

DBA Dissertation Thesis

Sensemaking and Sensebreaking in Complexity

A discursive approach to the dynamics between business, government, and society

A

Qualitative Research

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ABSTRACT

This doctoral thesis contributes to discourse and sensemaking literature by exploring discursive dynamics in complexity between business, government, and society. Exploring the discursive dynamics between these three actors in complexity provides a deeper understanding of how sensemaking, sensebreaking, and sensegiving occur and the dynamic aspects grounded in this process. The research uses a phenomenological approach and a social science approach. The study is abductive, and the method applied is grounded theory. It describes the phases and provides examples from 26 in-depth interviews with actors. The complex setting chosen as a case study was the extraction, mining, and mineral industry (EMMI). The people interviewed were international actors despite most of them being based in Finland.

Findings include an indicative model on sensemaking, sensebreaking, and sensegiving that can be applied in complexity. Further, it explains how the model can be used to understand better how different actors make sense of themes and subthemes in their context. This fits well with complexity, as patterns and solutions emerge as we move through time. Complexity does not hold only one best practice but multiple layers and pathways, so different aspects and entanglements occur. This, in turn, explains how the discursive dynamic between actors evolves and develops based on how the actors engage in a sensemaking process.

The research found that time poses issues in the sensemaking process, as the perception of time and fragments of the problems are intertwined and hard to place on a timeline. Further, the findings suggest that new senses cannot occur without sensebreaking. The research indicates that common ground can be found in discussing the terms for the future.

Keywords: Sensemaking, Sensebreaking, Sensegiving, Complexity, Business Government and Society, Discourse, Time, Future.

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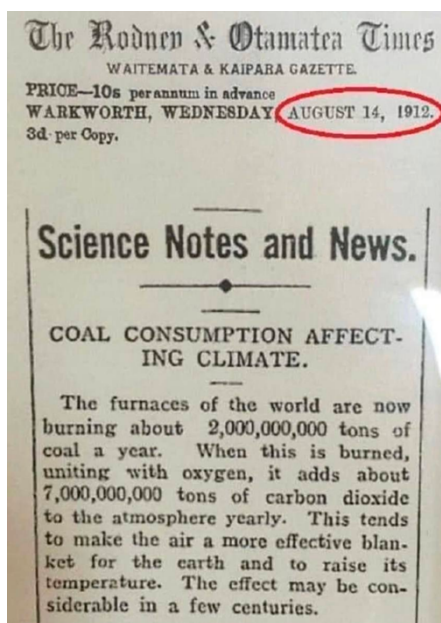
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1 Introduction

Today's world is volatile, uncertain, complex, and ambiguous, called VUCA. This is at least stated by many politicians, business leaders, and representatives of societal groups. This thesis focuses on complexity as one of the most significant challenges governments, businesses, and society face. One of the examples of complexity can be found in one of our time's biggest stories – the transition to a sustainable future. In recent years, sustainability has gained much attention, becoming an issue that can no longer be overlooked or ignored. However, sustainability is a multilayered, interdisciplinary, and interconnected thing.

1.1 Sustainability and the UN 2030 Agenda

The first UN Climate conference was held in Stockholm in 1972. At that point, there was evidence of the shifts in the climate and the consequences of our consumption. In 2015,



196 Parties at COP21 in Paris signed the Paris Agreement, a legally binding international treaty on climate change (UN FCCC, 2022). The agreement aims to limit global warming to below 2,0 degrees Celsius, preferably 1,5 degrees Celsius compared to pre-industrial levels. Unfortunately, according to the IPCC, the climate change work is not on track, and the effects are more widespread and rapid than estimated, and they are intensifying (IPCC, 2021). The mechanisms of our

climate are more complex than anticipated. Furthermore, we have yet to succeed in cutting carbon emissions by the original plan.

However, sustainability is more than climate change, as seen by the UN Sustainable Development Program, Agenda 2030 (UN Sustainable Development Goals, 2022). Seventeen goals were adopted by the UN in 2015. The Sustainable Development Goals (SDGs) are widely

accepted. They are annually measured on a national level and compared on an international level. Some businesses and non-governmental organizations (NGOs) have adopted the SDGs and are reporting on improvements in their focus areas. The SDGs function as a blueprint for a sustainable future.

The focus is growing on issues related to sustainability. There is a growing concern for the well-being of societies and our planet. From this, an urgent need to balance the needs of the planet, people, and the economy is gaining more attention (UN Sustainable Development Goals, 2022). The Brundtland Report defines sustainability as “ensuring that it meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland Report, 1987).

Several initiatives aim to accelerate the SDGs. Much attention has been brought towards climate change based on the Paris Agreement (UN FCCC, 2022), but more recently, concerns have grown about the loss of biodiversity. We are currently facing a rapidly changing world with much uncertainty about the future. Complexity and chaos increased during the COVID-19 pandemic 2020 (Uhl-Bien, 2021). In addition to the COVID-19 pandemic, conflicts, such as the armed conflict between Ukraine and Russia, cause supply chain disruptions and increase raw material prices (Baffes & Magle, 2022). Severe weather has also been causing issues globally in many regions.

The planetary boundaries and the consequences of transgressing them have been shown by Johan Rockström and his team (Rockström et al., 2009). In this research, nine planetary boundaries are linked to the Earth's system and provide a safe space for humanity to operate. Moving beyond the safe operating space, we enter the zone of uncertainty and further into the danger zone (Rockström et al., 2009). In 2009, evidence showed we had transgressed three planetary boundaries (Rockström et al., 2009). Today, the Stockholm Resilience Center shows

we have transgressed four of the planetary boundaries, and freshwater is still disputed but has been reported to be transgressed as well during 2021 (Stockholm Resilience Center, 2022).

The landscape is shifting, and expectations of business, government, and society's behavioral change are growing. Sustainable solutions are gathering more attention in society (Cunliffe, 2004; Mintzberg, 2005; UN Global Compact, 2014). Events like corporate scandals have increased people's attention to the activity of government regulations and businesses. Political leaders are also challenged for their lack of action by campaigns such as Fridays for Future (FFF), initiated by Greta Thunberg, and the Most Affected People and Areas (MAPA) movement that is linked to FFF (FFF MAPA, 2022). The lack of action in solving urgent problems brings our current systems to the edge of chaos (IPCC, 2021). The COVID-19 pandemic has caused significant setbacks in our development and welfare, having significant undesired consequences on our journey to meet the UN SDG. It has also increased concern for the climate and our ability to meet global societal needs. There has been a stronger willingness to call for more actions to achieve the Paris Agreement and a just, sustainable transition. The debate between business, government, and society is getting heated.

Evidence of current disruptions can be found in, e.g., 2021 when the highest court in two nations (France in February and Germany in May) ruled against the government for lack of ambition in battling climate change (The Guardian, 2021; BBC, 2021). In May, the oil giant Exxon was subject to an activist investor successfully pushing two new board members with expertise in renewable energy into the board (Engine no.1, 2021, Oil Price, 2021). On the same day, the Netherlands court ruled against Shell to cut its emissions by 45% by 2030 (BBC 2, 2021).

However, there is also good news and evidence of desired development. Based on the work of Rockström and his team, we have managed to move back on Stratospheric Ozone Depletion to the safe zone when comparing the reports in 2009 and 2022. This shows evidence

that societies, governments, and businesses can come together and seek solutions and development that create and ensure a safe zone for humans to operate (Stockholm Resilience Center, 2022).

1.2 Recognizing and dealing with complexity

Based on the previous sections, we can easily see today's multidimensional challenges. The challenges sustainability issues bring forward have no easy solutions, and we are dealing with complex and chaotic situations. Sustainability is a highly complex web with loops of causes and effects that are unpredictable and hard to conceptualize. Adopting an appropriate approach to the problem is needed.

In sustainability today, leaders are dealing with highly complex issues and challenges. In some situations, it can become somewhat chaotic. The unknown identifies complexity and chaos contexts. Complexity and chaos respect that there are things we do not know (unknown) and things we cannot know (unknowable). Therefore, the VUCA description of the modern world seems accurate.

Despite our surroundings' increasing complexity, many behavior models still focus on dimensions of linear and clear action outcomes (Snowden, 2002). These simplifications are leading to solutions and systems being developed for issues linked to the dimensions of simple (best practice) and complicated (more than one best practice) (Snowden & Boone, 2007). These are usually limited, controlled environments that can be managed. For example, it can be the manmade loan issuing system, where the process and consequences can be clearly defined. Another option is considering the assembly of a car, where there are many solutions, but generally, it still follows linear pathways.

Hasan and Kazlauskas's (2014) research points out that if you try to oversimplify complexity, you risk getting it wrong. With the growing global trends, interconnectedness, and global awareness, the need for ways of operating in the dimensions of complexity and even

chaos (Snowden & Boone, 2007) is growing. Sensing and allowing patterns to unfold in these dimensions becomes essential, as several unknown factors exist. According to Kim and Kaplan (2006), the pathways emerge through interactions between different groups of people and actors.

Snowden's (2002) approach to complexity and chaos is not unfamiliar. They are usually seen in complex environments, such as medical treatments of patients and emergency rooms (Van Beurden et al., 2011). Further, this approach is also used in chaotic situations, such as military and police force, when catastrophes occur (Vasilescu, 2011). However, complex environments are also seen in other research fields, including social sciences, theoretical physics, and management. These do not address the complexity and chaos of Snowden (2002) despite discussing complexity. For example, Tainter (2006) highlights the importance of problem-solving skills. This is highly relevant in social complexity. Tainter (2006) emphasizes the need to understand and control the complexity of long-term sustainability ambitions.

Some researchers, such as Wells (2012), argue that complexity needs to be reduced to maintain sustainability. In contrast, Espinosa and Walker (2017) emphasize the need for a systems approach to understand complexity and sustainability better. They suggest management tools that would apply in complex situations. The dynamic nature of sustainability and the many factors that are unknown or even unknowable, as Snowden (2002) suggests, calls for allowing complexity to be present in developing solutions for the future. Mitleton-Kelly (2011) highlights that sustainability requires adapting to a changing environment.

If we accept that sustainability cannot be resolved through traditional simple and complicated approaches, complexity and chaos become a natural part of sustainability. This is in line with what Mitleton-Kelly (2006) suggested in her research. There is an increasing need to explore how to deal with complexity efficiently. This does not only apply to sustainability, as complexity is present in most activities today. Suppose we accept Snowden's (2002)

proposition that complexity needs us to allow patterns to unfold and gather intelligence. In that case, we need to explore how we make sense of the patterns in ever-evolving surroundings.

1.3 Sensemaking and sensebreaking

Maitlis and Christianson (2014) define sensemaking as how “individuals work to understand novel, unexpected, or confusing events” (p. 58). If we accept the complexity described in the previous section, sensemaking becomes one of the mechanisms in navigating complexity. Ybema and Willems (2015) approach sensemaking as one key element in creating meaning or making sense of complex information. They continue by noticing that sensemaking is a key concept of human behavior. This supports Maitlis’ and Christianson’s (2014) notion of sensemaking and adds to it the element of human nature.

According to Weick (1995), sensemaking is about understanding ‘what the story is.’ As a natural next step, Weick (1995) found that we move forward to consider the question, ‘What am I supposed to do.’ Hence, sensemaking is not only about understanding or developing knowledge; it is also connected to action.

On the other hand, according to Pratt (2000), sensebreaking is “the destruction or breaking down of meaning” (p. 464). Ashforth and Schinoff (2016) note that sensebreaking creates a space for new sensemaking. This, in turn, creates a desire to seek meaning and understanding of what is going on, in accordance with Maitlis and Christianson (2014).

1.3.1 Discourse is a central part of making sense of complexity

Discourse plays a crucial role in how we make sense of things. According to Weick (1995), sensemaking is how we develop an understanding of the world around us. Discourse is a broad concept and includes different types of communication, such as narrative, procedural, expository, and conversational (e.g., Ulatowska et al., 1990). Discourses often represent coherence and are consistent in the line of thinking. Taylor (2006) builds on this by adding that

discourse usually aims to portray a more extensive understanding of a point or to communicate a specific understanding of a phenomenon.

Narratives are often discussed within discourse, as more specific, including an evaluation. Further, narratives are often sequential (Hernes & Obstfeld, 2022). Typically, narratives are found in media, including television (Tomaš & íková, 2009). Rhetorical discourse stands out when exploring media, as the narrative often aims to bring forward arguments (Joutsenvirta & Vaara, 2009; Iversen, 2014). Narratives being a big part of discourse makes it hard to explore discourse in terms of sensemaking without also talking about narratives.

Boje (1991) defines narratives as situated storytelling. He continues by stating that they are more often fragments rather than complete. According to Rouleau (2005), stories are often used to support agendas. Vaara et al. (2016) argue that the expression of a beginning, middle, and end narrates reality. Sensemaking is a multiphased and complex issue where many factors interplay.

1.3.2 Complexity as a discursive phenomenon

The issues have no easy solutions and require a holistic approach from many stakeholders. Topics such as over-utilization of natural resources, business impacts on global warming, pollution, equality, corruption, and human rights are all increasingly important (e.g., UN, 2014; UN Global Compact, 2014). Information is becoming increasingly easy to share through different platforms, such as social media platforms and larger access to the internet, to mention a few. It is also spreading faster to larger audiences. Hence, the amount of information on what is happening worldwide related to government decisions, policy, business ethics, sustainability, responsibility, political agendas, and social movements keeps growing, and various viewpoints are brought forward. There are many narratives available.

There is also a rapid growth in the number of NGOs in recent years (Brower, 2011). NGOs are vital in the current debates and discussions of sustainable solutions and demanding better solutions. These often operate as defenders of human rights, societal concerns, and the voice of the environment. They are active in whistleblowing and exposing governments and businesses for unethical or unsustainable behavior, greenwashing, or lack of ambition. It also increases the number of narratives present.

Discourses reflect and reproduce social reality in ways where some outcomes are realized rather than others (Fairclough, 2003; van Dijk, 1998). Some actors are voiced, and others are silenced (Fairclough & Wodak, 1997). This means that “certain things come to be portrayed as positive, beneficial, ethical, understandable, necessary, or otherwise acceptable [...] other things are constructed as negative, harmful, intolerable or, for example, morally reprehensible” (Joutsenvirta & Vaara, 2015, p. 744).

This interconnection of narratives and their impact on the larger discourse is critical to understanding how we make sense of complexity. Quick (2018) emphasizes the role of narration in engaging different stakeholders. His research mainly focuses on how different perspectives can be explored and examined. Narratives by different stakeholders also serve to persuade actors but also to imagine future outcomes. Fenton and Langley (2011) emphasize the importance of narratives as a strategic tool. They highlight how narratives are essential in making sense and discovering purpose and meaning. Identity is further explored as an element followed and seen in the different narratives (Fenton & Langley, 2011), which supports understanding how stakeholders' identities and values unfold (Mills & Austin, 2014). Work by Tukiainen et al. (2010) highlights the subjectivity involved in meaning-making, especially in unexpected events and turbulence.

However, there is limited information on how the different realities are constructed between various actors in complex issues that involve multiple stakeholders. The different

elements in meaning-making are explored in individual research, but how the dynamic between actors influences the meaning-making and development of understanding in complexity requires further research.

The complexity of solving the problems of people and the planet requires us to develop new approaches. As we can see from Rockström's teamwork (Rockström et al., 2009), to discover sustainable solutions, we need to make sense of the present and future demands and needs. These efforts require the collaboration of business, government, and civil society. Current issues include the notion that we do not have a clear idea of our planet's systems and mechanisms. Many natural systems are still challenging to understand, as seen from the failures to construct, develop, and uphold a manmade biosphere (Tietz, 2021). We lack an understanding of the interconnectedness of current global systems and efficient tools to make sense of the required transition from current systems to sustainable ones.

1.4 Problem formulation

Traditional leadership and transformational leadership forms are sometimes built by oversimplifying complexity. With the complexity involved in, for example, sustainability issues or global value chains where multiple stakeholders are involved, a clear, collective vision serving all parts and including all aspects of complexity is becoming increasingly challenging. Despite ideas presented in books such as Polman and Winston's "Net Positive" (Polman & Winston, 2021), we still lack tangible approaches and a deeper understanding of the sensemaking of the future. These issues involve developing and understanding how multiple factors influence and actors talk solutions and alternative pathways into existence. Further, it requires understanding how sensemaking and sensebreaking of the phenomenon occurs.

For example, the complex global concerns have intensified academic and social debate on sustainable solutions. Thus, sustainability has become a highly discursive phenomenon (Bien & Sassen, 2020). Exploring sustainability as a discursive phenomenon with actors from

business, government, and society is a complex challenge. The discursive legitimation struggles for legitimizing and delegitimizing alternatives, solutions, opinions, and more are at the core of the phenomenon. The need to understand how we are making sense of the complexity is essential for the discovery of solutions and future pathways. The different narratives involved in forming the larger discourse and how they contribute to meaning-making need to be further explored.

The polyphony of needs to meet in an increasingly interconnected world with severe sustainability issues (such as climate change) has brought a need to understand better how we can collectively make sense of solutions and the role of discourse and legitimation in making sense. In a highly globalized world, actions in one region cannot be isolated. Still, we need to holistically explore the impact of solutions, operations, and decisions throughout the value chain and the stakeholders affected by the decisions made. We also need to consider the different stakeholders and their voices and ways of legitimizing or delegitimizing solutions and operations (Vaara & Whittle, 2021).

Basu and Palazzo (2008) argue that how actors make sense of their environment is a highly linguistic process. Goshal and Morgan (1996) claim that behavior occurs based on linguistic, cognitive, and behavioral features. Basu and Palazzo (2008) continue by saying that it is essential to understand, on a deeper level, how actors make sense of the world and their environment. This, in turn, will support an understanding of how different needs and demands can be met and where consensus and tensions are created in controversial sustainability solutions and projects. Hence, power dynamics and struggles are present in the sensemaking process of actions taken.

1.5 Objectives and Research Questions

The doctoral thesis aims to develop an in-depth understanding of complex issues as a discursive phenomenon that either supports or prevents development and progress. This

research recognizes that complex issues need to be explored through a phronetic approach, meaning that it recognizes that things are both good and bad depending on a group of people and viewpoints. This research's second objective is to understand better how government, business, and society (representing both community and environment) make sense of complex issues and the discursive dynamic elements involved. The research will adopt a discursive perspective, allowing us to explore the different aspects of sensemaking and sensebreaking between business, government, and society.

To explore how discourse plays a role in making sense of complex challenges, especially in controversial business operations, this doctoral thesis will use the extraction, mining, and mineral industry (hereafter referred to as EMMI) as a study objective. This has been chosen due to its highly complex nature of pressure to generate increasing amounts of raw material needed urgently for the green transition, geopolitical power struggles, extraction operations' negative impact on the environment, societies in the global south encouraging mining operations in their countries, while, in contrast, the global north communities are being reluctant to have mines in their backyard.

The complexity and polyphony of the chosen topic demonstrate many similarities with other significant sustainability issues, for example, food systems, access to fresh water, access to the internet and information, education, technology, loss in biodiversity, and many other topics, where business, government, and society debate over the pathways forward to meet present and future demands and needs on a global scale.

Sustainability issues are not isolated, and power and politics play a crucial role in developing the discourse. It also allows for a systemic approach (as suggested by Schildt et al., 2020) where power is linked to assumptions and structures on how we see the world and act rather than an episodic, single event of attempts to manipulate others. It also allows exploring sensemaking at a societal level.

The research questions are:

- a. How are business, government, and societal actors making sense of complex issues?
- b. How are new discourses and narratives developed, and what enables actors to explore them?
- c. How is the discursive dynamic in complexity enabling or disabling progress, development, and new solutions to emerge?
- d. How are different actors discussing and making sense of the future?

These questions are the course of the

1.6 Key definitions

In this section, key definitions are described and explained.

1.6.1 Complexity

Complexity is defined based on Snowden and Boone's (2007) definition. The cause-effect relation is hard to see in complexity, as many variables impact the outcome. There are also more unknown things, so scenario analysis cannot be done. In this context, patterns emerge, and you respond to them as they do. This way of defining complexity will be used in this research.

1.6.2 Sensemaking

Currently, there is no agreed definition of sensemaking (Vaara & Whittle, 2021). Weick (1995) defines sensemaking as a process where interaction with others plays a key role. Weick et al. (2005) explain sensemaking as “when people confront something unintelligible and ask, ‘what is the story here?’” (p. 410). In this research, sensemaking explains how things are talked about and acted out into existence.

1.6.3 Sensebreaking

Pratt (2000) describes the same thing through sensebreaking, which is defined as “the destruction or breaking down of meaning” (p. 464). In this research, sensebreaking refers to

the breakdown of how we have seen and understood the world around us. This is aligned with Pratt's (2002) description of sensebreaking.

1.6.4 Sensegiving

Gioia and Chittipeddi (1991) define sensegiving as “the process of attempting to influence the sensemaking and meaning construction of others toward a preferred redefinition of organizational reality” (p. 442). This thesis adopts this approach to sensegiving, referring to occurrences where different actors share knowledge and information or contribute to other actors' meaning-making and understanding.

1.6.5 Discourse

Discourse is seen in this work as the overarching story or storyline. It is usually linked to narratives, identity, available information, action, and positioning.

1.6.6 Narrative

The narrative is one fragment of the discourse. A narrative can be a part of a story or an element of a larger whole. It focuses on a specific event, time period, or message. These usually connect to the larger discourse and, when brought together, develop essential elements for the discourse and sensemaking.

1.6.7 Organization

In this thesis, an organization does not only refer to a business (for-profit organization). It refers to any organization, e.g., NGO, association, foundation, group of people, governmental organ, or business. It includes both registered and non-registered organizations. All organizations hold the element of activities, identity, and discourse being organized.

1.6.8 Actor

An actor is seen as an individual, a group of people, a collective, or a constellation of organizations and individuals. An actor is in some way present in the discourse, either as an

individual or as a group of people. In the discussion section, the actor represents a viewpoint or idea rather than themselves as a representative of a specific organization or themselves.

1.6.9 Business

Business is, in this research, defined as a for-profit organization. Business can also be seen as the (market) by creating value and welfare. Business is strongly connected to the economy and seeks opportunities to generate profit by increasing value in different ways. Business is operating under the law and regulation of the nation. Business refers in this case to actors who are related to EMMI.

1.6.10 Government

The government is a governmental institution that monitors compliance with laws and regulations and oversees the ownership of state assets (e.g., areas of land). Governments (state) act through legislation. The government is traditionally seen as the different institutions that act under government bodies.

In this research, educational institutions, for example, universities, are also considered as governmental bodies. This is due to the governmental funding that universities and researchers receive. It is important to note that governmental funding is independent, and research by universities is done by researchers as independent bodies. This is an important notion, as governments support the generation of knowledge as a science in appreciation of academic standards and rules. Generally, research conducted in Finland is appreciated nationally but also internationally due to its independent nature and the freedom of researchers to act as neutral, independent bodies of knowledge.

1.6.11 Society

Societies are usually seen as the “sum of social relations among citizens that structure society outside politics and business. It includes the family, voluntary organizations, societal groupings, churches, and trade unions” (Van Tulder & Van der Zwart, 2005, p. 9). In this

research, the society represents multiple voices and different perspectives grounded in the definition of Van Tulder and Van der Zwart (2005). Further, as Wartick and Wood (1999) note, societies create norms.

1.7 Outline of the Dissertation

The first section of this research introduces the research topic and outlines the problem formulation, aim, and key definitions. It also clarifies the limitations of the research. The second section examines key literature for the study. Key literature explores the Cynefin framework, temporal sensemaking, and legitimation. The third sections present the theoretical framework of business, government, and society. The fourth section describes the research logic, rationale, and method. It continues by describing the data collection and analysis method. The fifth section is the discussion and results section, describing the elements in sensemaking forming the discursive dynamic between business, government, and society. The final section concludes the research and proposes future research.

1.8 Limitations and scope of interest

The research will focus on a discursive approach to sensemaking and sensebreaking in complexity. Despite Snowden's (2002) framework containing other options, this thesis is limited to complex situations. Further, as a case study for the thesis, it will explore the extraction and mining industry, and most of the data has been collected by interviewing international actors in Finland. However, this represents a complex issue, and the findings will likely apply to other surroundings and contexts.

The thesis does not aim to explain or analyze how the mining and extraction industry works or how the complex issues and dynamics between different actors are individually resolved. It is limited to exploring the different discourses present and aiming to explore how sensemaking or sensebreaking occurs and which factors play a role in this.

Despite many other concerns within the extraction industry, this research does not aim to develop a complete understanding of the discourses and legitimations within the field but focuses on understanding the dynamics between discourses and legitimation for each actor and between them. It will develop a deeper understanding of how different actors make sense of the present and the future and how the discourses interact to strengthen or challenge sensemaking.

2 Literature review

This chapter starts by looking at the Cynefin framework to understand complexity. The second section focuses on sensemaking, sensebreaking, and sensegiving literature. This is followed by looking at temporary sensemaking, identity, and legitimation. The chapter concludes with a summary of the literature review.

2.1 Cynefin framework

The Cynefin framework explains five contexts: simple, complicated, complex, chaotic, and disorder (Snowden & Boone, 2007). The context of the disorder means that you are unclear on which of the contexts you are dealing with. Each domain has specific characteristics and different contexts where they serve their purpose. Hence, they can be linked to leadership, as Snowden and Boone (2007) did in their Harvard Business Review Article on “A Leader’s Framework for Decision Making.”

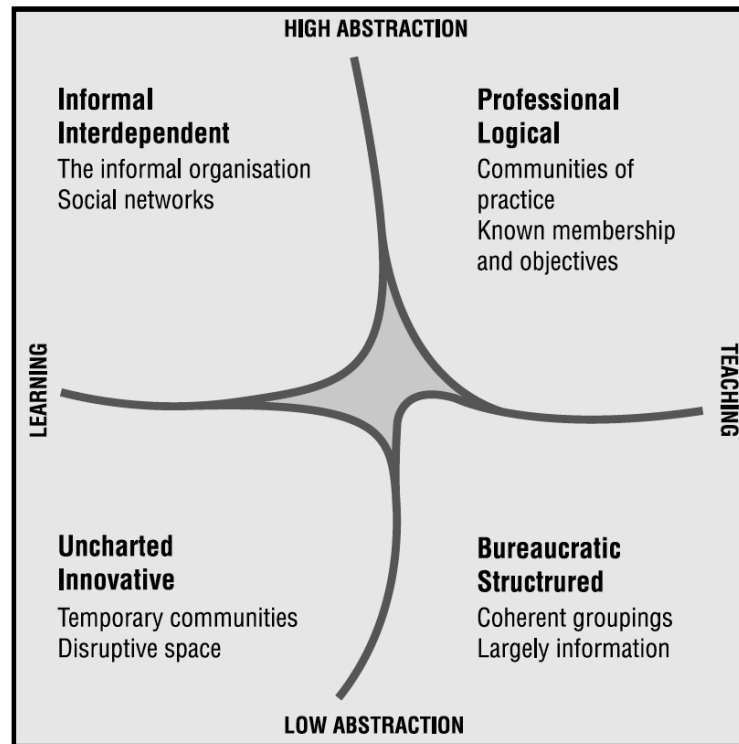


Figure 1: From Snowden (2002). “Cynefin: common sensemaking.”

The *simple* contexts are related to best practices. Here, the relation between cause and effect is evident. The *complicated* context is usually related to areas where experts work. Here, the connection between cause and effect is clear, although there might be more than one outcome. In this context, scenario analysis is used. The cause-effect relation is hard to see in complex cases, as many variables impact the outcome. There are also more unknown things, so scenario analysis cannot be done. In this context, patterns emerge, and you respond to them as they do. In *chaos*, rapid response is needed. The cause-effect relations are unrecognizable, and they are mostly unknown. In these situations, decisions are made with limited information and based on limited time (Snowden & Boone, 2007).

2.2 Sensemaking, sensebreaking and sensegiving

Currently, there is no agreed definition of sensemaking (Vaara & Whittle, 2021). Weick (1995) defines sensemaking as a process where interaction with others plays a key role. Despite

this, the cultural, institutional, and social aspects are embedded in the sensemaking process (Vaara & Whittle, 2021).

Weick et al. (2005) explore sensemaking as the foundation for action. They mean that once a situation is understood, it leads to actions that can be taken. Sensemaking occurs when events challenge how we understand the world around us. Pratt (2000) describes the same thing through sensebreaking, which is defined as “the destruction or breaking down of meaning” (p. 464). Weick et al. (2005) explain sensemaking as “when people confront something unintelligible and ask, ‘what is the story here?’” (p. 410). This is followed by a linguistic process, where meaning-making and understanding evolve from talking. The process can include talking to colleagues or explaining specific events. What follows is that the event or the situation is talked into existence, and some sensemaking occurs (Weick et al., 2005).

Ashforth and Schinoff (2016) emphasize that sensebreaking creates a space for new sensemaking. They continue by noticing that once a void has been generated, this void usually triggers a desire to fill it. This is also when individuals are subject to sensegiving, which occurs in many organizational contexts to support individuals or groups in understanding how and where they fit in (Gioia & Chittipeddi, 1991). This, in turn, creates a desire to seek meaning or understand what is going on, in accordance with what Maitlis and Christianson (2014) found in their research. The void can also be filled without sensegiving as the individual seeks to develop an understanding of the world around them.

As a natural next step, Weick et al. (2005) found that the following question becomes “Now what do I do?” (p.410). As Kolb (1984) mentioned, experience is an essential part of how we develop an understanding of things. Experience is intertwined with our knowledge. Therefore, it becomes natural to consider how to act to bring the event into existence (Weick et al., 2005).

Cunliffe and Coupland (2012) bring forward embodiment as a part of sensemaking. Being able to narrate or tell a story is a critical element of this approach. Petac (2019) approaches sensemaking as a dialogue, where storytelling is a vital part of the sensemaking. (Forchtner, 2021) goes deeper into looking at the narratives that are present in meaning-making. Eaves and Walton (2013) continue the narrative approach by exploring the multi-layered narratives in sensemaking. They also emphasize the polyphony present in the multilayered narratives. Whittle et al. (2023) found evidence of how meaning-making is constructed through discourse. They highlight language's cognitive, social, and discursive aspects in sensemaking. Jameson (2001) brings forward the role of narrative reasoning as a core aspect in resolving conflict and influencing decisions.

Sensegiving is the process of supporting sensemaking and giving sense to different events. Gioia and Chittipeddi (1991) define sensegiving as “the process of attempting to influence the sensemaking and meaning construction of others toward a preferred redefinition of organizational reality” (p. 442). Sensegiving is linked to sensemaking, according to Gioia and Chittipeddi (1991). As a result of making sense of an organization, sensegiving can be initiated to influence a change process. Despite sensegiving, each actor makes sense of their position and activities and often discusses the topic (Gioia & Chittipeddi, 1991).

2.2.1 Common sense, new sense, and non-sense

Discourse plays a role in meaning-making. Maitlis and Sonenshein (2010) argue that ‘strong discourse abilities’ (p. 572) shape the dominant outcome in disputes and situations. Mantere et al. (2012) also add that the sense of ‘breaking’ occurs when the way we see and understand things is challenged. Vaara and Whittle (2021) developed three approaches to sensemaking: common sense, where a situation has embedded taken-for-granted ideas; a new sense, where something new emerges; and nonsense, where we dismiss an alternative way of making sense of things (p. 9). Figure 2 demonstrates the different aspects of this approach.

Table II. Three outcomes of discursive sensemaking: common sense, new sense and non-sense

	<i>Definition</i>	<i>Power implications</i>	<i>Questions for future research</i>
Common sense	A way of making sense of an issue or situation that is widely taken-for-granted as natural, obvious or right	Domination is reproduced and power is obscured through ideologically-laden discourses being viewed as neutral or even beneficial to those dominated	How does the common sense reproduced by the social group or organization naturalize existing power structures?
New sense	The creation of a new way of making sense of an issue or situation that departs from common sense	Domination is contested, challenged or changed through the creation of new ways of making sense in a counter-discourse that disrupts existing power relations	How does the new sense created by the social group or organization challenge existing power structures?
Non-sense	The dismissal of an alternative way of making sense of an issue or situation that departs from common sense	Domination is reproduced through the delegitimation of ways of making sense in discourses that challenge systems of domination At its extreme, absolute hegemonic dominance of prevailing discourses render any other way of making sense 'unintelligible'	How is the new sense created by the social group or organization dismissed in order to protect existing power structures? How do dominant discourses render certain ways of making sense inconceivable?

Figure 2: *Common sense, New sense, and Non-sense by (Vaara & Whittle, 2021, p.9)*

Basu and Palazzo (2008) looked at the sensemaking process and identified the cognitive approach (what they think), the linguistic (what they say), and the cognitive (how they behave). Within cognitive, Basu and Palazzo (2008) identified three legitimation approaches: pragmatic, which can be seen in the ability to convince others; cognitive, aligned with social perceptions and adaptation; and moral, where uncertainty brings the actor to respond to external expectations.

As sensemaking occurs based on past, present, and future events, understanding the impact of time in sensemaking is essential. The following section will incorporate the time element in sensemaking through the emergent research field on temporary sensemaking and the role of discourse in it.

2.2.2 Timebound, temporary sensemaking

“... time becomes human to the extent that it is articulated through a narrative mode, and narrative attains its full meaning when it becomes a condition of temporal existence.” (Ricoeur, 1984, p.52, italics in original)

According to Hernes and Obstfeld (2022), sensemaking is connected to the flow of time. This means sensemaking combines past and future events to make sense of the changing present. This is an emerging field in sensemaking (Hernes & Obstfeld, 2022). Sensemaking has previously distinguished “between ongoing sensemaking in the present and sensemaking of the past and future events” (Hernes & Obstfeld, 2022, p.2). According to Hernes and Schultz (2020), the distinction might prevent exploring how past and future sensemaking supports understanding and navigating the present.

Experience also plays a crucial role in making sense of the present. Tsoukas and Chia (2002) explain how experience intervenes with how we make sense of things. Kolb's (1984) research agrees with this by describing how experience and knowledge combined to change how we view the world. According to Kolb (1984), knowledge is not a steady state but should instead be considered a process. There is a constantly ongoing dialogue between perceived knowledge and experience (Kolb, 1984). If we view knowledge as unsteady, it can be modified by different things we learn and different life experiences. Kolb argues that “no thoughts are ever the same, since experience intervenes” (1984 p. 84).

Ricoeur (1980) talks about the notion of “within-time-ness” (p.173), referring to how we connect different events that are disconnected and generate sense out of them and meaningful wholes. Sandberg and Tsoukas (2020) agree with this and emphasize the need for sensemaking research to engage with different modes of time. According to Polkinghorne (1988), narratives are one of the main ways we make sense of different experiences. Gioia et al. (1994) argue that connecting past and future events is critical in developing an understanding of development over time.

The sensemaking process is complex, and many factors influence how we make sense of the past, present, and future. Hernes and Obstfeld (2022) argue and highlight the importance of incorporating time in sensemaking. Cornelissen et al. (2014) disclose how mindfulness can

be collectively constructed as a linguistic process over time. Their research looks at the shooting of a civilian as a counter-terrorist protocol. They found that how we communicate affects how we make sense of things unfolding. Different episodes and a collective sensemaking process over a period caused an innocent civilian to be shot.

In this process, alternative interpretations were dismissed, and cues that led to the collective mindfulness of the situation and the interpretation of it caused these signals to be ignored and unrecognized. The verbal communication in connection to the emotions and behavioral patterns reinforced the perceived understanding of the situation (Cornelissen et al., 2014).

Ricoeur (1980) states that “every narrative combines two dimensions in proportions, one chronological and the other nonchronological. The first may be called the episodic dimension, which characterizes the story as made from events. The second is the configurational dimension, according to which the plot constructs significant wholes out of scattered events” (p. 178). Due to this, sensemaking becomes a process of selecting events and fragments and connecting these in different ways to create an understanding of new situations. In this process, the sense of time becomes more holistic and less chronological, as events can be pieced together without needing to occur in a chronological order. To explore this in more detail, Hernes and Obstfeld (2022) present prefiguration, configuration, and reconfiguration as ways to connect different temporary elements and explore how sensemaking occurs in different situations described in the following sections.

2.2.2.1 Prefigurative sensemaking

According to Boje (1991), sensemaking is a daily activity. The prefigurative sensemaking draws upon knowledge and experience from past events. Weick (1979) explains this way of sensemaking as moving through time by organizing events and experiences as sequences. According to Hernes and Obstfeld (2022), this approach sees sensemaking as

evolving as we move through time. Experiences and moments that are connected are seen as “distinct, yet not separate” (Hernes & Obstfeld, 2022, p. 8). Hernes (2014) continues by acknowledging that we make sense of things by reflecting on past events. This is also seen in Weick et al. (2005), where a patient's current condition is compared to the past. This is especially important when treatment or medication is given, as it provides essential information in the sensemaking of the situation and how to resolve the issue.

However, this way of making sense is not limited to connecting the past to the present. This is also used to make sense of the future. Hernes and Obstfeld (2022) state that “when looking back, actors perceive the past as sequential streams of experiences and events, which they project to the future continuity” (p. 8). In other words, past events become a foundation for making sense of the future and how you anticipate the future to unfold. According to Hernes and Obstfeld (2022), this way of sensemaking is applicable in simple cases or day-to-day activities. As you make sense of the situation, prefigurative sensemaking is grounded in past experiences and events. Sometimes, it might prevent noticing small changes and indications contradicting the prefigurative narrative.

At its core, prefigurative sensemaking includes anticipation and acting things into reality. It builds on past experiences that support predicting the outcomes of the future. Swain (2019) notes that building new sense within the old poses challenges. As Swain (2019) discovers, there are challenges in prefiguration: “ends-guided and ends-effacing. The former leads to a practical dilemma between acting to bring about the future and acting as if it has already been achieved” (p.47). This tension between the present and the future might cause issues in the sensemaking process, especially when past experiences that describe the issue you are facing do not exist.

Prefigured sensemaking can be seen as incorporating habits and routines. When complexity is added, and unknown events occur, prefigurative sensemaking does not support

the sensemaking of new events that have not been encountered before. Here, the configurative approach becomes more applicable. This is discussed in the next section.

2.2.2.2 Configurative sensemaking

If we accept that prefigurative sensemaking deals with simple issues, we must explore sensemaking in more complex situations. As discussed in section 1.2, complexity is our current world. As Snowden (2002) noted, complexity is described as a situation where unknown and unknowable elements are present. Weick et al. (2005) describe this phenomenon as trying to understand the ongoing story. Weick et al. (2005) use talking things into existence in the ongoing sensemaking process connecting past, present, and future. This, in turn, will act as the basis for action.

Configurative sensemaking supports actors in responding to events in the near future. Hernes and Obstfeld (2022) describe the process as holistic, where the actors address problems in front of them by weaving information together. Despite the sensemaking process drawing on different events, experiences, and knowledge, these cannot be seen as separate, as they might change their meaning (Hernes & Obstfeldt, 2022). Hernes and Obstfeldt (2022) state that “accumulating the broadest set of experiences in prefigured time, and then curating them, in the moment, into temporary configured narratives that combine past and future events into an intelligible whole that responds to a new, unforeseen challenge. Prospective events may never actually occur, but they are necessary for actors to formulate a story of how to move on” (p.9). This process allows actors to move into uncertainty and complexity with alternatives based on previous experience, events, and knowledge while also being sensitive to curating new information.

Weick et al. (2005) explain that an unlimited number of experiences influence sensemaking as we move through time. This creates a situation where complexity increases. In prefigurative sensemaking, there is a desire to limit complexity, also called “narrative reduction”

(Weick et al., 2005, p. 414). Despite this sensemaking process often being described as sequential, it is an interwoven representation and a more holistic approach that is adapted (Hernes & Obstfeld, 2002). This represents the process of configurative sensemaking rather than prefigurative sensemaking. This process suits the challenges complexity presents as an alternative to oversimplifying complex issues for sensemaking.

Configurative sensemaking goes beyond connecting and assembling prefigured sensemaking. According to Hernes and Obstfeld (2022), it requires imagination and creativity in “the intersection between sometimes creatively selected past events and plausible future events” (p. 9).

In contrast to prefigurative sensemaking, where habits and routines form how we make sense of a given situation, configurative sensemaking is influenced by agency and creativity. However, the sensemaking described in configurative sensemaking does not yet answer the actions taken and how to act the future into existence. Refigurative sensemaking, discussed in the next section, focuses on acting.

2.2.2.3 Refigurative sensemaking

Weick et al. (2005) emphasize the need to talk and act things into existence. Hernes and Obstfeld (2022) describe the difference between configurative as being the narrative and refigurative sensemaking as being the “acting out of ‘now and then’ of actual, lived time” (p.10). This sensemaking process is linked to actions taken and the time of action. Despite the narration being complex and multilayered, the refigurative acting is usually sequential. Weick (1979) describes this as acting possible futures into existence. This is equally important as understanding the story and talking things into reality.

According to Hernes and Obstfeld (2022), sequential enactment does not reduce complexity. Organizing actions in complex situations is a way of managing complexity. Hernes and Obstfeld (2022) give project management as an example, where complexity is organized

in interconnected actions and activities. Vasgaasar, Hernes, and Dille (2020) refer to this as controlling time by creating sequences and connections between different activities and actions. Prefigurative sensemaking can be seen as the unfolding practices that are present in complexity.

2.2.2.4 Linking prefigurative, configurative, and refigurative sensemaking

Suppose we accept that prefigurative sensemaking symbolizes habits and routines. In that case, configurative sensemaking represents creativity and agency, and finally, refigurative represents the enactment of unfolding practices. But the question remains: how are these interconnected? Hernes and Obstfeld (2022) suggest that “actors influence their narrative trajectory over time through their configurative sensemaking, which connects the other two modes through the ways that experiences or solutions are selected from prefigurative sensemaking on the one hand and the ways that configured narratives is converted into refigurative sensemaking (enactment) on the other” (p.11). However, Hernes and Obstfeldt (2022) recognize that one of the significant challenges is bringing other actors' narratives into this process. To do this, they suggest the role of mediators or brokers. The role of communication skills is heightened when inviting other actors in the refigurative sensemaking process, as building bridges between different actors becomes essential. This process requires time, according to Obstfeld (2017). In these interactions, prefigurative sensemaking can be seen as sharing and transferring knowledge. This form of sensemaking occurs between different actors but might not contribute to configurative or refigurative sensemaking.

Based on the work of Pratt (2000), sensemaking is likely to occur after sensebreaking. In the sensemaking process, sensegiving can influence what type of sensemaking occurs. This is in line with the suggestions of Hernes and Obstfeld (2022), where “refigurative and configurative sensemaking requires a more dynamic engagement of different perspectives where new possibilities can be imagined” (p.11). This can be linked to Follett's (1995) idea of integration.

By recognizing these different forms of sensemaking, we can support developing an understanding of how the other actor's narratives and discourses together can form a deeper understanding of complexity. This challenges the dominant approach of simplifying complex issues to manage them and invites complexity by supporting sensemaking by connecting various narratives on the past, present, and future timelines to talk things into existence in a creative way. This, in turn, will inform action in complexity to enact the desired future into reality.

As Hernes and Obstfeld (2022) mentioned, communication skills will naturally influence this dynamic. For this purpose, the role of legitimation is one element that allows us to explore how communication is influenced to justify or dejustify worldviews and understandings. In the next part, we will look at the role of legitimation in sensemaking.

2.2.3 Legitimization and Discourse in sensemaking

As discussed, making sense of complex issues is a dynamic process where different narratives support developing a discourse as part of the narratives in discourse, rhetoric, and justifications impact meaning-making and the sensemaking process. Vaara et al. (2006) argue that the discursive process is highly influenced by how different narratives construct legitimacy or illegitimacy. Van Leeuwen (2007) approaches legitimacy as a communication activity, where different ways of communicating and sensegiving can be seen as more effective than others. Vaara et al. (2006) add by stating that “it is the discourse and its characteristics that define what can be considered as legitimate/illegitimate” (p.8). The discourse and the construction of the discourses play a crucial role in sensemaking.

Marín-Arrese (2015) approaches discursive constructions by looking at justification mechanisms aiming to legitimize narratives. The research explores how taking a specific stance and mystifying the responsibility in communication leads to patterns in communication. Marín-

Arreses (2015) work constructs an understanding of the public inquiry and governmental legitimacy process.

Legitimacy has a political and power relation due to the nature of influencing and convincing. Saveleva (2019) and Joutsenvirta and Vaara (2009) explore the media's and ideology's role in legitimization. Due to the nature of legitimacy connection to narratives and sensemaking, scholars focus on learning more about legitimation strategies in different situations. The next part will discuss legitimation strategies in sensemaking.

2.2.3.1 Legitimation strategy and differences in context and audience

Van Leeuwen (2007) categorizes types of legitimations in his work; “1) ‘authorization,’ legitimation by reference to the authority of tradition, custom, and law, and of persons in whom institutional authority is vested; 2) ‘moral evaluation’, legitimation by reference to discourses of value; 3) rationalization, legitimation by reference to the goals and uses of institutionalized social action, and to the social knowledge that endows them with cognitive validity; and 4) mythopoesis, legitimation conveyed through narratives whose outcomes reward legitimate actions and punish non-legitimate actions”. (p. 91). Vaara et al. (2006) build on this by proposing a broader legitimization strategy approach with five legitimation strategies: normalization, authorization, rationalization, moralization, and narrativization.

Despite the research on legitimacy and discourse, a better understanding of legitimacy between different actors and audiences is needed. Research suggests that the efficiency of legitimization strategies varies across different audiences. Fernández Pinto and Hicks (2019) argues that the aims of regulatory science can legitimize value-led choices. This means that some audiences might prefer science as a legitimation or justification for action or inaction, whereas others might not. However, Edwards (2014) found that context is a critical element of legitimacy. He suggests that different institutions prioritize different reasons in decision-

making. De Jonge and Louwaars (2009) also emphasize the importance of societal benefits and economic value as playing a vital role in the efficiency of legitimation strategies.

Understanding the legitimacy strategies present in one context or the hierarchy in one group of people does not mean it is a universal truth. Hence, identity becomes an element to consider in sensemaking where multiple actors are involved.

2.2.4 Sensemaking and identity

As discussed in previous sections, sensemaking is a complex process where temporality and legitimation play a role in how we make sense of events. Research on legitimation has brought forward strategies for different actors to influence the sensemaking process. Some seem more efficient than others in impacting how we make sense of the past, present, and future. Despite this, all groups of people might not relate similarly to different legitimation strategies. As Edwards (2014) noticed in his research, different institutions appreciate different decision-making reasons. This is linked to identity and sense of self.

Identity is explored in many ways, with many definitions and explanations of what identity includes. Ashforth and Schinoff (2016) suggest defining identity as the way to respond to the questions “Who am I” or “Who are we”? (p. 13). This involves a sensemaking process where individuals seek to define their identity. In this process, individuals want to experience a sense of belonging while maintaining a sense of being distinguishable (Ashforth & Schinoff, 2016).

Ashforth and Schinoff (2016) emphasize that individuals need a clear sense of identity connected to context. Their research suggests identity is connected to three main aspects: effect, which is linked to the feeling of an individual; behavior, which is linked to actions taken; and cognition, which is related to thoughts and thinking. Ashforth and Schinoff (2016) highlight a social aspect to identity and that individuals often seek validation of their identity. The social

aspect of identity highlights the need to fit into their surroundings and a sense of belonging (Ashforth & Schinoff, 2016).

Identity is, however, not a steady state. Ashforth and Schinoff (2016) emphasize that the reconstruction of identity can be “triggered by various cues, particular identity threats; surprises; and novel, disruptive, and/or critical events” (p.12). Identities can be seen as stable or dynamic. Ashforth and Schinoff (2016) explore the different orientations of identity and result in interpretive orientation, where the identity evolves, but the individuals themselves can experience the identity as stable. The process of identity also involves discovering tendencies that the individual likes and can relate to and tendencies they dislike and might reject as a part of the self (Ashforth & Schinoff, 2016).

In a social context, individuals hold multiple identities. Elsbach and Flynn's (2013) research shows how social and individual identities co-exist. Caza and Wilson (2009) found that individuals capable of holding multiple social and personal identities are more likely to handle complex thoughts and actions. Identities are constructed through interaction and not only as a self-reflection exercise (Beumeister & Tice, 1986). This adds to the multiple identity aspect, as recognizing what is valued by self and what is valued by others. Balancing these is a part of making sense of identity but also the ability to adapt to different situations.

In some situations, the construction of identity involves sensebreaking. According to Pratt (2000), this involves questioning who you are. This, in turn, creates a void that, as previously discussed, allows for sensemaking and sensegiving to occur. Maitlis and Christianson (2014) discuss the sense of self as a significantly facilitated sensemaking process. In this process, balancing between the individual sensemaking of who you are and who you are not and the external sensemaking of who you are and who you are not becomes crucial.

Lewin (1951) argued that identity seeks equilibrium, where a balance between different aspects has been reached. However, Ashforth and Schinoff (2016) note that this equilibrium is

not a steady state, as what is seen as desirable in one moment might change over time, which might strengthen or weaken the sense of self. This creates a situation where identity is seen as evolving. Despite Weick (1995) suggesting that sensemaking occurs in retrospect, temporality and social context allow for identity to grow in the future (Maitlis & Christianson, 2014).

If we accept these dynamics in identity, we can see that identity is a fluid concept. With this, narratives support individuals in explaining themselves and their identity (Ibarra & Barbulescu, 2010). This narration supports developing a sense of order coherence despite often being self-centered (Ashforth & Schinoff, 2016). These narratives link past and present and inform the individuals on the evolving identity and a sense of direction for the future. As Ashforth and Schinoff (2016) state, individuals often feel assured and fortify their identities if these narratives receive social validation. This, in turn, might support individuals taking a defensive stance in the emergence of sensebreaking.

Based on this, there is an ongoing debate within individuals and groups of people on their identity. As these are linked to an individual's social validation and values (what is portrayed as desirable and undesirable), these influence the sensemaking process and the prioritization and valuing of different events. One aspect of identity that plays a crucial role in complexity is the sense of morals and ethics discussed in the following section.

2.2.4.1 Challenges in Moral and Ethics

Society and different whistle-blowers have focused more on leaders, business, and politics (e.g., TIME 2014). In our interconnected social media time, the level of privacy is reduced (Vielmetter & Sell, 2014). In scandals, managers are accused of opportunistic behavior and short-term gain that jeopardizes future generations to meet their needs (Cunliffe, 2004; Currie et al., 2010). Leaders are also subject to being misaligned with the things they speak for and how they act (Vielmetter & Sell, 2014). These cases bring accelerated pressure on managers and decision-makers (Khurana & Nohria, 2008). Organizations or leaders can no

longer ignore the ethical dilemmas related to a sustainable future (Donaldson, 2002). Hence, we face the challenge of reshaping ourselves to meet the needs of a sustainable future (Wicks & Freeman, 1998). The challenge is that we are currently transitioning, where ethical issues are complex and new leadership approaches are still being developed.

Approaching ethics is still debated from different views, especially if ethics is a collective organizational or individual issue. Watson (2003) argues that ethics is an individual responsibility. On the other hand, scholars such as du Gay (2000) argue that ethics can and should be introduced to organizations through structures and bureaucracy present in all places. Gilligan (1987) says that ethics is not a matter of “moral agent[s] acting alone on the basis of his principles” (p. 304). Baumann and Tester (2001) argue that “being moral means knowing that things may be good or bad. But it does not mean knowing, let alone knowing for sure, which things are good and which things are bad” (p. 46). All of these rely on the notion that there is a known dimension, knowing what is right or wrong or if something is good or bad.

It is argued that there is a need to look at ethics more as practice, as Clegg et al. suggested in 2007. Clegg et al. (2007) argue that evaluating what is good and bad is based on “debate and contestation over moral choices” (p. 108). In this case, practice is referred to as something that is done rather than an understanding of how things work. For a leader, it is not enough to understand how something needs to be done; you need to act according to the values. As mentioned earlier, the era of social media and the reduction in privacy puts added pressure on “walk the talk” (Vielmetter & Sell, 2014).

“The biggest challenge is not the technology; it is the mindset of the people – their reluctance to embrace radical change until circumstances force them to. In the middle of success, it is difficult to understand why you need to change now.”

- Mr Hilgenberg, a VW executive (Boston, 2021)

2.3 Connecting temporary sensemaking, identity, and legitimization

The connection between temporary sensemaking, identity, and legitimation forms how different actors make sense of the world around them. As different actors face different issues, are exposed to different identities, and have different values and prioritizations, sensegiving and legitimation are valued differently. Recognizing that sensemaking of events that have not presented themselves in the past cannot occur based solely on past knowledge and experiences creates a need for creativity. Hence, connecting past, present, and future and imagining potential future pathways are essential in sensemaking.

Different actors engage in different processes in sensemaking as complexity creates a situation where multiple solutions are present and developed over time. Hence, different solutions, aspects, and world views are present at the same time. This, in turn, contributes to multiple discourses being simultaneously present. How different actors are exposed to legitimation, information, a sense of internal and external identity, and different aspects of time results in the worldview that constitutes their reality.

One important aspect to note is that despite different actors having different understandings of how the world works, they can all be traced back to occurrences of sensemaking. Thus, all the realities co-exist at the same time. Complexity presents multiple aspects of knowing but also elements of unknowing, interpretations, and different elements create a space where multiple solutions and understandings can co-exist depending on which fragment of the big picture actors are focusing on.

2.3.1 Sensemaking developing a strategy is no more a one-person or top-management job – discourse and narratives

In addition to these developments, there are big leaps of development in strategy research. A bottom-up approach has challenged the traditional top-down approach, where strategies happen in the organization's lower levels. Weick (e.g., 1995) started by approaching

strategy from a sensemaking perspective, looking at how strategy is adopted and understood in the organization (bottom-up). Gioia and Chittipeddi (1991) approach strategy from a sensemaking and sensegiving perspective, including both the top-down and bottom-up approaches. The idea is that organizations need a sensemaking process to understand what the organization is (bottom-up) to formulate the strategy, and then a sensegiving approach to communicate and create understanding in the organization of its existence and its individual roles.

In relation to this, Mantere and Vaara (2008) have looked at participation in the organization and how inclusion in strategizing impacts the organization. They also find that strategy does not seem to be solely the work of the top management team anymore, but rather that we are striving towards an approach of strategy being a part of the organization as a whole and on different levels (Mantere & Vaara, 2008).

If we think about strategy, one of the most essential parts of strategizing is making sense of where we are heading. Narratives allow us to understand how we see and view the future of our surroundings and try to influence its desired development. Without this process of ‘making sense’ of the future and where we are heading or where we want to be in the future, a strategy cannot be formulated. Thus, it becomes essential to find methods of studying how the future of the surroundings and our audience is discussed and how an understanding and meaning around this is created.

Focusing on the narratives involved in strategizing and how these discourses develop over time to create understanding in navigating complexity. As Barry and Elmes (1997, p. 430) say: “among its various attractions as an approach for studying strategy, narrative emphasizes the simultaneous presence of multiple, interlinks realities, and is thus well-positioned for capturing the diversity and complexity present in strategic discourse”. Weick (1995, p. 129) states: “Stories allow the clarity achieved in one small area to be extended to and imposed on

an adjacent area that is less orderly”. By adopting a discursive approach, we can better understand the circumstances in which our understanding and realities of the future are created (Barry & Elmes, 1997). This links back to how we create an understanding of the future. Even more importantly, we get an increased sense of the values and agendas of different actors involved in the legitimation and illegitimate as well as influencing, and thus, the various interpretations (depending on the background of the actors) of the resolutions and tensions of future and potential pathways. These are not examined as the truth but “a view that opens up new trains of thought” and encourages discussion and better, more explicit understanding for decision making (Barry & Elmes, 1997, p. 431).

Based on this and the temporality, strategy, and strategizing in complexity, it can be argued to be a collective effort. Multiple stakeholders bring fragments of the discourse that create a more holistic picture of the complex issue. In this process, sensemaking and sensebreaking occur among different actors, creating new meanings. This sensemaking process is influenced by sensegiving on some occasions. This thesis approaches complexity as a multi-actor interaction where sensemaking, sensebreaking, and sensegiving occur between the actors as time passes. For this to occur, new ways of dealing with tensions are needed, which are discussed in the following section.

2.3.2 Navigating complexity - Beyond dominance and compromise towards integration

Follett's (1995) research focuses on not dominating but discussing and understanding to make decisions. Follet (1995, p. 73) states that “if, then, we do not think that differing [opinions] necessarily mean fighting [...] integration is more profitable than conquering or compromising, the first step towards *bringing the differences into the open*”. Accordingly, conflicts can be constructive if we communicate and clarify our differences. Discourse plays a crucial role in how actors make sense of the different opinions, trains of thought, and ideas regarding the areas we are trying to influence. This, in turn, moves us away from the traditional

studies around dominance, power, and struggles. Therefore, language's role can be seen as necessary, as it creates a better understanding of the audience and its members and a better base for decision-making.

Follett (1995) suggests that this examining method focuses more on integration, the intersections or 'shared understanding' of things, rather than dominance or compromising. The difference between dominance and compromising compared to integration is that in the two first cases, one or both sides need to sacrifice something, whereas in integration," a solution has been found in which both desires have found a place, that neither side had to sacrifice anything" (p. 73)

According to Follett (1995), the focus should move away from right and wrong toward sharing understanding and creating meaning that makes sense. Thus, even though there might be contesting views of the future and what the leaders should strive to be, they are more a sensemaking process than dominance or power struggles and thus move towards Follett's (1995) idea of integration.

Rarely, though, do you get the whole story all at once. In their research on organizational culture, Vaara and Tienari (2008) point out that narratives related to sensemaking usually are fragments or parts of the whole picture. These fragments, or antenarratives, help the organization's sensemaking process and form different outcomes or narratives. In the case of leadership, this means that by identifying the antenarratives, you can see glints of what the future or the direction of the organization seems to be, and these together create an understanding of the sensemaking process of the organization. Vaara and Tienari (2008) also point out that you can specify the different discourses present by identifying the antenarratives involved in the sensemaking process.

This line of research within strategy brings us in on the discursive approach to strategy. The discursive approach includes the role of language, communication, and rhetoric. In this

line of research, the role of discourse has become increasingly attractive. Discourses in organizations have become a way of understanding and accessing the underlying assumptions of organizations and a way of sharing and creating understanding in organizations. Discourse provides a space for understanding where new trains of thought might occur and understanding of a situation may occur. From a sensemaking perspective, discourses enhance the sensemaking process (Gioia & Chittipeddi, 1991; Barry & Elmes, 1997). From a sensemaking perspective, discourses allow us to understand the organization better and thus position the organization on a deeper level.

However, discourse within one organization might aim to reach a consensus to form a strategy. This might not be the case when including multiple stakeholders, as will be explored in the theoretical framework.

2.4 Summary of literature review

This chapter has explored the difference between Cynefin's framework's simple, complicated, complex, chaos, and disorder dimensions. From there, the complex has been defined as cause-effect relations that are hard to determine, and many unknown and unknowable things are present in decision-making. The dimension of complexity requires adaptation skills, as pathways and patterns unfold as the actor moves through time.

Sensemaking, sensebreaking and sensegiving were key aspects of complexity and development. Sensemaking discusses how different actors make sense of their surroundings (the story and actions) (Weick, 1995). Sensebreaking occurs when how actors make sense of the world around them no longer works (Pratt, 2000). Sensegiving is the actors' attempt to influence sensemaking (Gioia & Chittipeddi, 1991). These aspects were followed by Vaara and Whittle's (2021) research on common sense, new sense, and non-sense. These were linked with Basu and Palazzo's (2008) work on pragmatic, cognitive, and moral legitimation approaches.

A temporal sensemaking approach was presented based on the work of Hernes and Obstfeld (2022). This work discussed and explored prefigurative, configurative, and refigurative sensemaking approaches. These are seen as interacting with the past and future to support the sensemaking process in the present. Kolb's (1984) work on experience and knowledge is linked to sensemaking, as knowledge cannot be seen as a steady state. Experience is intertwined with knowledge, and thus, development and progress occur. Cornelissen et al. (2014) emphasize the importance of recognizing mindfulness, where signals contradicting a collectively generated narrative might be overlooked.

Legitimations were presented for different actors to justify or dejustify different world understandings. Van Leeuwen's (2007) and Vaara et al. 's (2006) research found different legitimizing methods. Ashforth and Schinoff (2016) note that identity is crucial in sensemaking and legitimation. Different identities help actors sort through large amounts of information and define their roles in complex settings. Morality and ethics are linked to identity through recognizing good and bad. However, ethics and morals can be seen as individual and collective efforts.

The chapter acknowledges the shift in strategy work and development as complex settings require collaboration. This is aligned with e.g. Mantere and Vaara (2008), who emphasize that strategy work involves actors at all organizational levels. Further, Follett's (1995) work on dominance, compromise, and integration provides options for resolving tensions between actors and narratives. These aspects lay the foundation for the thesis literature review and past research.

3 Theoretical and conceptual frameworks

This chapter explores the theoretical framework of the dynamic between business government and society. It first describes the framework and literature relevant to it. It then examines the discursive aspect related to the theoretical framework.

3.1 Dynamics between business, government, and society actors

Globalization has provided opportunities and added complexity, especially in the business sector. Much focus has been on “integrating national markets, increased competition, and rapid technological advance by many small and medium-sized enterprises that operate across borders “(Van Tulder & Van der Zwart, 2005, p. 14). Despite many benefits, the dominance of business activities, and the current sustainability crises, people have started questioning the highly commercialized ways of being and acting. Van Tulder and Van der Zwart (2005) explored mainstream management studies and discovered the SEPT model (S(ocial), E(conomic), P(olitical), and T(echnological)). Van Tulder and Van der Zwart (2005) state that “this model was created by Ian Wilson, who worked as a corporate planner at the American General Electric company) (p. 13). The model has been criticized for significant limitations. In addition to T being seen as an autonomous entity, developing independently from other actors. More significantly, it fails to address the dynamics between the different acts involved, as “it is often at the interfaces of S—E—P that the real problems and challenges (and the real solutions) arise” (Van Tulder & Van der Zwart, 2005, p. 13), as shown in Figure 3.

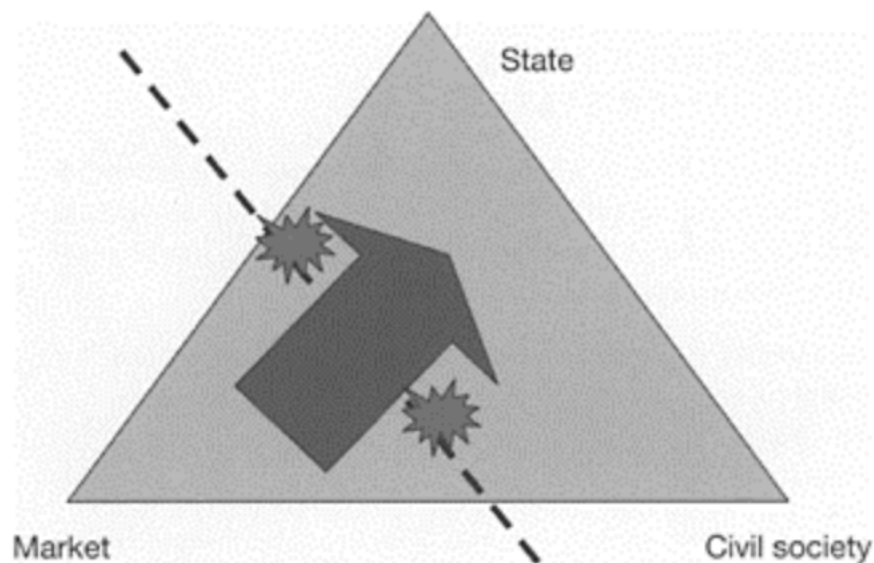


Figure 3: An advancing market (Source: Van Tulder & Van der Zwart, 2005, p. 13)

Figure 3 demonstrates the relationship between the main actors of development, based on the work of Van Tulder and Van der Zwart (2005). Here, different businesses most often represent the market, the state is the government, and civil society represents both the environment and society. Despite one prominent actor being the business or market and them often being the fuel for internationalization and globalization, they have since the mid-1990s been challenged by “the alternative/anti-globalization movement.” (Van Tulder & Van der Zwart, 2005, p. 14). These actors' primary objective is to protest globalization's negative consequences. Some examples of such activities are *Corporate Planet* (Karlner, 1997), *When Corporations Rule the World* (Korten, 1995), *Corporation Nation* (Derber, 1998), and *The Silent Takeover* (Hertz, 2002). One of the main arguments is whether globalization is advancing good worldwide or only for the selected few. With increasing concerns about the suffering caused by climate change, hunger, poverty, and other global challenges, these movements are seeing globalization as one of the main drivers of inequality in developing countries as they are suffering from not being globalized. Criticism has also been pointed towards environmental concerns.

Van Tulder and Van der Zwart (2005) state that changing societies will trigger rivalry and conflict. These will be between different actors and within the group itself. None of the actors can act without the influence of another. The entities present in the triangle cannot act separately from each other but are entangled. Despite this, how they organize themselves and their relations is highly subject to context (Van Tulder & Van der Zwart, 2005). Each context and individual actor “employs a logic, rationality, and ideology of its own” (Van Tulder & Van der Zwart, 2005, p. 9). Governments (state) act through legislation, business (market) by creating value and welfare, and societies are usually seen as the “sum of social relations among citizens that structures society outside politics and business. It includes the family, voluntary

organizations, societal groupings, churches, and trade unions” (p. 9). Wartick and Wood (1999) add that societies create norms.

The dynamics and the balance between each actor can vary. The dialogue between the actors plays a crucial role in how the legitimation and legitimacy are handled and what the outcome will be. For complex sustainability issues, the dynamics between these actors and the power balance between them need to be explored in further detail. The process of how they make sense of their role, the balance, and the potential resolutions and perceived futures is critical in understanding the sustainable transition and pathways and how they develop over time.

3.2 Discourse between Business, Government, and Society

Ethics arise when combining Van Tulder and Van der Zwart's (2005) work with discourse. Habermas's (1990) work explores discourse in the dynamic as a meeting to find consensus and agreement on where to go next and how to proceed. This, however, is contested by several researchers. The desirability to reach a consensus between business, government, and society is varied. Mitic (2018) suggests that consensus can be reached eventually, but the impact and influence of different actors are difficult to track. Hence, the outcome of what consensus can be achieved is highly unpredictable. Snowden and Stanbridge (2004) add to this by highlighting the need for a context-specific understanding. As emphasized by Snowden in the Cynefin framework, complex situations require us to allow pathways to unfold as a part of sensemaking. Therefore, each case requires tailored solutions.

Van Tulder and Van der Zwart (2005) and Haveri (2006) also highlight the challenge of finding consensus within governmental institutions. Van Tulder and Van der Zwart (2005) emphasize that in complex issues, insufficient dialogue often leads to reoccurring or, in the worst case, increased confrontation between the actors. Haveri's (2006) research on the Finnish government found that “Despite the need for intense cooperation is acknowledged in most

surveys, practical steps are often difficult to take due to the complexity of the inter-organizational action. Actors encounter complex situations involving many issues, with the issues continuously changing and complicatedly interdependent” (p. 31).

Reaching a consensus might be possible, but it might not, in all cases, be desired. Consensus reaching has both positive and negative implications based on research. Hence, the theoretical framework explores the different actors' discursive dynamics rather than how consensus can be achieved. The theoretical framework aims to support bringing forward the multi-layered narratives and different discourses that are present simultaneously in complexity.

4 Research Methodology

This chapter aims to demonstrate the research methodology for this qualitative thesis. The research explores how sensemaking or sensebreaking occurs in the discourse dynamic between business, government, and society. It draws upon past research in temporal sensemaking, sensemaking and legitimation, and sensemaking and identity (explained in section 2). For this purpose, a grounded theory approach has been adopted, where categorizing research findings has contributed to identifying key literature to describe the discursive dynamic. Grounded theory allows for a flexible, emergent process between literature, data, and findings, supporting patterns that emerge from the collected data. The stories are told using an ethnographic approach, allowing for a closer relationship between the researcher and the data. The approach is described in more detail in this chapter.

4.1 Research questions

The doctoral thesis aims to develop an in-depth understanding of complex issues as a discursive phenomenon that either supports or prevents development and progress. This research's second objective is to understand better how government, business, and society (representing both community and environment) make sense of complex issues and the

discursive dynamic elements involved. The research will adopt a discursive perspective, allowing us to explore the different aspects of sensemaking and sensebreaking between business, government, and society.

This doctoral thesis will use EMMI as a study objective to explore how discourse plays a role in making sense of complex challenges, especially in controversial business operations. This has been chosen due to its highly complex nature of pressure to generate increasing amounts of raw material needed urgently for the green transition, geopolitical power struggles, extraction operations' negative impact on the environment, societies in the global south encouraging mining operations in their countries, while, in contrast, the global north societies are being reluctant to have mines in their backyard.

The complexity and polyphony of the chosen topic demonstrate many similarities with other significant sustainability issues, for example, food systems, access to fresh water, access to the internet and information, education, technology, loss in biodiversity, and many other topics, where business, government, and society debate over the pathways forward to meet present and future demands and needs on a global scale.

The research questions are:

- a. How are business, government, and societal actors making sense of complex issues?
- b. How are new discourses and narratives developed, and what enables actors to explore them?
- c. How is the discursive dynamic in complexity enabling or disabling progress, development, and new solutions to emerge?
- d. How are different actors discussing and making sense of the future?

4.2 Research methodology selected and design

Choosing the applicable research design is grounded in the central research questions and the researcher's degree of control of the phenomenon (Yin, 2003). It is also related to time in the sense of historical events or current events and phenomena (Yin, 2003). I have chosen a case study to demonstrate the discursive dynamic between the three actors and its contribution to sensemaking or sensebreaking. According to Lundahl and Skärvad (1999), this allows for an in-depth analysis of the research topic. This, in turn, will provide a more holistic view of the phenomenon.

The discursive dynamic between the three actors in complexity is a current phenomenon. Moreover, I have limited to no possibilities of impacting the experiences and stories told in the interviews, a case study is applicable (Yin, 2003). A qualitative approach is justified when research focuses on explaining a phenomenon. Yin (2003) emphasizes that research aiming at understanding “how” sensemaking or sensebreaking occurs allows for both a case study and a qualitative approach.

Myers (2009) discusses the importance of flexibility when studying dynamics. As my data consists of semi-structured interviews with individuals at one given time, it is a cross-sectional study (Lundahl & Skärvad, 1999). Further, as the research will describe how discourses and different variables contribute to sensemaking or sensebreaking in a complex issue, the decision for a qualitative case study is applicable. Saunders et al. (2009) highlight that one downside of this approach is the lack of determining cause and effect. However, describing the phenomenon and the discursive dynamics at this stage will support the development of variables applicable to cause-and-effect research in the future.

The research rationale followed a chosen pathway, illustrated in the image below.

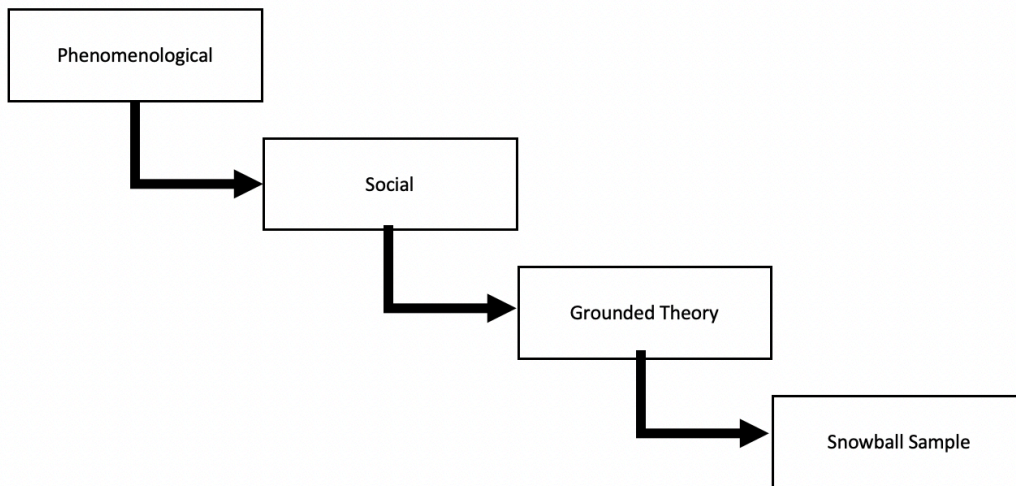


Figure 4: Research approach

4.3 Rationale for qualitative research, inductive method

The research follows a qualitative approach and will be a mixture of ethnography and indicative case studies. An indicative case study is used for inductive research at the early stages of theory development. Eisenhardt (1989) supports this idea as it can advocate for building a theory and developing a hypothesis. EMMI has been chosen as a case for the research, as it represents a complex issue with multiple actors involved. Further, the case study was chosen to focus on actors in Finland but incorporate actors with experience with other complex issues. Additionally, all individuals have experience on an international level.

In the analysis, references to specific cases (for example, events and interactions) are not limited to circumstances in Finland. As all actors are internationally active, and their experience is based on interactions, information, and knowledge from several international events, the discussions in the interviews were not limited to reflect solely events in a specific country or region. Many reflected that other actors have expressed the same experiences they

have had in other nations and events in different regions. This was validated by persons interviewed who work and act over national borders and in international organizations.

The case study in understanding the discursive dynamics between the three actors and its influence on sensemaking and sensebreaking is suitable for complex issues and should not be limited to EMMI. Due to the nature of an indicative case study, the theory development and indications explored can be adopted for other complex issues and tested subsequently in the future (Saunders et al., 2019). The aim is not to conduct a descriptive study of EMMI but rather explorative research to explore a complex issue to develop a deeper understanding of the discursive aspect involved in complexity.

Semi-structured, open-ended interviews were conducted to collect data for the research. The interview guide can be found in Appendix A. The quantitative approach allows for open-ended questions, where more profound levels of meaning-making can be mapped and discovered. This will add to the existing knowledge of how meaning-making occurs, evolves, and develops. It will also support the in-depth understanding of how sensemaking of complex issues evolves based on different actors' discourses and meaning-making.

The qualitative research approach provides an opportunity to see, for example, underlying attitudes, values, and views. Ethnography is a suitable way of examining the ways of making sense of complexity, as ethnography allows and requires the researcher to relate to the research object. According to Saunders et al. (2009), interpretive ethnography emphasizes subjectivity and multiple meanings. This is suitable for this type of research, where narratives and discourses are multi-layered and a part of the sensemaking of the complexity for different individuals and audiences. Golden-Biddle and Locke (1993) state that authenticity, plausibility, and criticality are the most important contributions of ethnographic studies. According to Golden-Biddle and Locke (1993, p. 595), "Through authenticity, ethnographic texts appeal to readers to accept that the researcher was indeed present in the field and grasped how the

members understood their world.” Achieving authenticity includes: “particularizing everyday life, delineating the relationship between the researcher and organization members, depicting the disciplined pursuit and analysis of data, and qualifying personal biases” (Golden-Biddle & Locke, 1993, p. 595). Golden-Biddle and Locke (1993, p. 595) add that plausibility helps readers accept that “the findings make a distinctive contribution to issues of common concern.” This is achieved through ways that “normalize unorthodox methodologies, recruit the reader, legitimate atypical situations, smooth contestable assertions, build dramatic anticipation, and differentiate the findings” (Golden-Biddle & Locke, 1993, p. 595).

Finally, Golden-Biddle and Locke’s (1993, p. 595) criticality approach strives to “probe readers to re-examine the taken-for-granted assumptions that underlie their work.” Suggestions for achieving criticality are “carving out a room to reflect, provoking the recognition and examination of differences, and enabling readers to imagine new possibilities” (Golden-Biddle & Locke, 1993, p. 595). Despite not sharing the experiences of the people interviewed, the data collection and semi-structured interviews allow sensemaking to occur during the interview. Further, discussions in advance and securing a safe space to speak your mind without judgment by the researcher provided an understanding of the settings and the situation that could not be encountered without the ethnography. As the researcher has no prior experience in the case study field, the person interviewed could view the researcher as curious, trying to understand rather than influence.

Lundahl and Skärvad (1999) emphasize that qualitative studies aim to describe, analyze, and understand the behaviors of individuals and groups. It is also suitable for the researcher to explore motives and the content of described events. The data in this research are semi-structured interviews that are recorded and transcribed, so they are suitable for a qualitative research approach. Narratives are used to understand complex events (Boje, 2001). Ford (1999) adds that through narratives, meaning emerges to the participants through the political and

social process of making sense of the situation. Thus, narratives are a way of understanding how sensemaking or sensebreaking occurs.

An inductive research approach allows for a flexible relationship between theory and empirical research. This way, empirical findings can influence the theory and approach. These, in turn, develop justifications that explain the phenomenon that can be discovered in already published research. It is essential, however, to note that this thesis does not test or validate any specific frameworks or approaches, nor does it state hypotheses that are tested. The research is strongly guided by the questions and the problem formulation discussed in section 1. Theoretical frameworks will be compared with findings in the data, and conclusions will be drawn based on this. This is in with suggestions by Alvesson and Sköldbberg (2008) on increasing objectivity in interpretation and conclusions based on the analysis.

4.3.1 Grounded theory in data analysis

The grounded theory allows for theorizing social interaction and discovering theories and patterns (Glaser & Strauss, 1967). As this thesis focuses on understanding the role of discourse dynamics between the three actors, grounded theory is suitable for discovering theory through the data collected. Grounded theory suggests that the data, like recordings or literatures, are first coded with open coding (Strauss & Corbin, 1998). Relationships can be discovered from here, and axial coding can be made. Finally, selective coding can be adopted to categorize and sort the data.

A theory follows these, and finally, a model is developed (Glaser & Strauss, 1967). This analysis allows the “discovery of theory from data systematically obtained” (Glaser & Strauss, 1967, p.2). Grounded theory allows the researcher to determine what to focus on and what to do next as the theory develops (Glaser & Strauss, 1967). The codes allow us to focus on the things of interest, in this case, the elements of the discourse between the three actors and how they contribute to sensemaking or sensebreaking. The categories allow space to create an

understanding of the dynamics and issues, not as much of the situation as such (Glaser & Straus, 1967). Still, these categories need to emerge from the codes, and thus, the phenomenon is explored and emerges from the data once it is coded.

The benefits of allowing the concepts and theories to emerge from the data are that they do not exclude the researcher from the phenomenon in the case and limit our focus to a specific issue. As the theory emerges from the data, it will also fit the data better than if it were pre-determined. This also supports the inductive approach. Despite grounded theory being at its core inductive, an abductive approach with a flexible relationship between theory and data can also be applied. In this thesis, the literature has been revisited multiple times to discover suitable literature, published research, and theories to describe the phenomenon.

Despite reaching theoretical saturation based on the data collected, additional data will likely reveal more aspects and dynamics. Hence, the research invites a deeper and more comprehensive understanding of the phenomenon in the future. This is also why the indicative case study approach suits this research.

3.2 Narratives

Making sense of complexity involves creating different scenarios or stories about the past, present, and future. Further, it requires understanding which things are relevant or important when facing complexity. A discursive and narrative approach allows one to zoom in on the fragments of discussions involved in creating an understanding and meaning of complex issues. By exploring the larger discourse and the narratives related to it, the researcher can develop an understanding of the different, specific meanings that co-exist (Vaara & Tienari, 2008).

A narrative approach is suitable as it invites individuals to provide a complete narrative or story on their experience and understanding. As the research aims to explore sensemaking and sensebreaking, storytelling and narratives support the discovery process. Despite grounded

theory and narrative inquiries being sometimes seen as separate ways of conducting research, they are both applicable to the purpose of this research. To reach the deeper levels of sensemaking in complexity, stories, and narratives are present in the data collection to demonstrate the experiences of the individuals in the complex issue they are facing. Storytelling also reveals the interpretation and values of specific events, supporting the research's in-depth analysis of meaning-making. Despite narration inquiry often being seen as a sequential approach, narration in forms of sensemaking are usually fragments connected to one another. Vaara et al. (2006) explore this as fragments or antenarratives contributing to theory development. Therefore, the approach becomes a combination of grounded theory and narrative inquiry, as narratives are present in the discovery of sensemaking, while a grounded approach allows for patterns and theorizing to emerge from the data collected.

An in-depth analysis will provide information on these discourses and the dynamics and their relationship to sensemaking and sensebreaking in complexity. By exploring the discursive dynamics in depth, underlying ways influencing how the actors make sense of the complex issue can be discovered and mapped.

3.3 Timeline as a method

Using a timeline demonstrates how different discourses or themes can be placed on a timeline over time and how the various themes appear and disappear along the timeline. These support formulating an understanding of how the theme is placed in the present future relating to sensemaking and help develop an understanding of how these different themes work together (or against each other) to formulate an understanding of complex issues. Despite this being cross-cut research, the discourses present in sensemaking can be placed on a timeline. This supports discovering the dynamic nature of discourses and how the different narratives are chronological or unchronological. This, in turn, will also support understanding how different

actors address past, present, and future events and how they contribute to sensemaking or sensebreaking.

During the data collection, themes will be identified and matched with themes from the literature review. This will also allow exploring and reviewing problems and the current understanding of the complex issue. Especially recurring themes will be of interest both within and between actors. The research design will allow for a deeper understanding of sensemaking within and between actors through systematically coding and categorizing themes and how the themes are discussed and addressed. This allows for an in-depth analysis of how themes are discussed, viewpoints justified or unjustified, and values present in how the actor is making sense of the complex issue and the multi-layered discourses around it. This, in turn, allows for mapping and developing a deeper understanding of the discourses' impact on how we understand the world around us, the different actors involved, and the intentions of other actors.

4.3.2 Philosophy

The research philosophy adopts an interpretive approach, as when exploring the sensemaking process, there are multiple meanings that are interpreted simultaneously. Despite this, one key element to understand is that there is an objectivistic dimension to the research. This is because despite many seeing the coexisting realities as separate, they are, as a matter of fact, a part of the same reality in the complex issue. Epistemology is a narrative approach where perceptions, worldviews, and understandings of different individuals and groups can be explored. The researchers' reflexivity cannot be ignored in the research process, making the research subjective. This is reduced by introducing codes to the text and going beyond themes discussed to explore how themes are presented, explained, and justified.

The research is based on the constructivist theory. This approach is often referred to as social constructivism. It builds on the foundation that individuals seek “understanding of the world in which they live and work” (Creswell, 2014, p.8). The assumption is that individuals

develop subjective meaning, and it relies on the participants' views. This fits well with the purpose of the study, which is to understand how sensemaking or sensemaking occurs in complex issues. This approach identifies the following assumptions: how humans construct meaning as they interact with the surrounding world, how the historical and social perspectives influence meaning-making, and how meaning-making is a social activity (Creswell, 2018). The approach is phenomenological. The phenomenological research approach allows for the description of the phenomenon and the experience with it. It has strong philosophical and psychological roots (Creswell, 2018).

4.4 Sensemaking as a research method

Ring and Rands (1989) describe the sensemaking methodology as “a process by which individuals develop cognitive maps of their environment” (p. 342). According to Neumer et al. (2008), sensemaking is currently a rapidly growing area of research. It is used to describe, understand, and explore the deeper levels of change and behavior in a broad variety of contexts (Neumer et al., 2008). As we move through “reality” (Neumer et al. 2008) or time (Hermes & Obstfeld (2022), sensemaking usually occurs in connection to decisions that are made. As our sensemaking of things happening around us is fragmented, the sensemaking methodology seeks to understand when sensemaking occurs and what contributes to it (Neumer et al., 2008). In addition, Weick et al. (2005) add that understanding how sensemaking occurs is connected to the past, present, and future. In complexity, decisions are strongly linked to both external expectations and organizational cognitive and linguistic processes (Joutsenvirta & Vaara, 2009).

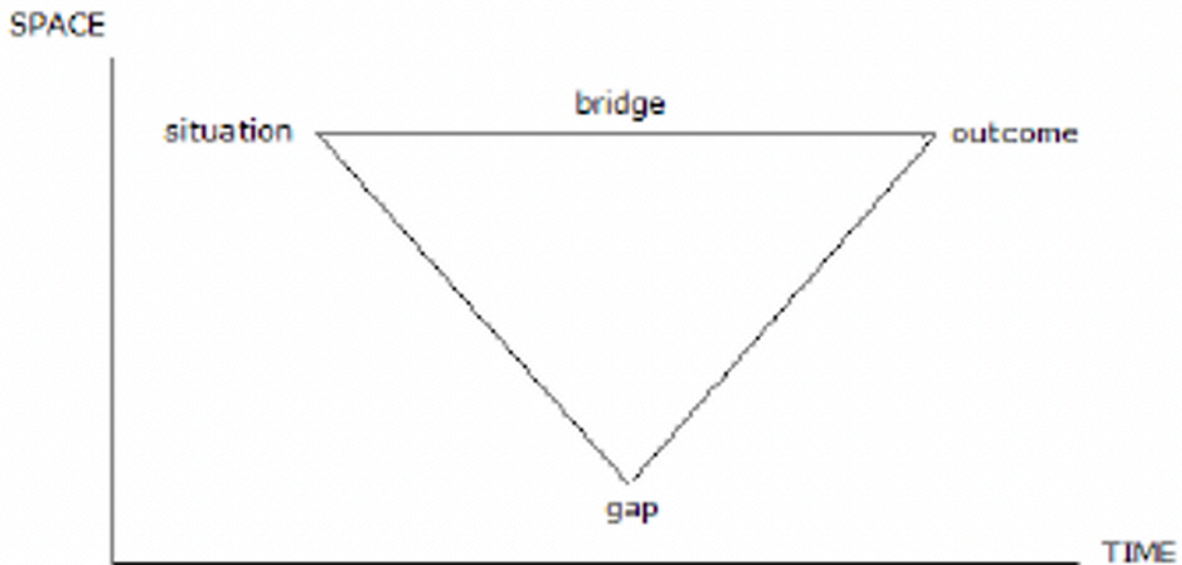


Figure 3: The Situation-Gap-Outcome Triangle

Figure 5: The sensemaking situation gap between perceived future and current state by (Neumer et al., 2008)

Sensemaking in complexity matters helps us understand more profound levels of actions linked to linguistic, behavioral, and cognitive features (Goshal & Morgan, 1996). This, in turn, presents an opportunity to understand decision-making at deeper levels. Pfeffer says, “What we do comes from what and how we think” (2005: 128).

Brickson (2007) argues that the sensemaking process in an organization impacts how they view their stakeholders and, therefore, how they interact with them. Decisions are also made based on the perceived external and internal demands. Constructionists (Weick, 1995) and enactment agree that organizations are not acting with a “real” environment but a perceived, constructed understanding of it.

Dervin has focused on understanding sensemaking as a phenomenological tradition in which the term sense-making emerged (Neumer et al., 2008). Much development in the sensemaking methodology is communication-based, which fits well with the thesis agenda. The methodology allows exploring both sensemaking and sensebreaking (or sense-unmaking). Neumer et al. explain that “it finds its roots in the works of Bourdieu, Bruner, Carter, Derrida,

Dewey, Foucault, Freire, Gadamer, Habermas, Hall, McGuire, Rorty, and Toulmin, among others” (2008, p.2).

4.5 Data collection

The data was collected in 26 semi-structured interviews during September to December 2023. The interviews were recorded and transcribed. The criteria for participating in the interview were the following:

- Involvement in forms of work with, work on, research about, publications about, exposure to, or participation in EMMI.
- Willingness to speak openly and for the interview to be recorded and transcribed.
- Language requirements to do the interview in Finnish, Swedish, or English.
- Representation or connection to one or many of the three core actors: business, government, and society.

The selection and identification of individuals was based on the following aspects:

- Accessibility and ability to find contact information.
- Word of mouth – recommendation by participant
- Google search by keywords to find actors involved and contact information.
- Speakers at events
- Connections in own network (e.g., LinkedIn)

This results in a non-probability sample, where characteristics cannot be drawn to represent the population (Saunders et al., 2009). For the research, such generalizations are not required or needed. The volunteer aspect of the sampling created a snowballing effect, where more and more volunteers emerged throughout the process. Despite this, the sample size of 26 in-depth interviews provided sufficient data and insight for the indicative research. The sample aimed to get a representation of each group, business, government, and society. Business is, in this research, defined as a for-profit organization. The government is a governmental institution

that monitors compliance with laws and regulations and oversees the ownership of state assets (e.g., areas of land). These institutions also represent society through, e.g., election processes at the municipality. Individuals and NGO organizations represent a societal voice from different perspectives.

Everyone was approached both via email and a phone call. All participants received the defended and accepted research proposal, and the interview process was described. Further, the use of the interview was disclosed. The participants either signed a letter of consent (Appendix B) or agreed at the start of the interview recording.

All interviews were transcribed with the support of Sonix for a first draft of the literature. This was followed by correcting the literature by listening to the recording and reviewing the first draft. The literature was sent to participants during December and January so they could check that it represented the interview flow and for potential correction of concepts, names, and facts. No modifications were made to the literatures. Further citations used in the analysis were sent to the participants for review. This was to reduce the researcher’s subjectivity and personal interpretation and increase the views and understandings of the individual, portraying them in a way they agree with.

The sample resulted in interviews in the three categories of business, government, and society as follows:

Representation (based on definition)	Number of actors	Number of quotes	Quotes/individual average
Business	10	28	3
Government	11	29	3
Society	5	18	6

The number of quotes refers to the data analysis, where quotes to demonstrate how aspects are addressed are discussed. The number of quotes is a total of 75. To ensure that the quotations are fairly represented from each group, number of quotes from actors was checked. As society representatives in this categorization was less, each individual was quoted more

times to give a fair representation of the voice. However, in absolute numbers, the voice is still underrepresented based on this way of categorizing the actors.

Despite this easily being seen as an uneven sample distribution, where societal representatives are underrepresented, it is essential to note that many of the people interviewed categorized themselves differently. Many people interviewed said that they are not purely in one group or another. For example, a person working at the municipality also represents the voice of society. Further, a researcher at a university is, at the same time, a member of society and might be involved in societal activities. Activists and professionals might be entrepreneurs despite approaching the issue through a societal lens.

If we consider how the people interviewed position themselves and accept that some of them might hold multiple identities (as suggested by Asforth and Schinoff (2016)), the results are as follows:

Representation (multiple identities, in three categories)	Number of actors	Number of quotes	Quotes/individual average
Business	11	30	3
Government	12	32	3
Society	13	32	2

If we look in more detail at the identification, the results look like this:

Representation (based on multiple identities)	Number of actors	Number of quotes	Quotes/individual average
Business	7	24	3
Business and Government	2	4	2
Business and Society	2	2	1
Government	4	15	4
Government and Society	2	6	3
Society	5	17	3
Society and Government	4	7	2

Note the difference in the nuance between Society and Government and Government and Society. In the first one, the person was employed by the government. In the latter, the person sometimes provided expert opinions to governmental institutions.

If we examine the same data and ask the people interviewed to position themselves in only one category, the results look like this:

Representation (based on definition)	Number of actors	Number of quotes	Quotes/individual average
Business	10	28	3
Government	7	23	3
Society	9	24	3

Therefore, the representation of different voices and actors based on their identities is balanced in the sampling. During the interview, the individual was asked to emphasize from which viewpoint they are approaching the issue. In some cases, separating the different identities was challenging, as many had been involved in different activities through their life. Some of the actors were also actively involved in arranging events where multiple viewpoints and voices could be heard. Others were actively engaging in the intersection between different actors engaging with them in different ways. This observation supports Ashforth and Schinoff's (2016) findings on multiple identities being present in individuals.

In the analysis, the representatives are in the quotations categories based on the first way of categorizing, which is linked to the definition provided in the introduction. However, when looking at the examples, many actors expressed similar concerns or tendencies. Further, categorizing actors and approaches to it is open for debate and interpretation. For the consistency and purpose of the research, defining clearly how the categorization of different actors has been done is essential. Categorizing solely based on individual interpretation makes the repetition of the research challenging. However, it is important to note that the analysis above indicates that a fair representation of different voices is present in the analysis.

In Appendix C, a list of different representatives and quotes is listed. To ensure the anonymity of each representative, the quotations are not marked with numbers, so the different quotations cannot be grouped or connected to recognize the individual. Further, references to places and cases are anonymized, including references to actors involved in, for example, media headlines. Assumptions on which role the actor holds in cases presented cannot be drawn based on the examples provided, as the actor might be both the target of, involved in, or observer of the issue brought forward.

4.6 Data Analysis

The research strategy is assumed to follow the pathway of an emergent, indicative case study (Saunders et al., 2019). Saunders et al. (2019) elaborate that in emergent, indicative case studies, despite the researcher choosing environment and cases that represent the issue, allow for a flexible relationship with literature and the impact of engagement to allow patterns to unfold. This indicative study provides the rationale through which findings can be replicated. In the future, research and theoretical framework will be further developed by quantitative and deductive studies that can be adopted based on the indications of this research.

4.6.1 The use of AI

The analysis will build on thematic analysis (Saunders et al. 2019). Atlas.ti and NVIVO were used for the thematic data analysis. Atlas.ti provided an option to use AI in the coding, but as the codes focused on themes discussed and less on how the matters were discussed, the AI was not developed enough to support the analysis. Ai support tools provide an option for sentimental analysis (as Atlas.ti does). However, sentimental analysis is still not recognizing the aspects of how discussions and sensemaking occur for different actors, and the different aspects and depths of it. Despite the lack of AI to support the analysis of interviews beyond the themes discussed, the tools supported recognizing and coding the data and the development of a coding scheme. The coding scheme is described in the analysis part. The coding was, however,

done manually, not with the support of AI as originally planned. This finding provides an opportunity for AI development, as AI could support generating a deeper understanding of how conversations take place and how different actors engage in sensemaking, sensebreaking and sensegiving at different levels and stages.

4.6.2 Working with the data

Identifying quotations to use was done manually on paper. This was because the codes used for the research in NVivo and Atlas.ti were large amounts of data, making it hard to recognize from all options the ones that would appropriately describe the aspects. Therefore, the interviews were printed with the highlighted coded areas, and the quotations to use were identified.

The quotations were cleaned and clarified, and repetitions were removed to make the citations easier to read. Persons quoted in the thesis have a chance to verify that the cleaned quotation represented their viewpoint and that the content intended is reflected in the quotations. This also reduces the biases and misinterpretations done by the researcher.

To secure the anonymity of the participants, no specific events, names, places, or dates are mentioned. Also, any reference to material, minerals, chemicals, or others is removed. The aim is not to validate if the information is correct but rather to demonstrate how sensemaking occurs and how different actors use different sources of information, events, narratives, etc.; for sensemaking, the specific events, facts, and occurrences can be anonymized. This research mainly focuses on how sensemaking or sensebreaking occurs rather than on what is being discussed and validating if it is correct or not.

4.7 The Researcher

The researcher is an experienced professional in facilitating dialogues on complex issues in a business context. The researcher holds a B.Sc. and M.Sc. in Economics (Business Administration) degree from Hanken School of Economics and a M.Sc. in International

Management degree issued by Franklin University Switzerland but conducted as a joint program with UN Institute for Training and Research. The researcher has yet to gain experience in EMMI, which might have influenced the research. Exposure to EMMI is due to it being frequently discussed in media and by different actors. The researcher recognizes the issue's complexity, and many voices are presented. Despite this, no direct exposure or involvement in the issue has occurred. There are no mines near the researcher's house or in the areas where the researcher is acting.

The researcher is drawn to the topic as it demonstrates a complex issue with multiple strong voices and viewpoints. It also highly influences many aspects and actors. With the new Critical Raw Material Act (CRMA) by the EU, the discussions have been intensified. Further, as the researcher has a background in sustainability, the movement away from fossil fuels and renewable, clean energy sources has also been an area of interest that the researcher has followed. The green transition and other technological innovations have caused stress on EMMI, while they are also seen as problematic concerning climate change and biodiversity. Land grabbing and ownership of land have also been discussed at UN events, where the researcher has had the opportunity to hear some of these concerns raised.

The researcher is drawn to complex issues with no easy solutions, as they require collaboration beyond organization and national borders. Complexity is present in almost all sustainability-related problems, and therefore, it has caught the interest and attention of the researcher. Further, discourse, rhetoric, and legitimation have been areas of interest since their strategy work at Hanken School of Economics during her bachelor's and master's studies. Discourses and facilitating difficult discussions are the researcher's passions, as multiple viewpoints, cross-sectional knowledge, and collaboration are crucial elements for new solutions and ideas to emerge. The researcher is passionate about understanding how discourses

bring actors together to navigate complexity from multiple viewpoints and discover new solutions, ideas, and pathways.

The researcher has experience conducting open interviews after years of being involved in research and data collection at university, in business, and as a management consultant. Recent years have also placed the researcher in international contexts and dialogues between different actors to facilitate the space for dialogue and discovery. Spiritual Intelligence skills that emphasize listening to understand rather than listening to respond and training have provided skills to address complex issues where tensions and emotions occur. It has also offered the patience to allow sensemaking during the discussions and the ability to create a safe and open interview space. The researcher has previously been involved in research related to sustainability, responsible management education, community development, rhetoric, legitimation, discourse analysis in strategy, and strategy as practice.

In addition to the supervisor and different experts provided by the European Business University network, the researcher has put in place advisory members to support the research process but also for ethical considerations and to reduce reflexivity. In this, one of the advisors holds a position as a board member in a global mining company. Ten advisors represent academia, society, NGO, business, and government. The advisors generally have limited or no exposure to EMMI, reducing the biases of actors actively involved in EMMI.

The advisors were chosen with the following criteria:

- Experience in dealing with highly complex issues involving multiple actors.
- Experience in top-level management, high-level research, or actively involved in leading campaigns over a long period of time.
- Experience in collaboration with multiple actors and involvement on a global level

- Willingness to participate and support the research process, providing insight, reflections, ideas, and thoughts openly and confidentially.
- Willingness to only expose or communicate findings or ideas after research is published.
- Willingness to invest time supporting the researcher between 10-25 hours during one year.
- Strict confidentiality of any information and preliminary findings.
- Ability to maintain objective.
- Willingness to be involved without monetary compensation and without mentioning the name in the thesis.

The people involved as advisors and support for ethical considerations were gathered in small groups (4-5 persons) or as individual meetings. This secured the anonymity of some individuals and ensured that all actors could present their viewpoints without influence from others.

The advisors presented their ideas, viewpoints, and thoughts on conducting the research. Another important part was ensuring that the research could be helpful to practitioners. The advisors did not have access to conducted interviews but relied on the discussions and questions asked by the researcher. Issues discussed in addition to applicability and potential value to practitioners were, for example, the model, theory used in the research, tools used, the letter of consent, and the letter of invitation to research. The discussions have been strictly confidential.

The interviews have been conducted in Swedish, Finnish, and English. Swedish is the native language of a minority in Finland, which the researcher also represents (Finn-Swedes). Their native language is Swedish. The researcher's language at home with their partner is Finnish, and it has been Finnish for most work done as a management consultant. Further, the language of the researcher's father is Finnish. The researcher has excellent oral and written

communication skills in both Finnish and Swedish. The researcher wrote her master's thesis in English at Hanken School of Economics and has completed the MSIM program in English at Franklin University Switzerland. The internship program at the UN has also been conducted in English. All parts of this doctor's program, courses, and related coursework have been done in English.

Further, much of the work on an international level has been done in English. Hence, the researcher has excellent oral and written communication skills in English despite being of Finnish nationality and having a native language of Swedish. This provided the opportunity to allow the interviews to be conducted in any of the three languages. All participants were allowed to choose the language most suitable for them. All actors ensured fluency in the language selected, and English was also for many, either a native language or evidence of strong skills in English were demonstrated through work requiring sufficient English skills.

The different actors were asked to express which group of actors they felt they represented. Based on their organization's webpage or how they described themselves on, e.g., homepage or past working experience, the actors were placed into the different categories of business, government, or society. The definitions of the categories were discussed in the introduction sections with key definitions.

4.8 Ethical Considerations

Due to the nature of the study, ethical considerations must be addressed. The researcher formed an ethical committee of academic advisors to support evaluating and securing the highest integrity and ethical standards throughout the process. The ethical committee will support the researcher throughout the process and help resolve potential ethical challenges and biases. Further, they oversaw the researcher's procedure, plans, and practice, secured compliance with ethical standards, and flagged potential issues or challenges upon detection.

The research will involve sensitive conversations through interviews. This information must be treated with caution, especially when the debate between different actors is heated. Further, the internal data from within different actors (not publicly available) must also be treated with caution. For each participant, a randomized code was generated to log the source of information. The unlocking data for connecting code with the original will be stored on a hard drive separate from the data. A printed copy of the key will be stored in a separate location. This will ensure that delicate information cannot be traced back to the source.

Further, agreements were signed with participants, and records of any information delivered. These will also need to be stored securely. Data security matters were discussed with experts, and the highest levels of security to protect delicate information and the people involved in the research were followed. If these measures are not in place, there is a risk that people will not be willing to participate.

Further, no funding or financial support from any researched parts was accepted. This ensured the research's purpose, aim, and integrity were clear. Any funding needed to be carefully evaluated by an academic advisory team to support securing it will not undermine the research findings or could be interpreted as bribery. No funding was sought or granted for the research, and the researcher funded the research from her savings.

Any attempts from parts involved in trying to manipulate, bribe, or in other ways disrupt the research process or outcome of the research were informed to the ethical committee formed for this research. No such attempts were present in this research.

4.9 Summary

This chapter has looked at the purpose of the research, the research questions, and the methodology selected. The research adopts a qualitative research method and uses grounded theory. The data collection has been done using learnings from a sensemaking approach, where people who are interviewed have been able to make sense of the issues and events that have

occurred during the interview. The data was collected from September to December 2023. The data analysis was conducted during the data collection and in January 2024. Ethical considerations and the researcher's background are also discussed in this chapter. This concludes the methodology chapter.

5 Discussion and Results

This chapter looks at the indicative model developed because of this research to describe the sensemaking process and phases included in it. This chapter also looks at the development of the different actors' themes, explaining the discursive dynamics between business, government, and society in complexity. It provides insights into how sensemaking in complexity occurs and indications of sensegiving and legitimation as forms of influencing and supporting the sensemaking process. It describes the different phases of development of fragments and how they are linked to the larger discourse.

The indicative model is described in more detail in this chapter. Quotes from the interview describe and explain the different aspects involved. Despite most interviews being conducted in Finland, the events and actors might have occurred in nations other than Finland. As each actor is internationally engaged and events occur in different places worldwide, the assumption of events in Finland cannot be made. In the interviews, however, the events referred to are described as not only single events or occurrences but rather frequent and independent of surroundings.

Section one of the research developed an indicative model in Figure 6. The different aspects of the model are described in Table 2. Descriptions of the various phases and quotes from the data follow this. In the different phases, the elements related to them are discussed and described. To secure anonymity, places, cities, names, and actors' names have been removed.

Section two discusses how the model is involved in developing an understanding of complex themes. As these themes develop differently as we move through time, the phase in which an actor is might differ. This table demonstrates how the actors make sense of a large complex issue and the core elements related to and relevant to them. This is shown in Figure 7.

Section three of the chapter summarizes the discursive dynamic between business, government, and society. In this model, the table in Figure 8 demonstrates how the different actors form an understanding and in which sensemaking phase they are on different topics. Due to this, the individual discourse of each actor develops in a different way over time. It also demonstrates that the level of inclusion impacts how well the different actors are aware of the different discourses and sensemaking processes. This way of explaining the discursive dynamic through a sensemaking process supports understanding how the fragments and different narratives play a role in different actors making sense in complexity, where themes and understandings meet and where sensebreaking between actors occur as a result of different stages in the sensemaking process and elements of sensegiving and legitimation.

The fourth section of the chapter explores the future as an option for developing collaboration and working on a more holistic approach to complexity. Themes presented by different actors are presented. Some stories of the future are also introduced to provide examples of futures described in the interviews.

The final section is a summary of the analysis and discussion section.

5.1 Indicative model of sensemaking in complexity

This section presents the indicative model developed based on the research to describe the phenomenon and sensemaking process in complexity. The process is linked with the discursive dynamic, based on how each actor develops their understanding of complexity. The section explains the different phases and draws on examples from the data to explain the phases demonstrated.

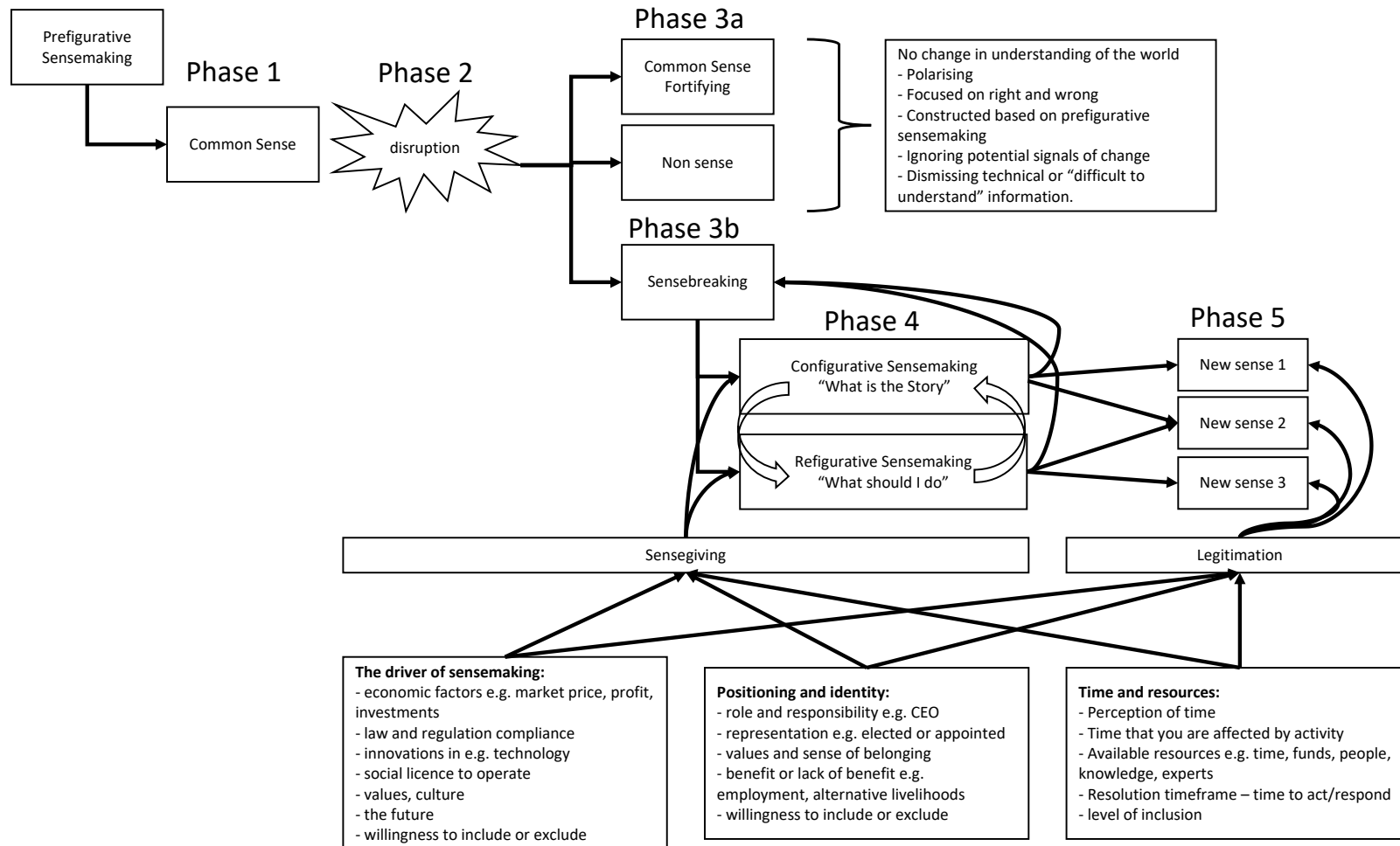


Figure 6: Indicative Model on Discourse Development by Tina Karme

Table 1: Definition and description of different phases in the model by Tina Karme

Phase	Definition	Characteristics
1: Prefigurative sensemaking and common sense	The “business as usual” state, where past knowledge, experience and education dominates how we make sense of our surrounding.	A stable state with confidence over what is going on and what actions to take. Often grounded in “proof of concept”. The view of being right and knowing how things are. Being able to demonstrate viewpoints and willing to help others recognize and learn how to make sense of the world.
2: Disruption, issues, and problems	These can be in the form of small or big events on local or international level. Examples include (but not restricted to) natural disasters, armed conflict), policy and regulation changes, power shifts between actors, research and knowledge, innovation and technology, emotional triggers (e.g., fear), dissatisfaction, misinformation or propaganda, and long-time horizons. These trigger some form of reaction by actors impacted by the disruption.	Disruptions challenge the existing understandings of things or trigger the actor in different ways. Without judgement of true or not or the level of impact the disruptions have, they catch our attention and cause some sort of movement and reaction.
3a: Common sense fortification	1. Fortifying common sense by e.g. gaining knowledge, finding likeminded people, seeking research, or conducting research to validate view. 2. Dismissing disruption and arguments as non-sense by e.g. arguing for opinion vs facts, emotions preventing clarity for counter partner, expert vs non expert. Dismissing can also be due to lack in understanding e.g. complicated and technical documents and reports.	Unwillingness to give legitimation to other viewpoints. Polarizing and dominant in nature. Aiming to convince others of your viewpoint and understanding being the correct one. Focuses on right and wrong. This usually prevents sensebreaking and is subject to Phase 2 being triggered multiple times due to tensions arising from different understandings and viewpoints that are being dismissed or information not considered or recognized.
3b: Sensebreaking	Disruptions cause the present understanding to break down, causing a void to be filled. This initiates a process of looking for alternative pathways and solutions.	Breakdown in understanding. Confusion and lack of direction. A need to seek e.g. information, people, knowledge, experience, reflection to make sense of the disruption. Open to sensegiving.
5: Configurative sensemaking, refigurative sensemaking, and sensegiving	The process of filling the void caused by sensebreaking. Emphasis is on understanding the storylines (configurative) and then the action pathways that are available (refigurative). The process is dynamic and configurative and refigurative are in a constant dynamic with one another. This process is usually fragmented.	A willingness to find and explore alternatives, willingness to listen, learn and include. Is subject to time constrains, resources available and expertise available. Is also dependent on the desired outcome and what caused sensebreaking to occur. Testing different solutions and ideas. Gaining intelligence through discussion and dialogue, research and development and controlled tests. Subject to different forms of sensegiving dependent on desired outcome. Curiosity.
5: New sense or new sensebreaking	Pathways on how to move forward (story and action) or a new sensebreaking occurring due to not finding ways to fill the void. New sense and sensebreaking might occur at the same time, formulating an understanding of the problem to be solved without having a solution to present, meaning that configurative sensemaking occurred, but prefigurative sensebreaking persisted (e.g. Future intention but lack of solutions to make the future desires a reality). New sense and sensebreaking can occur at different stages. New sense occurs both as fragments but also as larger wholes.	An understanding and viewpoint have been reached, either as a fragment or as a larger whole. A sense of being able to define what is lacking and what is needed. A willingness to share learnings and develop further. Chronological and clearly stated story and actions linked to it.

5.1.1 Phase 1: Prefigurative sensemaking and common sense

This phase is grounded in prefigurative sensemaking. Prefigurative sensemaking is defined as a process that draws upon knowledge and experiences of the past, as discussed in section 2.1.2.1. It draws on past experience, knowledge, and education to understand the world and formulate a narrative and actions to be taken. Hernes and Obstfeld (2022) state that “when looking back, actors perceive the past as sequential streams of experiences and events, which they project to the future continuity” (p. 8).

This can also be seen as the “business as usual” approach, where solutions, behavior, and pathways are considered solid, stable, and generally agreed upon. It builds on proof of concept. As Hernes and Obstfeld (2022) describe, prefigurative sensemaking is suitable for normal activities with no particular or disrupting tendencies. They do not require adaptation skills, and much of this is grounded in routine.

As a representative of business puts it:

“Often you get the question, that can’t we meet the demand with circular solutions? But unfortunately, not. Circularity is not the path to fortune. And I think everyone knows that, and that we need more mines” (representative of business)

In this, the actor representing business notes that it can be seen as common sense that circular solutions won’t be enough to fulfill the requirements of minerals. They assume that all know it. Despite the quote stating that people often ask if their needs could be fulfilled with circular solutions, the assumption is that all know they cannot. These are conflicting notes by the actor.

Often, statements of common sense might hold conflicts in them, but they are not noted by the actor presenting them, as in the example above. This means common sense can also be called the general opinion, recognizing that not all actors agree. In some cases, it can also be linked to the level of awareness of the actor or even how much you value the knowledge or

thoughts of the actor. Common sense is also used to legitimize one's viewpoint, referring to the opinion or knowledge to be generally agreed upon and misaligned ones to be not generally accepted or adopted views and ideas. This is aligned with Vaara and Whittle's (2021) findings on common sense.

Another example of common sense is expressed in these quotations from a business representative:

“Operation conditions require that demand, supply, and price on metals in the Western world and society are global and consistent. The price of gold is as high or low everywhere, independent of whether we are in Delhi, production in Toronto, or Rovaniemi [...] The system steers towards other solutions if there is, e.g., a lack of lithium globally, which we won't have, but if there were to be, then yes, we will find solutions, and batteries will be produced from pinecones or whatever”. (representative of business)

In this, the assumption is that all understand the nature of the economic system. It also argues that the system as such will generate solutions and, therefore, the system works for new solutions to occur. This way, for the market and economy to work are generally accepted, and the public accepts, recognizes, and agrees.

A societal actor talks about the governmental system like this:

“We have a 4-year reign period of the government, during which politicians are focused on how they get that period to look good. After that, they switch to the opposition to shout to the new government that when we reigned, all was good, despite the new government needing to clean up a mess left by the previous government reign”. (representative of society)

The societal actor assumes that the governmental system of four years is permanent and that this is a common sense and stable state. Despite the dissatisfaction with how the system works, it is assumed to continue and to be general knowledge. The aspect of how the government and opposition dynamic works can be discussed and disputed, but the reign period is seen as stable and well-established. The common sense aspect here is the assumption that this is how it will work in the future and that all actors recognize it.

A governmental actor states clearly with the sentence “it goes without saying” the assumption that this is established as common sense and that it is agreed among actors.

“It goes without saying you shouldn't get rid of these fossils”. (representative of government)

These are a few examples of underlying assumptions that are constructed as common sense and can be linked to prefigurative sensemaking. They form our opinion of how the world works and are stable elements of complexity and change. They also demonstrate underlying assumptions of things that cannot or do not need to be changed.

Swain (2019) discovers there are challenges in prefiguration used for sensemaking. As the past informs the future, the future can be seen as already being determined. As Swain (2019) puts it, it “leads to a practical dilemma between acting to bring about the future and acting as if it has already been achieved” (p.47). As Hernes and Obstfeld (2022) note, this applies to simple issues but is less suitable for complex ones. This is aligned with Snowden's (2002) proposal on complexity, where patterns must unfold as you move through time.

As we move through time, disruptions that challenge these ideas occur. These will, in turn, create some form of reaction in the actor. These disruptions are linked to common sense and are conflicting with it. In the next section, we will look at examples of disruption.

5.1.2 Phase 2: Disruptions, issues, and problems

Disruptions question, challenge, and even dejustify common sense. Actors might trigger these to provoke thought and disrupt current pathways or solutions but also as uncontrollable events such as floods, pandemics, and conflicts. Disruptions cause actors to react in some way. Disruptions that were identified in this research are:

- Events
- Policy and regulation
- Power dynamics between actors

The research also identified secondary themes intertwined with the main themes. These occur in the disruptions in different forms, either individually or as collective themes. Secondary themes as parts of the central themes are:

- Research and knowledge
- Innovation and technology
- Increase in awareness and interest
- Emotions
- Misinformation
- Time perception confusion

Disruptions can be of different sizes and impact different actors in various ways. Many of the disruptions are also interlinked. Technology and innovations are often linked to market disruption or shifts in power, e.g., salt battery development and AI. An increase in awareness and emotions is also often linked to changes in our habitat or environment. An example is cases where a mine is planned close to summer homes or your living area. Such examples usually increase awareness of people this change impacts, and often fear arises. The following parts will examine the themes and secondary themes in more detail.

5.1.2.1 Events

Events are often referred to as the armed conflict in Ukraine, climate change, the pandemic, or similar out-of-control events that require attention, as described in the quote by a governmental actor below:

“The transformation throughout society, not just the green transition, the war in Ukraine, the coronavirus, the pandemic, and the role of China, have brought a whole new geopolitical dimension to this, which was not there before, and there is quite a bit of adaptation since climate change. It's like this big umbrella on top of me and a shadow. It will affect society, the economy, culture, and just about everything. I hope this change will be for

the better, and with this green transition now, you can really move forward”.
(representative of government)

The actor points to many activities that are going on and how they impact everyone. There is research on how the pandemic impacted each actor. Therefore, the actor sees it as general knowledge. However, China's role is a vaguer argument as many in society are not necessarily aware of how China impacts nations and in what way. In a small sample of media coverage, China is rarely mentioned. Also, in unofficial discussions with community members, China was not mentioned. However, in unofficial discussions with community members, many often referred to reading the news and, therefore, knowing what is happening worldwide.

Assumptions on how different actors' awareness levels are regarding events occurring around us and how much they are perceived to affect actors might lead to misinterpretation of a situation and how disruptive it is. In turn, this can cause issues if one actor assumes an event to be more impactful than another who might not even recognize such an event or disruption has occurred.

Large, global disruptions are difficult to ignore and, as is seen in this quote, cause a reaction. The reaction does not provide a clear understanding of the outcome or type of action it will lead to. A business actor describes the disruptions like this:

“And now, in the last few years, from a European perspective, we have come to understand climate change and the green transition, and through that, we have reached the understanding that something needs to be done. Classic examples are wind power, electric cars, and transmission of electricity of this type. Little by little, there is a realization within the European Union that, yes, these raw materials are really needed, and we do not produce them. I wonder what is being done here. And now, in the last three years, these significant changes in geopolitics, especially Russia's aggression in Ukraine, the coronavirus epidemic was also the one that triggered quite a lot at first, but especially then the Russian invasion of Ukraine. The invasion blew up the European conversation on why raw materials are needed. It is the general political view and the general view of the nation-states of the economic powers that raw materials are required. And now, this realization is slowly turning into action”. (representative of business)

In this, the magnitude of the disruption unfolds over a longer period, and single events build on the notion. Here, the actor describes that the disruption has presented itself earlier but has not gained much attention. Despite the significant disruption of the pandemic, raw materials were yet to be a big topic of discussion, despite some actors recognizing the need. Only once the aggression of Russia on Ukraine occurred the impact of needs on critical raw material became loud enough to cause a reaction.

The slow movement and reaction to initial signals caused the EU to move rapidly. This has, in turn, caused ripple effects in business and society. Time to react will be discussed later in the analysis, but as demonstrated here, it impacts sensemaking in terms of making sense of an issue and inclusion. This also indicates that despite disruptions not being recognized at one stage, they might become focal points later. Hence, disruptions are both single occurrences and intertwined, evolving phenomena where different fragments are woven together.

The multi-dynamic tendencies in disruption might occur on many levels that are interlinked. The actor emphasizes disruption on many fronts and is linked to many actors and how they escalate and expand over a short period. The likelihood of these disruptions not affecting you is decreasing, and the urgency to act is increasing. The actor also notes that action follows a process of discussion and making sense of what is happening and how to resolve the issues. From here, they move to the phase of action.

This can be seen in other things as well. On climate change, much discussion has been on reducing fossil fuels. Despite having the narrative on fossil fuels impacting climate change, it was only during COP28 that an agreement was reached to phase down on fossil fuels. Reaching such statements takes a lot of time, and putting these narratives into action requires more sensemaking, as will be discussed later in this chapter.

5.1.2.2 Policy and regulation

Another element of disruption is the unpredictability of how fast some policies are implemented and enforced. Sometimes actors get caught by surprise, as situations might change quickly and funds move rapidly when new rules, regulations, and government agendas are introduced and enforced:

“I got a call from a geologist asking if they could become a trainee. I said that the outlook for the industry was so bad that there was really nothing to offer. This was in May. In August, I called him to ask if you would come to work tomorrow. That is how it sometimes goes. It is reversed. That is, I could not predict in May what would happen in August. Then people started talking that this green transition is now the one that raises. That is indeed the case. We started investing very heavily in wind power, partly with state support, in solar cell systems in this type of battery technology. Someone may say that if it is produced with traditional fossil fuels, that kilowatt-hour of energy needs one unit of copper. If we produce the same energy with wind power, then it already needs 16 times as much copper. And then, if you produce your product with battery technology, you need even copper”. (representative of government)

In this example, a government representative discusses the difficulty of forecasting events and their impact. Despite having information on the current situation, the actor recognizes that changes that occurred in such a short time between May and August greatly impacted the actions taken. Further, as the need for the green transition is growing and being put in place quicker through government support, the need is anticipated to increase as more raw materials are required to produce these forms of energy.

Despite the indicators of the disruption related to the green transition, the actor could not foresee when the government would make decisions causing the movement of funds and investments. This causes unpredictability and challenges in recognizing the phase and urgency to act for disruptions. Political shifts and global markets cause rapid movement and fluctuation in systems. Where there might have been unemployment and difficulties in finding a job, it might quickly shift to a lack of knowledge and employees available. The urgency to react might

also cause issues in including different actors and providing time for others to make sense of the change and how it impacts them.

This societal actor, who has been working with exploration, addresses the unpredictability of events and how they evolve over time. He addresses how easily a narrative becomes adopted by large audiences and accepted as reality and how this might have severe consequences.

“Three hundred unemployed people entered the labor market of a thousand geologists, and it collapsed all at once. And that's how I saw it as well. In retrospect, it seems pretty incomprehensible how all of us, like the entire nation, believed back then that mining was a sunset industry. The world was seen as pre-built. And then we kept repeating things that we believed. Things like the Chinese can't get refrigerators because it's impossible. It was confirmed that the reconstruction of Europe ended at the beginning of the 80s. Then, European demand fell, and it did so in the United States. But no one thought about it, which is, of course, self-evident that this growth will continue elsewhere. Everyone believed that it was the end. You don't need these raw materials anymore, and you can take care of things by recycling. It seems unbelievably childish at the moment when you think about it”.
(representative of society)

In this quote, the societal actor points to the government's naïve approach to recognizing geologists' value. It also points to the Western world's attitude, assuming that development and living standards cannot be reached in underdeveloped regions. These taken-for-granted assumptions are challenged and questioned, and learnings from the past are brought forward to voice concerns about history repeating itself. These represent another aspect of prefigurative, common sense narratives determining how we make sense of the future. Actions are taken as if the future is already here, and learnings from the past inform us how the future will unfold. There was no need to make policy or regulation changes, and things were assumed to be moving towards circular solutions automatically. Today, we naturally see the importance of a circular solution policy, which the EU and other regions are pursuing.

Law and regulation impact the power dynamics between actors but also on different themes. In the last quote example, this is another issue that was addressed. It addresses the geo-

political power situation and assumptions made concerning that. The power dynamics also cause disruptions, which are explored in the next part.

5.1.2.3 Power dynamics between actors

Power is present in the discussions by different actors. The current power structure on who is seen as trustworthy, who can mobilize society, and which topics fit the political agenda are discussed, among others. Also, shifts in the power dynamics are brought forward, and which actors hold a strong voice during different time periods is changing. This movement of power causes disruptions in addition to power struggles. The power struggles, in turn, cause some people to choose to be silent and others to seek efficient ways to gain more attention and power.

5.1.2.3.1 Law and regulation shifting power

This uncertainty and disruption, in turn, cause fear, ambiguity, and tension. Decisions on who to include in the discussions also add to the tensions. Some actors might feel they have few choices and, hence, that they are being ignored or forced. This is demonstrated by this governmental actor:

“Legislation catches the public interest, as now, for example, the EU's raw materials initiative or regulation. This, then, may again stir up opposition. I don't think it's as good. I understand the urgency and need, but as I said, things need to be discussed more, and companies need to take the locals, no matter how busy, they need to include the locals. They need to consider, share, and discuss land use. Now they are forcing the snake into the pipe as we are custom to say”. (representative of government)

These disruptions might also cause shifts in power dynamics, as explained by this actor. Regulation and policy sometimes strengthen the current way of acting or justifying actions, but in other cases, they cause disruption. In this example, mining companies with critical raw materials are gaining more power due to the new regulation. This, in turn, means that the actors opposing these mines are losing leverage in the process of preventing the mines.

Changes in law and regulation are also mentioned as disruptions, which might significantly impact local implications on how things have been handled in the past and

leveraged by different actors. In this, the need to support sensemaking over a more extended period of time is emphasized. A societal actor explains the impact it has on their work as follows:

“Now it looks like that mine [referring to one mine in a disputed conservation area] is one of those that will get this critical raw material status, CRMA status, under this new law that is currently being processed in the EU. They're supposed to have approved it already, and now it's going to be implemented and stuff like that, so it's now moving forward”. (representative of society)

Power disruptions can also occur in ways of statements or claims. These usually reflect the relationship between different actors. These also include strong statements of understanding of current situations and disagreement with them, as shown in the following quote:

“The benefits are transferred here abroad in a short time, and the disadvantages remain here for us residents. It is pure colonialism. [...] They don't employ locals like that because they don't. It is also an unfortunate fact that if a person has been unemployed long enough, getting them to work is quite a difficult task. And the other thing is, is there enough trained staff? At the moment, it is not being planned either. The labor shortage at the mine is already so severe that it can hardly be filled, and there is already a plan to do this fly-in, fly-out thing in this mining. In other words, many mines have been closed in different nations. There is a lower level of wages, professional men available or why not women. Well, they fly them here for two weeks to work, and then they go home for two weeks to spend. And then they get the wage benefit of not staying here, and that's seems to be alright Well, here you can see how limited the large benefits are and how 'free of charge' we are giving it all.” (representative of society)

Here, the societal actor is voicing the unfair distribution of wealth from the raw material occurrences. Further, the short-sightedness of the activity is also being emphasized. The actor challenges the current system by disrupting and voicing concerns for who the activities benefit and who is on the losing side of the activities. The societal actor is raising concerns about how the business operates in the interest of profit. Suppose profit conflicts with the welfare and well-being of the community, as in the example of employing people from abroad; the businesses will choose to prioritize profit. In addition to this, the actions of the business cause

frustration in society, as their viewpoint is that not only the minerals wealth but also the income benefits are being taken elsewhere.

The societal actor emphasizes that actions and activities like this will cause tensions. It is viewed as opportunistic and as short-sighted. Local community people, with few alternative income opportunities, are left unemployed while the business is thriving. In discussions, this caused tensions to arise due to the experience of unfair treatment. Some actors might be seen as more powerful in comparison to others. There is a constant movement in these dynamics, and often actors aim to get more power.

5.1.2.3.2 *Actors gaining or losing power*

Shifts of power and how, for example, activists have gained more attention are also discussed. These are linked to time; some of these changes might occur rapidly, whereas others evolve over a more extended period. Ignoring the small disruption signals might cause the actor to feel a sudden, significant change has occurred, whereas they have been evolving over a more extended period. This is described in this example:

“And it's a bit like there are no local areas without a “no mines” movement, and these movements are now emerging just in these areas where these cottages are located. And in the extreme case, these different social media groups may even be run from abroad. Well, maybe this is the time for that. [...] For example, in 2012 or 2014, we had a survey with a scale on which people put different players in the mining industry, and environmental organizations were at the bottom of the spectrum. We were back on top of it. [...]. But get this new group of people, they're influential. So, they say no to the mines is the result of these new movements, and of course, not like the activists because they're in the cabinets talking, and that's how you have accomplished so much. But even in that circle, there are new, more radical players of this kind. [...] They are people with summer cottages in the area and who have high influence”. (representative of government)

This actor discusses how power has shifted due to interest and agenda shifts. In this example, influential people have experienced that their summer cottages are subject to change and, therefore, have taken an interest in the topic. Often, when you are impacted directly by the actions, you react more rapidly. Some actors are not necessarily concerned with the

environmental aspects of the mine or its economic impacts but rather drive self-interest in preserving their summer home in a specific state. In these cases, interest aligns with environmentalists and activists pushing for lower environmental impact or even aiming to ban mines from particular sites. Despite different drivers for the alignment, this alignment of interest has brought more power and leverage to the actors, who might previously have needed access to different forums and people.

Shifts in power dynamics bring forward demands and needs. Elections and changes in parliament, both locally and internationally, have an impact. Currently, Finland is in the middle of the presidential election, and there is much debate on how the elections will impact the nation and drive the nation's foreign policy development. Further, a new government was recently elected, which has also had its impact through new areas of focus, political agendas, and targets set for the term. These are usually reflected in the governmental agenda, as governments are dependent on society, for example, through elections.

“However, the question of how, for example, this criticism of mining develops has to do with how governments or governments in general are prepared to accept societal demands and in what way they do so. Then, at the same time, companies play a major role in how they receive the government agenda and how their behavior is reflected. These two things play such a big role”.
(representative of government)

In this quote, the actor emphasizes the political will and power relations linked to the governmental agenda and its issues. It reflects the needs and demands of society as a part of the governmental agenda. Elections and results of elections in forming the government and governmental agenda cause businesses to adjust and respect concerns and voices raised by society. Industry lobbying also impacts politicians' willpower and ability to act in the political arena. These are, in turn, linked to the trust of governments, especially when promises to society are made that might, in turn, give more power to specific parties driving the agendas of different actors.

5.1.2.3.3 Geopolitics and power

The political global power also presents a much larger disruption dynamic than discussed in the earlier examples. Other nations might cause disruptions to others by refusing to collaborate or provide access to resources. This is demonstrated by the business representative below:

“But at the same time, someone could say to us, ‘Hey, you can't sell iPhones anymore because you do not control or contribute any of the rare earth minerals in the world’. I think this is a pain point where you shouldn't judge any point of view. We need to get that conversation going on our role and our future. Under what circumstances and in what conditions can we continue this discussion, what needs to get done, and what requirements do we need to meet so that mines can be a part of our future? Because very quickly, we will otherwise drift apart and find ourselves in situations where the answer is that we can absolutely not have mine here. And sure enough, it may be that the result is currently that it is not possible. But a conversation on what needs to be done needs to be sparked between actors and pathways discovered to avoid this situation”. (representative of business)

In this, the business actor emphasizes the need to negotiate and clarify under which conditions we can continue the operations in a nation. Clarification on what needs and standards need to be met so that operations can continue needs to be discussed, and the setting for the discussions needs to be agreed upon. Without that, the business actors note that we are putting ourselves at risk in the global arena but also at risk of polarizing different actors and society from the operations and needs in the global arena. Balancing all needs and acting out a complex future requires putting different actors' voices together and finding pathways and solutions for the future.

The business actor also emphasizes, that different nations can and have the power to choose not to collaborate with other nations. This can be seen in how many nations have reacted to the aggression from Russia on Ukraine. Economic leverage and using different means to reduce or increase collaboration are ways frequently used in the global arena. Different nations have the power to choose who they do business with and under which terms and conditions. This also applies to businesses.

As a practical example, how different nations can choose under which circumstances they operate in the global arena, this societal actor talks about the decision made by China:

“The current situation in which free trade in critical raw materials comes to an end comes as no surprise to anyone. Half a decade ago, the Chinese published a list of strategic and critical minerals, and for everyone, or almost everyone, there was a date after which they would no longer sell them, as they needed them in their industry. Now, this debate has arisen as the dates provided by the Chinese have expired, and the Chinese have done as they said they would”. (representative of society)

In this quote, the societal actor brings forward another dimension of the global power issues. Nations that are producing critical raw materials have noted a need for themselves to use the raw materials and are hence unwilling to provide access to them to other nations. This benefits the regions economically, as they can produce the much-needed and required products and sell them to the nations that need them.

This poses a challenge for regions like the EU, as a finished product is worth more than the raw materials used to produce the finished goods. These dynamics cause uncertainty and volatility in the global supply chains and markets. As access to resources becomes increasingly difficult, it pushes the market price up, which calls for alternative options and solutions. However, before innovations can catch up with the changes in markets, it takes time. In cases where actors are poorly prepared for changes in the market, situations cause ripple effects and disruptions in the supply chains, which can be seen after the Russian aggression in Ukraine and during the pandemic.

Looking at the global arena, comparisons between nations also occur. These comparisons are not only in power, but also in development, regulation, and responsibility. Comparison is discussed in the next part.

5.1.2.3.4 Unjust or just comparison between nations

Comparison and benchmarking are arguments that cause the actors to compare the current situation to that of other nations. In this example, the actor discusses the disruption of

attention in comparing one country to an underdeveloped nation instead of comparing it to a developed nation of similar characteristics:

“Developed nations are compared to undeveloped nations like Congo. For me, it would be okay if compared to Finland, Sweden, Norway, Australia, and Canada. These nations have developed their prosperity in different industry forms, a large part coming from mining and energy industry products, and no one considers them to be exploited by developing countries. It makes little sense to compare a developed nation's operations to an underdeveloped nation's operations”. (representative of society)

In this, the societal actors argue that comparing a developed nation's way of operating to an underdeveloped nation makes little sense. Comparing a developed nation's operations compliance with laws and regulations on working conditions and safety differs from developing regions. In many developing regions, reports of children working on mine sites and no safety measures being in place are frequent. Therefore, the argument made by the societal actor seems fair, as the comparison does not fairly reflect the circumstances and issues in context. Despite tendencies of colonialism being stated, as in a societal actor quote earlier, colonialism in its traditional sense, where wealthy nations are acting in underdeveloped nations, cannot be seen as fair comparison to developed nations acting in other developed nations.

This notion is linked by a governmental actor to the issue of responsibility and outsourcing responsibility as follows:

“Then it should also be possible to produce it here in a responsible way as well. And then, in the follow-up text, it was pointed out that the fact that I use metals is not an argument for excavating here. Today, much of the raw materials needed are imported, and we are moralistically entitled to import the materials from other parts of the world. Currently, we are not producing everything we need. I would argue that we are plundering the rest of the world if we start to look at it. Why is that more ok? I think we should actually direct this criticism elsewhere and consider our role more carefully in all of this”. (representative of government)

In this, the actor discusses the global dynamics of the outsourcing problem. The governmental actor is questioning if it is OK to produce materials abroad if we are not OK with producing them in our own country. This is similar to the findings of Joutsenvirta and Vaara

(2009) in the forest company issue in Uruguay. One of the narratives presented was that a developed nation brought its polluting industry to its country, as it was undesired on its own. It was expressed as using a developing nation to dump polluting and harmful industry procedures on them, as they were dependent on foreign investments that could support the society to meet their needs and develop.

The argumentations presented by the governmental actor are similar here. The question of outsourcing the issue to a different region is a questionable solution that potentially causes tensions and conflicts in other regions. This links to the quote made earlier on what conditions need to be met so that operations are acceptable on a national level. This type of discussion is even more urgently needed, considering the global arena and power dynamics present in it.

Comparison between different developed nations can bring forward technological solutions that have been adapted in different regions. It also supports developing policy and regulation that raises the bar on environmental concerns and issues. For sensemaking purposes, using comparable nations as a benchmark and providing information on how different issues have been resolved in other regions can act as useful information and provide insights into the impact of such decisions.

Changes in power dynamics, shifts in power, and disruptions that impact on a global level make an actor question their role in the future. Different actor's definitions of who they are and what their roles are have changed and evolved over time, as discussed. This brings forward the role of identity and how actors identify themselves and other actors. This is discussed in the next part.

5.1.2.3.5 Identity

Identity plays a key role in disruptions. As Ashforth and Schinoff (2016) emphasize, identity helps us understand who we are and how others perceive us. Identity is a multiphased thing for each individual, and it evolves and changes over time.

Different individual, collective, and social identities are present in the power dynamics. It can be seen in how actors see themselves and others. The roles of being the bad or the good ones are reflected in the data, which is used to disrupt common sense. This can be seen in this quote from a societal actor:

“And this, in a way, geologists were no longer needed, and then, on the contrary, the problems of the mining industry were pushed collectively. We changed quickly from heroes to villains in the story. There may be a bit of a change in the other direction to some extent, and some are even looking for the mantle of the hero and showing it a little bit again”. (representative of society)

The actor points out how the notion of self has changed and is constantly moving as we move through time. This is aligned with Ashforth and Schinoff’s (2016) research on identity and how identity evolves. Mines have been villainized as polluters and destroyers of the environment. However, raw materials and minerals are seen as saviors in the green transition. The minerals and green transition is seen as a solution for decarbonizing nations and is, thus, the story's heroes. However, obtaining the minerals is still seen as an industry causing significant harm, which causes EMMI to be seen as the villain.

This conflict in how we relate to the mining industry is causing issues in identity creation. As business sees the potential growth of their industry and business and are the solution to climate change, they are simultaneously a big part of the problem in environmental concerns, pollution, and disturbing land. This contradicting role and challenge disrupts how the industry and its actors are perceived. Where many actors globally are voicing the need for more mines on the wave of the green transition, other actors are vocally objecting to increasing mines and lobbying for circular solutions and secondary mining at waste sites. The focus on product design to meet the demand for circularity is also a central question in this narrative.

This tension in identity, being both bad and good simultaneously, pushed alternative solutions forward. It brings a voice to identifying what we want to be and what we do not want

to be and tendencies related to it. This is described by Ashforth and Schinoff (2016) as identifying traits and behaviors we like and want to see but also traits and behaviors we want to get rid of. If we resolve this by only looking at solutions from the past (prefigurative sensemaking), we are acting as if the future is already here. What actors do with demanding circular solutions and design is configurative sensemaking, where potential futures and solutions are discussed and acted into existence. This is aligned with what Swain (2019) discusses as a core difference in sensemaking.

Shifts in identity cause shifts in values and focus. These, in turn, generate new expectations and new demands that need to be met. This can be seen happening over a longer period of time, where one type of behavior has been accepted, for example, during the time of our grandparents, but youth today are not accepting the same behavior. These shifts in individual and collective identity bring forward new trends and expectations. These are discussed next.

5.1.2.4 New expectations

Disruptions are also explained as things linked to evolution and time. New expectations, such as no harm to the environment and expectations of future generations being able to generate wealth for themselves, cause disruptions to the current ways of acting, as shown in the quote below:

“The economic benefits must remain here, and this is not happening today. It's a terribly short-sighted way of thinking. One person I know got a job for ten years when he got into the mines. That's how it is. It's terribly short looking. All of this is at the expense of his children and grandchildren, who are the ones to clean up after them and pay the related costs. And they can accumulate decades, or even a thousand years in the worst case, to clean up after the operations have ended. Not to mention the environmental impact, where the negative impact should be non-existing”. (representative of society)

In this example, the timeframe present goes for three generations and beyond. The issue is that despite a 10-year working contract, which can be seen as a lengthy contract to sign in

the modern world, considering the impact and long-lasting impacts of the mines, this is a very short period. The economic concern is whether the wealth generated will meet the needs of future generations and how expenses caused by the activities will be covered after the activities are completed.

The concern on what happens with mines after closure is also addressed by this business actor who is working in the intersection between business and government:

“After all, we are constantly confronted with the fact that old mines that are either closed down or go bankrupt, that the guarantees required by the state authorities for the restoration costs of restoring them are completely underfunded. If, on the other hand, they were there at the top end, then it would be difficult to start mining. One mine went bankrupt and is the first mine that is now being closed under the Mining Act. There have been several discussions with various authorities about how to proceed, how to act, and who is paying. There were a couple of million invested in it at the time, which was the required collateral. The closure has cost about 25 million so far. That is a good illustration. And then, if you want to shape opinion towards society and communicate that collateral is always unfortunate and too small, this will serve as a good example for that, yes. But then again, if someone had said that you can start digging, put 25 million on that table, no one would have done anything at all. How do you balance this? We will really need to work hard to discover it”. (representative of business)

The challenge is that despite the ending of the extraction operations, there are activities that need to happen post-extraction. These activities take time and require investments. Further, some of the consequences might be long-lasting, for example, the environmental impact. The business actor emphasizes the difficulty in balancing different needs and concerns. In the example, the balance of different economic needs is addressed and explored. The closing of the mine and expenses related to it are compared with the societal benefits of having the mine. The concern is that if expectations on where funds required to close the mine grow too high, the economic benefits of having the mine in the first place might be lost.

How to address different issues and concerns and at what stage is challenging. Finding agreement on how to prioritize needs is challenging. One additional aspect of economic challenges is the need for the environment. In the quote, the business actor mentioned the

restoration of restoration. This expectation, which has been enforced by the Mining Act and is being put into force now for the first time, is causing challenges and bringing forward issues to resolve. This adds to the complexity, and as there is no past experience on how to resolve these issues, challenges occur.

Despite new expectations often being linked to the need to consider the needs of people, the planet, and profit, this example shows that economic balancing between different aspects is challenging. Societal actors also raise concerns about us making decisions that will cause future generations to suffer the consequences. Youth are also expressing their concerns more vocally through demonstrations and actions taken. This is also seen by young activists on climate change, who feel their future is taken from them by the actions of decision-makers today (for example, Fridays for Future (FFF)).

5.1.2.5 Summary of disruptions

These examples demonstrate some aspects of how disruptions occur at different levels. Some disruptions occur as significant, transformational ones, whereas others might be smaller at the start but gain attention over time. The common element in these disruptions is that they catch an actor's attention and cause a need to react somehow. Depending on the disruption's experience, importance, and influence, the responses and effort put into it differ. This is also linked to how many disruptions occur simultaneously and the prioritization of different themes and fragments. Some frequently mentioned events were categorized as different larger events, policy and regulation, and power dynamics between actors.

Events on micro, meso, and macro levels impact and influence different actors differently. The events demonstrated show that events might occur as sudden, large events but also as slower, developing events that gain attention and traction as time passes. Further, some themes might be irrelevant at one time but become relevant later. The multi-dimension and

intertwining of events add to the complexity. How different nations and audiences are impacted and react to the disruption also requires attention and sensitivity.

Policy and regulation were discussed as challenges in knowing the timing of implementation and enforcement of regulation. The unpredictability causes challenges in forecasting and might lead to situations where rapid response to changes is required. One actor emphasized that he did not know in May what would happen in August. The policy and regulation aspect was also linked to assumptions on how global markets will evolve. In some cases, the lack of policy and regulations also impacts. When there is an anticipation of support or reaction from law and regulation, but it does not happen, it causes disruptions.

But the law is not only addressed as a disruption in operations and on how things are evolving. In law and regulation, geo-political aspects and power also play a role. Power dynamics are addressed in the section as law and regulation shifting power, actors gaining or losing power, geopolitics and power, unjust or just comparison between nations, identity, and new expectations. All of these cause a shift in power and cause a reaction in the actors. Power dynamics are very present in different forms and will be discussed further in the next sections.

Disruptions take on different forms and are often intertwined, as can be seen by the quotes used as examples. Often, the actors address several challenges that occur simultaneously and also propose pathways on how to move forward. Sometimes, things are more mentioned as accepting the way things are and working with that. Most disruptions are rooted in some level of dissatisfaction with the current state or questioning of how we currently do things.

A reaction does not always need to be linked to actions, but often, it is. Different actors react in different ways depending on the disruption, its nature, and the identity of the actor. In phase 3, we will explore different responses to disruptions.

5.1.3 Phase 3a: Fortification of common sense

Disruptions cause a need to react. The reaction can take different forms. Phase 3a illustrates responses, where the common sense or current understanding of how things are is strengthened. This is done by seeking additional information, deepening knowledge, reaching out to like-minded people, and justifying viewpoints.

5.1.3.1 *Comfort and uncertainty prevent willingness to change*

There is a natural tendency to reject the need to change. To put it in simple terms, if we think there is nothing wrong with the way we have made sense of things, why would there be a desire to change? Change is seen as challenging work, consisting of uncertainty and ambiguity, as explained by a business and governmental representative below:

“Everybody has to change. If you speak about these three silos, all of them have to be changed. Governments have to bring up the regulations. Businesses have to transform their business models, which they can, and, at the same time, individuals can change their behaviors. I think everything is possible. This is one aspect. I think the other aspect is also this aspect of change; I mean, we speak about change processes; who really likes change? If you are in a comfortable situation, why would you want to change something? You start to change things if you are in an uncomfortable situation. At the moment, with many of the complexities that we're trying to solve, we might see that we are, after all, in a very comfortable position. Still, looking at this from a global perspective, yes, there are a few wildfires. Yes, maybe there are fewer polar bears, but overall, we're in a comfortable position globally, too comfortable for what is expecting us in a very short amount of time. And here again, I think our far side is limited as individuals and human beings”. (representative of business)

These challenges, where the discussed need to change is recognized as a disruption, but one's situation being comfortable enough to keep going as before, causes reluctance to change. Despite understanding the negative impact of actions, they are not affecting you directly or causing an uncomfortable situation enough for change to be desired. In addition, change is seen as more uncertain than maintaining things as they are.

The nature of complexity is not having all the information and all the answers (Snowden, 2002). This, in turn, is one of the challenges with current systems; they rely on simple and

complicated scenarios where different elements are known or knowable. In complexity, patterns emerge as you move through time. This causes a situation that contains a lot of uncertainty, where actors need to adapt and adjust as they move through time. This is often the case, which is why many actors prefer staying in the comfort of known things rather than moving into the unknown unless it is absolutely required. A sense of control and management can be sustained in the dimensions of simple and complicated, whereas complex issues cannot be fully controlled or managed.

One element of modernity is the overflow of information. The overflow of information is also causing the information to be fragmented. This is discussed in the next part.

5.1.3.2 Challenges with information

When looking for information, knowledge, and insight, many actors discuss the fragmentation of information. Businesses have multiple channels through which they provide information. Governmental actors are both on local, national, and international levels. In addition, various officials and actors are involved, all with their channels for information. The two main aspects discussed with information is the fragmentation of information due to the many channels of it, and the challenges in understanding the information provided.

5.1.3.2.1 Fragmentation

This, in addition to many experts forming and sharing their knowledge, for example, on social media, causes an overflow of information to be available. This causes different actors to spend a lot of time looking for information. In addition, many pointed out that knowing where to look for information, how to search for it, and what keywords to use is not a simple task, as explained by this societal actor and governmental actor:

“You probably have to search several different sites and familiarize yourself with a lot of material that is difficult to figure out. [...] I'm sure it's difficult because there's so much information coming from different directions, and the information is affecting us in ways like understanding what they are going to do”. (representative of society)

“Just the fact that information is available in many places, for example, government reports that are public or owned reports by businesses. There is a lot of different information from these organizations. Still, there is a lot of different information internationally. Then there is the research side, followed by the publications of the professions and such, so the information is widely available from many places. When there's quite a lot of information available at different levels, maybe, for example, you need to publish research in a readable language. So, is information easily found and understood for different industries, different professionals, and different people?”. (representative of government)

In these quotes, the actors speak about the different places you can find information and how difficult it sometimes is to find. The fragmentation not only on a local level but also on the international level causes issues. Further, they emphasize that there are different forms of information and that, in many cases, the information available might be challenging to understand. This aspect will be discussed in more detail in the next part.

Knowing or knowing for sure that you have the latest, most relevant, and accurate information at hand is becoming increasingly challenging. There is no collection of information available, and much is linked to the ability of individuals to look for information. This, in turn, might cause surprises, as this representative is expressing:

“But I want to give you an example of how challenging this research part is. I was interacting with a company that is very established, and they have mapped out the value chain. They were shocked by the holistic picture I presented on where to look for information. Even if they worked on sustainability, they realized they did not know where to access the information. In my view, I hadn't gone anywhere special for it, and I was shocked that they were shocked they didn't know these things”. (representative of government)

As fragmentation of information is demining increased knowledge and skill in searching yet knowing alone where to search for information, even individuals and organizations get caught by surprise, no matter how well they aim to do their research. This is true for many actors. The concern of not having the correct information and all information available is growing and causing issues in decision-making. Many actors also expressed concerns with the number of reports that are published, as you do not have enough time to read them:

“In principle, all information is accessible everywhere: it can be done as individuals or, in the case of companies, as a small company, but simultaneously as part of something much bigger. And this is perhaps one that also evokes mixed feelings in a way. At the moment, legislation requires the company to provide very extensive information. And so, informing also means organizing events, discussions, or press conferences. And now we can already see that in certain places, we have so many of those opportunities by different companies that there starts to be tournament fatigue for all parties. Then, it is difficult to keep things in order when that information comes from so many directions and many times a month. Even those who do the work on organizing such events put in a lot of time and effort in relation to this. It is time-consuming and labor-intensive for all parts involved, and the different phases confuse which project and ignition are at what stage”. (representative of business)

The overflow of information and events to participate in to stay up to speed with all things evolving, is occupying time and energy from many actor. As the representative of business says, it is causing tournament fatigue in participants. The challenge in finding a suitable balance of sufficient information and ways to give information in an efficient way is challenging in the interconnected world we live in. There are multiple channels for sharing and receiving information which adds to the challenge.

As information occupies more and more of our time, many actors filter what they receive. Usually, this filtering includes focusing on relevant or interesting information based on your work or areas of interest. This, in turn, creates a situation where the information you read often strengthens what you already think you know. The overflow of information also causes cases where digesting all elements becomes confusing as it is difficult to distinguish what information is related to what. Requirements to share and include participants in various ways puts pressure on ensuring information is sufficiently provided.

The other challenge that has been mentioned in these quotes is the challenge of understandable information. Despite all information not being aimed at all audiences, some of the information related to the events and license to operate are difficult to understand. This is discussed in the next part.

5.1.3.2.2 *Readable and understandable information*

As mentioned earlier, this causes information to be dismissed, as the actors cannot understand it. As information is dismissed as non-sense, nothing changes how we make sense of the world. The information that was difficult to understand was often referred to as research, governmental reports, and technical explanations of processes, laws, applications, and decisions. In some cases, the information is not explained in a way that different actors can use it, and therefore, it can easily be categorized as non-sense. Naturally, one question is if all information needs to be easy to understand by different actors or if some information is more aimed towards experts and people actively involved in the different aspects. Research, for example, is not always aimed at practitioners but rather to be used by scholars and expand the area of research and understanding in the scientific community.

Some actors have taken measures to improve the information and clarify the topic. One business representative handed over many publications they had to explain their operations, the mining industry, and even circular solutions. They were still actively working on translating information to make it understandable for different audiences.

“Mining specialists are mainly engineers, Master of Science engineers, scientists, and chemists. They're terribly skilled at their own work and in that field, but that industry hasn't been doing this kind of understandable communication to the outside world for a very long time. And it's natural for these people not to want to be in the public eye. They want to do their job extremely well, and there's a bit of a mentality of doing things carefully and letting it speak for itself. I have noticed that it is incredibly challenging because this is such a large field, and there are so many things that you would like to tell and find out”. (representative of business)

The business actor recognizes that reports and information experts provide are difficult to understand. Further, many of them are not accustomed to being in the public eye and have different types of interaction with various groups of people. As their logic is to do their work very well, and it speaks for itself, the need to explain their work to different audiences and levels of knowledge in the subject is seen as less important. However, many actors struggle, as

they need to understand how things are managed and done, which leaves a need to fill those blanks. Many actors fill those blanks with limited information and perceptions of how they think things work.

The information provided by business representatives was addressed by other actors as well. Despite it being challenged by some as greenwashing or leaving out important information, the need for businesses to play a more active role in the debate was expressed.

This is seen in this example by a government representative:

“But without a doubt, the mining industry communication could be better. They have really improved over the years, but there is still work to be done. Mining businesses are doing social science and learning and evolving to communicate better. They are really thinking about the story of mining and how we can communicate things better. All of this is happening, exploring how we can communicate better. I am not talking about how engineers or other experts do it, but people-to-people communication. Animation is being used to break down information. People go to educational institutions and schools to get information and knowledge out there”. (representative of government)

The actor addresses the need for better communication and finding ways of providing information that is available.

Another business actor contradicts this by noting that information is available for different audiences in this quote:

“The level of information and the details you can find in openly accessible documents is always more than enough to form an opinion, research, and dig into a topic in more detail. In my entire professional life, I’ve never stumbled into a situation where I couldn’t form an opinion or an educated opinion on a topic because everything was super confidential. I’m sure that if I want to form an opinion on how to manage waste in space, there are enough publicly available reports that will help me understand and so forth. Otherwise, it would not even have a master’s student doing theses at the university. And if you look at the thesis of a master’s student, it is always usually a good level of detail and insights, and they don’t spend millions of dollars in accessing documents and reports. So, I think there is enough good information available for anyone who is curious enough and keen enough to dive deep into a topic including mining”. (representative of business)

The actor argues that there is plenty of information available for different actors to find and use. Different reports are aimed at different audiences and levels of knowledge. Therefore,

any actor can form an opinion based on the information available. However, finding this information and the time used in finding the information is not discussed. Also, language barriers might cause obstacles to reading, finding, and understanding the available information.

Some governmental actors have also taken the role of acting as translators of information. Many governmental organizations and actors arrange events and meetings where matters can be discussed to support information sharing:

“I would be a so-called neutral party and bring up things, explain what they mean, what they mean in, for example, waterways, what they mean as dust, and what they mean in the climate setting. For this, it is based on facts. As an example, the pollution in water is diluted after some hours. But when you talk about millions of cubes and don’t give context to it, it causes people to be terrified. For them, what is happening now is enormous. You cannot assume they can see and connect the proportions to context. In itself, it is the same thing that was done with energy. No one understands megawatts and gigawatts. Is it a lot or a little? But then when you say, well, that’s 25,000 single-family houses worth what they use. Everybody understands that. But this translation is what’s missing”. (representative of government)

These translations are needed to make existing information, reports, and measurements more understandable. Understanding the context related to the information provided is essential in strengthening the current story and causing disruption. Without actors making sense of the information available, they are dismissed as non-sense. This, in turn, poses the question of whether the information is helpful or needed in the first place and what value the information presented at the end generates.

Information that is difficult to understand leads to dismissal of it as non-sense. Dismissing information can also occur due to other reasons. One of them is linked to the fortification of the existing understanding of the world and mistrust in viewpoints that divert from it. This is discussed in the next section.

5.1.3.3 Fortification of existing understanding

Fortification of exiting understanding refers to a type of mindfulness. Cornelissen et al. (2014) disclose mindfulness as a state where a group of people has made up their mind of what

is happening, and only see and experience things reinforcing this view. Mindfulness of this type is present in many actions and activities.

Cornelissen et al. (2014) discovered that mindfulness can be collectively constructed as a linguistic process over time. They found that how we communicate affects how we make sense of things unfolding. In this process, alternative interpretations were dismissed. Emotions also played a key role in the process (Cornelissen et al., 2014).

In the next parts, some aspects of fortification of existing views are explored and demonstrated. These include mistrust, echo chambers, and unwillingness to collaborate. These are discussed next.

5.1.3.3.1 Mistrust

Fortification of one's understanding might prevent actors from accepting the information provided. One of the biggest reasons actors expressed was mistrust, as this societal actor expresses, of the standards:

“And quite striking is that the company was still getting the ISO 14001 environmental certificate in autumn because they have behaved so well. And then just a little while after that, they destroy the whole of nature in the surroundings and cause one of the most significant environmental accidents”.
(representative of society)

The ISO14001 are environment-related certifications. Despite organizations receiving them, there is evidence of a negative environmental impact, which will take a long time to clear. We have examples of how mines have caused environmental disasters in many regions around the world in the past despite them being compliant with standards and following governmental regulations. Often, this causes mistrust in the information provided, the certifications granted, and law and regulation oversight, especially concerning risk management. Without trust in these, there are very few ways an organization can convince society that its behavior is responsible and that its actions are sufficient to manage risks.

Another aspect of mistrust is directed towards research and research conducted, as is addressed by this actor:

“As a person, I get accusations that generate suspicion of me and even try to undermine me by digging up things where suspicion can be generated. In other words, in a way, that my credibility can be questioned. And that way, you get to say that the other guy isn't credible, so what he's done doesn't feel credible. [...] In this case, for example, there is a media article in which the headline was that ‘the Ministry is investigating the interests of a key person’. Or something like that”. (representative of government).

In this example, the actor addresses the different means used to dismiss information provided. In this case, sound research is questioned by undermining the person conducting and publishing the research. The use of media to voice these concerns is a frequently mentioned tactic and is perceived to be an efficient one. Mistrust is generated as these types of news catch people's attention. In the discussions, other actors disclose the undermining done by others using media as a forum. Government, business, and society representatives address the issue and express experiences where they have been undermined and accused in person or as an organization in the media.

This type of mistrust concerning the information provided and the actions taken causes tensions. However, this information is seen as pushing forward the actors' opinions as convincing of being correct or taking a specific viewpoint. These are not perceived as objective or neutral forms of sharing information, considering the audience that struggles to make sense of them.

Due to the lack of trust, some actors do their own research. This, in turn, causes issues, especially when the information gathering is seen as being to validate an already formed opinion, as is noted by this societal actor:

“The societal actors carried out such a manipulation at the time. They took three samples at different times of the year and received a series of concentrations rising from it. It took us about a minute to figure out what it's all about, and that's because different seasons of the year are different, and the harder the tested matter is, the more substances are there. They do not

necessarily come from the mines. It does not accumulate evenly there, and the change does not reflect a change in some external emission source. And they disappeared at other times of the year. Those taken were done quite deliberately; it's no coincidence. They used such scientific know-how for media distortion. [...] In another study, they compare the measured concentration with the criteria for drinking water. Oh my god, seriously, that benchmark is compared with the massive nickel ore region. No, no, no, does natural means it is pure? If it is groundwater in such an ore area, those ores have polluted that groundwater anyway for millions of years. Again, all parts of that sentence are true, but the whole thing is misleading people". (representative of society)

This type of activity, where the aim is to strengthen what the societal actor already thinks they know, has the potential to cause the actor to ignore signals that conflict with the current understanding. Cornelissen et al. (2014) describe this as a form of mindfulness. Their research found that the collective understanding and commitment to a specific framing were collectively constructed in different activities over some time. This fits well with the challenges the societal actor presents and allows mistrust in information not aligned with one's own.

Another issue brought forward by Cornelissen et al. (2014) is that discussing the issue presents a challenge in recognizing alternative interpretations or options. In this case, mindfulness results in seeing the things that strengthen our understanding of the world or situation and dismissing things that are disrupting it. This is explored in the next part.

5.1.3.3.2 Echo-chambers

Based on Cornelissen et al. (2014), actors that have collectively developed an understanding of how things are tend to reinforce each other. This is another type of fortification of common sense. The collective sense present in mindfulness strengthens and fortifies one's own opinions, as presented by Ashforth and Schinoff (2016). The information sought often describes what is already known and strengthens it further. This is also referred to as silos and echo-chambers:

"Various groups then look for information in the discussions. Compartmentalization is perhaps quite a big problem nowadays. Many look for information to get an answer corresponding to one's own way of thinking.

I wonder if looking for neutral information in their own way is becoming even harder or even impossible". (Representative of business)

In this, the business actor is recognizing that, in many cases, information is used to fortify what is already perceived knowledge. This allows the rejection of conflicting information. Further, it might be that contradictory information is increasingly difficult to find. Complexity offers multiple pathways and solutions but also unknown elements. Hence, many different aspects can have legitimation at the same time.

Due to unknown factors and elements, complexity does not consist of one best practice or even a limited number of solutions (Snowden, 2002). This, in turn, causes a situation where the different viewpoints different actors arrive at might be conflicting despite them all being right at the same time. If information is not viewed holistically, different perceived best practices will conflict with each other, and actors will aim to argue for their solution and reject others. This aspect is noted by this governmental actor as follows:

"The individual is interested in whether the materials come from a mine here or not, which is the basis for the intense defense of some people and for others' intense resistance. Mining permits are conditions that are primarily governed by business law. The Mining Act has been amended to include environmental elements, but we cannot be competent in environmental matters because environmental pollution gives a limited amount of pollution a right. It is the role of the environmental permit authority. However, this causes issues as how different groups prioritize and see as acceptable is unclear". (representative of government)

Different actors' different focuses also cause tensions, as all needs cannot be met simultaneously. Current solutions are allowing operations to exist with limited environmental impact. As the law permits limited environmental impact to occur for economic and societal benefit, it causes tensions between the needs of the economy and society and protecting the environment. These prioritizations and how to establish acceptable limits depend on what each actor sees as an acceptable balance between different needs and desires. This in turn is linked to values and identity, as Ashforth and Schinoff (2016) explains. Different governmental actors

also look at other aspects based on the task and mission they are provided with, aligned with the identity or position they hold.

This, in turn, also relates to echo chambers as many actors focus on the issue that is related to their area of expertise, as this business actor explains:

“Quite a few people probably know the whole picture of how the chain and the whole chain goes. At least the knowledge is probably quite limited about the particular area that concerns me, so much so that few study it as a whole and how it affects different aspects”. (representative of business)

The holistic overview of the larger picture is unclear for many actors, and hence, it might seem like decisions are made based on fragments rather than the overall impact from many viewpoints. As the understanding of where prioritizations and limits of what is acceptable are unclear, it drives each actor to pursue their view and agenda even more passionately.

The positioning and validation of both identity (Ashforth and Schinoff, 2016), and emotions and information recognized (Cornelissen et al., 2014) increase the issues with echo-chambers. Validation by others on how you view the world and what you value and prioritize fortifies your current view and might even lead to unwillingness to listen, recognize, or collaborate with other actors. This is discussed in the next part.

5.1.3.3 Unwillingness to collaborate

In almost all interviews, mindfulness and unwillingness to collaborate were brought forward as persisting, frequently appearing issues. It was described as unwillingness to listen, to collaborate, and to include. It was described in a similar way by all the different actors.

“If we go to such extremes, things become quite difficult. If you do not agree to listen or understand or want anything other than to keep your own barricades, that, unfortunately, nowadays leads to you being sent away from events. In a way, it's like a demonstration. Let's leave one of the groups just because we are not getting what we want. They just give up and say, 'This is us; this is it.' And it never takes the matter any further. Removing yourself or refusing to be a part of a group or discussion just because you're not getting your way is not fruitful. Persist in bringing up your cause and viewpoint. If you participate in broad-based groups like this, where the issue is discussed, and understanding increases on both sides, I think you might be able to raise

this awareness in a certain way. But such strong contrasts cause 98 percent to say, well, we don't talk about this. Let's go from here, which is the easy way out, and no, let's not take a position; I don't need to get involved in this drama. This has to be done, or we complain. We appeal to the administrative court, or we appeal to the highest court, or it doesn't matter if you are a defender or an opponent, then some kind of compromise should be reached. But people are not ready to compromise.

[same continues] And unfortunately, what happens here is that the silent majority's viewpoints remain unseen, unheard, and unexperienced. I'm on a team in various collaborative groups. I've actually been on occasions where a person has had to be muted by the team. They don't give anyone else a turn to speak, and I've seen that kind of meltdown an adult person gets. It was really unpleasant. It felt very uncomfortable. You should always remember to behave. And then, if it starts entirely out of control, you get a little bit of a feeling that you can't put someone on the call. Naturally, there are also smart people out there who perform. That fact is that if you go crazy when you get really emotional about some things, maybe work matters so much, but it does not work in your favor. You have to be really strict about things and stick to the facts. And if things are exaggerated or overboard, you lose your audience". (representative of government)

Here, the actor points to the experience of actors misbehaving. This has caused uncomfortable situations, and most of the time, it diverts from the points made by the actor. Many feel misbehavior is a reason for ignoring the message and neglecting the actor. Actors have even been muted in meetings due to misbehavior. Different viewpoints need to be brought forward professionally and with reference to facts. Emotions are also addressed in this quote, but they will be explored in more detail in section 5.1.3.4.1.

The dynamics of the conversations need to be respectful for other actors to be willing to hear their viewpoints and opinions. A business representative refers to a similar case like this:

"Here I was having a conversation with my friend who is, like, quite nature conservation, human and vegan and such. Still, he is terribly interested in this mining industry because we needed mines and these minerals to do much. So, others are still very receptive to information. And then there are the ones who don't want to hear anything you have to say and go on with their own opinions and stick to them". (Representative of business)

"If you look at, say, some debate TV programs or talk shows, they often take the people who are most at odds with each other. And the nature of that occasion may not be so terribly feel-good and quite polarized. I feel that the people who want to resist mine are the sites where you get groups and

activists supporting their viewpoints with narratives, and then they refuse to hear the facts, showing that it may not be quite like that". (Representative of business)

In many forums, the focus on arguing who is right and wrong has become a central point of attention. For all these, the common element is the tendency to categorize the differing opinions and disruptions as non-sense, meaning that they do not hold any value to be concerned with. Different actors are seen to argue for their viewpoints and to put narratives of the future alongside facts.

This causes a tension between prefigured sensemaking and configured sensemaking, where fragments of a perceived lot are talked into existence. Facts are difficult to generate on the same level as historical occurrences and events. However, the future cannot always be grounded in facts, as Swain (2019) emphasizes. The issue is, that projecting past fact into the future causes an issue, where the future is already enacted. The tension between the narratives and the facts can be seen on many levels. As discussed in the next part, these are used to justify and dejustify different viewpoints.

5.1.3.4 Facts, opinion, experience, narratives, and emotions as legitimation and delegitimation

As has been mentioned, different actors value different types of information. Business and government are often very fact-driven, whereas societal actors are linked to narratives, stories, and combinations between facts and measurements of the past and present and fragments of a perceived future. Rhetoric acts as justification or dejustification of these different elements, as presented in this quote:

"After all, perceptions and views are being played with here, and putting them side by side is impossible. To the harsh naturalists, it is so clear that if the effects can be observed, but can they be measured? If not, they go and look for answers somewhere in the sociology section; if that does not work, they look somewhere in the witchcraft sciences. And all of this happens very quickly. Yes, they also play a role in creating images and narratives based on these. And if that experience is as valuable as some measurement result or series of measurements, then fine, let's agree that they are. But if we generally

go down that line, it causes quite a lot of other problems for society”.
(representative of society)

In this example, the actor questions if opinions, experiences, and narratives can be put alongside measurements, facts, and data. He refers to even going as far as to witchcraft as a reason for opinion and legitimation. Despite being able to project history into the future, measuring activities that have not yet occurred in the past is impossible. As actors talk new ideas and things into existence, as there is no action related to this, facts, measurements, and science cannot be used to justify these opinions. However, in cases where facts, science, and measurements can be used, the question is whether they speak more loudly than experience.

Research institutions also conduct research institutions such as universities. These are often detailed descriptions of issues and contribute to the body of knowledge. Despite the research being mostly funded by the government, research is conducted as independent institutions according to generally accepted scientific principles. Often, several experts conduct research, and much research is accepted for publication in international journals. Some research, however, is conducted in a local context. Environment research is an example of this, as some parts of it are very contextual, for example, biodiversity.

However, as pointed out by this representative of the government, this type of research is not always appreciated or noted:

“What has struck me is that when we are writing a document that is a couple hundred pages, then it is not read. But then people participate in the debate with incomplete information because they haven't bothered to read the documents. And they say things that aren't true. So from my point of view, the discussion in society is so annoying in the sense that you participate without reading what we have actually done”. (representative of government)

The discussions become problematic when the available information is not addressed or noted. Some actors question the objectivity of research and what agenda research is driving. This can be seen in the media, where criticism of scholars and their integrity is questioned, which was addressed in the mistrust part 5.1.3.3.1. Another aspect is that the information might

be so technical that actors dismiss it as non-sense as discussed in part 5.1.3.2.2. Naturally, information is also dismissed if not aligned with the view and agenda of the actor, as discussed in 5.1.3.3.2.

Considering the notion of Kolb (1984), experience is a critical factor in how we evolve. Hence, experience is in a constant dialogue with facts and knowledge. The question is how these are woven together when different groups with different agendas represent knowledge, facts, and other experiences and narratives. Kolb (1984) discusses how experience and knowledge interact with one actor exposed to both aspects but does not refer to how these interact between actors and groups of people.

5.1.3.4.1 Facts and narratives, a need for balance?

As discussed, there are different emphases on what is appreciated by which actor. Society emphasizes experience, whereas business and government are fact-driven. This also results in experiences and opinions easily being dismissed as non-sense. On the other hand, many of the facts provided by government and business are hard to understand for some representatives of society and hence rejected as non-sense or not contributing to sensemaking.

“But other than that, the culture is that we are very fact-based; everything that is told must be that information and its sources can be found, and then we are very reluctant to engage in speculative discussion about what will happen in five years because that's not what the culture is in companies, and maybe just owning finance because of stock exchange rules, very little speculative information is shared. On the other hand, in this critical discussion of mine, one can throw in quite a lot of all kinds of comments that do not stand up to scrutiny in detail”. (representative of business)

“Typically, you see one small fact around which a story is created, which no longer describes the actual situation. This type of narrative affects all actors in the mining industry, and it may also be easy to build and create associations and get clickbait headlines. It already creates an emotional reaction”. (representative of business)

“In a way, people often justify their perspectives on concrete experiences they have, for example, of our activities. The fact is that, for example, we go to very concrete things that have explosions on average twice a week, and there is a big bang, sometimes there is a vibration, and people base their own views

on very, very concrete experiences like this, which is of course very understandable". (representative of business)

Business and government actors need to stay fact-orientated and base their knowledge on information, measurements, expertise, and science. However, as one of the business representatives points out, society also has valuable experiences. These are often dismissed as non-measurable or irrelevant, as this governmental actor emphasizes:

I think when we talk about mining, yes. After all, it talks about the economy as it does. And they are not questions of opinion; they are measurable phenomena. (representative of government)

The mixture causes issues between the actors and allows actors to dismiss some information as non-sense.

Despite the tensions between experience and facts, both of these are linked to the past. Experience is a part of Hernes and Obstfeld's (2022) prefigurative sensemaking. Kolb (1984) emphasizes the need for both to be present. Kolb's (1984) research does not, however, express how experience and knowledge mix between different actors. This research shows that experience within one group of people or one individual does not mix well with a fact-driven group of people or individuals. Despite our individual development being highly dependent on this mixture, actors are reluctant to accept experiences that have occurred for other actors and embody them as our own.

Narratives play a role in how we make sense of current situations, and if not addressed, persuasive narratives will be present and influence sensemaking as this business representative emphasizes:

"The big problems are related to starting the mining industry and closing it down [...] finding mining sites is a problem, so the whole industry becomes a bit of a treasure hunting image and that it would be easy money. And as long as it is a treasure hunt narrative, there is undeniably a bit of a feeling that once the treasure has been found, it will suddenly be robbed, and the actors will disappear from the place, which creates a bit of a false impression. In reality, it may take generations of men before we can open a single mine, find a sufficiently rich ore reserve, and develop it so that the industrial site is

created there. The second is, of course, that when the mining industry ends, it may take a generation before we can put an end to its effects again. So, for those two ends, of course, I would like a solution". (representative of business)

The actor addresses the narrative of a treasure hunt, which contradicts the process of establishing a mine. In previous quotes, the aspect of colonization has been brought forward in part 5.1.2.3.4. This narrative of a treasure hunt can be interpreted as a softer narrative compared to colonization. The actor recognizes the issue of how the narrative is constructed and told. The role of this narrative and the need to address it to change the perception is considered if a more accurate image of EMMI is to be portrayed.

This representative of business recognizes the need to balance between different groups. He also recognizes that a different form of narrative has been successfully created in, for example, Sweden, where a municipality, Kiruna, is being moved to make way for the ore mine:

"What has been done in Sweden? It has the richest iron ore in the world and therefore, they are moving the city. They have managed to generate a feeling that it is okay to move the city 10 kilometers away because there is good iron ore underneath. Here it is challenging. The municipality sees it as, 'Hey, if we could have this industry here, it would bring in taxpayers and jobs, and that would be a positive thing'. On the other hand, individuals, nature people, and others feel that if a mine comes here, it must be resisted passionately no matter what, and the authorities in that frame of reference easily end up in a nasty situation as the middleman as to whether or not to go by the book. If the law says that this is how these conditions are met, this is where there is discretion, then what is the discretion, and how much? All of this needs to be simultaneously balanced with the benefits that should be taken into account. And here, too, this permit process has now taken perhaps six years and perhaps another two or three years will pass, at least, before we can even get started. And millions of euros have been paid so far. And not a single euro has come from the product".(representative of business)

The need to balance different aspects is brought forward, as well as the challenges related to it. Complexity is, therefore, not about finding the best practice but navigating needs and solutions in different ways, depending on context and circumstances. Further, in this example, the business representative concludes that we currently lack solutions. This opens a space where the actor calls for new approaches and innovations. Hence, the solutions and

pathways cannot be found in prefigurative sensemaking. This is aligned with Polkinghorne (1988), who argues that narratives are one of the main ways we make sense of different experiences.

The neglecting of narratives causes issues mentioned by Sawin (2019). Without accepting narratives as a way to include configurative sensemaking in making sense of the present, the actions will be as if the future is already here. Hernes and Obstfeld (2022) address that making sense of the present is and should be influenced by the future. Snowden (2022) adds to this that patterns need to unfold as we move through time, especially in complexity. This uncertainty causes challenges and poses questions on how fact or measurement-driven we can be in all situations. However, the challenge presented by the societal actor is valid, as it is important to consider how far we can reach in narratives and imagination.

One aspect of narratives and experience is emotions. Emotions are present in the dynamics and unwillingness to act. As was explained by the quote of the governmental actor in section 5.1.3.3.3, emotions run high in some situations. Emotions can be useful for sensemaking and sensegiving, but many times, emotions are not perceived in a positive way. This is explored in the next part.

5.1.3.4.2 Emotional or professional?

Cornelissen et al. (2014) emphasize verbal communication and emotions as central to sensemaking. Despite the risk of emotions and verbal communication in collective settings contributing to mindfulness, they play a key role in sensemaking.

Despite this, emotions are dismissed by many actors. Another societal actor emphasizes that some actors are seen as rational and professional, whereas some societal actors are argued to act based on emotions. This causes some audiences to dismiss information despite it being grounded in measurements, research, and facts. This type of undermining or dejustification of

viewpoints causes actors to feel unappreciated and their work to be undermined, as explained in this quote from a representative of society:

“It's one way to label another person that they don't behave rationally but behave emotionally and rant about something. It is very familiar. It is perhaps the most familiar of them. Media frame things like this: the politician stated that strict environmental regulations are in place to guarantee safety and, indeed, guarantee that the environment is not disturbed. In reality, this is not the case because the rules are not respected and they are not enforced, so there would be strict conditions for building some elements. And then there was another one. A mining industry representative says that there are tourism benefits from the mining industry because it stabilizes the economy so much and, therefore, irrigates the industry as a fact. When I had my discussion, I expressed my viewpoints very professionally regarding different aspects. And I even had to show on paper what tourists have moved from the area to another area as the mine was coming, I presented questions like would you like to ski in yellow snow. Or in brown or whatever color? Despite this, it was titled somehow, 'Mining causes a lot of emotions' or something similar. It is humiliating to be referred to as emotional when others are referred to as neutral professionals”. (representative of society)

This approach is seen as polarizing, and the dynamic is explained as focusing on who is right and who is wrong. This way of labeling one actor as emotional and others as professional, behaving with dignity, causes a lot of frustration. The societal actor feels he is not being taken seriously despite having the research to support his claims. It also brings the polarizing dynamic, where some actors are presented as rational, reliable experts, while others are undermined and presented as emotional, irrational, and driving propaganda based on opinions. This causes despair in the actors, as they are labeled despite their behavior, and the behavior of some actors makes it harder for others to get their voices heard.

Different actors value emotional aspects less than a professional approach, research, and fact-based approach. Considering the limitations of fact and linking them to prefigurative sensemaking, this causes issues in development. Further, as emotions are linked to sensemaking and play a crucial role in sensemaking (Cornelissen et al., 2014), dismissing emotions as less valuable presents problems.

One reason for emotions being dismissed can be found in the misbehavior and misuse of emotions. Actors expressed experiences where emotions have taken over the individual or group of people, and they even led to threats. This is discussed in the next part.

5.1.3.4.3 *Emotional triggering and threats*

Tensions might also take a different level in some cases. Actors on all sides of the dynamic reported threats occurring in some of the discussions. Two societal actors present their experiences in the quotes below:

Someone has felt threatened by the situation; someone shouts, threatening to assault and threatening to kill, threatening to kill your dog. This is normal. I don't care about that anymore. I'm like in wild situations where some actors and activists in some public viewing completely lose their temper. Sometimes, the slanders are sharp and nasty, sure, but intelligently nasty. But sometimes, it's like full-on threats. (societal actor representative)

But if you want to talk to people online, it's incomprehensible. How can it be that I disagree 200% on one issue or another? On the Internet, when people write about things, how they are feeling. The human brain goes to the level of a lizard brain in an online discussion. It is like the picture where two dogs behind the fence would bark and shout at each other, and then when the wall was taken out of the game, they would just sniff each other. The reaction is completely lacking in confronting the other side. That's what causes that. [...] Few of them are in any way prepared to change their opinions but rather prefer to rotate the other end in a different position. Or it's another option, or they want to embarrass the other. Everyone else is starting to think, at least you can't agree with those because they are crazy. (representative of society)

Feeling personally attacked was listed by many persons, despite many not wanting to focus attention on it. In many cases, the focus shifted from discussing these experiences further to different actions to reduce them. Unacceptable behavior and polarizing activities that escalate the tensions both on a personal level and labeling other actors as crazy have been experienced by almost every person. One coping mechanism for this behavior and actions was passivity and reluctance or willingness to interact with the other party. The unwillingness can also be seen as remaining silent to avoid tensions.

The intensity of tensions and disagreement, in addition to disputes on what information can be seen as justified or acceptable, brings different actors into conflict. This provides

opportunities for each actor to fortify their understanding and reject other opinions as they do not match the way of making sense of the issue. Therefore, they can be dismissed as not addressing the issue presented by the actors. Threats and misbehavior add to the opinion that some actors should not be accepted into negotiations and discussions, as they are not basing their behavior is seen as unprofessional and triggering.

All actors recognize, that there is a need for an updated approach. Despite this, most struggle to make sense of the role these aspects play in either enabling or disabling sensemaking. In the next part, that concludes the section on facts, opinion, experience, narratives, and emotions a pathway of navigating the future in a more allowing way is expressed.

5.1.3.4.4 Conclusion - Allowing the co-existence of different forms of knowledge

The tension between different types of knowledge addressed in the previous parts causes issues. As different actors value different types of knowledge in different ways, it causes additional tensions between actors. Further, many of the appreciated forms of knowledge and frequently used forms of knowing are linked to prefigurative sensemaking. As expressed by Swain (2019), it causes issues in action that lead to alternative futures that are not grounded in the past.

One business representative addresses sensemaking of the future, as being more allowing for different types of knowledge. All types of knowledge are present in the discussion, as this business representative emphasizes:

“We have societies, and we have countries where it's okay not to create a fact-based understanding of the issue. Then they have, like an ideological or something else as some kind of starting point for it, and they don't think facts are how you approach it. When these are all mixed, it may be, for example, that if the political period is four years, then it may provide better support for decision-making than only facts to support decision-making. Or if there is a need, for example, for a fundraising campaign, it may offer more guidance about the situation in question than facts would”. (representative of business)

The actor addresses that some regions and nations are adopting a more holistic approach to development. As mentioned by Kolb (1984), different forms of information contribute to

how our thoughts, knowledge, and understanding develop. Many actors expressed that experience is a valuable form of knowledge, especially in challenging cases. This knowledge can not be linked to factual reports or research but is involved in the sensemaking process. Hernes and Obstfeld (2022) address this as different forms of prefigurative sensemaking that support the development and understanding of the present.

Different innovations and approaches are also supporting development. One of those are ecological compensation linked to context, as this representative of government expresses:

“I started asking questions and found out that under our current legislation, natural values should not be undermined if they are endangered. At that point, the recommendation was that the authority must not authorize this mine. But I fear that it will grant permission anyway because they will come up with the prioritized things also stated in the directive. It is said that if it is a project of great social significance or if there are no alternatives, then yes, on those grounds, I think the permission will be granted at some point. In that case, it is even more important the ecological compensations have been validly calculated so that they are actually met”. (representative of government)

In this way, the balance between different needs can be redefined based on new approaches to environmental concerns. However, the question is whether the interpretation and adaptation of these innovations will change behavior based on new needs and concerns. Increased awareness and the shifts in power push for approaches that consider these, and despite the actor recognizing that this is not a final solution, it is a step towards better operations and evaluation. An additional element is the recognition of influence. Despite the actor giving a statement, other drivers might be valued as more critical. Hence, finding new methods to get concerns considered are developed continuously, to balance the different needs.

The question of how to balance between the different forms of knowledge and purpose has no easy solution. However, it is essential to move towards Hernes and Obstfeld's (2022) notion of making sense of the present by linking the past and future. Fortification of current understandings through mistrust, echo chambers, unwillingness to collaborate, and different

knowledge prevents disruption and sensemaking from occurring, as demonstrated in the different parts.

Fortification causes one element in the issue. Another element is on the systemic level, in the democratic process. Despite it being presented as the system that gives voice to all aspects of actors and knowledge available. Still, there are also issues that are recognized in the democratic process that do not support sensemaking between different actors. These are discussed in the next part.

5.1.3.5 Democracy and suboptimal performance

The democratic process also contributes to solid voices of current systems to reject and hinder setting the bar higher. The different aspects of legitimizing and unwillingness to disrupt other actors' actions cause issues in pushing disruptions that would challenge the current models and understandings, as this governmental representative, business representative, and society representative address in these quotes:

“And it is quite remarkable to see that the industry is lobbying for a loose policy just because we are good. We know how to handle it anyway. If you're good, you should set the bar high because you have to take maybe a couple of steps with your best rival, two or three steps, and it would be over ten steps with most of the gang. This is now going to the business side, but this is not reflected in the thinking of the business for the most part. The lobbies will always be the mouthpiece of the backbench. That is how it comes from the fact that the voice of the company in the back seat becomes the voice of the lobby, which becomes the industry's point of view. At that point, we were already talking about national interest. Is this really a national interest? We get kind of a double discourse when we talk”. (representative of government)

“I mean, there are steps where democracy is not an option, you know? And for me, it's not an option. It should be non-negotiable to use substandard processes for extraction, operation, dissipative application, and not collecting and recycling material. So, for me, the fact that nowadays, certain operations are making business sense because they are somehow profitable, but they are suboptimal compared to the best available technology or processes should be seriously considered. I mean, a license to operate in the future should really be linked to having best-in-class processes and approaches. Every time someone proves to have a better process, that process should become the norm for everyone else and should become the norm as soon as possible. You know, you shouldn't allow suboptimal operations to happen. And I know that that's where companies are making extra profit”. (representative of business)

“An interesting case is that they want to do things as cheaply as possible to maximize their profits when they expand their landfills to accumulate sand. The cyanide-containing tailings are the most dangerous ones. It allowed the mining permit application to expand these by some million tons. Then I read their paper and noted that they have technical material and bottom constructions that are now not quite what they should be and are not, for example, as good as the law requires for landfills. The requirement is to have some coverage and ensure they are entirely leakage-proof for landfills. The company philosophizes further and states alternative methods compared to the ones presented that fulfill the requirements but are not as strict as the ones for landfills. But then they say, ‘Well, you can make it completely tight too, but it will be too expensive’”. (representative of society)

These examples demonstrate that there would be better solutions available that would be better for the environment. But they naturally require investments, which in turn will impact the profit. Many business actors lobby against stricter regulations, as they feel free markets are better for business. A political actor noted that even in cases where a strict regulation or law would require the already very advanced business to make only minor improvements, they are reluctant to make the law stricter.

This has a downside; suboptimal performance can persist if businesses lobby against more strict rules and regulations. Dismissing the need for development or even hiding progress provides an opening for lobbying against policy development. Arguing for no need to regulate, in turn, justifies business as usual and continuing as before.

“[...] law in compliance with the rules and regulations is always helping to create the baseline. And I think the law, regulations, and requirements are moving the bar higher. Especially when we look at all these non-financial disclosures and all those new requirements, ESG, and so on, the access to credit or money. Your rating is influenced by how you operate your sustainability”. (representative of business)

Regulations are seen as setting the baseline for operations. However, if the bar is not raised by political decisions, regulations, and law, the baseline will likely remain current.

Another aspect is the finger-pointing issue and the aspect of placements and funds. The finger point is on who is responsible for setting the baseline and who is ultimately responsible

for actions taken. For investments and where investments are placed, one representative of both government and business expresses it as follows:

“You can point to us, but we are just managers. We don't actually own the money. But in the reality the asset owners give them money and say invest that for me. These are my principles. But do you think that the asset owner then goes into each of those 40,000 investments that the asset manager has done on behalf of the asset owner? Of course not. Because it's also, again, it's going into too much detail, and you have to trust them that they are doing the right thing. But the asset manager has a lot of power, but at the same time, they're always pointing to, well, yeah, but it's the asset owners and we do whatever business tells us to do. We are the poor ones, and we just have to act, and we're always media points to us”. (representative of government)

The representative refers to the dynamic between the investor and the placement manager. The asset managers felt they were not responsible for how they placed the money and points to the investor. The investor, in turn, points to the asset manager, saying that they are the experts who should be aware of how they place the money.

The same elements can be seen in decision-making on raising the bar. Businesses point to the government and state that it is not their responsibility to raise the bar but to act by law and regulation. The government again points to businesses and says they would be willing to raise the bar, but as businesses are lobbying actively against it, they cannot do so. This type of finger-pointing acts as a legitimation for not acting. This, in turn, causes frustration among society, who cannot see progress in the demands on the operations. This aspect is presented by a business actor as follows:

“I'm the last person to want more regulation, but maybe here's a centralized planned economy that batteries are made in this way so that they can be dismantled and recycled and that they need to have this certain key information, as they will be in the future”. (representative of business)

The finger-pointing on whose responsibility it is to push for disruptions that cause the urgency to act and redefine is blurred. As pointed out in these quotes, all actors speak of different aspects and actors that need to push for change. However, comfort causes a reduction

in interest and effort to make a change. It is easier to continue as before than make a change that is not seen as needed to keep up the comfort level accomplished.

Democracy serves as a system for different voices and opinions to coexist. However, its mechanisms are preventing setting the bar higher and seeking solutions to meet the demands of the present and future. Where strong voices and lobbying occur, it runs the risk of dominating the discussion. Further, some of the aspects emphasize the need to be right rather than wrong. This type of dimension is discussed in the next part.

5.1.3.6 Dominance and focus on being right and others being wrong

Based on Follett's (1995) notion of tension, these responses to disruption represent the elements of dominance. The tendency to justify and dejustify in terms of who is right and who is wrong causes a situation where it is seen that both viewpoints cannot exist simultaneously. Both parts are also seen as reluctant to sensegiving from others with a different view. This approach easily gets intertwined with misinformation and the need to object and show misinformation provided by other actors:

“We have had three mines closed in the recent past. Well, if you talk about maybe the last five years or so in the recent past and opened one. And then I compare this kind of conversation that you might be following in public, where we talk about a mining boom. And I can't see it. The recent past shows that we have reduced raw material production. [...] There was, among other things, this comment that the view would be ruined if a mine were added to the landscape. I began to think you can see a mine in the landscape already. It is really hard to understand why someone would claim this when it is clear that the mine is already a part of the landscape” (representative of business)

In these quotes, the business representative talks about different exposure to public information (news, posts, reports) or discussions with other actors. The business representative point to the discussion of the mining boom, despite more mines in the past having been close. Further the landscape destruction if subject to a mine is puzzling, as there is currently a mine in the landscape. The audience accepts much of the information, causing different opinions and viewpoints to emerge that lack facts to back them. This puts pressure on the actors receiving

the information to be able to distinguish between good and bad information, as is noted by this actor:

“When new knowledge is produced, it can also be falsified, it can also be peer-reviewed, and it is in the firing line of constant debate and argumentation. Representatives might not always use the latest knowledge but refer to outdated information that has already been replaced by new knowledge. Our state of understanding is growing constantly, and the scientific debate is also ongoing on some aspects”. (representative from society)

“The biggest problem I see, but this is not related to mining in general, is that it may be becoming more difficult in the last ten years, 15 years, and this goes hand in hand with the evolution or involution of social media, distinguish between good information and bad information, and this is valid at all levels of complexity. You can find a nice, easy infographic explaining the role of a mine in our society. Which is you can discuss it at the pub, or I can discuss it with my kids. At the same time, we don't know, or it is difficult to distinguish if you are not competent and into the topic, whether that is the infographic is correct, or it's, or it's not correct. And that's the biggest issue: all this fake news or incorrect information. That's the biggest risk I see. And that's where you have potential, you know, the manipulation of public opinion and so on”. (representative of business)

This, in addition to echo chambers and the tendency to collectively create an understanding and reinforce it (Cornelissen et al., 2014), explains the issue present in the dynamic. The dynamic focuses on bringing forward differing opinions and different ways of getting your view heard. Each of these acts as a disruption for the actors who disagree, but rather than leading to a sensemaking process, the tendency here is to fortify what is perceived to be common sense or the right viewpoint. Despite information being, in some cases, incorrect (as in the example of the mine and landscape), they form the general understanding of the situation. The need to be right instead of wrong causes issues where actors are reluctant to recognize or admit shortcomings. It, in turn, leads to issues as described by this governmental representative:

“So, this is quite classic when two big mistakes can be made about environmental thinking. The second is to go faster in the wrong direction and call it progress. This is to favor diesel with lower emissions; they are similar and faster but in the wrong direction. In other words, if the direction has been wrong, let's stop and do things differently. It is the same logic is with

quicksand. Instead of running faster, you need to be still. Then the other one is this siding with bioenergy. Often, this natural gas is seen as a coal repair. For me, it is as if you have hopped on a northern train in a city, but you should be traveling south. When you recognize the wrong direction, you jump off the train in one place and take another that goes east. Then, when others ask what you are doing in the northeast, when you were supposed to travel south, without thinking about it, you say that you are not at all as north as you would have been if you were not getting off the north train and getting on the east train. Northeast is further south than you would have ended up if you had been on the train to the north. Politicians must always be careful about sidings and picking up speed in the wrong direction. That's what we do half of the time. The good question is, why is this so?". (representative of government).

The unwillingness to admit and recognize potential shortcomings despite being faced head-on with them causes issues for development. The sense of urgency to react is causing some actors to go for any solution available, which is usually linked to prefigurative sensemaking. Actors might feel pressured to do something rather than to stop and take time to allow new solutions and patterns to emerge. This can be linked to our history of acting based on simple and complicated dimensions, where the correct answer and solutions can be found, and situations can be managed. Snowden (2002) states this is not the case when looking at complexity. Patterns and solutions emerge as you move through time. This is aligned with Hernes and Obstfeld's (2022) notion of configurative and refigurative sensemaking. The governmental representative points out that we would need to stop and allow time for the configurative sensemaking process to take place and talk things into existence rather than focus on immediate actions in the wrong direction.

As described by Swain (2019), the challenge with prefigurative sensemaking and common sense lies in the difference between acting to create and make the desired future reality or acting, as the future would already have been determined and achieved. The difference is that if we assume that the past determines the future, no actions can change that pathway. If we recognize that actions can lead to a different type of future, we must let go of past understandings to give way to new ones.

5.1.3.7 Summary 3a: Fortification of common sense

Fortification of common sense takes many forms. This is by far the most discussed aspect of complexity. It is seen to be the most dominant dynamic, and it is the most discoverable in the data gathered. The different aspects of fortification are summarized in Table 2.

Fortification Themes	Subthemes	Example (quote)
Comfort and uncertainty prevent willingness to change	-	<i>"who really likes change? If you are in a comfortable situation, why would you want to change something? You start to change things if you are in an uncomfortable situation. At the moment, with many of the complexities that we're trying to solve, we might see that we are, after all, in a very comfortable position".</i>
Challenges with information	Fragmentation	<i>"You probably have to search several different sites and familiarize yourself with a lot of material that is difficult to figure out. [...] I'm sure it's difficult because there's so much information coming from different directions, and the information is affecting us in ways like understanding what they are going to do".</i>
	Readable and understandable information	<i>"As an example, the pollution in water is diluted after some hours. But when you talk about millions of cubes and don't give context to it, it causes people to be terrified. For them, what is happening now is enormous. You cannot assume they can see and connect the proportions to context".</i>
Fortification of existing understanding	Mistrust	<i>"And quite striking is that the company was still getting the ISO 14001 environmental certificate in autumn because they have behaved so well. And then just a little while after that, they destroy the whole of nature in the surroundings and cause one of the most significant environmental accidents"</i>
	Echo chambers	<i>"Various groups then look for information in the discussions. Compartmentalization is perhaps quite a big problem nowadays. Many look for information to get an answer corresponding to one's own way of thinking. I wonder if looking for neutral information in their own way is becoming even harder or even impossible"</i>
	Unwillingness to collaborate	<i>"If we go to such extremes, things become quite difficult. If you do not agree to listen or understand or want anything other than to keep your own barricades, that, unfortunately, nowadays leads to you being sent away from events."</i>
Facts, opinion, experience, narratives, and emotions as legitimation and delegitimizing	General	<i>"And if that experience is as valuable as some measurement result or series of measurements, then fine, let's agree that they are. But if we generally go down that line, it causes quite a lot of other problems for society".</i>
	A need for balance?	<i>"But other than that, the culture is that we are very fact-based; everything that is told must be that information and its sources can be found, and then we are very reluctant to engage in speculative discussion about what will happen in five years".</i>
	Emotional or professional?	<i>"Despite this, it was titled somehow, 'Mining causes a lot of emotions' or something similar. It is humiliating to be referred to as emotional when others are referred to as neutral professionals"</i>
	Emotional triggers and threats	<i>"Someone has felt threatened by the situation; someone shouts, threatening to assault and threatening to kill, threatening to kill your dog. This is normal".</i>
	Allowing co-existence of different forms of knowledge	<i>"We have societies, and we have countries where it's okay not to create a fact-based understanding of the issue. Then they have, like an ideological or something else as some kind of starting point for it, and they don't think facts are how you approach it."</i>
Democracy and suboptimal performance	-	<i>"It should be non-negotiable to use substandard processes for extraction, operation, dissipative application, and not collecting and recycling material."</i>
Dominance and focus on being right and others being wrong	-	<i>"When new knowledge is produced, it can also be falsified, it can also be peer-reviewed, and it is in the firing line of constant debate and argumentation. Representatives might not always use the latest knowledge but refer to outdated information that has already been replaced by new knowledge. Our state of understanding is growing constantly, and the scientific debate is also ongoing on some aspects".</i>

Table 2: conclusion of fortification of common sense

Each actor describes them as their activity and as activities by other actors. The power dynamic reflected in acquiring more power and defending power positions gains much attention. Despite this being the most dominant way of acting based on this research, there is a longing for different approaches. Many describe this approach as energy-draining.

Another aspect of sensemaking fortification is that it is blocking development. As can be seen from the data, all actors are reluctant to change, and energy is emphasized in being right and showing how others are wrong. Further, legitimizing existing ways of acting and being is at the core, and therefore, development or desire to change cannot be recognized. This way of reacting to disruptions is preventing development and progress despite much energy and effort being put into the process.

Despite this, it is natural to question if action is desired and, if so, what type of action. A different approach to disruptions is discussed in the following sections, where sensebreaking and sensemaking are applied as a response to disruptions.

5.1.4 Phase 3b: Sensebreaking

Despite the overwhelming evidence of Phase 3a, there are elements of sensebreaking described in the data. This alternative approach to Phase 3 is where there is a breakdown in the understanding or worldview. As Ashforth and Schinoff (2016) explained in the identity work, sensebreaking creates a void that requires being filled. This void also provides an opportunity for new thoughts, ideas, and approaches to take form. These might be triggered by disruptions so significant that they cannot be ignored (e.g., disasters, economy, law), by curiosity triggered by increased awareness, or by dissatisfaction with the current state. Examples of this type of sensebreaking can be found in the disruptions. These are usually referred to as significant events that can no longer be ignored or changes that provide opportunities. As this business representative puts it:

“It was so true that things have always been agreed and conflicts resolved. The conflict passes, but it is not a permanent state. There is always a new conflict. But without conflict, do we evolve?”. (representative of business)

This agrees with Follett’s (1995) notion of compromise and integration as resolutions to conflict. The sensebreaking phase provides a need for sensemaking and developing a different approach to disruptions and previous ways of acting. These are not only grounded in past knowledge and understanding and hence require a different approach to developing the story and action pathways to move forward.

Disruptions addressed that contribute to sensebreaking can also be linked to experience, as this business representative addresses:

“The mining industry is extremely technologically advanced today, so the notion that there is some dirty miner out there with a search in some dark tunnel chipping stone to extract some minerals from it is quite outdated. There is cutting-edge technology, and they are developing that technology. In other words, it is a really big technology development center so the working conditions there are at least reasonable. And that's not what the mining industry does. No, it's probably such a big omission. Without knowing, I could imagine that many of the innovations that we exploit today come from the mining industry”. (representative of business)

The representative of business addresses that having had the chance to see a mine has transformed the perception. The experience challenged the knowledge and understanding of mining operations. Further, the technology under development and already in place is also raising the question of how much of this is being used for other purposes outside of the mine. This shows a growing interest in seeing other sides of EMMI that are not frequently discussed or brought forward. These are examples of personal disruptions in understanding that have caused sensebreaking. They have piqued an interest in knowing more, which allows space for sensegiving.

Sensebreaking recognizes that there are currently no complete answers but requires work to discover pathways, solutions, options, and answers. This gives way to sensemaking of different forms and a dynamic process on different levels. This is described by both Hernes and

Obstfeld (2022) and Ashforth and Schinoff (2016). Hernes and Obstfeld (2022) refer to this as configurative and refigurative sensemaking, which is described next.

5.1.5 Phase 4: Configurative sensemaking, refigurative sensemaking and sensegiving

As explained in the previous section, as sense breaking occurs, we are more subject to changing our understanding of how things work and the world around us. Sensebreaking provides an opening for sensemaking to occur on different levels. As Weick (1995) explains, it is linked to making sense of the story and its actions. Hernes and Obstfeld (2022) explain this as the configurative and refigurative sensemaking process.

Suppose we accept that prefigurative sensemaking symbolizes habits and routines. In that case, configurative sensemaking represents creativity and agency, and finally, refigurative represents the enactment of unfolding practices. The question then is how these are present in practice and how the dynamic between actors plays out.

5.1.5.1 Dialogue

The configurative sensemaking process focuses on the narrative or the story. It relates to talking things into existence. This is much related to dialogue with different actors and experts. In this phase, many use their networks and connections as well as events.

“A lot of information is obtained from the member companies, for example, through various working groups, where different themes are discussed, and through that, we get things on what the operations and everyday life look like in the way they operate at that end. And that's where we get that information, too the research institute, the stakeholders, the partner organizations”.
(representative of business)

Workshops and discussion forums are used to gather information. This demonstrates the actor's willingness to hear different viewpoints and develop a solution based on fragments of information. These are obtained as information for sensemaking. The different actors involved can be seen as sensegivers, who bring forward their information based on different

aspects. This, in turn, will give better insight into the actors involved. Research and observations are also present in these dynamics.

“Well, I don't use the word will, because if there was a will, then we would strive for that active interaction. I would use the term common theme space, i.e., there are the same themes, but the fact that since we are kind of on such different sides, how can we bring these themes together in a common discussion? [...] Some events last year were, in my opinion, kind of a turning point. Last year, I believe, was the first time, for environmental NGOs sort of satellite events in connection with the main event. And then there were also experts from both sides to discuss, which was really, really good. And here too, as was the case with the main event, there was also a meeting with representatives to discuss. And this year, it was the main event for me. It was even more clearly on display there. Of course, there were also many more of these side events. But the fact that there was also a main event discussion and representatives on both sides. In a way, that information would then be on both sides of the discussion. The fact is that if there is no such discussion, then that consensus rarely arises, even if it is exactly the same themes that one would like to see taken forward. However, it can be a bit challenging if you do not have discussions around these themes”. (representative of government)

In this example, the viewpoints and understandings that are present represent different viewpoints on the themes that are being discussed and recognized. However, there is no consensus on the story or actions. Despite this, having the same issues and challenges on the agenda provides a space where fragments of the phenomenon and the surrounding world can be developed from many viewpoints.

5.1.5.1.1 Listening and giving voice

As a part of the dialogue, listening and giving voice is given attention. The skill of listening to understand and to gain knowledge and information in different forms is expressed as an critical element in sensemaking. This is expressed by the two actors:

“Listening means as they say in English: “I hear you, I'm with an open ear and an open mind. And I'm thinking, I'm internalizing”. But when I'm listening to you, for example, I might ask for references, and I may ask that some people who are now familiar the topic for something else. But usually, I listen and ask and thank people for the information”. (representative of government)

“So, if you stop to think about the content of what was on display in the demonstration and then what was in the theme of the event, yes. In the mind,

the protesters believed that there should be closed loops, minimize emissions, and prevent emissions and accidents. Then again, the event's themes, on the other hand, had the same themes on display. The objects and the goals are very much the same. But then it is true that how can we get these different actors to talk to each other about these common goals? I would see just such common interfaces in terms of how we could move the discussion forward and help find solutions on both sides". (representative of government)

The different themes and actors linked to them hold different roles, identities, drivers, and agendas, but they also hold different fragments of the story and the issue. Giving a voice to an actor does not always mean that the actor has the complete solution. The voice is seen as a part of the sensegiving process. Hernes and Obstfeld (2022) talk about weaving different forms of information and fragments of stories together. They note that in this process, experience and knowledge cannot be seen as separate. This is aligned with Kolb's (1984) notion that experience and knowledge are constantly interacting, and hence, knowledge is not a steady state.

This process provides us with better tools to generate new knowledge and understandings. These, in turn, form a more holistic approach to the phenomenon, where the fragments are curating new meanings to emerge. This is very different from the approach of common sense, where Weick's (1995) notion of narrative reduction can be observed.

The narrative reduction is seen to cause issues. Approaching complexity as a more holistic, interconnected phenomenon provides better insight. This is discussed in the next part.

5.1.5.1.2 Complexity as a holistic phenomenon with space for creativity

In previous sections, the narrow focus on specific concerns was raised. This was present in the mindfulness of actors, which led to tensions and challenges in moving forward. These actors emphasize the need to allow complexity and look at things more holistically:

"Of course, we tend to think of things as if we were to break them down and then think of them as parts. But this shows the complexity, that everything depends on everything". (representative of government)

"One person in that community clearly says that we should not start fighting with the mining companies, that we should start negotiating. And then when

you understand it, you see that fighting this takes so much energy. What a fight, they [the company] have bigger resources. I'm trying to negotiate an agreement. Then, they persuaded the entire community. Okay, let's go, we're negotiating here and then we got a negotiation connection with them and that's it. It was close to the birth of a, and it was very close to a resolution. We only had certain conditions that needed to be met". (representative of government)

The sensemaking that leads to action is linked to skills and abilities. In some cases, we might have an idea of the story but lack solutions on how to make it a reality. These demonstrate what Hernes and Obstfeld (2022) present as selected creativity of the past connected with future pathways and future events. The process uses these fragments to form an understanding but recognizes that they are influenced by the agency. Despite this, the approach adds creativity and innovation, as things are talked about and acted into existence over time. This is described as sensegiving in the sensemaking process. The different actors are involved for different reasons.

"Like civil servants and states, they somehow have such a limit on them that they kind of say that you should do it like that, and then they move really quickly to the regulation details. However, I'm looking more for them to have that vision, and that vision might also create the idea that they should work together across these silos and in more directions". (representative of business)

This requires what Hernes and Obstfeld (2022) refers to as mediators or brokers. The mediators or brokers are skillful communicators and have abilities to build bridges and connections between different actors, as described in the quote above.

One element in this is forming the narrative of what we want to achieve and talking things into existence. This requires moving beyond having answers and solutions and moving towards good quality of questions and gaps to fill, as explained in the quotes. This is referred to as developing a deeper understanding of how solutions emerge and adopting a more holistic approach to how different elements and aspects are tied together and how they, as collective solutions, generate better outcomes than individually developed solutions that are then mixed.

“This I call the fish soup principle or system thinking, which we lack and go all the time. And that's the pipe thinking; we usually have the ingredients for fish soup on the table. But we spend two hours arguing about boiling. This has to be prioritized, and I hate that word. Most are holistic solutions; prioritization leads to fighting over whether to boil potatoes, fish, or carrots. Well then, we boil the potatoes, taste the broth, and say that this is not fish soup. So, it didn't work out. What do we prioritize next? We boil those carrots. And we spend a day on it. We boil the ingredients separately. And then somebody says, ‘Hey, you need to get an overall picture of this, and this means that first, there is no big picture, which equals pouring those ingredients into the same bowl. But it still doesn't taste like fish soup. Of course, it's the same ingredients in some order, but the broth has a very different taste when they're cooked separately. Getting used to system thinking would again mean that you don't understand the big picture, in which case the overall solution is pretty straightforward—first, water, for broth, salt.

You peel the potatoes, bring them to a boil after the carrots, and know what you're getting from the beginning. When you struggle to prioritize it, the whole soup is done, and the entire thing is more than the sum of its parts. The soup tastes different than when cooked separately. This is like in politics, and this is what companies do quite a lot of when they realize that when you can't have a completely different strategy and go studies in a different direction and investments in a different order and this interpretation and marketing keep this marketed and this production is produced. And this is something that is lacking in this political decision-making process in society. And to make matters worse, if someone works for a certain company and is in production, then it still has the company-specific identity”. (representative of government)

These display the ambition to get a broader perspective and form their understanding based on different viewpoints. This clarifies a different aspect of the sensemaking. The process is influenced by other forms of navigating sensemaking and its different elements. These various forms of sensegiving are drivers, aim, positioning, identity, and time and resources.

Business actors emphasize the need to include more actors to seek and discover new solutions:

“We want as many statements and involvement from stakeholders as possible as early as possible, but we have also heard from the point of view of its stakeholders. It shows that it is difficult to understand what stage we are at now, what is even being said about this matter, or what was even this company to which a statement is being sought. I do believe that there is still there. That field is also perceived as confusing”. (representative of business)

“And I think it's an awful lot of richness that operators still have good connections with each other in that way and can openly discuss the challenges that everyone has and then think about how others have been solved. And if

you don't, this kind of information exchange is lost. [...] Of course, I think it's good to have that humility in all things and not have the attitude that I have all the answers. Because I don't think this world will ever be finished. I don't think it's very good leadership if you lead in that way and with the belief that I have all the answers". (representative of business)

This ambition aligns with what Hernes and Obstfeld (2022) found in their work. They highlight the need for inclusion but also the challenges around the issue. Each actor discusses a desire to meet at the negotiation table. In this, they have a fear of the discussion being in terms of accusation and polarization, which sometimes prevents them from acting. As will be seen in the final section on the future, there is a desire to develop systems where fruitful and respectful conversations can occur.

There are three main category recognized as sensegiving elements: The driver and aim in sensemaking, positioning and identity, and time and resources. These turn into legitimation after the sensemaking process, as they act as ways to explain how the new sense has occurred and which factors contributed to it. Hence, when explaining and justifying the new solutions and viewpoints, sensegiving elements are used to describe which things influenced sensemaking. The following parts discuss some of the elements of sensegiving in the sensemaking process.

5.1.5.2 Sensegiving: The drivers and aim

In the sensemaking phase, there is the opportunity to influence, support, and share knowledge and experience. One element of this is for the actor to consider the need for sensemaking or the driver of development. The different drivers of sensemaking were economic factors, law and regulation, innovation, social license to operate, and the willingness to include or exclude aspects, voices, and actors. The economic aspect is often linked to market price development, profit, or attracting investment. As the processes of setting up a mine are long and require high investments, this aspect comes up as one issue that is considered and solutions developed collectively.

Law and regulation changes and compliance with these are also often seen as collective efforts. Businesses interact with other business actors and seek support in different ways to make sense of how regulation and law will impact them and the opportunities and challenges these will bring forward. Further, organizations actively lobby for law and regulation depending on what they hope to accomplish. In some cases, law and regulation might support business actors who have adopted technological solutions and shifted the market in their favor.

Innovation, which often is linked to technology, is a driver. This takes two aspects, one being the adaptation of technological solutions and the second being developing technological solutions. Especially in the second one, many organizations create networks and even ecosystems for developing solutions. These ecosystems work for more significant challenges and themes, for example, circular solutions. These solutions are, in some cases, linked to the social license to operate, especially regarding environment and safety.

The social license to operate holds other aspects as well. It is referred to alternative industries and professions as well as the time horizon related to the operations. Society is also considering how their environment will be safe and attractive for future generations. Mines are seen as a wealth generator, but there is also fear about what will happen to the community when mining operations stop. If mining has prevented alternative industries in the area, solutions on how these can coexist need to be developed. These are sometimes connected to how the infrastructure can be used in the future.

The social license to operate has a lot of conversations on the environment. Many actors are critical of mines, as they are destroying the environment. Some societal actors even confirm that we need mines, but not at the expense of the environment. They often even suggest allowing the minerals to be in the ground, hoping that future generations will be better equipped to get them without destroying the environment.

Culture and values also play a critical role in the process of sensegiving. These are rooted in our identity but might also take other forms. Culture and values as drivers focus on what is valued at given moments. Especially within society, shifts in what is valued and appreciated occur. Understanding what is valued by different actors and cultural aspects supports developing solutions and influencing in a way that generates a desire for collaboration and interaction rather than repelling it.

The future is also seen as a driver of sensemaking. Using the future to make sense of the current situation is also referred to by Hernes and Obstfeld (2022). The future holds the potential to support sensemaking by understanding the vision and direction of development. Despite it potentially leaving open questions, it is seen as a practice that brings clarity and supports sensemaking, especially in navigating uncontrollable, intense disruptions (like weather events).

The willingness to include or exclude is linked to the drivers. If there is a high drive-in, including stakeholders, and seeking consensus, it is more likely that more actors and critical voices are involved. Exclusion might be an option when, for example, highly technological solutions are developed for a given purpose. The inclusion and exclusion depend on the other factors related to the desired outcome.

As this governmental actor says, drivers are essential to provide answers to the core questions that require a response:

I fully understand many people's concern about the increase in mining that when fossil fuels are replaced, some other metals will be needed in significant quantities. And get used to it, but there's the fact that you do it, so when you're not going to achieve it with metals, you don't, it's it. It has these cut-off conditions, and we will then have to adjust that consumption. Maybe that's where it stays. It will not be a painless process either, and no one has yet said how it will come about, what its consequences will be, and how those consequences will be dampened. (representative of government)

The drivers can be linked to the question “What is in it for me or us?” and finding clarity on that question. It focuses on the desired outcome and the story in the making. It provides focus.

5.1.5.3 Sensegiving: Positioning and identity

Identity and positioning affect how the actors see their roles in the story. It is often linked to a position, for example, a company's CEO or a volunteer. As Ashforth and Schinoff (2016) suggest, identities are often tested and reinforced in different settings. If the identity construction gets accepted and appreciated by the surroundings, it gets reinforced.

Ashforth and Schinoff (2016) continue by saying that it is possible to hold multiple identities. In this research, some actors could hold many identities and speak from different perspectives in the interviews. However, many defined their position and identity based on their work in an organization or a community.

“It's truer that a lot of people want to look at it from their own perspective much more strongly when they don't want to even think about it. [...] For some, the intent is to look at things from the point of view of biodiversity, for example, without considering that there is not necessarily a huge desire to investigate whether biodiversity holds financial opportunities. For others, financial opportunities might be the point of view or interest”. (representative of society)

As described in the quote, actors recognize that different positions and identities hold different points of interest. Many described a sense of recognizing the other sides and identities to influence and support in sensegiving. They also noted that sensegiving required a willingness to receive information as well as providing it.

“Yes, the tourism mining industry can get by if the mining industry is not visible to the tourism industry. And that's where the question comes in well. ‘Wait a minute. It's quite strange if you disappear.’ The most visible form is the tourism industry and the infrastructure built on it. Is this somehow better infrastructure than what is built for mining”?.? (representative of government)

Actors also recognized that synergies could be found, but it requires an open dialogue between the actors. In sensegiving, different voices of how they see the world can be discussed and explored rather than discussing who is right and wrong.

Based on role and position, many actors are also either included or excluded. It has to do with recognizing where information can be found that supports sensemaking but also with how different identities and individuals can come together. Suppose the relationship and identity of actors and groups are in the fortification of common sense. In that case, they are unlikely to discuss pathways to move forward despite their role holding information of value. Issues mainly occur when values and identities portray the other actors as bad.

Despite this, the information and, for example, news related to the actor are examined. If the interaction between different actors is difficult, in sensegiving, issues still aim to get the viewpoints and an understanding of the actor by including other information resources.

Identity and position are central in recognizing where information, knowledge, and experience toward working on a solution might be held. However, time and resources are also essential to consider, which are discussed in the next part.

5.1.5.4 Sensegiving: Time and resources

As noted in the section on disruptions, time plays an essential role in sensemaking. It is linked to how things evolve over a period of time (as was mentioned in the quote on the pandemic and Russian aggressions in Ukraine) but also to making sense of how new laws, regulations, and others impact local communities and allowing time for the sensemaking process. Despite an urgency to react to regulation and different policies making it possible to move more rapidly, moving faster than different actors can make sense of the shift, which is likely to cause opposition. In many cases, this is due to the entanglement of the discussion. These entanglements can be seen as different actors are talking about different events along the timeline, and many assumptions being made with regard to common sense. Sensebreaking,

when not addressed, might, over time, develop into fear and uncertainty, which in turn is likely to lead to opposition. Allowing time for the sensemaking process, especially as sensegivers are sensitive to the time aspect, is key in bringing actors on board.

Depending on the impact of a disruption, time and inclusion can be discussed. For example, if you have an issue with equipment breakdown, you have less time to find a solution. The issue's impact can be maintained and might only have a limited impact on the specific business or function. In contrast, opening a new site or expanding the mining operations is a much larger task. It requires more resources and inclusion in the sensemaking process on how it will impact alternative livelihoods, the community, economic aspects, environmental issues, and so forth. Therefore, more time is needed to discuss and resolve the issue. Despite having a legal license to operate, the social license to operate is becoming increasingly important.

5.1.5.4.1 Entanglement of time

In long processes that occur over a more extended period of time and influence larger groups of people, a sensemaking and sensegiving process between actors is needed. Time easily becomes entangled. In the discussions with different actors, issues arise in local communities, misunderstanding that geological exploration will result in mines being established. Further, local communities might think these take place over a shorter period than in real life, as the process, applications, and investments in establishing a mine take 5-15 years.

The perception of time is challenging; for some actors, five years is a long time, whereas for others, it is a short time. Society representatives generally had a long time horizon, as they might have lived in a region for generations. This causes a situation where government and business perceive matters happening over a 5-15-year period or a stable operation of a business that lasts for 30 or more years to be seen from a long-term perspective. Conversely, 30 years might seem like a short time for society, as many have been living in the region for years and generations. In unofficial discussions with community representatives, many saw issues with

the large mines changing the landscape and environment for many years, long after the mining and extraction had taken place. It was seen as short-sighted, as their grandchildren would need to carry the consequences of actions taken by our generation.

This also presented another issue, where concerns might not align on a timeline between actors. Society presented problems related to post-extraction, whereas business and government representatives presented timelines before and during operations. This causes an entanglement in the sensemaking process, where different actors discuss different matters, and issues and concerns are not resolved or addressed. As many business and government representatives are fact and knowledge-driven, discussing future issues that might or might not occur is difficult. Business and governmental actors report and disclose based on prefigurative sensemaking, whereas society is more broadly discussing the future and future concerns using configurative sensemaking. This mismatch is demonstrated with some examples in the timeline in Figure 7 below.

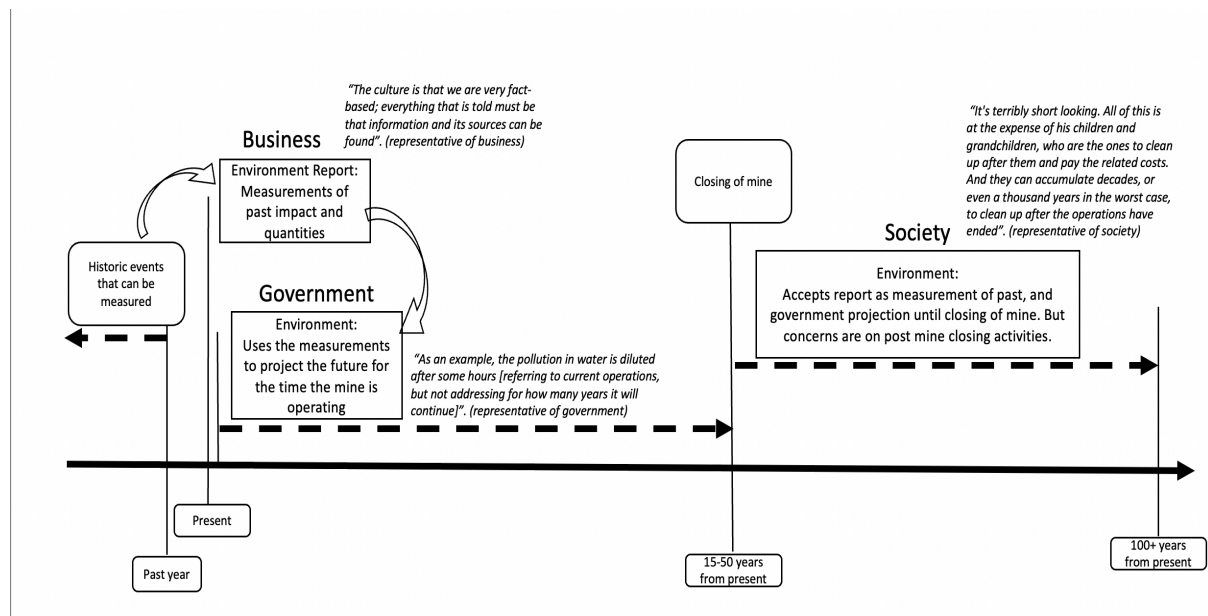


Figure 7: The aspect of time and entanglement of time causing questions to be unanswered.

This entanglement causes tensions. One reason is in the discussion as society talks future scenarios into existence on a longer time horizon. In contrast, business and government narratives are grounded in acting as if the future is already here based on facts and knowledge in history (measurements, research, etc, that act as evidence to project into the future). The other aspect is that the representatives of government and business leave future concerns unaddressed.

These challenges in time entanglement can be seen within other topics and themes as well. Despite efforts to address concerns, without a placement on a timeline and considering how to map and address them in relation to time, there is a risk of leaving questions unanswered. Placing them on a timeframe provides clarity, as different events will occur and relate to different times. This, in turn, might provide better focus and clarity in the sensemaking phase.

As was expressed by the business representative in 5.1.3.2.1 on fragmentation, there is both regulation and willingness from different actors to engage in dialogue to clarify where the process activities are. However, in these conversations, the time aspect is not explicitly and clearly mapped from this perspective. As described by Hernes and Obstfeld (2022), these different time perspectives are woven together. However, in the sensemaking process, if you do not recognize which time aspect you are on, it might confuse the actors, and questions might remain unanswered. One potential reason for this is the resources available. This is discussed in the next part.

5.1.5.4.2 Resources in complexity

Further, the resources available also play a crucial role in sensegiving. For example, if you have experts working in your organization, you have better access to them than external resources. Also, funds, equipment, and time to offer are essential aspects. Some processes are very long, which might cause confusion but also provide development opportunities:

“That mining process from kind of starting to explore that soil and on the way to that mine closure. It's as vast, wide a scale as it has. Different things you. If you master geology, you won't be able to get there in the mining industry, where all kinds of chemical processes and other environmental impacts come into play. It requires different skills. So, the fact that you master the whole palette that's how it is. It is quite impossible for one person to be able to handle it completely”. (representative of government)

Another issue with time is related to when different actors address different topics. Different time horizons also impact how our prefigurative sensemaking can influence the sensemaking process. This means some actors have lived through activities themselves, whereas others have heard their stories. Different events also get confused in relation to time. As an example, often businesses report on events that have occurred in the past. This is partly due to the fact-based orientation. Governments use these facts to portray things into the future. Societies, on the other hand, might be concerned with issues related to their children and livelihood in the region after pension.

5.1.5.5 Summary of phase 4: configurative sensemaking, refigurative sensemaking and sensegiving

Sensebreaking creates a void that gives space for sensemaking. As Weick (1995) explains it, it is the process of talking things into existence and considering what actions to take next. Different types of sensemaking have been discussed in this chapter. The different aspects of sensemaking are summarized in table 3 below.

Theme	Subtheme	Quote examples
Dialogue	<p>Listening and giving voice</p> <p>Complexity as a holistic phenomenon with space for creativity</p>	<p><i>"A lot of information is obtained from the member companies, for example, through various working groups, where different themes are discussed, and through that, we get things on what the operations and everyday life look like in the way they operate at that end. And that's where we get that information, too the research institute, the stakeholders, the partner organizations".</i></p> <p><i>"Listening means as they say in English: "I hear you, I'm with an open ear and an open mind. And I'm thinking, I'm internalizing". But when I'm listening to you, for example, I might ask for references, and I may ask that some people who are now familiar the topic for something else. But usually, I listen and ask and thank people for the information".</i></p> <p><i>"Of course, we tend to think of things as if we were to break them down and then think of them as parts. But this shows the complexity, that everything depends on everything".</i></p>
Sensegiving: The drivers and aim		<i>I fully understand many people's concern about the increase in mining that when fossil fuels are replaced, some other metals will be needed in significant quantities. And get used to it, but there's the fact that you do it, so when you're not going to achieve it with metals, you don't, it's it. It has these cut-off conditions, and we will then have to adjust that consumption. Maybe that's where it stays. It will not be a painless process either, and no one has yet said how it will come about, what its consequences will be, and how those consequences will be dampened.</i>
Sensegiving: Positioning and identity		<i>"It's truer that a lot of people want to look at it from their own perspective much more strongly when they don't want to even think about it. [...] For some, the intent is to look at things from the point of view of biodiversity, for example, without considering that there is not necessarily a huge desire to investigate whether biodiversity holds financial opportunities. For others, financial opportunities might be the point of view or interest".</i>
Sensegiving: Time and resources	<p>Entanglement of time</p> <p>Resources in complexity</p>	<p><i>"That mining process from kind of starting to explore that soil and on the way to that mine closure. It's as vast, wide a scale as it has. Different things you. If you master geology, you won't be able to get there in the mining industry, where all kinds of chemical processes and other environmental impacts come into play. It requires different skills. So, the fact that you master the whole palette that's how it is. It is quite impossible for one person to be able to handle it completely"</i></p> <p><i>See figure 7</i></p> <p><i>"That mining process from kind of starting to explore that soil and on the way to that mine closure. It's as vast, wide a scale as it has. Different things you. If you master geology, you won't be able to get there in the mining industry, where all kinds of chemical processes and other environmental impacts come into play. It requires different skills. So, the fact that you master the whole palette that's how it is. It is quite impossible for one person to be able to handle it completely"</i></p>

Table 3: Sensemaking themes, subthemes, and quote examples.

Sensemaking is often referred to as different forms of dialogue with actors. The dialogues take place in different ways, for example, in workshops. During such activities, different participants can act and contribute with their knowledge, ideas, and questions. This provides a space for ideas, innovation, new thoughts, and visions to emerge. Sensegiving takes different forms, and in the data, the different actors express the drivers and aim, positioning and identity, and time and resources as main impactors on how sensemaking opportunities are recognized and in which direction the sensemaking process is developing.

In these, time is a challenge, as one specific theme can occur in different points of time. An example of this is environmental concerns, which can be measurements of past

environmental impact, projection of the past into the future based on measurements or concerns for how the activities will impact the environment 100 years from now.

5.1.6 Phase 5: New-sense or sensebreaking

New sense occurs because of a developed discourse and action plan. New sense might occur as larger wholes or fragments based on a specific subtheme of a more significant issue. As Obstfeld and Hernes (2022) explain, these tend to provide pathways to move forward in complexity. The developed pathways are linked to what the process of phase 4 has resulted in and what outcome is desired to be achieved.

As described by different actors, the desired outcome (the story) and related activities might differ. It might include elements as described above of seeking consensus between key stakeholders, establishing societal license to operate, reducing environmental impact,

From these discussions, some sort of larger understanding can occur, as mentioned by this business representative:

You need to create the mining industry 2.0. And this has been what I've been talking about, and it's been an exciting reaction. I start like professionals who very quickly say tell me how you would do it, because they, of course, understand how difficult it is. Even in concrete terms, they know how challenging it is to change the current business model. It has helped when able to find examples of how other industries have made changes either if they want to or are under pressure. They have to move the discussion further in such a way that you are not the best experts, and within this industry, you can find the solving model. All the technologies exist, but the fact that the courage to start doing it and seek that approval, for example, for higher costs in that value chain or for smaller market areas or an alternative shareholder base. This is where we probably struggle the most if the easiest thing would be to continue as we are done. Because now we see so massive. With electrification, there is a need for more natural resources, especially those produced by the extractive industries. But I just don't think this society is going to work that way. (representative of business)

In this example, the actor discusses the future with different organizations. From these discussions, fragments of what EMMI could look like emerge. All of these do not have a solution for how things will work, but new ideas, visions, and questions are talked into existence.

A societal actor speaks of a solution to waste as follows:

Now, you can very easily imagine that you should reduce the mining industry's side effects and use industrial byproducts instead of releasing them into the sea. They had invited an international company, and they decided to buy the products. The producer of them would crystallize the product and donate the products. The world market price is very low; if they are now globally large amounts, you will not get rid of them if you do not give them for free. So, they have a collaboration option. (representative of society)

In this case, the solution is a collaboration between different actors. The actor has been looking for solutions for some issues to improve the environmental impact and has the knowledge of the solution to present to the organization.

For other actors, it might be more about how to gain attention and effective ways of disrupting actions that are unacceptable in a transforming world. These often seek ways of getting their message forward efficiently and gaining attention to it. They might also seek pathways to develop new solutions and approaches that benefit actors based on their agenda. New sense might also be on shortcomings in current systems. These often require letting go of the past and recognizing the changes made, which will provide different outcomes in the future. These aspects cannot be validated, as they are still to be put into action. Despite the narrative and solutions having been talked into reality, they lack historical cases of completing the action plans, hence acting the new approach into reality. These developments might contribute to new sensebreaking, as practical implications and proof of concept are still lacking.

5.2 Themes and sensemaking

The process is linked to how different themes evolve for different actors. This is demonstrated in Figure 7. The figure explains how different fragments of larger themes might be in different phases of sensemaking; for different actors, different themes, elements, and fragments are in different phases. The phases are not only linear but also circular and might move back and forth depending on information, viewpoint, and involvement. As described in

the process, disruptions might occur in the theme (e.g., new law) that might move the perceived understanding of where you currently are in the process.

These fragments contribute to the general development of sensemaking around a theme. The themes can be seen as the larger discourse around a specific topic. Fragments included are based both on the understanding of the actor and prioritization. These are many times linked to the area of influence or knowledge.

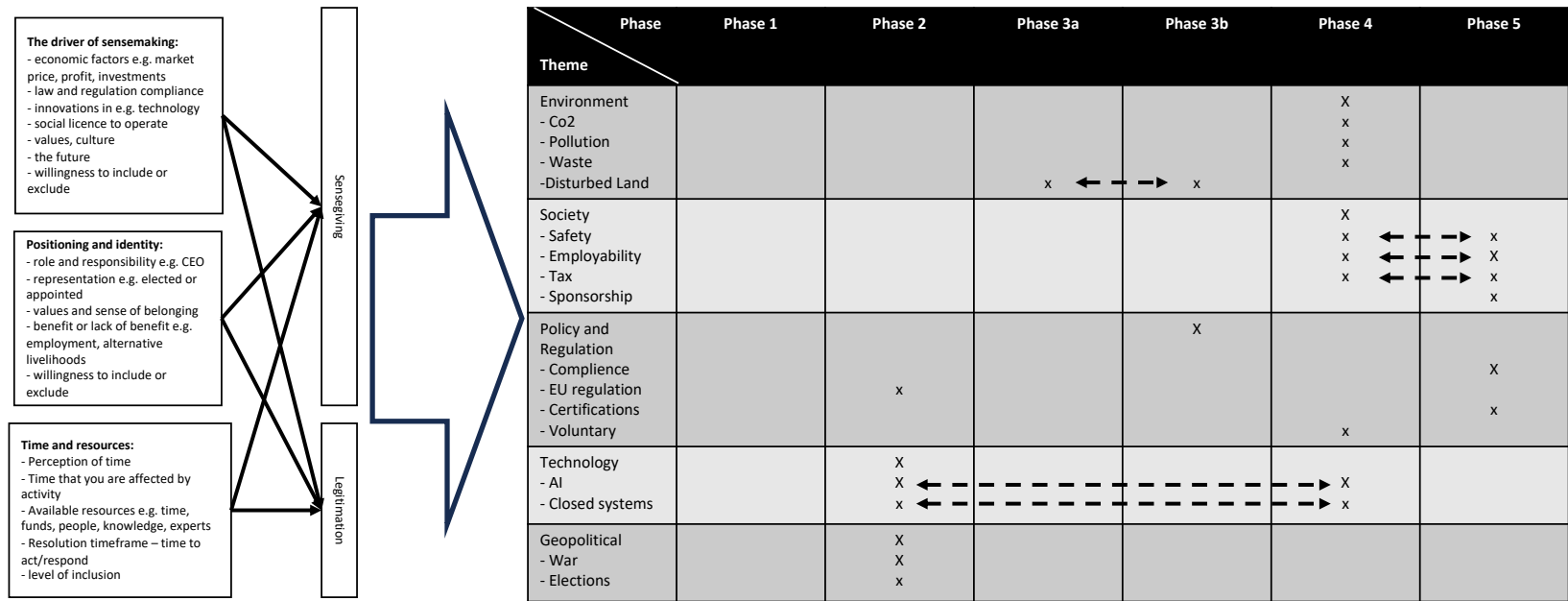


Figure 8: Development of discourse for different actors.

5.3 The discourse dynamic between business, government, and society

The discursive development linked to sensemaking in complex issues depends on many factors, as described. As defined by Snowden and Boone (2007), *complexity is when* the cause-effect relation is hard to see, as many variables impact the outcome. There are also more unknown things, so scenario analysis cannot be done. In this context, patterns emerge, and you respond to them as they do.

The discursive dynamic, as described by Van Tulder and Van der Zwart (2005), is linked to the sensemaking process (figure 6) and the development of the discourse for each actor (figure 7), which describe the dynamic aspects. Habermas's (1990) work explores discourse in the dynamic as a meeting to find consensus and agreement on where to go next and how to proceed. This, however, is contested. The desirability to reach a consensus between business, government, and society is varied. Mitic (2018) suggests that consensus can be reached eventually, but the impact and influence of different actors are difficult to track. Hence, the outcome of what consensus can be achieved is highly unpredictable. Snowden and Stanbridge (2004) add to this by highlighting the need for a context-specific understanding. As emphasized by Snowden in the Cynefin framework, complex situations require us to allow pathways to unfold as a part of sensemaking. Therefore, each case requires tailored solutions. The question is if consensus is desired or needed between the different actors. Consensus reduces tensions, which are also the triggers for sensebreaking.

As different actors proceed in the process in different ways, different realities emerge. These can be traced back to how sensemaking has occurred and the viewpoints formed. As complexity has no simple solutions and cause-effect relations are unfolding as we move through time, different approaches and realities coexist simultaneously. This also describes the discursive dynamic between the various actors – how each actor understands the current situation and the future desired state is dependent on elements used in the sensemaking process.

One of the critical elements in the process is exclusion and inclusion. Further, different agenda aspects depend on the drivers, time, and resource aspects. Despite the process being described as chronological, figure 7 shows that the process's dynamic might be unchronological. The outcomes of the process are often presented in a chronological matter, which different actors' reports show. This is aligned with Hernes & Obstfeld's (2022) approach to temporary sensemaking. Despite moving from prefigurative to configurative and refigurative sensemaking in a chronological way, the process of sensemaking holds elements of chronological approaches and non-chronological approaches.

The data also shows the difficulties in including different viewpoints and actors, as stated in one issue by Hernes and Obstfeld (2022). Further, Ashford and Schinoff (2016) emphasize the identity aspect as both seeking acceptance for your own identity but also the layers of what you want to be and do not want to be. These, in turn, link strongly to how willing you are to include different actors in the sensemaking process or how well different actors, based on their identity and approach, are likely to cause sensebreaking.

As demonstrated in Figure 8 below, the discursive dynamics are informed by a multiphased and multi-layered approach to how different actors make sense of the world. Further, the different themes and fragments on their agenda, combined with time aspects and identity, cause alignment and tensions between the different actors, as demonstrated in Figure 8. The figure also indicates that the broader the actor's horizon is in forming the opinion, the more synergies and integrated approaches can be developed. Based on Follett's (1995) findings, this usually led to integrated solutions. Further, they might support making sense of identity and role by suggestions from Ashforth and Schinoff (2016). This, in turn, can be linked to Follett's (1995) finding that tensions lead to integrated solutions when dominance and compromise are not seen as options.

Based on legitimation, the research suggests that different actors are more subject to different forms of legitimation. This is aligned with the findings of Fernández Pinto and Hicks (2019). Opinions are formed in various ways, but as this research demonstrates, if views prevent us from sensebreaking and, therefore, entering sensemaking, they, in turn, prevent development. As described in the introduction of this research, development is urgently needed on many fronts.

There is also a need for disruptions, and there is a role for that. Therefore, some actors embrace the role of being disruptors, not necessarily being the ones who develop solutions. Activists are often disrupting and setting demands but are not always involved or willing to develop solutions. They act as whistle-blowers, raising voices on issues, concerns, underperformance, and problems. Another factor that is enabling disruption is the media. The media is seen as an actor who triggers movement and supports sensemaking. Despite media being seen as a disruptor, it is also seen as a lazy way of gaining information and forming an understanding and opinion on limited information. Misinformation is also brought forward as confusing the dynamic between actors and causing a reaction for either correction of information or defending the position.

These are also invitations to broaden the horizon and understanding of different aspects. Despite this, different actors still drive different aspects, and consensus might not always be a desired outcome. Follett (1996) notes that tensions lead to integrated solutions, which can also be seen as a new sense.

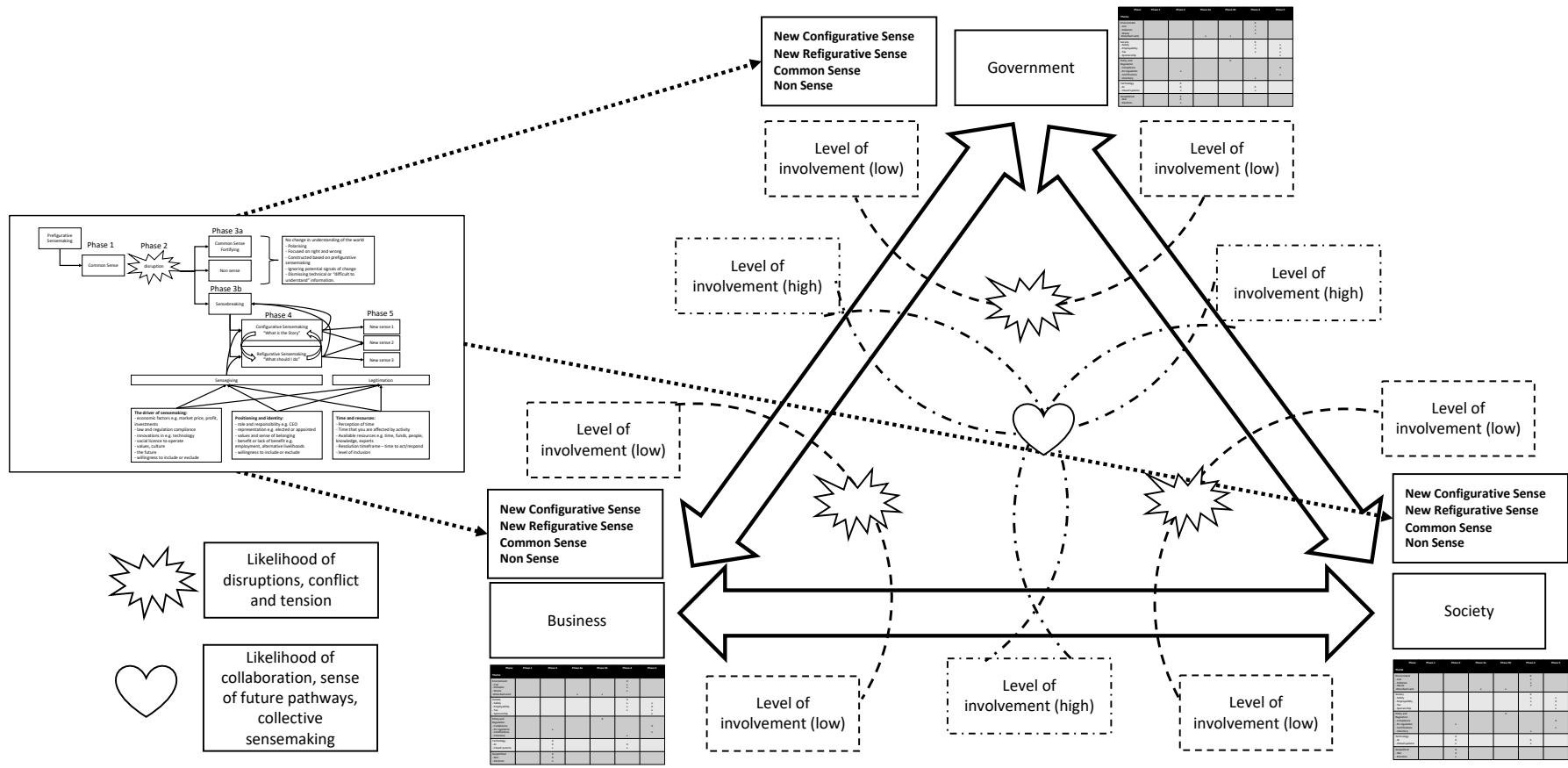


Figure 9: The discursive dynamic between actors.

The main finding is that different discourses co-exist at the same time. Despite actors seeing them as different realities, they are a part of the same reality. The discursive dynamic shows potential in discussing the desired futures and the needs that must be met in different aspects. In contrast, the sensemaking process and the discourse of different actors can evolve and develop a wide variety of pathways to act that story into existence. Complexity provides no best solutions but multiple approaches and learnings along the way. Considering the circumstances of the VUCA surrounding, this type of approach, where multiple pathways are unfolding simultaneously, would seem like a resilient way to approach complex issues. However, this requires collaboration between different actors as well as a topic of discussion that involves sensemaking. As noted, without sensebreaking, there is no need or desire to make sense.

From this, the thought emerged on the future and if the future could act as a topic where all actors experience some form of sensebreaking. This will be discussed in the next section.

5.4 Neutral ground – the future we want

In this section, the responses to the questions of the future will be briefly discussed. The question on the future generated a different type of mode in the conversation. Some actors were more hopeful on the path we are on, whereas others had more dark clouds on the horizon. Despite this, when considering how they desired EMMI to develop, if anything was possible, it sparked needs and hopes for the future of EMMI. It also brought forward some amazing, creative thoughts on what future actors want to see and experience. The themes shown in Figure 9 below came up when discussing the future.

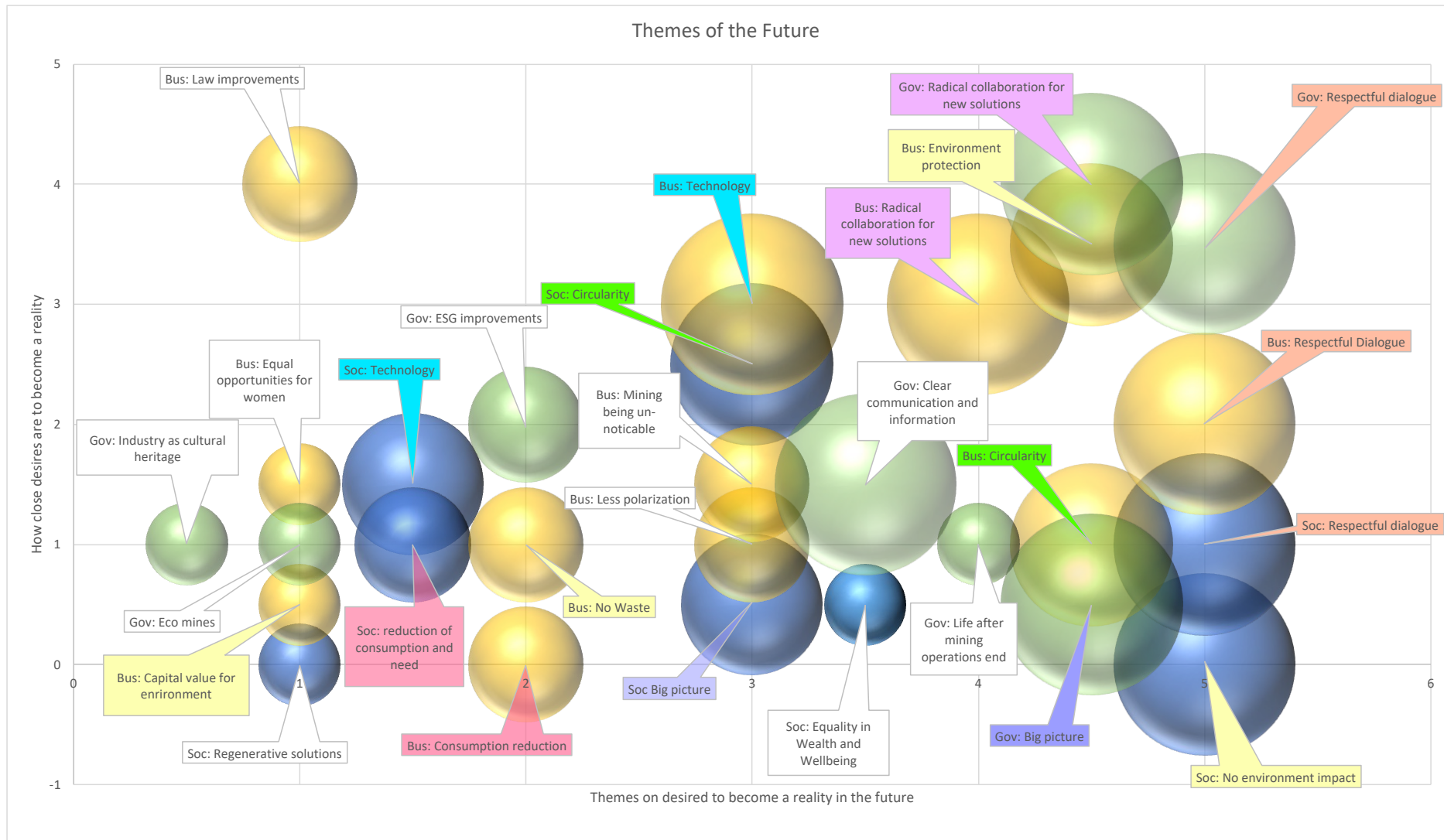


Figure 10: Themes of the future between actors

The size of the dot represents how frequently the issue came up. On the X axis, the desirability of different solutions is presented. The reality of how near we are to reach this future is reflected on the Y-axis. The different colors represent the different actors: green is government, blue is society, and yellow is business. These interpretations are highly subjective, and they do not need to justify their opinion or viewpoint. In the discussions, no tensions between actors were discussed or recognized. However, each actor recognized the challenge of getting from the current situation to the future desired state. Also, the notion of how close we are to reaching some of the desired futures can be disputed.

As suggested by one business actor in the sensemaking phase, discussing what type of a future we want to accomplish can develop a space where actors can come together. As shown in Figure 9, all actors demonstrate a high desire to meet at the negotiation table and solve issues collectively. This is supported by Follett (1996) in terms of it holding the potential not only for compromises but also integrated solutions. As Hernes and Obstfeld (2022) point out, this is one of the biggest challenges in configurative and refigurative sensemaking. They call for more radical collaboration to spark new ideas.

In the sensemaking process, it is essential to note that new knowledge, ideas, patterns, stories, and actions evolve as we move through time. Hence, the negotiations are less about offering the solutions you already have and, more importantly, about discovering new, better ways of acting that will contribute to building the future we want to see.

Sensebreaking occurs when the actors are asked to describe desired futures and not consider how to get there or if it is possible. The imagined futures often brought forward questions and questioning if it is utopia or realistic. This can be seen as sensebreaking, where there is a space or call for sensegiving and sensemaking. Creativity, innovation, and collaboration can spark ideas and steps on how to. Move towards desired futures. As complex issues require pathways to unfold and collaboration with different actors, the future

might hold the potential to bring actors together to develop a narrative. A consensus on how to move forward does not need to be reached, as any pathway and solution moving societies in a desired direction can be seen as progress and development.

5.5 Summary of analysis and discussion

This chapter has presented the indicative model of sensemaking, sensebreaking, and sensegiving. It presents five phases: prefigurative sensemaking and common sense; disruption, issues, and problems; common sense fortification; sensebreaking; configurative sensemaking, refigurative sensemaking, and sensegiving; and new sense or new sensebreaking. These phases are described, and examples from the interviews are provided. The data shows that much focus and energy from different actors are put on fortification of common sense. As disruptions occur, there is a tendency to emphasize who is right and who is wrong, fortifying one's own viewpoint and aiming to convince others. This way of acting is seen as time-consuming and blocking development. As each actor seeks to disrupt other actors' activities but wishes to maintain their position and view, it is polarizing. It causes tensions where reluctance to move forward or progress is limited.

Sensebreaking opens the opportunity for development. Because of sensebreaking, new sense can emerge through a sensemaking process. The process is a dynamic between the story in the making and actions related to the story. These are defined by Hernes and Obstfeld (2022) as configurative and refigurative sensemaking. As a part of this process, the actors draw on information from the past (prefigurative sensemaking) and perceived and desired futures to develop a new sense of both stories and actions.

Different actors and identities are used to develop ideas and thoughts in this process. These seem well recognized by different actors, who actively seek different viewpoints and drivers in their sensemaking process. Resources available are also recognized as sensegivers on how to move forward and develop a new understanding. One element that causes issues

in this process is the element of time. How different story fragments fit on a timeline as the perception of time causes confusion between actors, as these fragments are intertwined and linked to own perceptions. In practice, this occurs as speaking about the same theme but at different points in time. An example of this is environmental concerns, where government and business can show measurements of environmental impact from history and how that is projected into the future. In contrast, society might be considering the environmental impacts after the mine has ended its operations. These time-related entanglements can contribute to tensions in the sensemaking process if not recognized and addressed, as different actors might not get the information required to make sense of where sensebreaking has occurred. This creates the risk of actors filling the gaps with the best available information, which might sometimes be a story or narrative of a perceived future.

The process and its elements are used to describe how different actors construct their discourse. As actors move through time, different themes and subthemes are in different parts of the process. Further, the information used, especially in the sensemaking phase, acts as a way to generate the narrative of fragments in the larger picture. Different discourses emerge through the process as different actors are influenced in different ways, and they prioritize and show interest in different topics. This is shown in Figure 7.

This, in turn, explains the discursive dynamic between different actors. As complexity has unclear cause-effect relations and holds many unknown aspects, multiple pathways forward can be explored. This allows a space where different approaches, solutions, pathways, and demands can occur simultaneously, and all of them can be traced back to a sensemaking process. This, in turn, can create a situation where different options and pathways are true simultaneously. Therefore, development and complex solutions are not reliant on one best practice or different solutions developed by experts but rather

fragments of different approaches and pathways of an evolving and emerging future in the making.

Opinions are formed in different ways, but as this research demonstrates, if views prevent us from sensebreaking and, therefore, entering sensemaking, they, in turn, prevent development. As described in the introduction of this research, development is urgently needed on many fronts.

This can be seen in Figure 9, where the participants are asked about their desires for the future. The themes and topics expressed have many similarities, and the themes can be woven together to generate one larger discourse. One of the actors expressed that there would be tensions in reaching the desired future. This can generate a space where desired futures can be talked into existence. Pathways and actions related to reaching these futures might be many, and the pathways push development forward through creation, innovation, and discovery.

6 Conclusions

This research has explored the discursive dynamic between business, government, and society in complex issues. As demonstrated in this research, the discursive dynamic plays a role in the sensemaking of complex phenomena. The temporal approach by Hernes and Obstfeld (2022) to sensemaking on prefigurative, configurative, and refigurative supports developing a process on how sensemaking occurs for different actors as we move through time. It allows exploring sensemaking as a dynamic process based on themes and fragments that develop the discourse for each actor.

The challenge, as proposed by Hernes and Obstfeld (2022), lies in the inclusion of different actors in the configurative and refigurative states. This is linked to the elements of sensegiving that depend on drivers and agenda, identity, time, and resources. One main challenge is the current dominant appearance of Phase 2, which emphasizes the need to be

right and others to be wrong. This leads to the polarization and dejustification of different narratives and stories and contributes to fortifying the current state seen as common sense. This might also prevent progress and development in areas that are desperately calling for attention.

Further, the research demonstrates that the gateway to developing new stories and new actions is through sensebreaking. Without sensebreaking, we are stuck in phase 2, which is linked to the prefigurative, existing solutions and knowledge. Phase 3a is a dead-end where no development occurs as each actor is fortifying and defending the current state, understanding, and situation.

Sensebreaking creates a void to be filled, which, according to Hernes and Obstfeld (2022) and Ashforth and Schinoff (2016), cannot be filled through previous understanding and prefigurative sensemaking. The research explains the sensemaking process but also recognizes that different themes and fragments of a theme are in different phases during different points in time. These are also different for each actor, which develops the different aspects present in the dynamics. As different actors generate their discourse based on which themes are present on their agenda and where in the process they are, it influences the discourse they develop for different purposes.

The research also demonstrates a desire for dialogue between different actors. There is a desire to find ways and behaviors that support more collective sensemaking, as there are gaps in the sensemaking process. Ideas of the future seem to act as a foundation for discussion, where the needs to be met can be discussed and agreed upon. This holds the potential to shift the focus away from being right and wrong and to seek a mutual direction of what is acceptable and desired in the future.

As many of the desired futures might be quite far from the current state, this leaves voids that need to be filled through a configurative and refigurative sensemaking process. It

places the problems, issues, and voids at the center and calls for creativity and innovation, talking things into existence, which in turn leads to filling the gap of acting things into reality. This is aligned with Obstfeld and Herne's (2022) findings on temporal sensemaking.

Another key finding is the element of time. How different actors discuss a theme in relation to time causes confusion and entanglement. The perception of time (long vs short in business and in society) causes confusion if not managed well. As an example, businesses and governments often describe the environmental aspect as measurements and research conducted and projecting them into the future over the time of operations. However, the society might be concerned years after the operations have stopped. If themes are not discussed in their proper time context, sensebreaking and voids are left open. In these situations, sensemaking might occur through vague narratives and perceived futures and stories that support actors moving forward from sensebreaking.

Thus, recognizing the issues and their connection to time is essential for both understanding the present and understanding the future. The time entanglements require more focus in the future to support the sensemaking process of different actors.

The research questions presented in this doctoral thesis were: How are business, government, and societal actors making sense of complex issues? How are new discourses and narratives developed, and what enables actors to explore them? How is the discursive dynamic in complexity enabling or disabling progress, development, and new solutions to emerge? How are different actors discussing and making sense of the future?

The first question on how business, government, and societal actors make sense of complex issues is described in Figure 7, describing the sensemaking process. In this process, it is important to note that many times, fortification of common sense occurs, which in turn prevents development and leads to no new sense occurring. This is seen and experienced as energy-draining and polarizing.

The second question on how new discourses and narratives are developed and what enables actors to explore them are answered in the process description in Figure 7 in Phase 4. Sensegiving is acting as support for the sensemaking process. Another aspect of this question is described in Figure 9, where actors reflect on desired futures. In this, actors present ideas and thoughts of what they would want to see in the future. As many of these desires are not met and solutions on how to enact this future into reality are lacking, these create a sensebreaking that leads to the opportunity for collaboration and new sense to emerge.

This is also linked to the final question on how different actors are discussing and making sense of the future. The discussions are occurring based on sensebreaking and to determine the needs that need to be met in the future. The social license to operate, as well as environmental requirements, are pushing for new approaches and solutions. Tensions hold the potential for integrated solutions in accordance with Follett's (1996) suggestions. The integrated solutions might be a combination of multiple world views and realities that all occur at the same time. This polyphony of pathways and solutions builds resilience in a VUCA surrounded by many unknown elements.

The third and final question on how the discursive dynamic in complexity enables or disables progress, development, and new solutions to emerge is discussed in Figure 6, phase 4, and Phase 5. New solutions and new senses need to meet the demands set by the disruption, and when it occurs, progress and development are highly likely to occur as well. The discursive dynamic brings forward alternative pathways and world views. As complexity is recognized by no best practice solutions, the discursive dynamic and multiple actors' interactions create a situation where tensions cause new pathways to unfold and solutions to emerge. As all the discourses are coexisting at the same time, they challenge

and disrupt each other. These disruptions can trigger sensebreaking, providing the space for new sense to occur.

6.1 Future research

As this is an indicative study, more research on the different aspects of the model is required. Deep dives and more extensive data on the different phases, themes, and where the actors are in the process are required. Sensegiving and legitimation issues should also be explored as separate research focuses that can be linked to identifying efficient ways of sensegiving and legitimation within and between different actors.

Disruptions that lead to sensebreaking and move actors away from phase 3a must be explored in more detail. This would require a systematic approach of hypothesis and testing to explore cause and effect on different themes, subthemes, and actors. This could be linked to legitimation and sensegiving.

Further, the model should be tested in different contexts. Despite actors being involved in different industries and many of them also representing a global perspective, the model should be tested and validated in different surroundings and cultures, with different actors, and in different industries with elements of complexity. This indicative research provides many opportunities for further research, both on a holistic level and also in zooming in on a specific aspect.

One aspect that I am particularly interested in, and already engaged with is the future of leadership. Navigating uncertainty and complexity brings a need to develop leadership models and practices that support leaders in meeting the demands and needs of the present and the future. A sensemaking approach can be used for this purpose, and the model focusing especially phase 4 and including different leaders in dialogue could provide insights and ideas, where new approaches, tools, methods, and actions are talked and acted into existence.

A final suggestion for further research would be on the role of media. Media is frequently discussed, but the cause and effect, as well as the role of media, would need to be explored as a deep dive and extensive, focused research on the role of media in the discursive dynamic. Looking at the news and exploring how they are linked to different themes and subthemes, as well as the sensemaking different actors hold, would require more attention.

6.2 Opportunities for practitioners

The research has mapped an indicative model of sensemaking. Different actors can use the model to map different phases of sensemaking in their own activities and the sensemaking phases and themes of stakeholders. This, in turn, can support the collaboration and activities around sensegiving. Further, the aspect of time entanglement and mapping of themes from this perspective will be useful in addressing concerns and recognizing voids and gaps. Focusing on how different actors engage in the conversation will support different actors in recognizing and better understanding other actors.

Another notion for practitioners in complexity is that tensions can be used to promote integrated solutions, in accordance with Follett's (1995) suggestion. However, this requires the actors to move away from compromise and willingness to give legitimation to different realities. This can be done by seeing different aspects as fragments, or antenarratives of a larger story that is unfolding (Vaara & Tienari, 2008). This is also in accordance with Snowden (2002) suggestion on leading complexity.

6.2.1 AI development

As noted earlier in the research, AI was planned to be used for data analysis. However, this was not possible, as AI did not provide insights on how the conversations were occurring from a sensemaking viewpoint. This provides a space for AI development, as the approach to how we use prefigurative, configurative, and prefigurative sensemaking

to understand complex issues is needed. Despite the human brain being designed for complexity (consider, for example, driving a car), it is not designed for holding and receiving as much information as is generated today. As AI supports sorting through the vast amount of information, bringing more depth to the information and how the different actors are making sense of complexity. This is a development where the generated model can function as a foundation, and themes and categories can be developed further in collaboration with AI.

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Appendix A

Guiding questions, but the interview is conversational. The focus is on the interviewee's perception and view of how understanding in the mining industry is formed both for themselves and, according to their own perception, for others.

1. What point of view do you feel you represent: state, business, or society? You can choose one or more. Do you open up your thoughts on how you end up here/these?
2. Where do you look for information and form your understanding of the current situation? How do you feel about the process? Is it easy, challenging? Why?
3. What do you think the current state of your mining operations looks like? Is it easy, challenging, clear, or something else to create an image of the current situation?
4. Do you feel that there is a common understanding of where information is sought and where it can be found?
5. The mining industry meets the definitions of complexity in many ways – The topic is very local, technical, and involves many areas and professional experts. But at the same time, it's very global. If we move for a moment to consider the matter from a Finnish perspective, how much complexity does the discussion show, and how much do you feel that we can handle it?
6. At what level does the conversation seem to be? (e.g. locally focused, Nordic, Europe, Global, geopolitical, or are we already considering ore exploration on asteroids and marches?)
7. Many operators are involved in mining, already on a Finnish scale. If we add to this all those who benefit from raw materials, one could argue that it applies to all of us. According to your experience, is the information easily accessible and understandable between different functions and actors?
8. Legitimation refers to a way of justifying one's own understanding or point of view. I have noticed that there is a lot of reference to the law. Personal experience, or something experienced, is also used as justification. What kind of legitimacy have you encountered in the topic between different actors? How are your own thoughts and views expressed? Does rhetoric play a role in that?
9. Future: Based on your opinion and experience, what does the future of mining look like? What kind of things do you base your outlook on in the future?
10. Do we have several future prospects and development paths available? Are there any differences or similarities between the actors depending on your experience?
11. Now comes the best point: You are given all the power and authority to decide, and whatever is possible, there is no need to think about how or what it would take. All power in You, Everything is Possible – what would the mining of the future be like? Tell as much as possible about this idea.

12. Is there anything I've forgotten to ask or want to add?

Appendix B



European Business Institute Luxembourg

(prev. European Business University Luxembourg)

Interview Consent Form

Research project title: Sensemaking and Sensebreaking in Sustainability Ambitions - A discursive approach to the dynamics of complex sustainability issues between business, government, and society

Research investigator: Dr Candidate Tina Karme

Research Participants name: Marleena Hagner

The interview will take (1-2h). We don't anticipate any risks associated with your participation, but you can stop the interview or withdraw from the research anytime.

Thank you for agreeing to be interviewed as part of the above research project. Ethical procedures for academic research undertaken by academic institutions require that interviewees explicitly agree to being interviewed and how the information contained in their interview will be used. This consent form is necessary for us to ensure that you understand the purpose of your involvement and that you agree to the conditions of your participation. Would you therefore read the accompanying **information sheet** and then sign this form to certify that you approve the following:

- the interview will be recorded, and a transcript will be produced
- you will be sent the transcript and given the opportunity to correct any factual errors
- the transcript of the interview will be analysed by Tina Karne as research investigator
- access to the interview transcript will be limited to Tina Karne and academic colleagues and researchers with whom he might collaborate as part of the research process for this specific thesis
- any summary interview content or direct quotations from the interview that are made available through academic publications or other academic outlets will be anonymized so that you cannot be identified, and care will be taken to ensure that other information in the interview that could identify yourself is not revealed
- the actual recording will be kept until the completion of the research process and defense. The recording is kept on an external drive with a coded name, which is not connected to the internet. The transcript of the interview will be kept on the same drive.
- After completion of the research, a virtual copy (pdf) of the research will be sent to the participants. At this point, the participant will have the choice to request the material to be destroyed or to allow the researcher to continue research with the material. A separate specification for other research will be provided, and any choice and preference of the participant will be respected.

Any variation of the conditions above will only occur with your further explicit approval

Printed Name

Participants Signature

Date

Researchers Signature

Date

Contact Information

This research has been reviewed and approved by the Edinburgh University Research Ethics Board.
If you have any further questions or concerns about this study, please contact:

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Tina.karme@sustory.fi or tina.karme@ebulux.lu

You can also contact (Researcher's name) supervisor: Frank Billingsley

What if I have concerns about this research?

If you are worried about this research, or if you are concerned about how it is being conducted, you can contact the EBI Dean James Mulli or Kubra Erden at European Business Institute (formed European Business University) at admin@ebulux.lu.

Homepage: <https://ebulux.lu/>

The research is 100% funded by the researcher Tina Karne's own savings. This is to ensure objectivity in the process. There is also a diverse panel of experts globally and an ethics committee in place for the research, to reduce personal reflexivity and maintain objectivity through out the process of the research.

APPENDIX C

Number of quotes per interviewed participant

(BUS – Business, GOV – Government, SOC – Society)

GOV	2
BUS	3
BUS	2
GOV	2
SOC	1
BUS	4
GOV	7
GOV	2
SOC	1
BUS	3
BUS	6
GOV	2
SOC	4
GOV	5
GOV	1
SOC	5
GOV	2
SOC	7
GOV	4
GOV	1
BUS	2
BUS	5
BUS	1
BUS	1
BUS	1
GOV	1