching, she worried if senior managers could think openly and expansively enough, even though there was a general will to think differently:

“We’re in a traditional industry that’s now facing massive changes... can we think wildly enough?” (Interviewee, HR Manager)

A Foresight Consultant also pointed out how considerable the differences between personal capabilities in futures thinking and contextualizing implications were among her clients. For some managers, the terminology of the field, along with techniques and tools are already familiar, while for many others they are not. A Head of Strategic Foresight regretted how low the maturity level in foresight capability is in Finnish companies. A Head of Development didn’t spare his words criticizing construction, his own industry, noting how low the futures thinking capability was in general and how difficult it was to consider and discuss even one potential future, never mind several concurrently. When interpreting futures knowledge, foresight is not the only useful expertise. An HR Manager doubted that in her organization, senior managers’ substance expertise about issues at the periphery of their industry was sufficient and felt this posed a challenge to interpreting their implications. Discussing the same dilemma, a Head of Development felt pleased that his top management team, being a combination of leadership from two recently merged companies, included people from different industries and with vision and capability to interpret peripheral factors.

Capabilities in foresight and interpretation however are not only a matter of personal experience and expertise, but also a function of organizational support and maturity in futures thinking. As a Foresight Consultant argued, an organization exposes individuals to different frames of thought and use cases, such as service development, strategy, markets and products, which are then applied for and by foresight and contextualization. She noted how organizational maturity in futures thinking can vary significantly between companies, and if the organization lacks experience, processes and tools for facilitating futures thinking, an individual might find it hard to know how and where to begin.

Just as harnessing emotions as a factor to impact interpretation, foresight and industry expertise emerged as a contradictory topic in the study findings. Referring to foresight subject matter and methodology specialists with limited industry expertise, a Head of Strategic Foresight outright claimed that:

“The time for generalists is over.” (Interviewee, Head of Strategic Foresight)

He argued that in order to be an equal and credible dialogue partner with business managers, foresighters had to be well-versed with the business realities of their counterpart's industry and company. By providing a cognitive framework, ample industry expertise allowed for foresighters to do their own contextualizations on behalf of their clients and provide immediate action recommendations. Given the time and attention restraints of senior managers, this is a strong argument, as evidenced by also a comment from a Head of Development, albeit from an opposite perspective, when discussing the difficulties of interpreting when both sides lack the same situational awareness:

“If over the past fifteen years you’ve developed the understanding of the system and what’s wrong with it, go ahead and try to explain it in fifteen minutes to a manager who lacks the same understanding.” (Interviewee, Head of Development)

When time is increasingly short, pragmatism requires all sense-making participants to have an equal understanding of the internal business context in order for them to contribute. “*I’m given three days instead of thirty*”, the Head of Strategic told about his consulting assignments. Yet, the argument downplays the participatory, dialogic aspect of foresight interpretation by pushing the cognitive responsibility to the foresighter instead of sharing it equally among them and the senior managers. From a consultant’s perspective, an emphasis on ‘sense-giving’ is not a problem since they are hired and expected to create value rapidly. However, while industry expertise allows foresighters to help managers to pose relevant questions for futures knowledge that lead to insightful interpretations, the question boils down to who provides the answers – the interpretations: the foresighter, or the manager. Other interviewees were not as absolute as the Head of Strategic Foresight, but instead believed foresight subject matter expertise and industry expertise are both required, or required at equal measure. “*It is situational*”, as a Head of Strategy commented, saying projects where the outputs must solve very practical problems, more industry substance knowledge is required.

Of course, the Head of Strategic Foresight either did not dismiss the importance of mastering foresight methodologies, but emphasized how crucial industry expertise was in creating credibility for the foresight practitioner in the eyes of senior managers and helping them communicate their views more effectively. However, extensive industry expertise is not always only a positive. As previous comments from a Head of Development and an HR Manager show, being too versed with the intricacies, operations and history of a company and its industry can provide a cognitive barrier of its own. Time as a limited resource requires all sense-making parties to be uniformly informed of the internal context, but at the same time, denies the opportunity to question the basic premises and assumptions which form the understanding. An interesting question arises: how much can

an individual have industry expertise, functioning as a cognitive framework, that it actually curtails creative imagination and limits thinking of possibilities and alternatives? Obviously, this thesis cannot provide but partial answer to this question.

Emotions and cognition drive and manifest as *behavior*. The commentary of practitioners included personal factors that, while being manifestations of emotions and cognition, as behaviors can be seen to have considerable effect on the performance of interpretation. Thus, they warranted a group of their own. The discussed behaviors included topics like *ability to engage with others* and *ways of communication, personal involvement and involvement of others when interpreting*, and the negative habit of *jumping to conclusions*.

As indicated by all interviewees, interpretation is primarily a dialogical activity. A few pointed out how important for practitioners is to establish a common lexicon of foresight terminology with stakeholders. Both internal practitioners and consultants highlighted the need for simplifying results of foresight work and summarizing futures knowledge, even though it might be based on comprehensive and detailed analysis. Simplifying and summarizing facilitates effective interpretation and avoids getting stuck with state interpretations in time limited situations. Several emphasized the necessity for foresighters to network and involve multiple stakeholders in strategic interpretation processes, not only senior managers. Thus, the methods and skills in communication, or how practitioners engage with managers and other stakeholders, are an important behavior-based success factor.

Yet, how individuals engage others is not only a matter of skill, but also willingness. An Information Specialist shared a stunning research finding from his company, a major insurance firm employing several thousand people: according to an internal study, a third of the employees admitted they do not share futures knowledge and market and competitor intelligence willingly with colleagues. While the study did not target foresight practitioners, it painted a stark picture of a challenge to involving employees internally in sense-making. When I asked about reasons why people are unwilling to share their insights, the Information Specialist argued that 'knowledge is power'. Some people apply knowledge only when it benefits them personally: for example, a competitive Sales Director could hold on to customer insights to benefit his/her personal sales efforts, or a Business Director could present futures knowledge only when it makes him/her look perceptive and smart in the eyes of specific peers. In conclusion, the emotion and attitudes of serving one's own self-interest manifest as a behavioral hindrance to engaging and involving others in joint futures knowledge interpretation.



Figure 4. Dilemmas of futures knowledge interpretation: jumping to conclusions and reverse reasoning in the flow of interpretation as part of strategizing

When asked about the behavioral aspects of interpretation, a number of practitioners talked about a specific type of negative behavior. According to them, ‘jumping to conclusions’ is what some managers tend to do when presented with trend insights, scenarios or even initial assumptions about possible futures. Instead of allowing for elaborations and discussions of effect interpretations, these managers disregard interpretation and dialogue, and instead voice action options and muse about the potential outcomes of strategies the futures knowledge (often still in the progress of being created) is implying or could be perceived to imply. As a result, they break down the logical flow of interpretation and reasoning. Using the model I developed for illustrating the interpretation flow and its integration with strategizing in chapter 2.3.3, I visualize the influence of jumping to conclusions in Figure 4.

A Director of Insights shared an example of this behavior from a recent strategy process, where already in the first strategy workshop of many, some business managers raised questions should a brand be discontinued, or production be transferred to another country, even when analysis of what was happening and what it meant for the firm had not really even begun in the participating teams. The Director of Insights also illustrated how managers also bind futures thinking with perceived realities of the present, asking if

something, often a strategy or an initiative, is possible given the current state of the company or its micro-environment, thus narrowing and scoping the discussion and limiting imagination and dialogue. In both cases, I argue this behavior effectively nullifies interpretation by leaping to discussion about preferable actions or at least inhibits the elaboration of interpretations: in an instant, implicit process, managers develop lines of reasoning from state uncertainties to effect interpretations, strategic action option formulation and finally to action decisions. Additionally, just as self-interest manifests as unwillingness to involve others in knowledge creation and interpretation, self-interest and emotions like fear manifest as jumping to conclusions, a defense mechanism to cope with new knowledge.

However, the behavior has other potential dire effects in addition to disrupting and skipping the logical flow of interpretation. The Head of Development, while describing an earlier strategy development project where the aim was to develop a new vision for the company's digitally driven and data-centric operations, pointed out how unilateral interpretations of future trends' impacts combined with jumping to conclusions can actually reverse the flow of interpretation and reasoning. In the project, the first challenge was how the new vision was developed with a pre-formulated action recommendation in mind. This constitutes the original 'jump' to a conclusion. The strategy recommendation was then argued to be optimal by developing alternative, less feasible and suitable action options that were presented side-by-side with the recommendation. In the presentation, the relevance and importance of the recommendation was then argued for by how well it addresses business implications that notable external trends have. However, the external trends were short-listed and chosen according to how they fit with the original action recommendation, its features and the implications it addressed! Thus instead of starting from the external trends and objectively building the case for a new strategy through state, effect and response interpretations and open discussion, *the case was built in reverse*. In Figure 4 above, the flow of reverse reasoning illustrates this dynamic. I argue that when interpretation occurs in reverse, it reduces itself into the dynamic of lobbyists and politicians with interests and agendas they wish to further. If it happens *only* in reverse, it removes iteration from the cycle and threatens the rationality, transparency and objectivity of interpretation.

4.4.3 *Input-related factors*

In addition to organizational and personal factors, a number of practitioners mentioned how inputs of interpretation, namely futures knowledge itself and understanding of real and perceived path dependencies of the company and its micro and macro-environments, influence the performance and process of foresight interpretation.

Table 12. Input-related factors impacting futures knowledge interpretation

| Theme | Sub-theme | Factors |
|---------------|-------------------|--|
| Input-related | Futures knowledge | <ul style="list-style-type: none"> • Quality, volume and availability of futures knowledge, • its distance to business |
| | Path dependencies | <ul style="list-style-type: none"> • Perceived and real path dependencies affecting individual and organizational decision-making |

The volume and quality of futures knowledge can affect interpretation both negatively and positively. A Director of Insight reflected how a previous strategy process had built on a rich base of futures knowledge, drawn from trend analysis, weak signal scanning, ethnography and lead user interviews, and semiotics. Thus, a fuller picture of the environmental change emerged, and well-argued interpretations could be made. However, he also admitted that some managers felt they were swamped by the amount of information. A Head of Strategy noted a common contradiction among her clientele: often, senior managers desire a simple interpretation and action recommendation, endorsed with clear figures, from a futures context that was complex and driven by systemic, inter-related factors. When managers are overloaded with information and perceive external factors as too abstract and complex, their interpretation focuses on more tangible, operational matters which are something they can decide and act on. The quality of futures knowledge is therefore subjective and hard to assess, even though it is required for strategic decision-making.

Examples of good quality futures knowledge, given by interviewees, included characteristics like being supported by real-life cases (e.g. forerunner companies or showing trends already having an impact in some other country, market or industry). When he talked about what makes futures knowledge valuable and credible, a Director of Insight pointed out that futures knowledge, such as reports, should include assessments of how probable external changes were and how considerable, or large, their impact would be, in addition to what the nature of the change is. I argue such, even qualitative, assessment is *an important mechanism to facilitate and encourage contextualization of change effects*. Such ‘meta-data’ about the external change provides the first understanding that bridges the analysis gap between external and internal environments. With the ‘meta-data’, the perceived quality of the knowledge is not only improved, as pointed out by the Director of Insight, but managers are better equipped to interpret its detailed implications to their strategy and organization.

Interviewees mentioned how futures knowledge and its perceived quality and credibility can suffer if strategizing stakeholders have not been involved in its creation. This

challenge concerns a quality characteristic of futures knowledge called ‘distance to business’ (Hines and Gold 2013). It refers to where futures knowledge was created, by whom, and about what topic, in relation to the user of futures knowledge and their context. Preferably, the ‘distance’ would always be as short as possible: as a Research Scientist admitted, futures knowledge is often peripheral, removed from the daily life of managers and abstract to the point of seeming irrelevant, compared to other types of past and present based information.

Along with the volume and quality of futures knowledge, a mentioned input-related factor were the path dependencies of the company and its environment. In other words, the content and outcomes of foresight interpretation are impacted by the history of the company. Like noted earlier in this section, how history is perceived can affect emotions and attitudes, but it is used directly in sense-making as an input as well. Interestingly, a Head of Strategy talked about how moldable history was:

“I thought earlier that history is written in stone, but my work has made me realize that you can really rewrite history too... like someone said, past is fiction, future is real.” (Interviewee, Head of Strategy)

Nonetheless, history is used as a context for interpretation. A Head of Development told about how their industry is viewed by senior managers as slow-moving and rigid by historical nature, and futures knowledge on the contrary and subsequent effect interpretations and action responses are challenged using the industry’s path dependencies as counterarguments. A Director of Insight explained how in his company that mainly produces consumer durables, current businesses are locked into certain business models, and when presented with new knowledge and interpretations, their owners immediately revert to path dependencies in defense:

“They ask me, *‘from what is this new thinking taking away, what is it discontinuing, I have a certain budget to operate with, if I over-invest in something new that won’t even generate profit in the first years, how can I argue for that [to my superiors]’?*” (Interviewee, Director of Insight)

4.5 How to perform valuable futures knowledge interpretation

Early in his interview, a Research Scientist commented how futures knowledge today is becoming a basic commodity, widely available online in forms of trend reports, publicized scenarios by companies, governments and NGOs, articles by researchers, white papers and blog posts by experts, among others. If such ‘un-tailored’, general futures

knowledge is truly a basic commodity, the fact only accentuates how important interpretation is as a way of adding value to futures knowledge. But the question remains: how to perform futures knowledge interpretation that is valuable to companies as they strategize? Put differently, what capabilities does valuable interpretation require, and what tools are used?

As I strive to answer the above questions, I have to note that the skills and capabilities discussed next could also be perceived to be success factors of foresight interpretation: if practitioners and managers lack them, they become hindrances to successful interpretation. Similarly, if they do not possess these capabilities, the individuals cannot utilize them to manage *other* factors influencing interpretation. Instead of viewing them as behavioral factors (and discussing them in the previous chapter), I categorize them as ‘meta-capabilities’ of futures knowledge interpretation. I argue this separation allows me to appreciate their nuanced, two-fold nature. In this section, I first explore what capabilities, expertise and personal traits are required for performing successful, valuable interpretation, then what practical techniques and tools are used in interpretation, and finally what practical means help manage factors that influence interpretation.

4.5.1 *Ideal capabilities, expertise and traits*

I asked the practitioners about how interpretation ideally happens and what kind of individual characteristics and capabilities either are necessary for successful interpretation or make up what they believe is an interpretation capability. Their answers split into three groups: the capabilities that could be trained, the expertise that could be attained through experience (akin to information) and the traits that are part of one’s attitudes or personality. To ensure that the conclusions about ideal capabilities do not become a laundry list of general characteristics of foresighters or knowledge-workers, but actually include only relevant findings that are directly related to futures knowledge interpretation, I must evaluate the findings critically. Without the risk of falling to the trap of circular, self-explanatory logic, I can show that each of the presented capabilities, expertise areas and traits can be included in the conclusions by identifying the objectives, core characteristic, and/or factors of interpretation that they affect. In other words, I can logically develop a capability set, or outline an ‘interpretation capability’, based on what interpretation aims to achieve, what it is ideally, and how to manage the structural, personal and input factors that affect it. I consider each of the capabilities, types of expertise and traits and how they link to the wider whole next. The results are grouped in Table 13 below.

Table 13. Summary of the capabilities, expertise and personal traits that are necessary for successful futures knowledge interpretation

| | |
|---------------------|--|
| Capabilities | Analytical thinking |
| | Communication |
| | Exploration |
| | Logical debating |
| | Making (novel) connections [imagination] |
| | Networking |
| | Querying |
| | Sourcing |
| | Structured cognition and tool use |
| | Turning interpretations into action |
| Expertise | Foresight substance expertise |
| | General knowledgeability |
| | Industry expertise |
| Traits | Confidence |
| | Courage |
| | Curiosity |
| | Empathy |
| | Objectivity |
| | Sense of responsibility |
| | Transparency |

As interpretation of effect uncertainties (i.e. uncovering and imagining implications of environmental factors to business) aims at problem solving, problem finding and expanding understanding together with revealing managers' cognitive frames, it is unsurprising that practitioners mentioned *imagination* and *analytical thinking* as key capabilities. Interestingly, none of the interviewees referred specifically to creativity when speaking of the imaginative aspects of interpretation, though a few inferred interpretation to be a creative process. For example, when elaborating on imagination as a characteristic of foresighters, a Head of Strategy simply called it "insightfulness" and "the ability to see farther than others, more clearly", implying this to be a personal trait rather than a capability. In my analysis, however, I adopt the actionable aspect of creativity (i.e., that is the ability to act and create something new) and I specify the use of imagination, or imagining, as the act of explorative intuiting (Crossan et al. 1999, see discussion in 2.2.1.3) which involves *making novel connections* between trends, factors, phenomena and the business. When I conflate creativity with imagination, I suggest that imagination, as understood here, can

be trained as a capability, rather than a trait of being imaginative or insightful, as the Head of Strategy remarked.

If the use of imagination is about *making* the connections, I then suggest analytical thinking can be viewed as the rigorous, objective *examination* of said connections. Logically inferring this, I claim, requires a number of meta-capabilities the interviewees noted: first, interpreters must be able to *structure* their thinking. A Senior Partner in a foresight consultancy referred this to as “being systematic” in one’s reasoning. Such structured approach is naturally facilitated by *ability to use tools and frameworks* (which are discussed in the next chapter). Subsequently, the ability of tool use includes tools and frameworks that are in the realm of foresight or futures studies, hence, *expertise in foresight* is a component of this ability.

Several interviewees indicated how central asking questions is to foresight interpretation. Therefore, I’ve included the *skill of query* as an ideal capability of practitioners. When interpreting effects and responses, asking questions is not only about elaborating on perceived implications and challenging personal assumptions that reveal how one has arrived to their conclusions, as a Foresight Consultant pointed out, but also identifying the underlying reasons why one has arrived to certain conclusions about effects and responses. Such query is integral to interpretation’s core characteristic of critical reflection, which I presented in chapter 4.3.

As several interviewees highlighted, the skill of query has to be complemented with the *ability to debate logically*. Put differently, this means the ability to present logical arguments, not only for initial interpretations of futures knowledge, which foresighters provide for decision-makers, as a Research Scientist highlighted, but also when conversations about futures and iteration through questioning generate new interpretations. Here, I conflate logical, rational presentation of arguments thus with the skill of maintaining a rational debate.

If interpretation is seen as dialogic, social and to have the purpose of sense-giving through shared interpretations, it comes as no surprise how practitioners emphasized the abilities of effective *communication* and *creating networks of relationships* with other individuals. An important aspect of communication mentioned was to summarize one’s own thinking and message. A Senior Partner at a foresight consultancy noted how important *confidence* is for a practitioner to be able to give presentations and handle sometimes heated debates in a social setting with top management, as futures knowledge and interpretations often provoke emotional responses from senior managers. Subsequently, based on my own experience as management consultant, I suggest posing questions to top executives (in a manner discussed above) also requires *courage*, if questions challenge the cognition, beliefs, or behavior of said executives.

Related to creating relationships is what I refer to as *sourcing*, or the ability to develop, maintain and utilize rich base of sources for futures knowledge, both within and external

to the organization. Perhaps unsurprisingly, particularly those interviewees operating inside companies (and not as external consultants), like the Director of Insight, emphasized the “richness of sources”: he also celebrated how one of his major foresight projects had used a wide range of insights and knowledge gathering techniques. While the extent of available futures knowledge in each case should be appropriate, futures knowledge is simply necessary for its interpretation and it is thus not difficult to argue that being able to efficiently access futures knowledge is a critical capability of interpretation.

To be able to be inquisitive and imaginative, interviewees mentioned a necessary personal trait of *curiosity* and learning about new things and the capability to *explore*. A HR Manager said one has to have “crazy curiosity”, referring to a sort of bold openness to things. A Head of Strategy put it bluntly when she said “if you’re not willing to learn - - to be curious, you’re on weak ice”. She also described exploration as looking for things without knowing what to look for, searching for information about things that there is no information about, or searching insights based on a scope or a frame (e.g. a business need or an industry) but without heeding the scope. Exploration, like many other activities and characteristics of interpretation, emerges as paradoxical. Granted, one could argue that exploration is not a particular aspect of interpretation (which assumes that exploration has been done and futures knowledge as an input has been generated). However, interpretation, as noted earlier, is iterative in nature. It generates new questions for which new futures knowledge has to be created, before further shared interpretations can be made. Therefore, I argue the skill of exploration becomes relevant to interpreters insofar it is a part of the iteration.

To create inputs for interpretation, i.e. futures knowledge and analysis of the past and present of the business and its environment, one needs both *foresight* and *industry substance expertise* (see chapter 4.4.2). However, as noted by the interviewees, practitioners also need to balance the influence of these expertise areas according to the business need and purpose of interpretation, that is, whether it is problem-solving or problem-finding in nature. The third expertise (i.e. attained more through experience than outright training) is *general knowledgeability*. This was highlighted by a Senior Partner of a foresight consultancy, who argued good general awareness of social issues, technology development, politics, history etc. provides a basis for intuiting and analytical thinking both.

As interpretation in a social context is based on trust, interviewees noted how it requires *personal transparency*, *objectivity* and also *empathy*. Based on their commentary, I suggest transparency and objectivity are particularly important to critical self-reflection and managing self-interests. When managers experience others as transparent and objective, this together with their genuine *empathy* or interest towards others breed a sense of trust to engage in imaginative interpretation and the courage to come out behind one’s role.

Finally, the ideal outcome of interpretation is that it leads to action or creates actionable results. From an individual's capability perspective, the ability to *turn interpretations into action* requires multiple things. A Head of Strategic Foresight gave illustrative examples how he connects foresight practitioners with relevant counterparts inside client organizations, utilizes his considerable industry expertise to provide interpretations and recommendations that managers can use directly, and involves managers responsible for execution throughout the foresight process. Furthermore, as a Director of Insight explained, actionability requires *a sense of responsibility or ownership* of the interpretations among interpreters, decisionmakers and those acting on interpretations and decisions, which to him in ideal situations are all the same people.

The logical relationships of necessary capabilities and the different purposes, objectives and ideal characteristics of futures knowledge interpretation presented above are not conclusive. Their relationships could be discussed even further and other connections could be made, but my analysis shows the relevance of the suggested ideal capabilities, expertise and traits. Furthermore, given the explorative nature and limitations of my study, I cannot claim that the list of findings is comprehensive. However, if a practitioner has such a capability set, what are then the practical tools and frameworks they can utilize to perform interpretation in practice?

4.5.2 *Practical tools*

While most of the interviewees agreed that futures knowledge interpretation is about exercising intuition, the study nevertheless aimed to shed light on the practice of interpretation by asking practitioners about the frameworks, techniques and tools they use and have found helpful for engaging managers³. By providing structure for cognition and imagination, these are what allow for heightened analytical thinking during interpretation. The frameworks and practical techniques mentioned by interviewees are listed in Table 14 below. The table uses the same classification logic as one I identified for tools and techniques mentioned in existing academic literature (see discussion in chapters 2.2.1.1.3 and 2.2.1.3).

Without explicitly naming the framework, an HR Manager described how they approach futures interpretation with TOWS, a reverse SWOT analysis model, where the starting point of analysis is identifying the threats an external driver presents to the company, then trying to imagine opportunities (or reimagine threats as opportunities) it offers

³ The interviewees, particularly those on the external consultant side, presented some of their templates and frameworks during interviews, but given how they constitute a major part of their competitive advantage and often include confidential information, I cannot reproduce and present them in full in this analysis. However, the examples interviewees gave show the variety of perspectives available for practitioners.

before elaborating the internal implications by imagining emerging weaknesses and desirable strengths of the organization.

Table 14. Frameworks, techniques and tools used by practitioners during and for interpretation

| | |
|--------------------|--|
| Frame-works | TOWS (reverse SWOT analysis) model |
| | VUCA (volatility, uncertainty, complexity, ambiguity) model |
| | Micro-environment models (with or without internal environment) |
| | End-customer perspective (e.g. customer journey models) |
| | Business model canvas |
| Techniques | "Trip to Mars", inspired narration |
| | Back-casting |
| | Trend hunting trips |
| | Stakeholder validation interviews and meetings |
| | Stories, narratives |
| Tools | Trend analysis software and online tools (e.g. Futures Platform) |
| | Digital tools for collaboration and co-creation |

VUCA (acronym of volatility, uncertainty, complexity, and ambiguity) was mentioned by a Head of Strategic Foresight as something he is aware is used in the field but which personally doesn't rely on anymore. In brief, VUCA is a cognitive framework for identifying the characteristics of the external environment when doing foresight or interpreting, and thus is not applicable for interpreting the implications of external factors to business per se. Yet, by helping to understand the nature of the external environment, I suggest it can be a useful framework for initiating state, if not effect, uncertainty analysis.

Different templates for modeling the micro-environment of the company were shown during the interviews. These force interpreters to consider the effects of external changes from the perspective of their external stakeholders, e.g. customers, suppliers, partners and competitors. In some cases, the models equally included the internal environment, i.e. company's resources, capabilities and questions about how external changes affect the business models of the company, and who is the company's employee in the future. Such approaches, if being more detailed, resembled TOWS models. The end-customer perspective, being either the customer or the consumer, was the most used segment of the micro-environment. In one example, interpretation begun with the question 'what does our future customer look like'. A Head of Strategic Foresight e.g. commented how models of customer journeys, or processes through which customers engage with their product and service providers as they search, choose, buy and use products and services, are used as

frames to make sense of how trends impact the life of consumers, and subsequently, the business of the provider.

Finally, practitioners used ways to model the company itself in order to flesh out the implications of external factors: one mentioned framework was the business model canvas, popularized by Osterwalder (2005), which includes as perspectives the company's key partners, key activities, key resources, value propositions, types of customer relationships, channels to reach customers, target customer segments, cost structure and revenue streams. The differences between models used to analyze the businesses vary in depth and detail and most importantly in the questions they pose to sense-makers.

In addition to 'hard' cognitive frameworks, interviewees shared a few examples of practical techniques and 'tricks' to facilitate interpretation. The playfulness of approaches was underlined. A Lead Business Designer told she had found useful a method she called 'trip to Mars', where she asked managers to imagine they had gone to Mars and come back, a journey that had taken two or three years and during which they had not been able to contact home, and then told them to describe that their business looked like after they returned, based on their understanding of how futures will unfold. Instead of simply asking "what is the situation in three years' time and what has led to it", the playfulness of the premise together with futuristic images of Mars spaceships and rovers inspire imagination and thinking. A reverse example of trip to Mars is back-casting, a technique where an implication or a situation are presented as given, but managers need to elaborate how the situation was reached or the implication became real. Another playful example given was a news interview in the future, where a manager had to play themselves in the future, explaining to a journalist what had led to the present (future) situation.

Trend hunting trips can serve as an example of both a space for interpretation and a technique to facilitate interpretation. A Head of Strategic Foresight described how he takes his clients across the world in such trips: for these, the clients inform him of a handful of themes or trends they'd want to learn about, in general and in terms of their future business, and the Head of Strategic Foresight looks for forerunners globally: examples of early adopter individuals or companies who already are embodying the trend and could serve as a learning and interpretation mechanisms about change and what it could mean for his clients. The Head of Strategic Foresight himself as well becomes familiar with the subjects as he plans the visits and participates in interpretations by fusing the content of the trips with his industry expertise in the form of action recommendations.

Several interviewees also mentioned how interpretation occurs not only inside the forums of the company, but with and by their stakeholders, namely customers. While it requires specific capabilities as discussed above, managers themselves can engage their customers in dialogue and query directly from them how they envision the impacts of external changes. In many cases, such stakeholder interviews and meetings were used to validate initial interpretations or to bolster the process with further interpretations.

Another technique to facilitate imagination and analysis was storytelling: like a Director of Insight recollected, interpretation sessions during a previous strategy process often begun with visual narratives depicting a preliminary understanding of what was happening, why, and how it was affecting the wider world and the company. These were the initial interpretations of practitioners, designed to provoke a response among managers and kick-start their personal interpretation processes.

Finally, interviewees shared a few comments about tools they use for interpreting. Futures Platform, a digital trend analysis tool offered by a Finnish company of the same name, was mentioned several times. Futures Platform can be used for collaborative futures knowledge creation and gathering, trend impact analysis, and factor impact rating and evaluation, among others. As an Information Specialist noted, such tools are used especially to share learning and interpretations across organizational boundaries, between functions and business units and people who in normal work rarely interact.

5 DISCUSSION AND CONCLUSIONS

My thesis poses two questions:

- 1) How foresight practitioners interpret futures knowledge for the use of strategizing
- 2) Why interpretation occurs as it does

I have the specific aim to study the practice of futures knowledge interpretation from practitioner and systemic perspectives. Put practically, my thesis explores and describes the behavior of foresight practitioners and its drivers as they respond to their colleagues' question "what does this futures knowledge mean for us and our organization" and "how should we act accordingly". Here, I strive to provide new understanding of how practitioners interpret futures knowledge for their colleagues' use and subsequently try to address research gaps highlighted by other academics, namely that the foresight theory lacks understanding of the individual practice (Tapinos and Pyper 2018, 294) in general and that foresight interpretation as a process is poorly understood (Horton 1999, 7) in particular. My thesis also serves a more wider purpose of trying to synthesize from existing theory and empirical evidence and new empirical findings a comprehensive, if not exhaustive, framework of futures knowledge interpretation that can be used to understand it as both as an activity that can be managed and as a personal capability that can be developed. Moreover, with the framework I attempt to understand futures knowledge interpretation more comprehensively and specifically than has previously been discussed in futures studies field.

In this section I bring together existing theory and evidence and new findings in an attempt to understand futures knowledge interpretation both as an activity and a capability. Weick illustrates a key challenge this thesis grapples with when he writes that "sense-making tends to be swift, which means we are more likely to see products than process." (Weick 1995, 49). Interpretation is personal, and it seems swift partly because it is highly intuitive, as both existing theory and new findings agree. Furthermore, simplifying interpretation to a process with inputs, actions and outputs is not sufficient if the intention is to understand it well enough to develop one's own actions and capability to perform it in a way that is valuable in practice. Because interpretation is in part personal and intuitive, the need to understand it more as a capability than a rigid process increases. Thus, while they are important, one has to look beyond the inputs, actions and outputs of the activity and grasp the factors that affect its success, the means to manage the factors, the practical tools that are used in interpretation, and the skills and expertise that make up the capability.

5.1 Purpose and objectives of futures knowledge interpretation

The theory and academic discussion in the field of futures studies at large covers the wide range of purposes and objectives of corporate foresight in general. These include e.g. creating awareness and deeper understanding of external, ‘state’ uncertainty (e.g. Hines 2003, 32; Voros 2003) but also of ‘effect uncertainty’ implications of external change to businesses and business strategic decision-making (e.g. Horton 1999, 7; Rohrbeck 2012, 449; Heger and Rohrbeck 2012, 829; Ruff 2015, 47). The research in this study shows that foresight practitioners view the business context, e.g. the goals, operations and resources of the company, as the domain from which the case-specific business needs and use cases for foresight and interpretations emerge. Objectives of futures knowledge interpretation stem from *concrete business needs*, and while state interpretations are necessary, I suggest futures knowledge is only valuable when it is contextualized to the organization at hand. The purposes for creating futures knowledge also range from the wide-scope, explorative search of ‘*problem-finding*’, where the understanding of implications to business emerge from open-ended futures knowledge creation and interpretation, to ‘*problem-solving*’ type of futures knowledge creation and interpretation, where the aim is to address business-oriented, specific issues and problems (see e.g. Hines 2003). Even when business strategists have a mentality of ‘problem-finding’, the driving purpose can of course be business-centric, meaning that futures knowledge is created and used to e.g. help determine vision or strategy of the company, yet, I argue the crucial difference is exactly at the level of interpretation. Here, the type and level of strategic questions differ, and as questions differ, so do the frameworks used in interpretation. When managers are problem-solving, the frameworks and contexts used for interpreting the implications of macro and micro environmental change are specified to the pre-determined problem. Here, available time is a practical constraint. When managers problem-find, the frameworks and context become more open and can cover the entire organization. Futures knowledge creation becomes more an issue of exploration and discovery, or looking for things one does not know they are looking for. It is up to the mentality of the managers to then determine whether they interpret the findings narrowly, in the context of an individual business decision or problem, or more widely, in the context of the company and its strategies.

While the interviewed practitioners themselves universally claim that interpretation and futures knowledge creation at large should stem from clearly articulated business needs, I suggest this does not mean that the initiative for strategic search for futures knowledge should only flow from the business context. Consider wildcard situations like the COVID-19 pandemic: here a company is subjected to an external crisis where the impetus of futures knowledge creation is not the company but the external, massively impactful factor. Here one has to interpret and understand the state uncertainties first in

order to focus on effect uncertainties. However, based on both views of interviewed foresight practitioners and findings of other researchers (e.g. Rohrbeck 2012) one could argue that futures knowledge, even though its creation has been driven by the external context, only becomes valuable when it is interpreted into the internal context.

As the findings of this research suggest, interpretations of futures knowledge have a key role in strategizing. As a Head of Strategic Foresight pointed out, interpretations are building blocks of the *change* narrative of the company that tells why it must change, how it changes and when. However, as Jarzabkowski (2005, 5) notes, strategy does not only concern change, but it often involves reproduction and maintenance as well. Thus, I propose interpretations about the future could rather be viewed as part of *strategic narratives*, stories about why a company must *act*, how it *acts*, and when, that are communicated to stakeholders to facilitate the desired action. A Foresight Consultant put it similarly if somewhat more concretely when she said foresight helps in development of the company's vision and its strategic options and determining the correct time to implement the strategic choices. In other words, it helps provide the *what*, *how*, and *when* of the company's strategies.

5.2 Outcomes of futures knowledge interpretation

Along with different purposes and objectives, both existing research and this study show that futures knowledge interpretation has multiple outcomes, i.e. products and benefits, when it is applied in the context of strategy making.

First, interpretation, when it is understood as contextualization of futures knowledge, produces *understanding of effect uncertainties*. Concretely, these are awareness and knowledge of *opportunities* and *threats* that the external changes pose of the company (e.g. Day and Schoemaker 2004, 128; 2005, Ralston and Wilson 2006, 142), but also knowledge of what I call '*positives*': positive implications of external change to the company that do not require action or pro-action on behalf of the company to realize the impact, unlike opportunities do. Put in another perspective, the understanding of effect uncertainty is the *understanding of organizational resilience*, because awareness of possible implications can be used to assess the *current* state of the company in the face of potential external change.

Second, interpretation produces *understanding of response uncertainty*, i.e. understanding of the possible outcomes of strategic actions the company can take in the futures context to both the company's performance itself and its own micro- and macroenvironment (e.g. Ralston & Wilson 2006, 149; van der Heijden 2005, 273-5; Lehr et al. 2017, 216-9). Here, the question of "what do the possible futures mean for us" becomes a ques-

tion of future robustness, feasibility and suitability of current strategic choices and strategy alternatives. Instead of focusing on the present, the attention turns to considering the possible futures and the current strategic direction and possible action options of the organization, and the question becomes will the company have the resilience and ability to survive and thrive in the future. When considering the future context and the possible strategic avenues the company can take, managers also ask themselves which alternative is the optimal. When addressing response uncertainties, the relationship of the future state of the company with the future external environment is interpreted: this includes understanding what implications the company's strategic choices might have on its micro- and macro-environment, but also how alternative futures might affect different strategic choices and their realization. Interpretation informs the managers about the relationship of the firm and the external environment, which as Rumelt points out, is the focus of strategy (Rumelt 1979, 196). Ultimately, interpretations of the relationship should lead to conclusions about strategy alternatives and choices of action.

Such products – opportunities, threats, positives and conclusions about strategy alternatives – in turn inform the company about issues relevant in the external context and the need to take action. This is true to both narrowly scoped strategy questions such as whether or not to launch a new product line, or wider strategy questions such as what the corporate level vision and objectives of the company are. As several interviewed foresight practitioners indicated, interpretations should lead to action. To enable such an outcome, people involved in interpretation should take ownership of the results, as a Director of Insight noted, and disseminate and argue for the shared conclusions in the organization. Furthermore, interpretation activities should, among others, be integrated in strategizing and corporate processes, for example, interpretation should have time reserved for it in the top management agenda. Interpreters, strategists and implementers should be, if not the same people, closely networked not only socially but also structurally, in terms of roles, responsibilities, forums and agendas. A Head of Strategic Foresight described this well when he urged interpreters, decision-makers and implementers to have counterparts in the organization who fluidly can communicate and co-operate in turning foresight into action.

Action is not the only potentially beneficial outcome of performing interpretation. According to existing theory and new empirical findings, these can include:

- Learning and unlearning (see e.g. Crossan et al. 1999, van der Heijden 2005, Huber 1991)
- Challenged cognitive frames (e.g. Day and Schoemaker 2004, Hines 2003)
- Shared understanding (Daft & Weick 1984, Crossan et al. 1999, Weick 1995, Ramirez et al. 2013)
- Coalescence to one view or expanded horizons of many views (Crossan et al. 1999, Weick 1995)

- Grown hunger for change
- Constructive emotions: increased optimism, courage, open-mindedness, willingness to act and experiment, and negative but useful emotional responses, such as impatience or anger in the company's sluggishness to act in the face of external change forces
- Coming up with new relevant questions for iterative futures knowledge creation and interpretation
- Promotion of futures thinking in the organization

If interpretation is made according to business needs in one hand and the level of strategic questions – being either of problem solving or finding type – on the other, what determines what is interpreted for strategy making, and if it is done at all? In other words, if business needs and strategic questions drive interpretation as an *activity*, what drives the *content* of interpretation?

Case-specific business needs, influencing factors such as limited time and managerial self-interests and the need to know how to act all scope what is interpreted in strategizing contexts according to the findings of this thesis. I claim that what connects them is the issue of relevance: they all help scope what external signal or change is relevant. Relevance in turn determines what should be interpreted. If uncertainty of decisions about strategic action is a crucial driver of interpretation, then signals are deemed relevant if they require action on behalf of the organization. Similarly, if managerial self-interests drive interpretation, then signals that affect them positively or negatively and thus require reaction or pro-action are considered to be relevant. Thus, whether or not a signal requires a response becomes a filter, one that defines what is interpreted or not. This poses a risk of blind spots, as if a signal has no perceived relevance, its interpretation is likely to be ignored. Furthermore, this also presents a paradox: if the act of interpreting uncovers what is relevant by producing a shared understanding of the implication to business, how do individuals know what to begin interpreting, i.e. what is/could be relevant? Here, issues the findings and theory have discussed such as individual intuition and self-interests, and power dynamics and politics that manifest as expected and explicit interests of the organization at large and other stakeholders in the organization could be considered as 'pre-social', 'pre-shared' filters for interpreting, meaning that these direct individuals as they note and bracket signals and ponder where to focus their attention and time required for in-depth interpreting. Yet, I believe relevance is ultimately established socially through interpretation, dialogue and integration that lead to shared understandings. I argue this applies even if individual figures have absolute authority in the organization and who force their views unto others, because each person is unique in terms of their personal background and cognitive views and they cannot be expected to perfectly reproduce the imagination and thinking of others.

On the topic of relevance in interpretation, I find it interesting how indications from the interviewees about actionability being a key ideal characteristic of interpretation betrays a bias in corporate thinking. Based on the discussion in the literature review (see chapter 2.2.3), I claim that *perceived effects* of environmental uncertainty, not the *need for action*, is what determines relevancy of environmental uncertainty. An action bias, or response bias, directs attention towards uncertainty whose effects demand action, i.e. opportunities and threats, and ignores uncertainty with positive effects that do not require action from the outset or based on an initial interpretation. While understanding of the latter type of effects might be argued to be ‘nice-to-know’ knowledge, they might cloak a threat or a missed opportunity. Returning to an earlier example about meat producers and increasing demand for pork, and how this initially could be viewed as a simple positive effect not requiring a response (e.g. realignment of strategy) on behalf of the producer: such a bias on action instead of focusing on indepth awareness of effects could blind the meat producer to the risk of the growing market attracting new producers that not only compete for the new demand but also for existing market shares. Avoiding action bias is also exactly what Day and Schoemaker (2004, 138-9) imply when they recommend managers to suspend the urge reach a quick judgment and avoid trying to reach a consensus on one meaning. The bias for action also hints at reasons why strategy is viewed primarily being about change instead of reproduction and maintenance: action is implied to be about doing something new, about changing behavior or strategy, or trying something different, instead of maintaining course and continuing the implementation of existing strategies.

5.3 Core characteristics and practice of interpretation

What is futures knowledge interpretation in practice? How does it happen, and according to foresight practitioners, how should it happen? Asking these two questions separately is deliberate, because theory of organizational sense-making (see e.g. Weick 1995), organizational learning (see e.g. Crossan et al. 1999) and relationship of foresight and strategizing (see e.g. Kaplan and Orlikowski 2013) provides a wealth of descriptive understanding of the practice of interpretation, in other words how it happens, whereas new empirical evidence sheds light on its normativity, i.e. how it should ideally happen to be valuable for companies and their strategy making. These opinions of normativity can be complemented with other findings and expert opinions that concern the measurement of foresight in general and its interpretation in particular (in e.g. Rollwagen et al. 2008, Rijkens-Klomp 2012, Piirainen et al. 2012, and Van Twist and Van der Steen 2012), because attributing measures to an activity means applying normativity to it. In synthesis of the different existing theories and empirical evidence with the new findings, I suggest

that futures knowledge interpretation has twelve core characteristics, of six of which are descriptive (dubbed functional below in Table 15) and six are normative (dubbed ideal).

Table 15. Synthesis of core characteristics of futures knowledge interpretation

| | |
|-------------------|---|
| Functional | Intuitive and analytical |
| | Continuous and iterative |
| | Individual and social: sense-making and giving |
| | Focused on and by extracted cues |
| | Based on and driven by cognitive frames and contexts |
| | Combines and rethinks futures with present concerns and historical paths |
| Ideal | Founded in trust |
| | Made in right time and space |
| | Rooted in participation and dialogue of different disciplines and personalities |
| | Actionable and fit for purpose |
| | Uses critical reflection |
| | Part of strategic decision-making processes and cycles |

I argue, based on its own findings and views of Crossan et al. (1999) that futures knowledge interpretation is a combination of intuitive and analytical thinking. Here, intuition regards the use of creative abilities of imagination to make novel connections between issues, while analytical thinking concerns the ability to assess the meaning, strength and relevance of these connections in a structured, logical manner.

Following the argument of Weick (1995, 43) who argues that sense-making is ongoing, similarly I suggest interpretation is continuous and iterative. As Orlikowski and Kaplan (2013, 978) suggest, strategic accounts required for decision-making and interpretations they are based upon are provisional, i.e. subjected to constant iteration and reconsideration.

The act of interpreting is both individual and social, as per the findings of this thesis and the existing theory on sense-making. If sense-making is about using personal cognitive abilities of intuition and analytical assessment, it is inherently done by individuals. As Gioia and Chittipedi (1991) make a distinction between sense-making and sensegiving and given how power dynamics, organizational politics and emotions and personal interests of managers affect futures knowledge interpretation, I too argue that sense is *made individually*, but it is *given socially*. Furthermore, this distinction is supported by Crossan et al. (1999, 525) who describe *integration*, a concept resembling sensegiving, as a process where shared understanding is created among individuals and what follows interpretation in their model for organizational learning. Being social, interpretation is not only

an act of intuiting and cognition, but also influencing and use of power, even if these occur with benign intentions.

I agree with Weick (1995, 49) and suggest that interpretation is focused on and by extracted cues. Following Weick's description, this means that interpretation requires individuals taking note of signals or cues, and how particularly surprising, alarming, peculiar, colorful, abnormal etc. signals are noted. In other words, interpreting is about picking up signals for sense-making, but the signals themselves, their nature and form, partly determine what is noted and what is not.

Similarly to cues, I propose interpretation is based on and driven by cognitive frames and contexts. As Starbuck and Milliken (1988, 51) point out, sense-making is about "placing stimuli into some kind of framework". These frameworks are both mental and tangible cognitive maps, such as beliefs of industry logic and SWOT matrices, respectively, and organizational and personal contexts that affect individual's thought processes, such as company culture, personal history and experiences, etc. Interpretation requires these frameworks to happen, but the frameworks in turn also influence how interpretation is made and what it produces.

The sixth and last descriptive type of core characteristic that I propose is how futures knowledge interpretation combines and rethinks futures with present concerns and historical paths. This claim follows from the findings of Kaplan and Orlikowski (2013, 965) who argue that strategic decision-making requires organizations to "settle on particular strategic accounts that link interpretations of the past, present, and future in ways that appear coherent, plausible, and acceptable". However, findings of this thesis suggest that not only do strategic accounts involve linking interpretations across different temporal levels, but so do the interpretations of futures knowledge themselves as well. As noted by a Director of Insight as he was describing a recent strategic process that included interpretation and creation of shared understanding, interpreting the implications of external factors to the brand's or, or company's, future and setting up a vision of the business required reimagining the past of the company's business, or seeing the past in a new light, thus more or less reinterpreting it. Put more concretely, in order for a manager to agree on an interpretation of an external, futures-based implication to the company or a brand, the interpretation must be coherent with interpretations of the environment's and the company's present states and histories. This core characteristic resembles what Weick (1995, 18) argues is a property of sense-making, namely how it is grounded in identity construction. Just as Weick points out, interpretations challenge and reconstruct both personal and organizational notions of identity, particularly when coherence must be achieved between interpretations about the future of the organization and its past.

In addition to six functional characteristics of futures knowledge interpretation, I suggest there are six normative characteristics that should manifest in practice if interpretation is executed successfully.

First, interpretations must be founded in shared sense of trust to allow for free, fruitful exchange of ideas. This involves participants feeling safe to share their interpretations, views and opinions without fear of losing face or being ridiculed or dismissed. Per expert opinions of the interviewees, a shared sense of trust implies some familiarity between participants and even the notion of fun and having fun while interpreting effects and integrating shared understandings.

Second, according to the interviewed experts and e.g. Day and Schoemaker (2005), the activity of interpretation should be rooted in dialogue and participation and not as a sole responsibility of one or few individuals. Furthermore, not only is dialogue encouraged, it is performed by individuals who differ in their areas of expertise, discipline and personalities. Instead of homogenous groups, interpreting, when it is most fruitful, brings together individuals with varying backgrounds.

Third, following the insights from interviewees, interpretation should be made in the right time and space. The right time refers to timing: they should not be done too late because the organization cannot act upon the shared understanding, nor too early, if the organization lacks the sense of urgency to act upon the shared understanding. Right space refers in making the interpretations in forums and situations where the shared understandings can be rolled out to processes and individuals who can promptly make relevant decisions based on or act according to the conclusions.

Fourth, interpretation should, unsurprisingly, then be actionable and lead to action by being fit for purpose, i.e. be based on and driven by real business needs, as highlighted by the interviewees and also other scholars and experts such as Schwartz (1998, xiv) and Rohrbeck (2012, 448). Fitness for purpose concerns also fit with political and organizational cues and processes – the social boundaries – of decision-making, as noted by Van der Steen and Van Twist (2012, 482-4).

Fifth, an individual performing interpretation should exercise critical reflection, not only towards the ideas, views and arguments of others, but especially their own. Here, managers should not only consider the logicity and rationality of their own arguments, but also ideally examine their own ways of thinking, in other words, why and how they arrive to their conclusions. Such reflection increases stakeholder rationality and transparency and helps identify their oft-hidden assumptions, which Rijkens-Klomp (2012, 438) and Piirainen et al. (2012, 471) also consider ideal effects of performing quality foresight.

Last, in addition to being made in the right time and space, if interpretation aims to contribute to strategy making, it should be integrated into strategy making processes and planning cycles, as suggested by the interviewees. Related to this, also Rollwagen et al (2008, 342) propose the highest possible level of interaction between foresighters and decision-makers during interpretation as a principle of impactful foresight. In practice,

interpretation should be in the management's agenda, with time allotted for it, and foresight and interpretations should be fed to or be produced among strategy-making executives and stakeholders.

Futures knowledge interpretation thus has a number of descriptive characteristics, but also normative ones that illustrate how ideally it should be performed to produce value for strategy making in corporate contexts.

5.4 Factors impacting the success of futures knowledge interpretation

After synthesizing the findings and previous empirical evidence of purpose, outcomes and the core characteristics of futures knowledge interpretation, I turn to the multitude of factors influencing its success and performance. While I have not done quantitative assessment of which factors are the most important, or have the strongest impact on the performance of interpretation, I have compiled the views from new (see chapter 4.4) and pre-existing empirical evidence (see chapter 2.2.2.3 for discussion). Table 16 presents the synthesis, which uses the same classification logic as my analysis of this study's empirical findings on influencing factors.

Table 16. Synthesis of factors impacting futures knowledge interpretation

| Theme | Sub-theme | Factors |
|-----------------------|--|---|
| Organizational | Structural-cultural | <ul style="list-style-type: none"> • Integration with other structures and processes • incentive systems • top management encouragement and support • top management ways of working • (flat or rigid) hierarchies of management • management attitude towards ambiguity and uncertainty • cultural focus on the short term • freedom to think differently • curiosity and the openness to new ideas in the organizational culture • overall mood in the company • power dynamics among stakeholders |
| | Resources | <ul style="list-style-type: none"> • available time and funding • managerial attention • access to information |
| | Space and timing | <ul style="list-style-type: none"> • correct timing and demand for interpretation • available forums, channels and technologies • performing interpretations in correct 'spaces' in the organization |
| Personal | Emotional | <ul style="list-style-type: none"> • emotions • attitudes (incl. openness) • self-interests |
| | Cognitive | <ul style="list-style-type: none"> • skepticism • personal experiences and education • biases (incl. Bounded rationality, attribute framing, risky framing, overconfidence, creeping determinism, groupthink & peer pressure, confirmation bias) • cognitive abilities and frames, incl. 'sacred cows' beliefs • subject matter expertise on foresight and relevant industries |
| | Behavioral | <ul style="list-style-type: none"> • level of involvement (of self and others) • engagement with others and ways of communication (incl. sharing) • jumping to conclusions |
| Input-related | Futures knowledge | <ul style="list-style-type: none"> • Quality, volume and availability of futures knowledge • its distance to business • fit with strategic need (problem solving vs. finding) |
| | Path dependencies (real and perceived) | <ul style="list-style-type: none"> • Perceived and real path dependencies of the firm and its environment affecting individual and organizational decision-making |

I do not repeat the description and analysis of the factors in this section, but make a few concluding overall notes. First, while comprehensive, I cannot claim the list to be exhaustive. However, it informs practitioners of the potential issues affecting their success and

provides them with means to reflect how they, strategy-making managers and the wider organization could be better managed to ensure better quality, fruitful interpretation. To an organizational developer with a systems analytical perspective, it provides a map for dialogue about pinpointing and addressing behaviors that lead to sub-optimal and/or underperforming futures knowledge interpretation. Second, it is important to note that many of the factors are not inherently negative or positive. Rather, they can manifest with positive or negative effects to interpretation. It is up to the foresighters and executives to manage these factors in a way that leads to their positive influence.

5.5 Tools for interpretation in theory and practice

Along with a comprehensive look on different factors influencing interpretation's performance, I have built a synthesis of the different frameworks, techniques and tools used by practitioners as they perform futures knowledge interpretation. Of course, their highest practical value comes with the ability to use them, and it is up to practitioners themselves to become capable in their use. Merely listing different approaches used in other cases and by interviewees of this study is informative, but I argue understanding how they are used and how they differ is more enlightening for practitioners. Such information is essential as it provides an insight into how interpretation is made. Overall, the use of frameworks and techniques is particularly crucial in interpretation, because these provide means to practice effect implications analysis and pose relevant questions and document valuable answers. They also help communicate mental models, beliefs and assumptions in a tangible way.

How are the different tools of interpretation used, and how do they differ? I've discussed briefly their use as part of the academic literature review (see chapter 2.2.1.3) and the analysis of my empirical findings (see chapter 4.5.2). Table 17 provides a synthesis of the different 'hard' frameworks that can be applied as such to bolster cognition, 'soft' techniques that are less structured and more engagement-oriented and are used as means to inspire ideation, and various offline and online tools for facilitating collaboration and dialogue.

Table 17. Synthesis of frameworks, techniques and tools for interpretation in theory and practice

| | | |
|--|--|---|
| ‘Hard’ Frameworks | <i>Macro-environment as frame</i> | PESTEC |
| | | Futures Wheel |
| | | VUCA (volatility, uncertainty, complexity, ambiguity) model |
| | <i>Micro-environment as frame</i> | Micro-environment models (with or without internal environment) |
| | | End-customer perspective (e.g. customer journey models) |
| | | Five Forces |
| | <i>Internal environment as the frame</i> | Value chain |
| | | SWOT |
| | | TOWS (reverse SWOT analysis) model |
| | | Business model canvas |
| The Business Idea (van der Heijden 2005) | | |
| ‘Soft’ Techniques | <i>Means for free-form ideation</i> | Vision statements & strategy documentations |
| | | "Trip to Mars", inspired narration |
| | | Back-casting |
| | | Trend hunting trips, and other shared experiences to learn about the future |
| | | Stakeholder validation interviews and meetings |
| | | Stories, narratives, metaphors and analogues |
| | | Simulation, wind-tunneling & roleplay |
| | | Coherence analysis (comparison between strategy and futures) (Battistella & de Toni 2011) |
| Tools | <i>Online and offline tools and spaces</i> | Trend analysis software and online tools (e.g. Futures Platform) |
| | | Digital tools for collaboration and co-creation |
| | | Workshops for engaging stakeholders |

I differentiate the hard frameworks further according to the context they are used to analyze: they either use the macro-environment, the micro-environment, or the internal environment of the company as the frame in which implications are identified. (Granted, the Futures Wheel, mentioned in the literature review, could be used in any environment). The ‘hard’ and ‘soft’ classifications of frameworks and techniques reflects also the different approaches, i.e. either framework-based to structure cognition or freeform ideation, or their combination, that practitioners must choose from. As an interesting example guideline to practitioners, in his theoretical paper, Tapinos (2012) provides a general recommendation how to utilize different hard frameworks in a logical sequence to produce scenarios, strategic options and decisions (see chapter 2.2.1.1.1 for details). Frameworks and techniques can be used side-by-side to complement each other, but ultimately, their

fit for purpose determines which should be used, and their value is shown by how well they help pose most insightful questions used for uncovering implications and consequences of macro- or micro-environmental uncertainty and, if possible, identifying (further) environmental uncertainty that should be studied and interpreted. Case-specificity means that comparing their quality and utility is ultimately pointless, even though each has its own relative strengths and weaknesses. Rather, a practitioner should be well-versed in the use of each and apply their combinations according to the needs of the situation.

It is not my intention to further analyze in-depth the different tools (although in chapter 2.2.1.1 I've provided a critique of SWOT/TOWS framework which in my own experience is one of the most used foresight interpretation tools in business). However, in chapter 4.4.3 while analyzing Input-related factors of futures knowledge interpretation, I highlight how a Director of Insight, working inside a major consumer durables company and reporting to various managers and executive across the organization, observed that futures knowledge could gain credibility if it could include estimations about the severity, probability and nature of the external change or driver. I call such estimates, or information, 'meta-data' of the futures knowledge about a change and argue such 'meta-data' provides the first understanding that bridges the analysis gap between external and internal environments. Based on my own experience as management consultant, I would add the issues of timing (when is the e.g. event going to unfold), what is it contingent upon (what needs to happen for the effect to become reality) and whether it requires immediate action or only monitoring, to the Director's list. When applied, not only does meta-data enrich futures knowledge and provide necessary insight for managers to begin framework-based interpretation in the first place, *it enriches interpretations themselves as well*. Here, above questions that are used to create the meta-data can be posed to the contextualized implications, i.e. opportunities, threats and positives. The result is enriched, more comprehensive understanding of the nature, severity, timing, contingency and required action of the implications. Thus, in my view such a structured approach becomes a sort of *framework in itself*, to complement the other different tools of interpretation.

Finally, as two interviewees, a Foresight Consultant and Head of Strategic Foresight, pointed out to me, generating interpretations is much about systematically posing questions. Arguably, the above concept of meta-data is based on a set of five questions! While I classify the ability be inquisitive as an ideal capability of futures knowledge interpretation (see next chapter), other scholars and practitioners have developed other generic question sets that in themselves could be viewed as tools of interpretation. I discuss them in more detail in my literature review, and they are Day and Schoemaker's (2005) questions to reveal hidden opportunities and threats and Ralston and Wilson's (2006, 142) questions to visualize strategy implications of scenarios (see chapter 2.2.1.1.1). I believe these are tangible and useful assets for practitioners.

5.6 Ideal capabilities, expertise and traits

Successful interpretation is not only about proper tool use: practitioners must also possess a set of capabilities. I have aimed to explore futures knowledge interpretation as its own capability, defining it ‘structured imagination’ in brief (echoing Weick (1989)), and as a capability which *synthesizes experience, knowledge, analytical frameworks, systemic and logical thinking, and intuition* (based on findings of Crossan et al. 1999, Montuori 2000, Miller 2007, Savage and Sales 2008, Dufva & Ahlqvist 2015a, Tapinos & Pyper 2018). This suggests that interpretation capability is a combination of the abilities to imagine, think in systems, think critically, and reason logically. It is the capability to imagine and identify and gauge the interconnections of factors, and articulate the relationship of interconnected factors to the company and its strategic choices and communicate them in a way that facilitates in turn the imagination, critical thinking, logical reasoning and systems thinking of others. But in more detail, what is the interpretation capability built upon? Synthesis of the literature review (see chapter 2.2.2.3 and Table 7) and new empirical findings (chapter 4.5.1) provide a summary of the ideal capabilities, expertise and traits of futures knowledge interpreters, and is seen in Table 18.

Table 18. Ideal capabilities, expertise and traits of futures knowledge interpretation

| | |
|------------------------|--|
| Capabilities | Analytical skills (deduction & induction, causal & systems) |
| | Communication (ability to summarize, storytelling, using the language of the audience and ‘hiding the machinery’ of foresight) |
| | Exploration (i.e. looking for things you don’t know you’re looking for) |
| | Influencing (e.g. debating, reframing, feeding others’ curiosity) |
| | Making (novel) connections between issues |
| | Networking with people |
| | Questioning skills (critical thinking and self-reflection, counter-factual reasoning) |
| | Sourcing (for futures knowledge) |
| | Structured cognition and tool use |
| | Turning interpretations into action |
| Expertise | Foresight substance expertise |
| | General knowledgeability |
| | Industry expertise |
| | Organization cultural expertise (cognizance of stakeholder values and views) |
| Personal traits | Courage and confidence |
| | Curiosity |
| | Empathy |
| | Objectivity |

| |
|--|
| Openness (to different sources of information, perspectives and concepts when developing ideas and sense-making, and considering alternative action options) |
|--|

| |
|----------------|
| Responsibility |
|----------------|

| |
|--------------|
| Transparency |
|--------------|

I've discussed the arguments for including these particular issues in aforementioned previous chapters. I note the list is comprehensive though not exhaustive. Again, listing the different aspects is by itself informative for especially less experienced corporate foresight and sense-making practitioners, but its true value lies in how it provides practitioners a fuller picture to grasp the elements of futures knowledge interpretation capability, and a basis for evaluating one's own capabilities. They are these capabilities, expertise and traits that I argue practitioners (including executives) require to gain most utility from interpretation and to ensure their performance embodies the ideal characteristics of interpretation.

However, does the new empirical evidence necessitate adjustments to the concept of interpretation capability that I suggest based on literature review? In other words, do the results suggest that it should be changed? When reflected against the synthesis of ideal capabilities, expertise and personal traits, I admit that the definition is action-oriented and pragmatic. It does not emphasize the value-based or normative aspects of interpretation, such as traits of empathy, transparency and courage. Put differently, while it does not overlook the social nature of interpretation, my definition of interpretation capability emphasizes its cognitive nature while considering the emotional aspects only through their role in influencing what one's experiences are and how they intuit and think. I believe this perspective is justifiable. First, I suggest valuable interpretation is a function of a sound emotional basis, meaning that in order to be able to perform valuable interpretation, involved individuals share a sense of trust, show objectivity, empathy and openness, and feel confident. Here, the role of emotions and normative behavior is secondary: to enable high quality cognition and intuition. Emotions and normative behavior are essential insofar they help produce valuable interpretation. Second, I argue that interpretation should aim for rationality and objectivity, and to be acts of rationality and objectivity. Hence, cognitive aspects can justifiably be emphasized when considering what capabilities the activity requires. While corporate strategizing and interpretation are never fully rational, they should not be determined by emotions either or be emotionally driven. If this is the case, the central components of interpretation capability should not be emotional or normative – even though emotions and normativity *affect* cognition and intuition always to a degree.

The capability perspective of futures knowledge interpretation brings forth an additional perspective to the discussion about its purpose. Given how interpretation is social and rooted in dialogue of different personalities and disciplines, I suggest every instance

of interpretation in general and facilitating practitioners in particular have a pedagogic purpose to increase the capabilities of participants in addition to meeting their practical, case-specific, business-oriented objectives. This argument lays on the premise that in order to optimize the value of generated shared understandings, the capability of all participating individuals should be high. Therefore, not only should foresighters or consultants have the necessary capabilities, but increasingly should the decision-makers.

Finally, I point out that the capabilities, expertise and traits are specifically individual, and this synthesis does not identify organizational capabilities, as e.g. Rohrbeck (2010, 72) does when he discusses the capabilities of a *corporate foresight system*.

5.7 Conclusions and implications

5.7.1 Main conclusions

My purpose in this thesis is to explore and describe the behavior and reasons behind the behavior of foresight practitioners as they respond to their colleagues' question "what does this futures knowledge mean for us and our organization" and "how should we act accordingly". By doing so, I strive to provide *new understanding of how practitioners interpret futures knowledge for managers' use in the context of strategy making*. My analysis of both literature and new empirical evidence the thesis was based on two main research questions: 1) how foresight practitioners interpret futures knowledge for the use of strategizing and 2) why interpretation occurs as it does.

In my search for answers to the research questions, I consider futures knowledge interpretation for strategizing both as an activity and a capability. This view incorporates the *purpose, objectives and outcomes* of interpretation, its *core characteristics, tools and techniques* used to perform it, different *factors* influencing its success, and personal *capabilities, expertise and traits* necessary to perform it successfully. Each of these elements shed light on either one of the two research questions or both.

To understand why interpretation occurs the way it does, I have studied the different *purposes, objectives and desired outcomes* of interpretation. Based on the findings and synthesis, I suggest that it is performed for the case-specific business objectives and needs and is influenced by the type of strategic purpose managers can have: the purpose can be to *solve* problems or *find* problems. It helps build the strategic narratives of the firm: the 'what' of the corporate vision, the 'how' of strategic options, and the 'when' of the timing of strategy execution. More specifically, as part of strategizing it produces both *effect and response implications*. Effect implications are shared understanding of the organization's resilience vis-à-vis the external environment and opportunities, threats and positives to

the organization. Response implications refer to understanding about the possible outcomes of strategic actions the company can take in the futures context to both the company's performance itself and its own micro- and macroenvironment. Because futures knowledge interpretation is used for reducing effect and response uncertainty, it is central to corporate strategizing.

In my view, two things drive what futures knowledge is interpreted socially: on one hand, it is determined by the interpreted object's presumed effect on the organization. This is simply because if a thing has no effect on an organization, it is irrelevant (doubly so because it demands no action on behalf of the company) and not interpreted. On the other, interpretation is driven by perceived relevance of the object and its effects. I suggest initial relevance in turn is determined by individual intuition, self-interest and expected interests of others. Sense-giving, iterative sense-making and formation of shared understanding however ultimately produce effect (and response) implications.

In a corporate strategizing context, interpretation is valued according to its utility, and to be valuable, interpretation should fuel and lead to action. Interpretations thus has an action-orientation, but I argue this poses a risk to corporate foresight and interpretation: a bias on action can blind organizations to external forces that initially register only as positives or what initially are seen to have no impact, i.e. requiring no pro-action or reaction. However, further inquiry or using a longer-term perspective might reveal effects that initial perceptions overlook.

How do individuals perform futures knowledge interpretation as a part of corporate strategizing? I argue trying to understand it as a linear process is impractical. Rather, it should be viewed as a cyclical flow (see Figure 2, chapter 2.3.3) that has no single starting point but a clear logical direction. Also, instead of viewing it as a process, it should be analyzed using a number of core characteristics. To produce the outcomes and benefits indicated by the interviewees of this study and relevant studies at large, I suggest performing individuals share a sense of trust and use critical reflection. Interpretation is participative and engages different disciplines and personalities. It occurs in right time and space so its outputs can be disseminated and used in the organization. It combines and rethinks futures with present concerns and historical paths: when interpreting futures knowledge for strategizing, reimagining of the past and present are required as well to produce strategic accounts that in turn allow for decision-making. Finally, interpretation is integrated in strategizing and corporate processes. In addition, interpreters, strategists and implementers should be networked, if not the same people.

A core characteristic of futures knowledge interpretation is that it is both based on and driven by cognitive frames and contexts. To understand how individuals perform interpretation, one must understand how they use tools for framing. I've categorized these tools as 'hard' frameworks and 'soft' techniques. Frameworks help scope and understand both the contexts in which external forces have an impact and what these effects could

be. Such frameworks could e.g. SWOT matrices or customer journey models. Techniques are ways to perform free-form ideation that does not rely on (nor are limited by) tangible frames but emphasizes intuition. Such techniques include e.g. backcasting and storytelling. Ideally, practitioners use both and choose tools that are best fit for purpose. In addition, practitioners use digital and analog tools to facilitate interpretation, sharing and to store information, such as workshops and trend analysis apps.

In my findings and discussion, I highlight a concept of futures knowledge and interpretation ‘meta-data’, that helps bridge both the analysis gap between knowledge and interpretation, and between interpretation and action by enriching and structuring futures knowledge and interpretations. The futures knowledge meta-data concerns the nature, severity, timing, and contingency of the external force. The meta-data of the interpretation concerns these and the required action of the implications. I suggest applying such a structured approach to assessing futures knowledge and interpretations is a tool in itself and this helps turning futures knowledge into interpretations and interpretations into action.

The activity of futures knowledge interpretation is affected by a multitude of organizational, input-related and personal factors, as shown by both existing literature and my findings. In particular, available time and attention of top management appears as critical and often in a negative sense as barriers. My research highlights several negative behavioral factors, such as jumping to conclusions. These are manifestations of personal emotional and cognitive hindrances of interpretation, and thus are easiest to note and mitigate. However, all types of factors should be considered when developing the individual and social aspects of interpretation. I claim jumping to conclusions is a notable negative behavior because it causes the individual and the social group, e.g. a strategizing management team, to ignore the rational flow of interpretation, where state, effect and response uncertainty are all assessed in a logical sequence. Furthermore, it can reverse the interpretation flow in strategic decision-making, leading to situations where (pre-determined) conclusions about strategy are used to influence what is interpreted and how, instead of letting interpretations lead to conclusions. Here, rationality, objectivity and transparency of strategic thinking and decision-making are threatened. I argue that lack of time, self-interests and emotions are the main reasons driving jumping to conclusions in interpretation and strategizing situations.

When answering the question how individuals perform futures knowledge interpretation, it is not sufficient to view it as an activity only. Based on the review of literature and new empirical evidence I propose that futures knowledge interpretation can be understood as a capability of ‘disciplined imagination’, that combines experience, knowledge, analytical frameworks, cognitive ability for systemic and logical thinking, and intuition. As a human capability it is built from several sub-capabilities, areas of expertise and beneficial personal traits. Being a capability, I further argue that success (as defined above) in

interpretation relies on others having the capability as well. This means that every instance of foresight and futures knowledge interpretation must have a pedagogic purpose to increase the participants' capabilities in addition to meeting the practical, case-specific, business-oriented objectives.

An interesting question is how the capability of futures knowledge interpretation differs from existing notions of corporate foresight capability, since there exists a number of models for corporate foresight capability (see e.g. Rohrbeck 2010 and Hines et al. 2017). Interpretation naturally is a part of foresight, but it is my view that some differences exist. First, the emphasis of actionability and how interpretations should ideally lead to action in the organization is not highlighted by Hines et al. (2017, 131) among their six Foresight Competencies. However, while not including the ability to influence action as a capability, Rohrbeck (2010, 83) still includes 'triggering internal actions' and 'influencing others to act' as two of the four main impacts and ways for value creation corporate foresight has. In other words, in Rohrbeck's view, action is an ideal outcome though enabling action is not specified as a key capability of corporate foresight. In lieu the role of enabling action, the findings of this thesis suggest that abilities of influencing and managing others' self-interests and emotions are particularly relevant and these are not emphasized in either Rohrbeck's or Hines et al's models. Furthermore, the role of industry expertise and understanding of the business logic of the company at hand emerge as critical, especially since they provide valuable contexts and frames for futures knowledge effect and response interpretation. Hines et al. (2017, 133) do not specify these among their six foresight competencies, but include 'organizational sector competency' in their wider foresight competency model, while Rohrbeck (2011, 78) includes 'deep knowledge' in one domain, where knowledge helps to "understand how far a topic needs to be understood to come to conclusions". Understood very loosely, this could be considered to apply to case-relevant industry and business expertise as well. Finally, the findings, especially how uniformly all interviewed experts viewed the importance of effect interpretation and how foresight in general should be driven by the business context. suggest that foresight work and foresight approaches should focus on scrutinizing the effect and response interpretation and not rely on foresight processes and approaches where interpretations emerge from a 'black box' (see e.g. Voros 2003) for strategizing and corporate decision-making.

5.7.2 Evaluation of the study

I pre-evaluate this study by discussing research validity and by using Winter's principles (Fisher 2010, 276) in earlier chapters (see 4.4.1 Quality considerations and 4.4.2 Limita-

tions of the research). However, some of the same principles provide a practical framework for *post facto* evaluation of the quality and validity of the primary research. Suitable principles are reflexive critique, dialectical critique, collaborative resources, risk to one's own values, and theory, practice and transformation. In addition, in this chapter I take a retroactive look at the population validity of my research.

During my work, I strove to exercise reflexive critique by challenging the new evidence with existing theory and empirical evidence and to be transparent about my objectives to develop practically valuable outcomes from the synthesis. Transparency includes my admission of having a practical eye on both the theory and new evidence and viewing them from the perspective of a practitioner. I believe this perspective is visible in both the analysis and produced conclusions.

As the concept of dialectical critique suggests, I found contradictions in the research findings between categorizations used to 'neatly structure things' and 'details of the things that challenge the structures'. While analysis of exploratory research typically begins with choosing an interpretive grid or a framework through which results are interpreted (Fisher 2010, 244-5), a key challenge with content coding in this study was that any given remark could be interpreted from many perspectives even inside a given framework. For example, when a practitioner was explaining a harmful behavior affecting futures knowledge interpretation in practice, I could have coded and discussed the issue both as a *behavior-based factor* affecting interpretation or as an example of *lacking capability or trait* on the part of the interpreter which manifested as harmful behavior. Thus despite being supported by an objective analysis framework, was it up to me then to choose a lens through which they look at the issue, which made the analysis increasingly subjective. However I believe my arguments for my proposed models and concepts are both logical and made as transparently as to warrant understanding and constructive criticism.

Though planned and executed by one researcher, my study emphasized collaboration: The findings and conclusions were validated with the interviewees themselves, and this gave them the opportunity to comment on, add views and confirm or challenge the insights, thus not only allowing them to learn from the synthesis, but also making the results more robust. I could have achieved an even higher level of collaboration (and arguably robustness of insights) by ethnographic research means, by following the actual performance and behavior of foresight practitioners as they engage with managers during strategizing and thus integrating them even more into the research process.

Risks to one's own values concerns the researcher's willingness to let the research process challenge the views and values he had when starting the process, including e.g. assumptions about the research material, the purposes of the research, and the original research plan (Fisher 2010, 277). Using an analogue from warfare, while the original research plan 'survived the contact with the actual research', meaning that the process did

not warrant going back to the plan and the purpose and adjust them retrospectively, the process and findings highlighted the fact that the points of view of strategists, i.e. managers who did not specifically act as foresight practitioners, could have provided complementary research material. The views of managers especially when it comes to the factors influencing futures knowledge interpretation and how to address them should be researched in future studies.

When discussing quality considerations that I identified before I undertook my own empirical research in chapter 4.4.1, I highlight the risks to population transferability. In particular, given that I quite loosely defined my unit of analysis (foresight practitioners working in-house or as consultants with a specific amount of experience in foresight and interpretation), I note that my empirical results might not be specific enough to be applied to any particular practitioner's needs, or to the context of any particular organization, or industry, for example. Based on my synthesis of the new empirical results and other insights in academic and business literature however I can claim that my results complement and build upon findings of previous studies. I did not identify any instances where difference of research populations would limit their comparison. I hypothesize however further in-depth studies focusing on the cultural aspects of practitioners and organizations might uncover notable differences in the activity of interpretation that only specific cultures or cultural backgrounds might exhibit. In addition, given that my research is exploratory and not descriptive, further research might uncover findings that are subjectively more relevant to other practitioners and their everyday contexts. However, given how this thesis validated its results with the interviewed practitioners themselves and I build the conclusions from a synthesis with other findings, I argue this thesis fulfills Winter's sixth principle of theory, practice and transformation. This refers to the need to have business and management theory with practical applicability and to have new theory tested in real life. The findings, synthesis and conclusions of this thesis have produced theory and insight that business practitioners can directly utilize in their work.

5.7.3 *Implications for practitioners and further research*

For practitioners performing futures knowledge interpretation in corporate strategizing contexts, my thesis provides multiple benefits. First, I outline functional and ideal core characteristics of futures knowledge interpretation that can be used as a guideline when assessing and developing one's own interpretation as an *activity*. Second, I explore and identify a number of competences, areas of expertise and personal traits that I argue constitute the capability of futures knowledge interpretation, and this summary can be too used as a guideline for assessing and developing one's own interpretation as a *capability*.

For up and coming foresight practitioners (and sense-making managers) working in business, I offer a summary of potentially useful frameworks, techniques and tools for interpretation, and understanding of their differences and purposes. For them, I also provide a comprehensive if not exhaustive view into various factors that might influence the success of interpretation activities and provide insights about means how to address challenges and negative systemic behaviors influencing interpretation.

For academia, I have produced novel insights about the practice of foresight and how futures knowledge is utilized in corporate contexts and as part of strategy-making. I have reviewed and synthesized existing theoretical frameworks and empirical evidence from a novel perspective that responds to gaps in understanding highlighted by Horton (1999, 7) who claims “interpretation, the most crucial step in the whole [foresight] process, is poorly understood, and has few theoretical techniques”.

I also present several ideas for further research. Most importantly, the explorative findings of this study should be made more robust and developed by more in-depth, longitudinal studies, e.g. utilizing ethnography, that investigate the actual (and not reported) behavior of futures knowledge interpretation as part of strategizing. Moreover, I have conceptualized and defined strategy and strategizing very loosely and generally and have not studied how futures knowledge interpretation occurs as part of specific strategic processes. Further comparative research that engages several different specific cases, or instances of strategizing, e.g. via ethnography, might provide insights about how different strategic processes or even schools of strategic thought might in practice influence interpretation as an activity.

I have also identified and reported a limited number of interpretation influencing factors and means how to manage these. Additional research could focus on identifying further practical means how to address individual and organizational hurdles to interpretation. Such research could e.g. explore how to encourage critical self-reflection and holding one’s ego in check during interpretation, and how to affect others self-interests without manipulation to maximize the objectivity, rationality and transparency of interpretation.

The final suggestion for further research concerns the execution of corporate strategies. While informing strategizing and decreasing response uncertainty are valuable contributions of futures knowledge interpretation, a possible venue for further research is studying how foresight can support in strategy *implementation*.

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APPENDICES

Appendix 1: Interview guide as a mind map of issues to be covered

