



TOWARDS A THEORY OF CRYO-CRITICISM: 'ARCTICNESS' AND YOUNG ADULT LITERATURE

A Thesis Submitted in Partial Fulfilment of the Requirements
for the Degree of Doctor of Philosophy in

Sustainable Development and Climate Change

Doctoral Programme of National Interest



PhD SDC
SUSTAINABLE DEVELOPMENT
AND CLIMATE CHANGE

In the Curriculum
THEORIES, INSTITUTIONS AND CULTURES

Irene Bordignon

April, 2026



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Scuola Universitaria Superiore Pavia



**Università
degli Studi
di Ferrara**

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by

Irene Bordignon

Supervisor: Prof. Elisa Bolchi

Co-Supervisors:
Prof. Maria Lindgren Leavenworth
Prof. Ylva Sjöberg

To V., my prince, always in my heart.

ABSTRACT

The Arctic, a complex ecosystem of ice, lands, and ocean, embodies much more than an endangered area affected by climate change: it is home to Indigenous cultures, rich biological diversity, and profound narratives entwined with its frozen landscapes. This study addresses the dual crises currently facing the Arctic: its rapid physical transformation due to climate change and the resulting erosion of cultural knowledge, memories, and worldviews deeply rooted in the ice. Climate data reveals stark trends, yet, scientific metrics alone cannot capture the profound cultural and ethical repercussions of this loss. The humanities thus play a critical role in interpreting how environmental changes reshape our sense of belonging, environmental ethics, and imagination.

To bridge these domains, this study develops cryo-criticism, a new interdisciplinary framework that integrates cryosphere science, Indigenous knowledge, and literary analysis. Cryo-criticism advances ecocriticism by focusing on ice not simply as inert matter but as a living, 'intelligent' material that stores memory, shapes ecological systems, and features prominently in cultural narratives. Through diffractive reading, a method sensitive to complex entanglements between science, literature, and Indigenous perspectives, this approach captures the multifaceted presence of ice in stories and realities alike. This methodology furthers material ecocriticism by addressing polar environments and cryospheric materialities, which remain underexplored in existing literary theory.

Focusing on contemporary speculative fiction for young adults, this study explores how these narratives engage with Arctic transformations, fostering ethical and ecological awareness among a generation inheriting unprecedented

climate challenges. The selected texts by English authors Nicola Penfold and Ele Fountain, Norwegian author Maja Lunde, and Sámi authors Máret-Ánne Sara and Ann-Hélen Laestadius are examined for their hopeful, nuanced portrayals of climate crisis, Indigenous resilience, and the dynamic interplay of human and non-human actors in the Arctic. These stories reveal ice and snow as sentient and transformative entities, shaping not only ecological but also cultural identities and imaginations of 'Arcticness'.

By situating literary analysis alongside scientific data and Indigenous epistemologies, this study argues that a meaningful understanding of Arctic futures demands such interdisciplinary synergy. Cryo-criticism invites us to reimagine the Arctic beyond narratives of loss, cultivating empathy, environmental responsibility, and hope through the recognition of Indigenous agency and the intricate relationships between climate, ice, and culture. Ultimately, this research enriches our capacity to respond justly and thoughtfully to the environmental crises reshaping Arctic regions, highlighting the vital role of cultural narratives in confronting global climate change.

ACKNOWLEDGEMENTS

This journey would not have been possible without the support of many people, and of human and non-human friends, who have listened, offered advice, and encouraged me along the way. I am deeply grateful to all of them; while words cannot fully capture my appreciation, I offer these thanks as a small token of my gratitude.

I am especially thankful to my supervisor and mentor, Professor Elisa Bolchi, who has guided me throughout these three years. She has taught me valuable lessons not only about research and academic writing, but also about life, relationships, literature, and the importance of enduring with beauty. Thanks to her support, I was able to follow my interests and develop my own critical perspective while always feeling grounded. Hers is a wonderful crocus!

I also wish to thank the Professors in the Doctoral Programme in Environmental Sustainability and Wellbeing at University of Ferrara, particularly Paola Spinozzi and Jorge Sans Burns, who supported me and my research with passion, interest, and a joyful spirit of sharing.

I express my deepest gratitude to my two co-supervisors, Professors Maria Lindgren Leavenworth and Ylva Sjöberg at Umeå University, Sweden. They offered their wealth of experience and knowledge to my research project, engaging with me in the various challenges that multidisciplinary brings. Both provided supervision with enthusiasm and availability and, no less importantly, offered the utmost support during my most difficult times.

Sweden also offered me the opportunity to join an extraordinary literary research group at the Department of Language Studies at Umeå University. This group, including both professors and doctoral colleagues, has become a constant fixture over the past two years through literary seminars filled with sharing, meaningful conversations, and relaxing post-seminar 'rewards' at Rött! Among these wonderful people, heartfelt thanks to Professors Van Leavenworth, Berit Åström, and Malin Isaksson. Last but not least, my most special *tack* goes to my friend and office neighbour, Lara Rodríguez Sieweke: without her, I would never have enjoyed the small and great joys of everyday life, facing together challenges that seemed insurmountable, navigating the ups and downs, and always caring, always reminding me that life must be faced with grace and wonder.

My gratitude also goes to C. M. Lerici Foundation for supporting cultural and scientific exchange between Sweden and Italy; their financing of my first research stay in Umeå opened up many diverse and exciting academic collaborations.

To Stefan, for our walks to the ice cave when I was looking for inspiration, and for the love you give me through your closeness, even from afar. The best is yet to come!

Finally, I thank the Arctic for welcoming me and making me feel part of a whole that transcends geographical boundaries. Your ice, an essential part of you, is now also a piece of my soul.

AI Acknowledgment

The use of AI tools (Gemini and Grammarly) was applied primarily for grammar checking as a substitute for traditional proofreading, and to a minor extent for occasional rephrasing.

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INTRODUCTION



Towards a Theory of Cryo-Criticism

TOWARDS A THEORY OF CRYO-CRITICISM

The Arctic is dominated by ice, existing in the form of a complex boundary between land and ocean. It serves as an essential passage for the migrations and narratives of Indigenous peoples, while supporting a significant portion of biological life across the planet. This study moves from the recognition that the Arctic is currently undergoing both an environmental and a cultural crisis. The heterogenous macro-region is witnessing a profound physical and ecological transformation: the melting of the Arctic cryosphere is among the most visible and urgent indicators of global climate change. Between 1979 and 2023, the Arctic warmed three times faster than the global average, annual air temperatures have risen by 3°C since 1971, and surface air temperatures are increasingly rising above the freezing point of 0°C (AMAP 2024). At the same time, the accelerating loss of ice entails the erasure of knowledge, memories, worldviews, and traditions embedded within it.

While scientific data records an increase in melting rates, temperatures, and sea level rise, the humanities are paramount in interpreting the significance of these changes and their influence on the imagination, environmental ethics, and sense of belonging to the planet. Indeed, as ice melts, the stories, memories, and epistemologies that have formed around cryosphere landscapes for centuries are endangered too. The material significance of memory and loss of culture related to melting ice and the melting of cryosphere landscapes are deep and diverse. The physical materials (artifacts, clothing, artwork, and ceremonial objects) made from or with which ice is interwoven are vulnerable to degradation or disappearance as it thaws. Likewise, archaeological sites which are preserved in frozen ground such as campsites and middens become susceptible to exposure and damage. As permafrost thaws, buildings built to withstand these icy landscapes such as ice cellars or traditional homes are

destabilized and collapse, leading not just to the loss of material heritage but to the disruption of community life. Furthermore, traditional knowledge usually builds on certain physical features of landscapes, for example glaciers or ice fields or seasonal ice routes; while such physical markers change or disappear, so do the physical references that ground cultural memory and practices. Even the documents and archives of ice-preserved areas are now at risk of becoming more degraded: more exposure can lead to the accelerated decay of carvings of wood, totem poles, maps or written records that embody generations of understanding. Moreover, biological elements (skins, bones and other organic material) which ice has temporarily protected, begin to decompose when exposed, with irreversible loss of cultural and historical significance. Overall, these forms of materiality are central to the maintenance of cultural memory, and how those materials disappear highlights the urgency of preserving tangible and intangible heritage subjected to a warming cryosphere.

To understand the broader significance of melting rates and climate projections, their cultural and ethical dimensions need to be addressed. This study intervenes in this gap by exploring literary and cultural interpretations responding to environmental loss, emphasizing that such engagements do not imply a mere hopeless outlook. While this investigation of literary works in this study examines whether the non-human environment acts as a preeminent force, it also recognises that all cultural and literary representations are human artefacts, inevitably mediated by human perspectives. The ecocritical analysis conducted in this study thus seeks not to question human uniqueness, but to shift towards a more balanced, ecocentric viewpoint in the face of daunting climate challenges. The humanities can indeed illuminate what anthropogenic changes in the Arctic truly signify for identity and collective imagination, and this study contends that only when scientific knowledge and humanistic

interpretation work together in synergy, it is possible to fully grasp what is at stake in the Arctic today.

This is where cryo-criticism emerges as a new way of conceptualising the Arctic. The main aim of this study is to develop a cryo-critical framework as a bridge between cryosphere science, literary analysis, and Indigenous knowledge systems. Cryo-criticism understands the cryosphere not simply as ice in a physical sense, but as a living material that stores memory, interacts with climate systems, and participates in cultural and ecological processes. It expands the scope of ecocriticism by opening it to polar environments and the materiality of ice. Furthermore, it introduces a methodological innovation through the integration of diffractive reading, allowing research to remain sensitive and responsive to the very dynamism it investigates.

Beyond analysing cryosphere features, processes, and presences, cryo-criticism lends itself to considerations of the actual existence of ice in the narrative universe of a story, and of how these narrated icescapes connect to real-world ones. I have called this further dimension of ice ‘intelligent material’ precisely because it involves ice as a vibrant materiality shaping and diffracting narrative modes. Throughout this study, ecocriticism and, in particular, material ecocriticism, are both challenged and applied as methods of inquiry to the literary analysis of texts. Thus, in delineating cryo-criticism as the main methodology, Chapter 2 acknowledges its indebtedness to ecocriticism, material ecocriticism, and postumanist theorisations while also discussing the necessity of probing into spaces and materialities that these branches of literary theory have not examined yet.

Conducting this type of analysis, which engages with the literary text while reaching beyond it, to address the material world of the Arctic, is fundamental to answer two of the main research questions guiding this study:

1. How can cryo-criticism meaningfully engage with the science of ice?

2. How can literature translate the transformations of the Arctic into ethical, ecological, and cultural awareness?

To thoroughly explore these inquiries and their implications, the preliminary considerations are distributed across the first two chapters. Chapter 1 provides the scientific contextualization of the state of the cryosphere in the Arctic and establishes the general ecocritical framework. Chapter 2 develops the theorization of cryo-criticism as a new framework of inquiry. Given that the nexus between cryospheric science and literature remains largely unexplored, these two chapters provide the theoretical groundwork for the subsequent textual analysis. Additionally, the central section of Chapter 1 addresses the foundational issue of shaping a sense of 'Arcticness' that frames this study, and my positionality as a researcher from an external perspective. To test and refine this theoretical framework, I turn to a corpus of contemporary juvenile speculative fiction set in Arctic environments. I explore these inquiries through contemporary authors – both from within and outside the Arctic – who write speculative fiction for a young adult audience. As primary inheritors of the ongoing transformations due to climate crisis, young adults find speculative narratives a spaces in which to imagine, or re-imagine, possible futures beyond the present.

The novels *Beyond the Frozen Horizon*, by Nicola Penfold (2022) and *Melt*, by Ele Fountain (2021), are investigated as an expression of a new wave of interest in Arctic issues from English authors through hopeful fantastic narratives. The ecodystopian novel *Drømmen om et tre* (2022, translated into English by Diane Oatley with the title *The Dream of a Tree* in 2024), by Norwegian author Maja Lunde, addresses issues of ambivalence, hope, and the uncanny, while foregrounding the dynamic relationships between humans and the fragile Arctic environment. Finally, the two Sámi novels, *In Between Worlds* (2016) by Máret-Ánne Sara, and *Stöld* (2021) by Ann-Helen Laestadius

(translated into English by Rachel Willson-Broyles with the title *Stolen*, 2023), reveal the Arctic as a place of biodiversity and cultural complexity. As Lunde's and Laestadius' novels were read in their original languages – Norwegian and Swedish, respectively – it was deemed appropriate to include the original text in footnotes, while providing the official English translations within the main text. Sara's novel, originally written in Sámi (*Ilmmiid gaskkas*, 2013), was translated into English by the author herself, in collaboration with freelance translator Laura A. Janda. Sara's work is thus quoted directly from its English version.

Each chapter of this study is simultaneously self-contained and closely linked to the others. Notions such as hope and care connect them, while other threads, such as the notions of traditional ecological knowledge and eerie Arctic landscapes, are specifically explored in dedicated sections that, in each chapter, precede the critical textual analysis. The discussion about the characteristics of Young Adult (YA) literature is addressed in its individual aspects in relation to ecocriticism and the literary works examined. YA positions itself as belonging to the genre of children's literature but, at the same time, serves as a bridge between juvenile literature and dystopias; it is a subgenre that, in its specificity, fully reflects the liminality of the age gap of the audience it is intended for, while remaining accessible to full adult readers as well. It is only in recent years that scholars have begun to explore deeper issues within YA fiction, utilising feminist, psychoanalytical, and post-structuralist theories, among others. While earlier studies primarily focused on adolescents' relationships with society, contemporary research has shifted attention to the difficult journey of breaking free from and reconciling with parental authority (Trites 2000), with turmoil being represented both in private family structures and in a sense of environmental justice. The 'new' literary adolescent often foresees the danger of anthropogenic actions before the adult characters. Additionally, analyses of the structural elements in adolescent novels have drawn inspiration from modern narrative

theory; this evolution goes beyond merely noting the prevalence of first-person narratives to providing a comprehensive examination of subjectivity construction linked to environmental disruption.

Finally, in all chapters, ice and snow are alternatively presented as both ‘intelligent’ matters (Deleuze 1997) and metaphors, showing how they affect narratives on a variety of levels. Several natural and cryosphere elements constitute a sense of ‘Arcticness’, even for readers who approach the Arctic from an external perspective; these are analysed as a common thread in sustaining different narrative modes. It is precisely from this point of view that the strength of Sámi and Indigenous narratives is foregrounded, serving as living literary testimony to traditions and cultures that dwell within and find their home in the cryosphere.

Chapter 1, therefore, starts by examining the main environmental disruptions in the Arctic and how these changes affect both ecosystems and Indigenous communities. The section also connects these transformations to the 1.5-degree climate goal, highlighting the importance of scientists and local peoples co-producing knowledge. The chapter then explores how the Arctic humanities and contemporary cryo-narratives help shape our sense of ‘Arcticness’. Through literature and cultural expression, it shows how stories about ice and transformation raise awareness of climate change. Finally, it reviews key developments in ecocriticism, moving to more recent approaches that include more-than-human perspectives, econarratology, and spatial analysis. The chapter concludes by stressing the value of applying these methods to YA literature to connect ecological thought, imagination, and education.

Chapter 2 develops the concept of cryo-criticism, proposing a diffractive way of looking at the Arctic that recognizes ice as an active and ‘intelligent matter’. The theoretical foundation of cryo-criticism draws on new materialism

and posthumanism, particularly the work of Karen Barad (2007), Donna Haraway (2003; 2008), and Stacy Alaimo (2010), among others. These scholars help challenge the traditional dichotomy between nature and culture, positioning matter as active and relational. Using a diffractive reading method, I place scientific concepts, literary representation, and Indigenous perspectives in conversation with one another. The chapter then explores how environmental and speculative YA literature represents the Arctic, providing the reasons for choosing YA fiction as the object of this study. Finally, the chapter compares external visions of the Arctic with Indigenous and Sámi perspectives, emphasizing the coexistence¹ of imagined and lived Arctic realities. Altogether, it positions cryo-criticism as a bridge between material ecology, storytelling, and the environmental imagination.

Chapter 3 provides a detailed exploration of how Penfold's *Beyond the Frozen Horizon* and Fountain's *Melt* engage with the climate crisis in the Arctic through the lens of YA speculative fiction, weaving together Indigenous ecological knowledge, scientific insights, and embodied experience. The theoretical background situates the climate crisis as both an ecological and imaginative challenge, examining how environmental literature and speculative fiction create spaces to reimagine human-nature relationships and highlight the evolving Arctic imaginaries, from sublime depictions to contemporary narratives centered on Indigenous perspectives and ecological transformation. For instance, I discuss how early depictions of the Arctic emphasised its sublime qualities, which often perpetuated a distancing from Indigenous knowledge. Contrastingly, contemporary speculative fiction integrates Indigenous perspectives, emphasising ecological interconnectedness and resilience. By

¹ The very existence of Indigenous peoples within a nation state inherently creates tension, as their interests, ultimately, clash. It is not sure whether they can ever coexist though this is precisely what a reconciliation logic would suggest (Tuck and Yang 2012), unless through a process of decolonization that strips away the nation state of most of its power.

focusing on this shift, the chapter shows how literature actively participates in reshaping our collective imaginaries about climate and the Arctic. Thus, this section underscores the capacity of speculative fiction to blend realism and 'otherness', enabling readers to navigate the Arctic's material and conceptual icescapes as dynamic sites of ecological and imaginative engagement. Both novels highlight scientific mediation in ecological understanding while celebrating ice's life-sustaining qualities, ultimately fostering a collective, hopeful vision for positive ecological action. Together, these novels challenge reductive stereotypes and offer nuanced, hopeful perspectives on the Arctic's environmental precarity, advocating for enriched critical frameworks that attend to the cultural and ecological vitality of the Arctic cryosphere.

Chapter 4 offers a comprehensive analysis of Lunde's *Drømmen om et tre*, situating it within the framework of YA climate fiction and critical eco-dystopias that explore Arctic futures shaped by ambivalence, hope, and the uncanny. Moreover, this chapter examines contemporary YA dystopias, emphasizing how critical dystopias balance bleak realities with utopian possibilities, reflected in the resilient and hopeful narrative in Lunde's novel. *Drømmen om et tre* exemplifies this by weaving Arctic futures marked by uncertainty and ambivalence yet grounded in resilience and optimism. This mirrors broader trends in young adult climate fiction, which often seeks to empower readers with hopeful visions amid ecological crises. The literary analysis focuses on embodied ecology through the protagonist Tommy, portraying him as the one who embodies ethical responsibility and ecological awareness. In doing so, the analysis explores key metaphors such as trees and seeds, as well as the influence of Tommy's grandmother Louise in transmitting values essential to ecological stewardship and hope. The last section of the chapter highlights uncanny, liminal spaces marked by isolation and contradiction, employing sociological concepts and the theory of heterotopias

to interpret the Arctic environment as both a threatening realm and a site of potential renewal. The analysis concludes by positioning the novel as a hopeful dystopia, where kindness and ecological consciousness offer pathways to resilience amid adversity.

Chapter 5 explores Sámi perspectives on Arctic landscapes and identity through the literary works of Laestadius and Sara, highlighting how they incorporate Indigenous knowledge and experiences into narratives of climate change and cultural resilience. While resilience is often celebrated as a valuable quality for individuals and communities facing challenges, it is important to approach the concept with caution and critical awareness. Scholars and activists have highlighted that resilience has sometimes been appropriated as a neoliberal tool that emphasises forced adaptation and individual responsibility, rather than addressing structural inequalities and the root causes of hardship (Leichenko 2011). This is particularly significant with respect to Indigenous peoples, who have historically endured systemic marginalisation and dispossession. The framing of resilience in neoliberal terms risks placing an undue burden on Indigenous communities to adapt to ongoing social, environmental, and economic pressures without adequate redress or support from governing institutions. Rather than empowering, such an approach can perpetuate injustice by obscuring the need for transformative change and the recognition of Indigenous rights. This study carefully considers these critiques and strives to engage with resilience as a multidimensional and context-specific concept. It emphasises the importance of listening to Indigenous voices and supporting frameworks that promote social justice and sovereignty, rather than imposing externally derived demands for adaptation.

The conceptual groundwork is established by examining the Arctic as a liminal space characterised by traditional understandings of seasonal cycles. For the Sámi people, the year is deeply structured by nuanced seasonal

transitions, and not just marked by climatic shifts but also by changes in animal behaviors, spiritual practices, and land use. These cycles govern reindeer herding, hunting, and community life, reflecting a holistic temporal rhythm that intertwines ecology, culture, and identity. Recognising this perspective allows the thesis to situate environmental change within a lived, embodied framework where seasonal disruption has profound cultural as well as ecological implications. Laestadius' novel *Stöld* is analysed by considering its potential to illustrate how Sámi identity and traditional ecological knowledge are intertwined with responses to environmental vulnerability and colonial pressures, urging a necessary evolution in Indigenous epistemologies. Sara's *In Between Worlds*, where fantasy and folklore merge with Indigenous and scientific knowledge, portrays cultural resilience through narratives that emphasise hope and renewal. Similar to resilience, the concept of hope can be politically ambivalent. While hope often serves as a necessary source of motivation and envisioning better futures, it can also obscure structural problems and be co-opted into maintaining the status quo. As Miéville (2015) argues, hope without critical engagement risks becoming a complacent acceptance of limitations rather than a drive for radical change. This tension underscores the importance of engaging with hope critically, recognising its potential both to inspire transformative action and to function as a tool of political pacification. Together, these two novels show the dynamic interplay between ecological transformation and Sámi literary expression, underscoring Indigenous agency and adaptation in a rapidly changing Arctic.

A diffractive lens of reading and criticism underpins the investigative approach (Barad, 2007). Karen Barad's concept of diffraction moves beyond traditional reflection by focusing on how differences overlap, interfere, and produce new and entangled patterns rather than simply opposing each other. This interpretative method emphasises the entangled relationships between

phenomena, encouraging an awareness of how knowledge is formed through these interactions rather than simply reflecting pre-existing realities. It can be combined with the study of ice formation and crystallization, where a distinct scientific discourse emerges that examines the winter seasonal cold in the Arctic through previously unexplored processes. By applying diffraction, the investigation attends to multiple perspectives and layers of meaning, opening space for nuanced readings of natural phenomena that go beyond reductionist or purely scientific accounts. This approach attends not only to language but also to the material form and conditions of the text's production and reception. Diffractive reading dissolves hierarchical oppositions such as subject/object or author/reader, instead exploring how characters, themes, and textual elements co-constitute one another.

This emphasis on entanglement and relationality resonates with cryospheric elements that inherently embody diffraction, such as snow and ice. Considering their almost implicit diffractive and physical nature, diffractive readings of snow and ice in contemporary literature enhance their captivating complexity. The ecomimetic formations of snowflakes and ice crystals are staged in a way that aligns with Haraway's reasoning on 'natureculture' bodies (2003). Nature is not depicted; it becomes co-created in and through formations that are viewed, felt, observed, and analysed – not only through the theoretical senses of sight and hearing but through the entire human body. As Hubert Zapf notes, there are good reasons to discuss nature or human environments as both internal and external phenomena: the characteristic environments of modern humans are not just external but internal environments, the inner worlds and landscapes of the mind, the psyche, and the cultural imagination, which make up the habitats of humans as much as their external natural and material environments (Zapf 2017: 150). Moreover, the Canadian scholar Daniel Chartier discusses the "ecology of the imaginary" in a study of Nordic and "literary

winterness" (2007: 44), arguing that the actual and the imaginary in literary depictions of the North are always integrated.

What emerges from the corpus under exam is that ice is frequently portrayed as sentient, unstable, yet transformative, and always as deeply entangled with human and non-human lives. These speculative works translate cryo-critical ideas into narrative modes, showing how knowledge about the Arctic can emerge through embodied experience. Overall, this study invites us to imagine Arctic futures not solely through narratives of loss, but through narratives of reciprocity and hope. Cryo-criticism inspires us to deepen our understanding of the intricate relationships between climate, ice, and human cultures, particularly those of Indigenous communities whose identities and ways of life are closely connected to frozen landscapes. It encourages us to move beyond seeing the Arctic and other cryospheric regions as distant, fragile wildernesses by revealing them as dynamic, lived areas of our planet imbued with rich cultural meaning and knowledge systems that challenge conventional bias. Through engaging with both realist and speculative stories, it helps us grasp the emotional and ecological dimensions of climate change in ways that scientific data alone cannot convey. This approach fosters empathy and a sense of ethical responsibility by highlighting Indigenous resilience and adaptive strategies, ultimately urging more sustainable and just responses to environmental transformations. By integrating ecological science with cultural and literary insights, cryo-criticism offers a more nuanced perspective on the rapidly shifting realities of the Arctic and other cold regions, enriching our awareness and capacity to act thoughtfully in coping with the climate crises, ultimately strengthening our sense for belonging to the planet. In this, the Arctic teaches us that vulnerability and resilience are not opposites, they are only phases of the same *continuum*.

REFERENCE LIST

- Alaimo, S. (2010). *Bodily Natures: Science, Environment, and the Material Self*. Bloomington: Indiana University Press.
- AMAP. (2024). *Arctic Climate Change Update 2024: Key Trends and Impacts*. Arctic Monitoring and Assessment Programme (AMAP), Tromsø, Norway. URL: <https://www.amap.no/documents/doc/amap-arctic-climate-change-update-2024-key-trends-and-impacts/3851> (accessed 19 January 2026).
- Barad, K. (2007). *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. Durham: Duke University Press.
- Chartier, D. (2007). "Towards a grammar of the idea of North: nordicity, winterity". In Michael Schmidt et al. (Eds), *Nordlit*, 22: Arctic Discourses 1, 35-47.
- Deleuze, G. (1997). *Negotiations, 1972–1990*. New York: Columbia University Press.
- Fountain, E. (2021). *Melt*. London: Pushkin Press.
- Haraway, D. J. (2003). "The Promises of monsters: A regenerative politics for inappropriate/d others". In Donna J. Haraway (Ed), *The Haraway Reader*, New York and London: Routledge, 63-124.
- Haraway, D. J. (2008). *When species meet*. Minneapolis: University of Minnesota Press.
- Laestadius, A.-H. (2021). *Stöld*. Stockholm: Romanus & Selling.
- Laestadius, A.-H. (2023). *Stolen*. Translation by R. Willson-Broyles. London: Bloomsbury Publishing.
- Leichenko, R. (2011). "Climate change and urban resilience". In *Current Opinion in Environmental Sustainability*, 3(3). URL: <https://doi.org/10.1016/j.cosust.2010.12.014> (accessed 12 April 2026).
- Lunde, M. (2022). *Drømmen om et tre*. Oslo: Aschehoug.
- Lunde, M. (2024). *The Dream of a Tree*. Translated by Diane Oatley. London: Scribner UK.
- Miéville, C. (2015). "The Limits of Utopia", URL: <https://salvage.zone/the-limits-of-utopia/> (accessed 12 April 2026).
- Penfold, N. (2022). *Beyond the frozen horizon*. London: Little Tiger Press Group.
- Sara, M. Á. (2013). *Ilmmiid gaskkas*. Kautokeino: DAT.
- Sara, M. Á. (2016). *In Between Worlds*. Guovdageaidnu / Kautokeino: DAT.

Trites, R. S. (2000). *Disturbing the universe: power and repression in adolescent literature*. Iowa City: University of Iowa Press.

Tuck, E., Yang, K. W. (2012). "Decolonization is not a metaphor". In *Decolonization: Indigeneity, Education & Society*, 1(1), 1-40.

Zapf, H. (2017). "Cultural Ecology as a Transdisciplinary Paradigm of Literary Studies". In Gabriele Dürbeck, et al. (Eds), *Ecological Thought in German Literature and Culture*, Lanham, MD: Lexington Books/Fortress Academic, 145-157.

CHAPTER 1



***Arctic Vanishing Cryosphere:
Multidisciplinary and Ecocritical
Inquiries in The Making of 'Arcticness'***

1 ARCTIC VANISHING CRYOSPHERE: MULTISCIPLINARY AND ECOCRITICAL INQUIRIES IN THE MAKING OF 'ARCTICNESS'

How the Arctic is imagined serves [to] illuminate wider lines of inquiry informing the way we envision the world and humanity's place and purpose in it.

(Maria Lindgren Leavenworth 2024: 9)

As the Arctic ice disappears, so does a library of ancient knowledge etched in snow, sung by elders, and carried by migrating herds. The cryosphere is not only frozen water, but a living archive of meaning, memory, and moral obligation. Cultural loss is connected to physical survival – specifically, but not exclusively, of Indigenous populations – which in turn is a deeply political issue interconnected with capitalism and colonialism. For this study, the choice to deepen cultural and literary expressions does not necessarily imply a replacement of a more holistic and material socio/political/economical understanding of the climate crisis. Indeed, the melting of the Arctic cryosphere is both a terrestrial crisis and a moral reckoning, and an erasure of culture and future from the ice. In the Arctic, ice is more than environment; it is kin, teacher, and archive. As it melts, cultures rooted in its presence face a profound unmooring, where traditional knowledge becomes orphaned from the land that once gave it meaning. The changing Arctic demands a conversation between data and story, and between satellite images and ancestral memory. Only when science maps the loss and the humanities give it meaning can we truly grasp what is at stake: not just ice, but the interconnected futures of climate, culture, and conscience. While science records rising temperatures, the humanities

hear the fading echoes of stories once rooted in snow. Together, they reveal that climate change is not only a physical transformation, but a disruption of lives and meanings.

Coming from the Ancient Greek *krúos*, meaning “icy cold”, and the Latin *sphaera*, meaning “ball” or “globe”, the word ‘cryosphere’ refers to those parts of the Earth on and below the surface of the land and ocean that are frozen, in regions where water freezes into snow or ice. Part of the cryosphere are cryospheric components such as snow cover, glaciers, ice sheets, ice shelves, icebergs, sea ice, lake ice, river ice, permafrost and seasonally frozen ground (fig. 1):

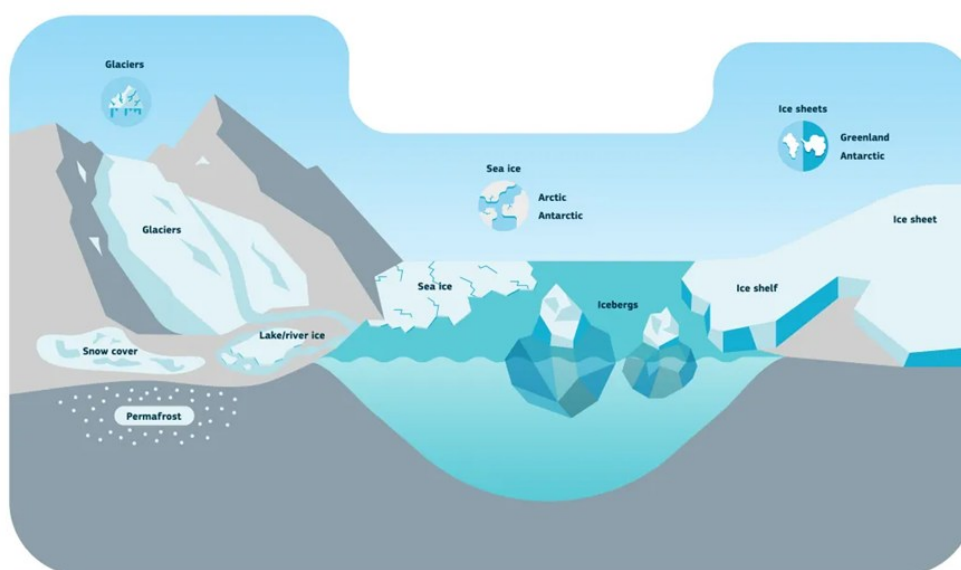


Figure 1: Different features of Earth's frozen regions, known as the cryosphere.
Credit: Copernicus Climate Change Service (C3S), NSIDC.org.

Humankind depends on the cryosphere, as it holds significant reservoirs of freshwater sustaining ecosystems and supporting livelihoods across the globe: ice masses cover about 10% of our planet's surface, about 10% of our planet's is covered in ice, and around 70% of the Earth's freshwater is stored in glaciers and ice sheets (IPCC 2019). Specifically, the mountain cryosphere plays an important role in providing freshwater for around half of the world's population (Barnett et al. 2005). When cryosphere melts, it contributes significantly to sea level rise; it disturbs ocean currents and, in turn, mid-latitude weather; it causes deadly floods, landslides and rockfalls. Moreover, the constant loss of cryosphere catalyses climate change through the release of greenhouse gases and the change in our planet's surface albedo (IPCC 2019).

The Arctic, in particular, is changing at a high pace, with temperature increasing three to four times faster than the global mean (Serreze and Barry 2011). Accelerated warming and its impacts on the cryosphere necessitate immediate implementation of targeted climate change mitigation strategies, including greenhouse gas emission reductions, alongside adaptive measures like improved water resource management and infrastructure resilience at local, national, and international levels (IPCC 2019). While all greenhouse gas-driven warming necessitates mitigation, accelerated warming in sensitive systems like the cryosphere presents heightened risks requiring especially urgent and targeted responses to both reduce emissions and strengthen adaptive capacity. In sum, the urgency comes from the scale and speed of warming and its cascading effects on natural and human systems globally (Ibid.).

Efforts to increase the capacity of cryosphere-dependent communities to adapt need to be supported, and enhanced actions must be taken to reduce emissions of greenhouse gases and meet long-term temperature goals and effective implementation of the Paris Agreement. Research by Alexandra Jahn (2018) and Jaime B. Palter et al. (2018) suggests that among the most effective

strategies to mitigate the risk of irreversible regional and global impacts resulting from the loss of the cryosphere. Rising temperatures in the Arctic are already leading to shorter snow seasons (Pauli et al. 2013), thawing permafrost and the retreat of the region's sea ice, ice caps and glaciers (Notz and Stroeve 2016).

This chapter aims to provide basic information about the more dominant ice melting phenomena currently ongoing in the Arctic, by focusing on ice loss and cryosphere disruption. In doing this, I will highlight the importance of adopting pan-Arctic visions, capable of bridging and creating fruitful interactions between life sciences, the humanities and traditional ecological knowledge. Moreover, a brief overview of the role of Arctic humanities and environmental narratives will be presented as a tool to convey ecological messages and scientific dissemination. Finally, an overview of ecocriticism as main methodological framework, especially highlighting its recent developments and inquiries, will be provided.

1.1 ENVIRONMENTAL DISRUPTION AND ICE LOSS

Never before has the Arctic experienced such high pressure by human impact (Overland et al. 2019), either by local environmental disturbances or by global climate change, leading to long-term changes and massive challenges to the resistance and resilience of polar ecological systems and Arctic societies. Snow and ice cover play an important land-atmosphere interaction, influencing climate variability at regional and global scales and sustaining water resources. Hydrologic and geomorphic processes are rapidly changing in Arctic regions, and the frequency of geohazards such as rain on snow floods, sudden melt and thaw events, catastrophic drainage of thermokarst lakes², and glacial lake outburst floods increase in response to climate and terrestrial changes.

² Thermokarst lakes are the results of processes, such as collapse, subsidence and erosion, by which characteristic landforms result from the thawing of ice-rich permafrost (Harris et al. 1988).

The Arctic, located at the northern tip of the globe, is a macro-region of roughly 4 million people and 20 million km² (only the area above the Arctic circle, that is, north of 66.6° N latitude, including 14 million km² of the Arctic Ocean), 4.5 times the size of the EU. Arctic regions have been undergoing profound changes driven by the forces of globalization and global climate change. Geographically, the Circumpolar North refers to the region surrounding the Arctic Ocean, which is covered year-round by sea ice except where the ice melts seasonally in summer. This region includes the Arctic Ocean itself and the adjacent landmasses of the surrounding continents. The North Pole is located in the central Arctic Ocean where only drifting sea ice is present. The land of the Circumpolar North comprises 13.5% of the land area of the Northern hemisphere on three major landmasses (northern North America, Greenland and northern Eurasia, as well as Iceland) and, within those there are portions of the nation states of Denmark (including Greenland and the Faroe Islands), Russia (Siberia), USA (Alaska), Norway, Sweden, Finland, Canada and Iceland. These same countries also comprise the Arctic Council of nations. It is possible to conceptually divide the Arctic into three structurally different Arctic macro-regions:

1. Arctic North America (Alaska's and Canada's northern territories), a region with a strong Indigenous presence, which is also the basis for land claims;
2. Russian Arctic (including Siberia), with a long tradition of a "strong" state providing services but leaving limited room for local initiatives;
3. Arctic Europe (northern Fennoscandia, Iceland, Greenland), a very heterogeneous region – more realistically, three different regions put together – characterised by democratic traditions without formal land claim agreements, but in which strong Indigenous organizations are present.

The cryosphere influences climate, ecological and social systems in the Arctic macro-regions and across the globe. Arctic surface air temperature has increased by more than double the global average over the last two decades, with feedback from loss of sea ice and snow cover contributing to the amplified warming. Climate-related changes to Arctic hydrology, wildfires and abrupt thaw are occurring, with impacts on vegetation, water and food security. Future climate-induced changes in the polar oceans, sea ice, snow and permafrost will drive habitat and biome shifts, with associated changes in the ranges and abundance of ecologically important species (IPCC 2019: 207).

The European Arctic – that is, the European part of the circumpolar Arctic – refers to the northernmost regions of Finland, Norway and Sweden (that is, the Fennoscandia), as well as northwest Russia and areas located in the North Atlantic, including the Faroe Islands, Greenland and Iceland. The following section examines shared ice-melting phenomena in the Arctic, but with Fennoscandia and Alaska at the center of the focus, through the lens of the cascading effects of climate change and their impact on the Arctic cryosphere.

1.1.1 Anticipated Impacts of Arctic Climate Change

Over the past 2.6 million years³, The Earth has fluctuated between glacial periods and interglacial periods (Lisiecki and Raymo 2005). We have been living in an interglacial period over the past 11,000 years (North Greenland Ice Core Project members 2004). During this time, the Earth's climate has been relatively stable, favouring the development of human civilization. Since 1850, the average global surface temperature on Earth has risen by 1.1°C and, according to a 2023 report by the Intergovernmental Panel on Climate Change, the world

³ These glacial–interglacial cycles have waxed and waned throughout the Quaternary Period (the past 2.6 million years). Since the middle Quaternary, glacial–interglacial cycles have had a frequency of about 100,000 years (Lisiecki and Raymo 2005).

is heading towards an increase of between 1.4°C and 4.4°C by the year 2100 (IPCC 2023). Whether the increase is closer to the top or bottom of this range will depend upon how rapidly we manage to cut back our emissions of greenhouse gases. Should the planet warm by about 2°C by 2100, water availability may decline by up to 20% in some river basins dependent on seasonal melting snow (Schneegans 2024). This will affect agriculture, hydropower and households (Barnett et al. 2005).

Pronounced changes in the Arctic add a new potential driver of anomalous weather patterns in midlatitudes that affect billions of people (Cohen et al. 2014). Warming temperatures and extreme events are affecting the Arctic terrestrial landscape in many ways, e.g. through expansion of shrubs into tundra, increased vulnerability to insect disturbances, regional declines in tundra vegetation, and increases in severe fire years (Finger-Higgins et al. 2021). In a similar vein, the marine areas are influenced by climate change, so that the loss of sea-ice has triggered shifts in marine algal blooms, with potential impacts throughout the food web including krill, fish, birds, and mammals in marine ecosystems (AMAP 2019). The changing Arctic influences the global climate through several processes and, as spring snow and summer sea ice cover decrease, more heat is absorbed at the surface (Perovich and Polashenski 2012). There is growing evidence that ongoing changes in the Arctic, primarily sea ice loss, can potentially influence mid-latitude weather (Cohen et al. 2014). As temperatures increase in the Arctic, permafrost soils in northern regions store less carbon (Turetsky et al. 2020). The release of carbon dioxide and methane from the land to the atmosphere further contributes to global warming (IPCC 2019: 276).

Global warming has a negative impact on plant and animal dependent on the cryosphere, as they have adapted over time to life in their icy environment

(Post et al. 2009). The Arctic polar bear filmed in 2017 by Paul Nicklen⁴, a photographer for *National Geographic* and a SeaLegacy⁵ activist, has become emblematic thanks to a video that has gone viral⁶. The bear in the film is a male from Baffin Island, in the Canadian Arctic. The location is an ice-free beach in late summer, and the scene is dramatic: the bear with protruding bones drags itself across the gravel in search of food, grabs something with its teeth from a rusty bin, gulps down with drool in its mouth and then lies down on the ground waiting for death. The dying Baffin bear has immediately become the symbol of contemporary human indolence, even if we cannot prove that it is in that condition due to the lack of ice (Born 2018). In any case, is not this perhaps a first glimpse into a future in which the ice will reach its lowest historical extent? The effects of global warming force animals to move further and further away to find their usual hunting habitat, as it is estimated that the ice-free season lasts twenty weeks more than forty years ago (Seebacher and Post 2015). In other words, polar bears must face longer journeys to reach the ice where seals live, which in spring are young and naive but in late summer become reactive, able to defend themselves from attacks⁷ (Born 2018). Consequently, polar bears expend more and more energy to find meat and store calories, triggering a vicious and losing cycle (Seebacher and Post 2015). Driven by hunger, they move across the sea on precarious ice floes, as suggested by another iconic image of climate change in which the life raft is infinitely disproportionate to the

⁴ Paul Nicklen Photography, URL: <https://paulnicklen.com/> (accessed 18 May 2025).

⁵ SeaLegacy was co-founded in 2014 Paul Nicklen and Cristina Mittermeier, a pioneer of the modern conservation photography movement. SeaLegacy is a Canadian-based organization that uses photography, filmmaking and storytelling to inspire action for a better world. At the nexus of climate action and sustainable solutions, SeaLegacy creates “strategies and content that instill hope and move audiences into action” (<https://sealegacy.org/>, accessed 18 May 2025).

⁶ National Geographic YouTube channel, “Heart-Wrenching Video: Starving Polar Bear on Iceless Land”, published 11.12.2017. URL: https://www.youtube.com/watch?v=_JhaVnJb3ag (accessed 18 May 2025).

⁷ While many polar bear populations are declining due to sea ice loss, some subpopulations are stable or even increasing, often depending on regional conditions (Laidre et al. 2015).

weight of the passenger. The most powerful animal has become the most fragile.

The cryosphere is also home to a wide range of species, including evergreen shrubs, dwarf shrubs like bearberry, the Arctic fox, snowy owls and seals. On land in the Arctic, some globally unique biodiversity may be lost to climate change (Post et al. 2019). Woody shrubs and trees are projected to cover 24-52% of Arctic tundra by 2050 (Pearson et al. 2013). About 20% of permafrost in the Arctic could thaw abruptly, causing ground subsidence (Schneegans 2024). Humans will also be affected by the melting cryosphere: people living in coastal regions will be vulnerable to sea-level rise, those living in upstream mountain areas will be exposed to a greater risk of floods, landslides and avalanches, while people living in downstream areas that are reliant on glacier-fed water sources may experience water shortages.

A shorter season of snow cover may favour wildfires across most northern and some mountainous regions. Factors affecting wildfire risk include changes in precipitation and soil moisture, thawing permafrost and poleward shifts in vegetation, which can create more fuel for fire. Wildfires are also a source of atmospheric mercury and black carbon; particulates and other components of wildfire smoke can increase local air temperatures and be deposited on snow and ice, darkening them and accelerating melting (AMAP 2025). Furthermore, mental trauma and health conditions⁸ associated with wildfires should not be underestimated. Wildfires have become increasingly frequent and severe in Canada. A study conducted by Mao Wanying et al. (2024) examines the prevalence of Major Depressive Disorder (MDD) and its

⁸ As Wanying et al. (2024) state: "Except for the possibility of bodily injury resulting from fire heat, smoke is equally dangerous due to the large amounts of carbon dioxide and carbon monoxide released into the atmosphere during combustion. Acute health effects of wildfires include reduced lung function, chronic lung disease exacerbation, neurological impairment, and increased mortality" (209).

associated factors among residents of Alberta and Nova Scotia who experienced recent devastating wildfires. Results indicate a markedly higher prevalence of MDD among wildfire survivors compared to general population estimates, with increased risk observed in individuals with direct fire exposure, evacuation experiences, property loss, and limited social support. Additional factors significantly associated with MDD included female gender, lower socioeconomic status, and pre-existing mental health conditions (Wanying et al. 2024: 209).

Satellite observations of extreme wildfires around the world from 2003-2023 show that the largest regional increase was in the Eurasian Arctic, where the number of extreme wildfires increased by more than a factor of four (Cunningham et al. 2024). On May 13th, 2025, Russia has declared a state of emergency in eastern Siberia, as fire fighters struggle to extinguish a series of sweeping wildfires. The mountainous region is located on the eastern side of Lake Baikal, the world's largest fresh-water lake. Regional officials say more than 90% of the fires were caused by careless human behaviour. On Tuesday 13th, May, 2025, twenty-two fires were reported burning in the region, covering an area of over 53,000 hectares⁹. On May 20th, 2025, Russia's Aerial Protection Service¹⁰ reported forty-nine fires burning across nearly 700,000 hectares (2,700 square miles) in six regions of the country.

In contrast to the immediate impact of wildfires, terrestrial snow cover is a defining characteristic of the Arctic land surface for up to nine months each year, with changes influencing the surface energy budget, ground thermal regime and freshwater budget (IPCC 2019: 246). Snow cover also interacts with

⁹ Express.co.uk, "Panic in Russia as state of emergency declared after huge fires rage out of control", URL: <https://www.express.co.uk/news/world/2054586/russia-state-emergency-buryatia-wildfires> (accessed 16.5.2025). On the recent wildfires spreading in the Siberian Arctic, see Luo et al. (2024), "Rapid summer Russian Arctic sea-ice loss enhances the risk of recent Eastern Siberian wildfires". In *Nature communications*, 15(1), 5399-4017.

¹⁰ Aviales.ru, URL: <https://aviales.ru/popup.aspx?news=9323> (accessed 30 May 2025).

vegetation, influences biogeochemical activity and affects habitats and species, with consequences for ecosystem services. Dramatic reductions in land areas north of 60° N snow cover extent have occurred since satellite charting began in 1967 (Estilow et al. 2015). Spring snow cover in the Arctic (from May through June) decreased by 26.7% from 1979-2023, with the largest decrease (28%) over Eurasia (AMAP 2025). Furthermore, in line with an overall increase in precipitation in the Arctic, the number of days with rainfall has increased at the expense of snow. In fact, the snow-covered area has declined also in October and November across the Arctic as a whole. Ecosystem impacts of declining snow cover include increased plant biomass, which may provide even more fuel for wildfires (Ibid.).

Response options exist that can ameliorate the impacts of Arctic change and allow time for effective mitigation measures: a pathway of 1.5°C – with a CO₂ peak of about 430 PPM¹¹ – can slow cryosphere losses to rates that enable feasible adaptation, greatly minimizing loss and damage. In fact, immediate mitigation measures, resulting in temperatures close to the 1.5°C Paris limit, reliably maintain atmospheric CO₂ well below 450 ppm; the most ambitious measures see CO₂ levels peak at 430 ppm (IPCC 2019). The rate of sea-level rise would then stabilize by 2100 because temperatures, while peaking at 1.6°C, would by then decline to around 1.4°C (Hamlington et al. 2024). This requires urgent action, however, with emergency-scale tightening of mitigation commitments and a 40% decline of fossil fuel emissions by 2030. Unfortunately, even the 1.5°C pathway may not be sufficient, with a best-case scenario that sea-level rise would slow down but not stop (Fawzy et al. 2020). This level of

¹¹ The referenced CO₂ concentration of approximately 430 PPM corresponds to current atmospheric levels as of 2026, reflecting the present-day conditions. This concentration is associated with a global warming level close to 1.1-1.2°C above pre-industrial temperatures, underscoring the urgency and feasibility of limiting further warming to 1.5°C through effective mitigation and adaptation measures.

mitigation is the only chance to preserve at least some minimum glacier ice (15–35%) in some mid-latitude regions, including Scandinavia, Iceland and the Alps (IPCC 2019).

Remaining below 1.5°C will still produce significant permafrost thaw and related emissions, but on a much smaller scale, since temperatures in the Arctic will “only” average 3–4°C higher than today. Studies consistently indicate that Arctic sea ice will still melt almost completely during some summers even at 1.5°C, but not each year and only for a brief period (days to a few weeks). Reducing the frequency of ice-free conditions will greatly decrease impacts and feedback both in the Arctic and throughout the planet, decreasing adaptation burdens, though still with some impacts tipping into loss and damage, especially for Arctic Indigenous communities (ICCI 2024). It is immensely important, though, to note that “the Arctic of the future will certainly be very different regardless of the emissions scenario” (AMAP 2019). It is obvious that there is a need to adapt to significant climate change impacts in the region, given that no matter what climate reduction measures will be achieved, the region will undergo fairly significant change (Koivurova et al. 2021: 49).

1.1.2 Permafrost Thaw and its Cascading Effects on Hydrological Cycle and Land Subsidence

Permafrost, the perennial frozen ground, is often imagined as consisting of ice below the surface, but this is not always true. In its simplest form, Permafrost is the portion of the Earth's surface with ground temperatures at or below 0°C continuously for at least two consecutive years, regardless of whether the ground is fully frozen or partially unfrozen (i.e., ice-free), meaning that the temperature is below freezing throughout the year (French 2017). Permafrost occurs within all soil and sediment types, and within solid rock. The southern limit of the Circumpolar North is frequently defined by the extent of

discontinuous permafrost. Because of this, frozen ground is an important reality to the peoples of the Arctic, and for all economic activity.

Permafrost can generally be categorized based on its geographical distribution into two main types: continuous and discontinuous. The continuous type is characterized by nearly unbroken expanses of frozen ground. In contrast, discontinuous permafrost occurs in areas where between 50% and 90% of the terrain remains frozen year-round, with mean annual air temperatures typically below -2°C (French 2017). Within discontinuous zones, permafrost commonly coexists with unfrozen ground, creating a patchwork pattern of frozen and thawed areas. These unfrozen patches, often referred to as taliks¹², may be found on south-facing slopes that receive more solar radiation, or beneath bodies of water (such as lakes and ponds) that do not freeze completely during winter (Williams and Smith 1989). In such contexts, unfrozen ground in permafrost regions, especially when surrounded by permafrost (Yershov 2004).

Where mean annual temperatures are below -5°C , the zone is made of continuous permafrost, only broken by taliks formed under water bodies whose full volume does not freeze during the winter even though the surface is completely frozen. Typically, this is limited to medium to large lakes and large rivers. In fact, small lakes may have unfrozen ground immediately beneath them, but permafrost is present below that. Within the continuous permafrost zone, the ground can be frozen to at greater than 1500 meters below the surface, coinciding with the coldest annual air temperatures in the Northern hemisphere. Cold-based glaciers are also underlain by continuous permafrost. Moreover, Arctic Ocean surface waters are typically about -2°C throughout the

¹² A talik , that is a layer or body of unfrozen ground occurring in a permafrost area due to a local anomaly in thermal, hydrological, hydrogeological, or hydrochemical conditions (NSIDC, definition of “talik” in *Cryosphere Glossary*, <https://nsidc.org/learn/cryosphere-glossary> (accessed 31 March 2025)).

year, due to the salt content lowering the freezing point below 0°C. This cold surface of water preserves subsea permafrost and prevents its melting; however, warming ocean temperatures could put this permafrost at risk, also risking the thawing and release of other frozen materials such as gas hydrates (NSIDC.org).

While the majority of Earth's heat is derived from solar radiation, internal heat generated within the Earth also radiates outward, creating a temperature gradient from the Earth's core to its surface, a phenomenon known as the geothermal gradient (Demezhko and Gornostaeva 2015). As a result of this geothermal heat, the formation of deep permafrost necessitates prolonged periods of air temperatures that are significantly below freezing. The rate of permafrost growth slows exponentially with increasing depth due to the opposing geothermal heat flux. When permafrost exists and summer air temperatures rise above 0°C, the uppermost portion of the permafrost undergoes seasonal thawing and refreezing, forming what is known as the active layer. The thickness of this layer ranges from only a few centimeters in the coldest regions to up to 4 meters in warmer southern zones near the permafrost boundary (Harris et al. 1988). The lower boundary of this layer is referred to as the permafrost table. Where the active layer lies within soil or unconsolidated sediments, especially in areas with significant snow cover, it often contains high moisture content, which facilitates cryoturbation, a freeze-thaw-driven mixing of soils (French 2017).

Moreover, the intensifying impacts of climate change, including more frequent and severe weather events, pose significant risks to infrastructure. Specifically, critical infrastructure such as housing, transportation networks (including roads and airstrips), utilities like water and sewage systems, coastal facilities, and communication networks are all vulnerable (Hjort et al. 2022). For example, thawing permafrost undermines building foundations and damages

roads, as seen with communities like Newtok and the Dalton Highway in Alaska (Ibid.). Coastal erosion threatens settlements such as Shishmaref, putting homes and cultural sites at risk (Hjort et al. 2018). Additionally, flooding and ground instability compromise water supply and sewage systems, impacting community health and sustainability. These challenges highlight the urgent need for targeted adaptation strategies to protect Arctic infrastructure and the communities that depend on it (Langer et al. 2023).

These risks are particularly acute in the Arctic, where the effects of climate change (such as coastal erosion, permafrost degradation, shifts in precipitation patterns, and flooding) are disproportionately felt by Indigenous and local communities (Irrgang et al. 2022; IPCC 2019). In some of the most sensitive regions, abrupt permafrost thaw occurs when environmental changes interact with geomorphological factors. As ground ice melts, the terrain subsides; meanwhile, pooled or flowing water leads to localized thaw and, in some cases, extensive erosion. This may result in meters of permafrost thawing within a short span, far exceeding the thaw attributable to air temperature rise alone¹³. Such thawing events represent pulse disturbances triggered by climatic drivers, such as extreme rainfall, or in combination with disturbances like wildfire, which alter the thermal dynamics of the ground (IPCC 2019).

Overall, permafrost temperatures have increased, and Arctic winters are now shorter and warmer than in the past. These changes disrupt the Arctic's natural climate-regulating processes – such as snow and ice cover reflecting sunlight – and reduce its capacity to maintain the cold conditions necessary for permafrost stability. High temperatures at ~10-20 m depth in the permafrost (near or below the depths affected by intra-annual fluctuation in temperature) have been documented at many long-term monitoring sites in the Northern

¹³ Abrupt thaw is often caused also by air temperature increases. The difference is in the rapid thermal erosion, in contrast to a gradual increase in the active layer (Turetsky et al. 2020).

Hemisphere circumpolar permafrost region, and at some locations, the temperature is between 2°C and 3°C higher than 30 years ago (IPCC 2019). Most Arctic infrastructure and systems encompassing the technical and operational networks essential for daily life, public health, safety, and economic activity were designed with steady permafrost state conditions in mind; now, with the effects of warming temperatures, active layer thicknesses are increasing, often beyond what infrastructure was designed for. In addition, economic activity in the Arctic often relies on winter transportation of equipment over ice roads built over permafrost and frozen lakes and rivers. Increased Arctic temperatures have led to later freeze-up and earlier melt of ice roads, limiting the viability of communities. Projected permafrost thaw and decrease in snow will affect Arctic hydrology and wildfires, with impacts on vegetation and human infrastructure (IPCC 2019). A circumpolar study found that approximately 70% of infrastructure (residential, transportation and industrial facilities), including over 1200 settlements (~40 with population more than 5000) are located in areas where permafrost is projected to thaw by 2050 (Hjort et al. 2018).

Moreover, one of the most troubling aspects of thawing permafrost is the sheer volume of carbon stored within it. Soils are the largest carbon reservoir on land worldwide, and permafrost soils contain 50% of this carbon, which is stored in the form of organic matter, but also as carbon dioxide (CO₂ created by aerobic microbial decomposition¹⁴) and as methane (CH₄ created by anaerobic microbial decomposition), both frozen within permafrost (Hugelius et al. 2013).

¹⁴ Aerobic decomposition and anaerobic decomposition are two different processes by which organic matter is broken down. Aerobic decomposition occurs in the presence of oxygen and involves the breakdown of organic matter by aerobic bacteria and fungi. This process is more efficient and produces carbon dioxide and water as byproducts. On the other hand, anaerobic decomposition occurs in the absence of oxygen and involves the breakdown of organic matter by anaerobic bacteria. This process is slower and produces methane and carbon dioxide as byproducts (ThisVSThat, URL: <https://thisvsthat.io/aerobic-decomposition-vs-anaerobic-decomposition>, accessed 31 March 2025).

As a consequence of permafrost melting, trapped carbon dioxide and methane are released along with black carbon¹⁵. Black carbon is made up of short-lived climate pollutants that, despite remaining in the atmosphere for shorter periods of time, are approximately 25 times more potent and powerful than carbon dioxide in terms of their contribution to global warming (Mead 2022). If today's rapid warming and permafrost thaw continue, the release of carbon from thawing permafrost will rapidly reduce much of the remaining carbon budget to stay within 1.5°C (ICCI 2024). As a result, Arctic regions have the potential to dramatically worsen the human-induced greenhouse effect, leading to additional dramatic climate change which will continue to disproportionately affect the Arctic.

1.1.3 Glaciers and Icebergs

Glaciers cover nearly 2.1 million km², some 10% of the Circumpolar North. Most simply, a glacier is a mass of dense ice on the landscape that deforms under its own weight. Glaciers are formed where the mass of annual snow falling on the glacier exceeds the mass of ice that is lost each year by melting, or, in the case of glaciers ending in the water, by breaking off – that is, calving – into the ocean (NSIDC.org)¹⁶. Glaciers form when snow that falls in the winter does not completely melt during the summer and thus remains from year to year; this means that the mass of snow that falls during the winter is greater than the mass of water that melts in the summer. This concept is known as mass balance (Cuffey and Paterson 2010). On a typical glacier, snow that falls in the accumulation zone – defined as the region with a net annual accumulation of snow and ice – is buried each year by additional snowfall (Benn and Evans

¹⁵ Black carbon, which causes up to a quarter of warming in the Arctic, is a dark soot that deposits in snow and ice when released, accelerating melting (Shankman 2018).

¹⁶ National Snow and Ice Data Center (NSIDC), "Glaciers", URL: <https://nsidc.org/learn/parts-cryosphere/glaciers> (accessed 16 May 2025).

2010). On the contrary, the region with net annual loss, or ablation, of snow and ice is known as the ablation zone. The line separating the accumulation zone from the ablation zone is known as Equilibrium Line Altitude (ELA)¹⁷. With the weight of each newly accumulated snowfall, the older snow is compressed and eventually solidified into ice. In addition, ice does not simply remain rigidly solid, it deforms and flows under its own weight. Any melting of this ice introduces freshwater to the ocean, which in turn raises global sea level (NSIDC.org)¹⁸.

Icebergs are large floating chunks of ice, detached from a glacier and carried out to a lake or the ocean. Icebergs come in all shapes and sizes, from ice-cube-sized chunks to ice islands the size of a small country. The term “iceberg” refers to chunks of ice larger than 5 meters (16 feet) across: these chunks of ice are made up of freshwater ice, which melts while floating to more southerly latitudes. Icebergs can be massive and have most of their volume underneath the ocean surface; typically, only 10% of the iceberg peaks out above the surface while 90% is below the sea surface. Smaller icebergs, known as “bergy bits” and “growlers”, can be especially dangerous for ships because they are harder to spot. The North Atlantic and the cold waters surrounding Antarctica are home to most of the icebergs on Earth (NSIDC.org)¹⁹.

Glaciers are sensitive indicators of climate change and are retreating at unprecedented rates, reshaping landscapes and the world as we know it. Implemented by Unesco and WMO (World Meteorological Organization), 2025

¹⁷ The lower topographic limit of multi-annual snow cover is called the snow line or equilibrium line altitude (ELA). It is an irregular line (altitude) located along the ground surface above which snow does not entirely melt in summer. At the ELA the accumulation of snowfall equals ablation (melting and evaporation). This line varies greatly in altitude. The annual equilibrium line separates the accumulation and ablation zone and differs annually. Average altitudes of the snow line taken over large areas can be used to derive a climatic snow line, which rises or falls in altitude in response to worldwide climatic zones. Polarpedia.eu, “Equilibrium line altitude (ELA)”, URL: <https://polarpedia.eu/en/equilibrium-line-altitude-ela/> (accessed 16 May 2025).

¹⁸ NSIDC, “Glaciers”. URL: <https://nsidc.org/learn/parts-cryosphere/glaciers> (accessed 3 April 2025).

¹⁹ National Snow and Ice Data Center (NSIDC), “Ice shelves & icebergs”, URL: <https://nsidc.org/learn/what-cryosphere#anchor-ice-shelves-icebergs> (accessed 16 May 2025).

was declared as the “International Year of Glaciers Preservation” (UN-glaciers.org) with the aim of raising global awareness about the critical role of glaciers, snow and ice in the climate system and the hydrological cycle, and the economic, social and environmental impacts of the impending changes in the Earth’s cryosphere. Climate change involving deglaciation is severely impacting polar regions and global oceans. Furthermore, global warming is very likely to enhance the frequency and size of calving events (i.e., chunks of ice breaking off at the end of a glacier) in polar regions, leading to significant changes in glacier and ice shelf dynamics (YIPG 2025). A warmer climate is triggering increased melt, ocean warming, hydraulic fracturing of ice and can promote increased calving and degeneration of icebergs with impacts on navigation²⁰. Worldwide, many glaciers are expected to disappear by 2100 regardless of the emission scenario, especially in regions with smaller glaciers. The World Glacier Monitoring Service²¹ has calculated that, since 1970, the glaciers it has been tracking have lost the equivalent of slicing 27.5 m of ice off the top of every glacier.

In *State of the Cryosphere 2024. Lost Ice, Global Damage* (ICCI 2024), UNESCO has also stressed the need to raise public awareness on the important role that snow, permafrost and glaciers play in the climate system and in the hydrological cycle, in order to explain the impact that climate change is having on ecosystems and on downstream communities dependent on mountains for their water supply. While the rapid melting of glaciers temporarily increases water availability, as the glaciers continue shrinking, seasonal availability will begin to decrease (referred to as passing “peak water”, ICCI 2024). Catastrophic and cascading impacts from glacier and snow loss are associated

²⁰ UN-glaciers, “YIPG 2025”. URL: <https://www.un-glaciers.org/en/key-messages> (accessed 27 February 2025).

²¹ WGMS, URL: <https://wgms.ch/> (accessed 3 April 2025).

with the actual levels of rapid warming, with some vulnerable mountain and downstream communities already facing non-survivable conditions by mid-century due to loss of seasonal water availability or destructive floods from which they are unable to recover. Glacial melt globally set a record loss in 2023, according to the World Glacier Monitoring Service (Zemp et al. 2023). Reported observations thus far from 2024 indicated record losses in some regions, with Sweden showing the highest melt levels in 80 years of observations (Forsberg 2024). It is very likely that projected Arctic warming will result in continued loss of sea ice and snow on land, and reductions in the mass of glaciers. Important differences in the trajectories of loss emerge from 2050 onwards, depending on mitigation measures undertaken (IPCC 2019).

Glaciers also carry huge cultural and spiritual significance for many Indigenous peoples and local communities and provide economic and educational benefits through the recreation and tourism associated with them (Schneegans 2024). Glacier melting is natural for the earth's cycle, but the problem today is that the melting takes place so fast that the ecosystem does not have time to adapt. A relatively newly invented concept is the so-called 'endangered glaciers', referring to Mark Carey (2007). According to Carey, the expression "endangered glaciers" reflects a cultural and historical construction of glaciers as vulnerable, threatened entities. It does not just describe physical melting due to climate change, but it also reveals how societies have come to value, fear for, and attempt to protect glaciers as part of the global environmental imagination. Moreover, in early 2025, Nina Kirchner, professor of glaciology, stated during an interview that:

The glaciers and their situation affect everyone, even if you live a thousand kilometres away from them. And even if the glaciers do not have a direct supply task in Sweden, as in the Himalayas, where you

depend on glacier meltwater to get drinking water during the drought, the glaciers affect ecosystems, animals and plants.²²

Nina Kirchner's statement highlights the far-reaching impact of glaciers beyond their immediate surroundings. Even in places like Sweden, where glaciers may not directly provide essential resources such as drinking water, their state influences broader ecological systems. Glaciers play a crucial role in regulating ecosystems, supporting wildlife, and maintaining environmental balance. Thus, their retreat or loss due to climate change has cascading effects that extend globally, affecting biodiversity and natural processes far from the glaciers themselves. Nowadays, glaciers are one of the greatest symbols of global warming: they have indeed a symbolic and visual significance for the discussion around global warming and the climate crisis. As Kirchner (2025) exemplifies, "in Iceland, a graveyard of glaciers has been symbolically uncovered, and there are many ongoing projects to save them, for example, by covering them with blankets to reduce melting by reflecting the sun's rays. The glaciers have received more and more media attention, but, unfortunately, the attention is negative due to the record-breaking melting" (Ibid.).

With the same vision in mind, but almost two decades earlier, Mark Carey wrote an article²³ in which he analyses the reasons why glaciers have become so inexorably tied to climate change in our contemporary imaginary, stating that it is necessary "to look beyond science and environmental change – to turn additionally to culture, history, and power dynamics" (2007: 500). He then analysed recent manifestations of glaciers narratives (i.e. menacing, sublime, recreational, scientific and wilderness glaciers) within the global

²² Unric.org, "Glaciers: a symbol of the climate crisis", <https://unric.org/en/glaciers-a-symbol-of-the-climate-crisis/> (accessed 3.4.2025).

²³ Carey, M. (2007). "The History of Ice: How Glaciers Became an Endangered Species". In *Environmental History*, 12 (3), Oxford University Press, 497-527.

warming discourse and suggested some implications of the endangered glacier narratives for different social groups (501-508). For Indigenous and local communities residing near glaciers, these stories highlight threats to traditional livelihoods, cultural sites, and natural resources, sometimes prompting greater awareness and support but also risking external interference. Meanwhile, for scientists and environmental activists, glaciers serve as compelling symbols of climate change's urgency, helping to drive policy and public engagement, though this focus can sometimes narrow attention away from other critical climate issues. His methodological concept applied to the representation of glacial melting and its different narratives is still potentially of interest for a broader analysis of contemporary narratives and will be analysed in depth in the next chapter. What matters is that glaciers have become the main parameter in communicating climate change and ice loss, thanks to the yearly updated data from the hard sciences and the narratives around it, building a bridge between science and the humanities. Glaciers contain an essential record of past climate and environmental activity in their ice. Thus, the disappearance of glaciers results in the loss of unique archives of human, environmental and climate history. As glaciers retreat and disappear, sensitive ecosystems are lost, and with them globally important biodiversity.

1.1.4 Arctic Ocean and Sea Ice

To move toward a holistic understanding of the contemporary and future Arctic Ocean, scholars need to integrate multiple scientific disciplines and consider interconnected processes shaping the region's climate, ecosystems, and human communities. As previously mentioned, the Arctic Ocean is engirdled by land masses, but this does not mean that only sections of it should be considered, usually sections based on national interests and many international non-recognised territorial waters (Wassmann 2021). On the contrary, an

integrated understanding of it that combines different perspectives into one is indispensable to create a base for sustainable ecosystem management. This implies that our comprehension of the Arctic Ocean is also a question of geographic point of view: what would happen if scholars from different countries changed their strategy from investigating their own “oceanic backyard” to one where they do that jointly?

Scholars from European, Asian, American and Greenlandic perspective could envision the so-called “pan-Arctic” Ocean, meaning that, instead of seeing the ocean *ad marginem* from four edges, they would re-frame and unite every edged vision to one and only Arctic Ocean. The acidification of its waters, together with other changes implied by anthropogenic climate change, need a no-boundaries approach in which we go beyond our edges to lift our eyes from the nitty-gritty details to nothing less than a holistic level. Geographically, this interconnected system is defined by the relatively narrow gateways through which the Arctic Ocean links to the rest of the world’s oceans²⁴:

- from the northern Pacific Ocean to the Arctic Ocean by the Bering Strait (80 km wide and less than 50 m deep);
- from the Arctic Ocean to Baffin Bay and the Labrador Sea through the Northwest Passage (channels of the Canadian Arctic Archipelago, less than 100 km wide and less than 150 m deep);
- across the shallow Barents Sea between northwest Europe and the Svalbard archipelago to the northern Atlantic Ocean (less than 250 m deep);
- through the Fram Strait between Greenland and the Svalbard archipelago (2500 m deep and 500 km wide).

²⁴ For all information on the Arctic Ocean gateways, see Ostenso, N. A. (2025). “Arctic Ocean”. In *Encyclopedia Britannica*. URL: <https://www.britannica.com/place/Arctic-Ocean> (accessed 17 May 2025).

Except for Fram Strait, all the water flow between the Arctic and other oceans are constrained by these shallow, narrow gateways, with important consequences for ocean circulation globally. Because of ice retreat, today it is possible to navigate on new Arctic routes, both commercial and touristic. In 2012, the ship *The World* crosses the Northwest Passage, becoming the first cruise ship ever to do so (Toomey and Splettstoesser 2013: 319-320). In October 2013, the giant 225-meter-long *Nordic Orion* was the first commercial cargo ship to travel the unfrozen route, boasting that it had saved sixty thousand euros in fuel²⁵. It transported coking coal from the Canadian port of Vancouver to the Finnish port of Pori, delivering the cargo to the steel mill Ruukki Metals.

The chemistry of the global ocean is rapidly changing due to the uptake of anthropogenic carbon dioxide (CO₂). This process, commonly referred to as ocean acidification (OA), is negatively impacting many marine species and ecosystems (Terhaar et al. 2020). Increasing atmospheric CO₂ drives ocean acidification, with some of the fastest rates observed on Arctic shelves (Ibid.). Lowest pH levels occur near the coast due to the additional effects of land-derived carbon sources. However, the impact of anthropogenic climate change on seawater acidity mediated by increasing permafrost thaw and coastal erosion remains unknown. The increase in organic matter release by coastal permafrost erosion over the 20th century enhances the interannual variability of seawater pH in Arctic near-shore areas (Muth et al. 2022). As a consequence, carbonate undersaturation events, stressing marine ecosystems, become more frequent, intense, and longer-lasting (OA-ICC 2024). If CO₂ continues to accumulate in the atmosphere at today's pace, CO₂ levels will reach at least 600 ppm by the end of this century, with global mean temperature exceeding 3°C and continuing to increase thereafter. Damaging levels of acidification will

²⁵ COAL, "The First-Ever Bulk Freighter to Pass Through the Arctic Was Carrying Coal", URL: <https://coalnewsandviews.wordpress.com/2013/09/26/the-first-ever-bulk-freighter-to-pass-through-the-arctic-was-carrying-coal/> (accessed 19 May 2025).

occur throughout the Arctic and southern oceans (Muth et al. 2022). Rising CO₂ levels leading to ocean warming and acidification are expected to cause severe stress on polar marine ecosystems, with evidence from past mass extinctions and current observations indicating high risks of significant species declines and extinctions, especially when factoring in the slow dissipation of heat absorbed by the oceans (Ibid.).

Extreme warming from high CO₂ levels will also have severe consequences for today's system of global ocean currents, with highly unpredictable disturbance of the Atlantic and Antarctic circulation systems. Loss and damage to ecosystems and human communities will be extreme, and irreversible (ICCI 2024). In addition, the Arctic Ocean has become dominated by a thinner, faster moving covering of seasonal sea ice which typically does not survive the summer (Serreze and Stroeve 2015; Notz and Stroeve 2016). Sea ice reflects a high proportion of incoming solar radiation back to space, provides thermal insulation between the ocean and atmosphere, influences thermohaline circulation, and provides habitat for ice-associated species (IPCC 2019). Summer Arctic sea ice extent has often been considered a bellwether of climate change, with great attention paid to the September minimum extent each year (Screen and Simmonds 2010). In fact, sea ice thickness and extent have declined in all months since the 1980s (AMAP 2025); and the consensus of sea ice scientists is that the ice cover has already fundamentally changed, crossing a threshold to a new state (Sumata et al. 2023). Thinner sea ice also carries wide-ranging climatic, ecological, and economic consequences, and melting sea ice is further acidifying the Arctic Ocean. Climate-induced changes in ocean and sea ice, together with human introduction of non-native species, have expanded the range of temperate species and contracted the range of polar fish and ice-associated species (IPCC 2019: 205). One of the consequences is the loss of traditional livelihoods for Arctic Indigenous people

dependent on stable sea ice platforms for hunting, fishing and travel. Scientists co-working with local communities keep on collecting stories narrated by Indigenous peoples highlighting the ubiquity of sea ice and considering it as a character in their real stories. They keep narrating about the formation of sea ice becoming highly unpredictable and not in line with local knowledge and memories, while less sea and fiord ice enables increase in boat-based tourism and new maritime routes.

Less summer sea ice may also influence mid-latitude weather systems, as exemplified by the persistent and abnormal cold, warm, wet, and dry conditions in recent years that can be related to large north-south undulations in the jet stream (Tang et al. 2014). As reported by the International Cryosphere Climate Initiative (ICCI) in 2024, “this thinner, weaker ice is more prone to being pushed towards the Atlantic by winds where warmer waters result in faster rates of melting; consequently, sea ice now spends one-third less time in the Arctic Ocean compared to two decades ago. This former ‘ecosystem of ice’ is today nearly gone” (41). Moreover, Arctic sea ice loss over the past three decades has not occurred gradually, but rather abruptly due to warmer temperatures. The occurrence of the first sea ice-free Arctic summer is therefore difficult to predict, but scientists now believe it is inevitable, and likely to occur at least once before 2050, even under a very low emissions scenario (IPCC 2023). The global impact of complete Arctic summer sea ice loss will therefore include accelerated global warming and its cascading impacts (ICCI 2024). Ice, whether in the form of frozen seawater on the ocean or as glacial ice on land, is not just a passive component of the Earth’s climate system. Losses of ice amplify and exaggerate regional warming due to ice-albedo feedback. The albedo of dark, open water is vastly less than that of ice and snow: dark open water reflects about 10% of incoming short-wave radiation compared to up to 90% for ice and snow (IPCC

2019). As a result, open water absorbs nearly ten times more heat than snow-covered sea ice.

Tightly interconnected initiatives in relation to ocean protection are occurring, confirming the need for multidisciplinary studies. For example, as described by Mission Blue²⁶, “Hope Spots” is an initiative supporting areas with diverse species and with significant historical, cultural or spiritual values that need new protection. The idea behind the concept of Hope Spots is that “anyone can nominate a site special to him or her – a site that gives HOPE (original emphasis). Collectively all these Hope Spots will create a global wave of community support for ocean conservation that leaders and policymakers can’t ignore”²⁷. Hope, as a keyword for this whole study, is a term of reference that is easily applicable by both sciences and humanities; it enhances action and emotionally strengthens resilience. The benefits and implications of involving emotional reactions will be analysed later, but the fact that scientists have circumscribed some Hope Spots to sustain and protect them through a clearly positive attitude is of relevance. One Hope Spot in the Arctic is in Spitsbergen Island, in the Svalbard Archipelago, a place on Earth that faces one of the most extreme effects of global warming. In parallel, from the humanities many initiatives of writers creating literary and fictional works come, with groups of different authors supporting the same cause. Under the name of “Authors4Oceans”²⁸ reunite the authors and illustrators passionate about the natural world and willing to preserve it for future generations, committing to rid our lives and communities of plastic and unsustainable fish wherever possible,

²⁶ Mission Blue promotes action to explore and protect the ocean by uniting a global coalition to inspire an upwelling of public awareness, access and support for a worldwide network of marine protected areas – the so-called “Hope Spots”. Mission Blue, “About us”, URL: <https://missionblue.org/about/> (accessed 16 May 2025).

²⁷ Mission Blue, “Hope Spots”, URL: <https://missionblue.org/hope-spots/> (accessed 5 April 2025).

²⁸ Authors4Oceans, “Authors and artists unite to help oceans recover”, URL: <https://www.authors4oceans.org/> (accessed 5 April 2025).

and inspiring young (and old) readers to do the same. Supporting the Svalbard Archipelago, author and environmentalist Nicola Penfold has also joined the project, with her YA novel *Beyond the Frozen Horizon* (2022) capable of masterfully conveying important ecological messages about the melting phenomena in the Arctic Circle to a young audience, as I will discuss in Chapter 3.

1.1.5 Ice Loss Affecting Indigenous Peoples and Co-Production of Knowledge in Arctic Research

Around four million people call the Arctic their permanent home. This number includes Indigenous peoples and many generations of immigrants, who, in some cases, have lived in the Arctic for hundreds of years. In fact, the Arctic population is diverse, including both Indigenous peoples – such as the Inuit, Sámi, Nenet, Yakuts, and Aleuts – and non-Indigenous residents who have established communities through migration over time. These immigrant populations contribute to the demographic and cultural complexity of the Arctic, alongside Indigenous populations who have lived there for millennia, thus representing a crucial political issue in a context characterised by Indigenous presence. People lead diverse lifestyles and speak over forty different languages, from semi-nomadic Indigenous cultures living on the land, to settled lives in towns and cities, both Indigenous and non-Indigenous. The crucial difference is that an immigrant does not steal Indigenous land (though they have a right to be welcomed if they are willing to share the land); they are a settler. As Tuck and Yang (2012) state: “Settlers are not immigrants. Immigrants are beholden to the Indigenous laws and epistemologies of the lands they migrate to. Settlers become the law, supplanting Indigenous laws and epistemologies. Therefore, settler nations are not immigrant nations” (6).

Climate-induced population displacement in response to impacts related to the shrinking cryosphere is expected to be one of the greatest climate adaptation challenges for Indigenous Peoples, and other Arctic Communities (AMAP 2025). Arctic climate change research is increasingly becoming application-oriented and focused on addressing the needs of people directly affected by accelerating changes in the region. This shift is reflected in collaborative, transdisciplinary approaches that emphasize capacity sharing and co-creation of knowledge between scientists, Indigenous communities, and local stakeholders. The engagement of local and Indigenous peoples has increased significantly, knowledge exchange efforts that foster dialogue and co-creation between researchers and local communities further bridge science with lived experiences, ensuring that research not only advances understanding but also supports informed decision-making at the community level. Thanks to the existing environmental knowledge of the residents in the region, or to how their everyday life has changed due to the problem studied. A pan-Arctic vision also includes holistic inclusion of the perspectives, voices, priorities, and needs of these people.

That of Indigenous peoples of the Arctic is a “living-with” resilience, featuring uncertainties regarding evolution of sea-ice thickness and extent, place attachment, and mobility (Ford and Pearce 2010). Indeed, most people start their day in the Arctic by looking at the temperature, precipitation and daylight. Additionally, the distance from capitals and metropolitan areas matters, and hence mobility, within the North and in-and out of it. Local knowledge has the power of tracing and testifying causes and consequences of climate change from polar ocean and cryosphere systems to biological and social impacts and relate them to responses to reduce risks and enhance adaptation options and resilience (Klenk et al. 2017). Considering Indigenous knowledge and local knowledge facilitates cooperation in the development, identification and

decision-making processes for responding to climate change in communities across the Arctic and better understanding of the challenges faced by Indigenous peoples (Klenk et al. 2017).

Connection with nature is a defining feature of Arctic identity for Indigenous communities, because the lands, the waters and the ice surrounding such communities evoke a sense of home, freedom and belonging, and are crucial for culture, life and survival. Moreover, spending time on the land is culturally important for Indigenous communities. As reported by IPCC (2019), “daily life is influenced by changes to ice freeze-up and break-up (rivers/lakes/sea ice), snow onset/melt, vegetation phenology, and related wildlife/fish/bird behaviour” (259). Inter-generational knowledge transmission of associated values and skills is also influenced by climate change because younger generations do not have the same level of experience or confidence with traditional indicators (260). Climate change has negatively affected place attachment via hunting, fishing, trapping and traveling disruptions, which have important mental health impacts (Cunsolo and Ellis 2018). For these communities, changing lake and river levels and the period of safe ice cover all affect the duration of use of overland travel routes and inland waterways, with associated implications for increased travel risks, time, and costs (Ford et al. 2015). In addition, foodborne disease is an emerging concern in the Arctic because warmer waters, loss of sea ice and resultant changes in contaminant pathways can lead to bioaccumulation and biomagnification of contaminants in key food species (AMAP 2025).

In “Involvement of local Indigenous peoples in Arctic research” (2018), Ylva Sjöberg and other scholars highlighted the importance of involving local Indigenous peoples in research activities, as this collaboration is increasingly recognised for several reasons, including knowledge sharing and sustainable development. The scholars focus on the perceptions of Indigenous people

among young researchers. Over time, Arctic Indigenous peoples have accumulated knowledge about the Arctic ecosystems, which is of great value for researchers studying Arctic environments and societies (Sjöberg et al. 2018: 29). Frozen-ground landscapes have been used in the past by various Indigenous peoples for settlement and hunting-fishing grounds, resulting in extensive Traditional Environmental Knowledge (TEK) about these ecosystems. Traditionally, Indigenous people of the Arctic have adopted an oral way of mapping their own territory and reflecting their connection to nature, and their handmade cartography has been built around the narratives of specific landmarks (Cogos et al. 2017: 43). In the case of Sámi reindeer herding community, representing their environment through written means has gradually become of great relevance for their survival, since they have to deal with the rapid changes in land use due to the environmental crisis. This context of emergency has largely affected their lifestyle; the repercussions of the ice-melting phenomena in the Arctic made them conceive new forms of “living with”, involving cognitive, perceptive, emotional, and social dimensions (Ibid.).

The growing interest towards the Arctic region requires a genuine co-production of knowledge (CPK) approach to enhance understanding and to inform adaptive and holistic decision-making in research. Ellam Yua et al. (2022) define CPK as:

A process that brings together Indigenous Peoples' knowledge systems and science to generate new knowledge and understandings of the world that would likely not be achieved through the application of only one knowledge system. Co-production of knowledge emphasizes the importance of attaining equity in research relationships (33).

The value of a CPK approach is that it allows people engaged in research to bring different ways of knowing, experiencing, and looking at the world together to gain a broader, deeper, and new understanding of topics and to generate new knowledge (34), where different research fields can affectively contribute to one or more topics examined. The co-production of knowledge and transdisciplinary research are currently contributing to the understanding of polar climate change, using a diversity of cultural, geographic, and disciplinary perspectives that provide holistic framing of problems and possible solutions (Robards et al. 2018).

While advancements have been made, the practice of knowledge co-production would benefit from further experimentation and innovation in methodologies, and better implementation of multidisciplinary approaches. This is the reason why the Arctic humanities, and the field of the environmental humanities in general, can make a strong contribution in creating, redefining and disseminating new knowledge, but they can also provide new ways of scientific dissemination. In doing so, sustained, focused and harmonised multidisciplinary information is needed for filling key knowledge gaps and uncertainties. One concrete example of such gaps lies in understanding the combined impacts of Arctic Ocean acidification on Indigenous marine food systems. While natural scientists document changes in water chemistry and marine species populations, social scientists and humanities scholars are needed to explore how these environmental changes affect Indigenous communities' cultural practices, food security, and policy responses. Addressing this issue requires integrating ecological data with traditional knowledge and effective communication strategies, demonstrating the urgent need for multidisciplinary collaboration to develop adaptive and culturally appropriate solutions.

1.2 THE ROLE OF ARCTIC HUMANITIES AND CONTEMPORARY “CRYONARRATIVES” IN SHAPING ‘ARCTICNESS’

This section focuses on conceptual and methodological options of dealing with contemporary narratives and imaginaries on the Arctic, both from Arctic and non-Arctic regions. There are some values that cannot be omitted when examining transitional environmental realities. The first one is credibility: while experience and knowledge by many scientists and environmental scholars build together a robust scientific foundation which can be trusted, I underline here once again the bidirectional need of welcoming diverse backgrounds and perspectives encouraging a multifocal academic community agreeing to grow together. Secondly, pan-visions and multidisciplinary ways of thinking and researching not only constitute a reciprocal effort but also rely on passion and dedication. As I will better describe in the pages that follow, a shared belief in the power of education can sustain and motivate researchers, academics and artists to engage in collaborative efforts that bridge disciplines and foster meaningful societal impact. I consider this as part of the process of discovering what ‘Arcticness’ is, or can potentially be: in fact, it is also a commitment to effective advocacy that drives our efforts for Arctic knowledge and action. The impairment and disappearance of ice and the plight of Arctic wildlife and Indigenous cultures should serve “as a wake-up call” (Mead 2022: 8). It is not too late to reverse the trend and slow the melting – but time will soon be up, if we persist on the path of inaction.

1.2.1 Multidisciplinary Approaches and Main Literary Corpus

Complex challenges often require dynamic solutions that evolve over time. Multidisciplinary approaches are more adaptable because they can draw on a wider range of skills and knowledge. For example, in climate change mitigation, collaboration between climatologists, urban planners, economists, policy

makers, social scientists and humanists to more comprehensive and resilient strategies. While the benefits are significant, multidisciplinary approaches also present challenges. These include communication barriers, differing terminologies and methodologies, potential conflicts in both research dynamics and political interests and ideology. Nevertheless, multidisciplinary approaches represent a powerful strategy for tackling complex problems in a more integrated and effective manner. As global challenges become increasingly interconnected, fostering collaboration across disciplines is not just beneficial, it is essential, because together with multidisciplinary approaches come different scenarios and possibilities for alternative pathways of change. Grounding Arctic climate change into local and international narratives may be demanding. Where possible, integrative research should also be outlined, because the rapid development of cryospheric ecology means that our understanding is presently fragmented.

This situation is typical of fast-moving scientific enquiry and arises from the lack of interdisciplinary research interaction. The growth in scientific output arises a need to communicate the current understanding of complex physical processes and feedback beyond the scientific community, to enable societies to respond to the associated challenges (Sjöberg et al. 2023). Non-traditional communication strategies, such as environmental literature, for example, have the potential of providing notable outreach impacts on the role of Arctic ecosystems for local communities and as a part of the global climate system (Bouchard et al 2018). As Sjöberg et al. state (2023), “fundamental science can further benefit from co-production of knowledge and transdisciplinary research approaches for understanding changes in ecological and social systems”. In this resides also the precious role of the environmental humanities – such as the study of speculative fiction, being at the core of this study – in a time of turmoil,

since many of these narratives focus on addressing real-world problems, in near Arctic futures.

In 2018, Bouchard et al. expressed the importance of connecting art and science along visual, narrative and metaphoric axes, so that to depict scientific concepts from a different perspective and to “help communicate science to the public and get the reader engaged” (367). Multidisciplinary approaches and co-creation of knowledge may provide effective means to adapt and respond to challenges resulting from rapidly changing climate. Moreover, multidisciplinary research and co-production of knowledge can strengthen local and Indigenous resilience-building (Sjöberg et al. 2023). The rapidly changing Arctic, home to a high number and great variety of Indigenous Peoples with typically close ties to the natural environment, may offer unique opportunities for multidisciplinary research, both from the Arctic and from international voices supporting and cooperating in scientifically and culturally sustaining the Arctic.

The chosen novels address important concepts about the cryosphere and the worlding of a new sense of ‘Arcticness’, including important portions of Arctic cryosphere, such as permafrost (e.g., distribution and dynamics of frozen ground, including human impacts), icebergs and glacial melting, the changing in seasonality and snow falls, the retreat of sea ice extent and ocean-related processes, and the important role of Indigenous knowledge. Nevertheless, Indigenous knowledge does not cover all the cultural, traditional and tacit knowledge among the whole Arctic region and its inhabitants. Non-Indigenous Arctic peoples also represent the Arctic, such as those born or living in the north but without an Arctic Indigenous heritage (Kelman 2017). The stories narrated in these novels provide common features but from different angles, so that readers can extract essential information on complex environmental issues through their emotional involvement.

The main literary *apparatus* consists of four speculative YA fictional works, two of which are recent examples of cryonarratives from the UK, while the other two novels are very significant examples of Indigenous narratives. The two English novels are: *Melt* (2021) by Ele Fountain, and *Beyond the Frozen Horizon* (2022) by Nicola Penfold. As for a perspective from within the Arctic, the two selected Indigenous econovels are *In Between Worlds* by Máret Ánne Sara (2016, translated from Sámi by the author herself; the original edition of this novel is in North Sámi language and published in 2013 under the title of *Ilmiiid gaskkas*), and *Stolen* (2023; original edition in Swedish, under the title of *Stöld*, 2021) by Ann-Helén Laestadius. In the case of the latter novel, both the original Swedish version and the English translation, not edited by the author, will be considered. These four novels, together, constitute the majority of my parallel ecocritical analysis between the English-speaking world and that of Indigenous communities, aimed at tracing ecological and environmental messages.

In addition to these two parallel poles, to a lesser extent and only for specific environmental references, some extracts will also be proposed from the novel *The Dream of a Tree* (2024; original edition in Norwegian under the title of *Drømmen om et tre*, 2022) by Maja Lunde. Here too, some extracts will be taken in the original Norwegian language and then also proposed in the English translation. This novel serves as a bridge: it is located in a Scandinavian, but not Arctic context – the writer is of Norwegian origin, lives and works in Oslo – and it does not belong to the Indigenous tradition. This perspective can act as an interesting link between the two main poles which support the analysis and provide some insights for different imaginaries.

1.2.2 The Importance of Raising Public Awareness

Raising public awareness about the changes happening in the Arctic cryosphere is not just a matter for scientists or policymakers. It is a global imperative that touches every aspect of our environment, economy, and even personal well-being. Public understanding is essential for meaningful climate action. When people are informed about Arctic changes, they are more likely to support science-based climate policies, change consumption and lifestyle habits, and demand corporate accountability and clean energy investments. Moreover, the Arctic is home to Indigenous peoples whose cultures, economies, and identities are intimately connected to the cryosphere. Melting sea ice alters hunting patterns. Thawing permafrost damages homes and sacred sites. These communities are not only facing physical disruption but also profound cultural loss (Ford and Pearce 2010). Raising awareness brings their stories into the global conversation, fostering more equitable solutions. Raising public awareness about how climate change is affecting the Arctic cryosphere is not a niche issue, it is a global priority.

The melting ice and thawing ground are not just symbols of change; they are catalysts for it. They remind us of the urgency, the interconnectedness, and the shared responsibility we all have to protect the fragile systems that support life on Earth. The Arctic may be perceived as far away, but its fate is inextricably linked to global ecosystems and communities. Communicating scientific concepts is an increasingly important task; however, the results of scientific research are generally not known by the general public (Bouchard et al. 2018). Data from the hard sciences need to be told, to become stories, to convey values and principles, to be placed and situated in a broader discourse. In a word, data needs to be narrated. The humanities take hold to a broader audience from different points of view and perspectives, but with the same goal in mind: reaching attention on how communities dependent on coastal

ecosystems are experiencing cascading changes related to sea ice, permafrost, water quality and land use, for which multidisciplinary approaches provide effective means to address the impacts on local sociocultural-ecological systems. Raising public awareness of how climate change is affecting the cryosphere is a key factor in building resilience to the melting cryosphere²⁹.

When considering the repercussions on a global scale, both the world and the Arctic are in turbulent times. What is happening to Arctic research in the humanities? The answer is hopeful: a new and growing field is emerging, where the Arctic becomes a natural part of the humanities. Historically, research on the Arctic has been dominated by natural sciences and technology, especially during expeditions in which almost no humanists participated; and by colonial perspectives which revealed how cultures were interpreted through power relations rather than local voices (Sörlin 2015). Humanistic fields such as language, anthropology, literature, art, and history have existed within studies on the Arctic, but have been considered marginal in the larger research landscape. Today there is growing recognition that something has been missing in previous knowledge: natural sciences alone cannot explain the human dimensions of climate change and societal change. Concepts such as the Anthropocene require interpretations of meaning, power and culture – that is, humanistic analysis. Sörlin also refers to discussions about “planetary humanity” (2015: 94), where humanists need to understand and interpret global connections and crises, which are something that also applies to the Arctic.

²⁹ The current situation in the Arctic benefits several groups, including energy and mining companies that gain access to previously unreachable oil, gas, and mineral resources as ice melts. Shipping industries also profit from newly navigable routes that shorten global trade paths, while Arctic nations expand their geopolitical influence and economic opportunities through resource extraction and territorial claims. Additionally, some fishing industries benefit from shifting fish stocks in warming waters. However, these short-term gains come with significant environmental and social costs, particularly for Indigenous communities and the global climate, highlighting the complex and often unequal distribution of benefits in the region.

The growing interest in the Arctic humanities shows a sign of change, in which humanists contribute with critical perspectives. Arctic research in the humanities addresses themes such as commodification of nature (e.g. icebergs and melting glaciers as icons of climate change), imaginations of the future Arctic in the light of economic exploitation, and local voices through broader climate discourses. The humanities are thus not only analytical but also visionary, with a responsibility to understand and shape the narrative of the future. Sörlin (2015) believes that the Arctic can no longer be seen as an isolated field of research. He supports a vision made of a new generation of researchers, from all over the world, shaping an international, integrated field of Arctic humanities. By combining scientific data (such as ice cores, sediments, measurements) with stories, culture and history, new possibilities are created to understand the Arctic in both the past, present and future. Newer narratives challenge anthropocentrism by promoting “multiplicity” (recognising diverse, intertwined human-nature relations) and “pluriversality” (acknowledging many coexisting worldviews or “worlds”). These aim to decenter the state and human dominance, instead framing the Arctic through relational, ecological, and Indigenous perspectives (Tennberg et al. 2022: 196-197). Multiplicity integrates ecological complexity into social understandings (Corry 2019). Pluriversality promotes research that respects diverse ontologies, including Indigenous and non-human agencies (Kurki 2021). In this, Arctic narratives in speculative fiction and in contemporary art practices can powerfully attract attention and address climate change science effectively.

1.2.3 Cross-Cultural Connections

Narratives are “the stories through which people share their experiences, make sense of their actions and perceive their place in the world” (Karlsson and Hovelsrud 2021: 5). But if narratives shape people’s way of seeing, being and

acting in the world, then narrating means also, more widely, worlding, and thereby exploring and sharing preferences and beliefs of how the land-, water-, and icescapes should be handled. Consequently, narratives also shape futures, and they are part of communities' ideas of what is possible to imagine as a viable future, what is necessary and what is considered acceptable. Experience and awareness of anthropogenic climate change can motivate climate adaptation and pro-environmental behaviours (Van Valkengoed and Steg 2019): Arctic populations' difficulties and resilience are still underrepresented in both research literature and research processes but fortunately plentiful and rising in literature and arts. Taking into account the cascading effects of cryosphere loss (see Section 1.1), it is clear that when it comes to climate change induced phenomena "what happens in the Arctic does not stay in the Arctic"³⁰. According to latest estimates, the Arctic will be largely ice free by the late 2030s, thereby profoundly weakening the Arctic's function as a global cooling system. In supporting the disclosure of recent impending phenomena, environmental engaged cultural works – such as the novels and short stories examined in this work – can contribute to shaping, once again, pan-Arctic visions and cross-cultural connections on a global level.

'Cryonarrative' is a term of reference first used by Elizabeth Leane (2022) referring to as a shorthand to describe "contemporary stories that explore interactions between humans and ice" (250). Cryonarratives strengthen the agency of the audience to build, maintain and revitalize northern knowledge. The concept of "knowing with (nature)" (Haraway 1988) is at basis of this kind of narrations, from which important messages of revitalization and reconstruction of a new concept of 'Arcticness' emerge, the latter being shaped

³⁰ As noted by Vidar Helgesen, Norwegian Minister of Climate and Environment, during his speech at the NATO Parliamentary Assembly at the Norwegian Parliament in Svalbard, Norway, on 9 and 10 May 2017. URL: <https://www.nato-pa.int/news/what-happens-arctic-does-not-stay-arctic-climate-change-arctic-will-have-global-consequences> (accessed 10 April 2025).

by broader new materialisms, multidisciplinary visions and still based on local and traditional Indigenous knowledge. Thus, the first and more important meaning of the term 'Arcticness' is to be intended as used to refer to interlinked ecological and cultural systems in the Arctic, bended in relation to local cultures, traditions and diverse cultures.

The concept of 'Arcticness' was used for the first time by Ilan Kelman (2017), meant as a multifaceted and often ambiguous way of understanding what it means to be part of the Arctic – geographically, culturally, politically and emotionally. In *Arcticness: Power and Voice from the North* (2017) he brings together different voices, disciplines and forms of expression (science, poetry, personal stories, technology) to examine how 'Arcticness' is experienced, constructed and used. The several meanings of the term, although they are related to each other, show the multifaceted nature with which we refer to the Arctic Circle. In fact, as Kelman states, "the Arctic breathes diversity and Arcticness embodies variety" (2017: 4). He describes 'Arcticness' as more than a geographical marker; it is an experience and relationship to the place, nature, and culture of the Arctic (41). It is about belonging, living, feeling, speaking, and remembering from the North. It is both individual and collective identity, where, for example, Indigenous peoples carry unique cultural ties to the region that are often made invisible or romanticized by outsiders (148).

The concept of 'Arcticness' is often negatively used as a political tool, where both Arctic and non-Arctic actors (such as China or EU countries) try to position themselves as relevant to the region by asserting their own Arcticness. This raises questions about power, rights, and voting rights: Who gets to speak for the Arctic? Who defines what "the Arctic" is? For more materialistic purposes and for advertising business, the Arctic has become a brand and 'Arcticness' sells through tourism (Kelman 2017: vi). But, once again, this branding often occurs from an outside perspective, where the Arctic becomes

exoticized, frozen in time, rather than seen as a dynamic, living reality. In contrast to financial and economic interests, personal stories show how 'Arcticness' can also be a way to find one's culture, family, and identity through creation, traditions, and spirituality. For many, it is an emotional connection that gives meaning, even if they are physically far from the Arctic. Furthermore, in relation to climate change, radar monitoring of ice and other forms of modelling research show how scientists, often non-Arctic natives, experience a scientific 'Arcticness,' an attraction to the Arctic as an object of study, but also as something almost mystical and inspiring (Kelman 2017: 28).

Arcticness is in constant transformation, just like the Arctic itself. Climate change, globalization, digitalization, and migration are creating new ways of being Arctic and new questions about relationships, representation, and sustainability. The Arctic is no longer seen as remote (Kelman 2017: 39): it is increasingly interconnected with global processes, which is also changing how 'Arcticness' is understood. 'Arcticness' is a fluid concept – as much a way of thinking and feeling as it is a way of defining a place. It is relational, political, emotional, and sometimes commercial. As a result, there is no "right" way to define what 'Arcticness' really is or how many nuances we can attribute to the meaning of the term but emphasizing the importance of listening to and including Arctic voices – and not just talking about them. Kelman underlines the fact that the Arctic, despite global notions of ice and wilderness, is primarily a home for people – both Indigenous peoples and other northerners (2017: 1-8). Here there are communities building relationships to land and nature. 'Arcticness' thus becomes not just an external characteristic, but something from within – a lived experience of place:

Within this Arctic rainbow, what is the Arctic? How do Arctic peoples relate to their places? The ways include living, livelihoods,

environments and movements. In many locales, movement means the typical commute by private or public transport to a nine- to- five office job. In many locales, it is the typical subsistence hunting, conversing with the wind, feeling the sea, traipsing the land and traversing the ice.

Water (solid and liquid) and wind flow, bringing with them life and death. The Arctic peoples flow with them. Movement, survival and thriving are choreographed within the elements and within the colours of the seasons: blue, grey and white melding with brown, green and splashes of colour in summer flora and fauna. The ever- changing kaleidoscope of weather and skies, of animals and oceans, of plants and the Earth, creates Arctic flows and ebbs (Kelman 2017: 2-3).

Kelman also emphasizes that there is no uniform definition of the Arctic. It can be defined by latitude, tree line, national borders, or Indigenous territories – each method with different implications. As Maria Lindgren Leavenworth (2024) states,

Sometimes, even the boundary between north and south is only figurative and Arctic imagery is worked into depictions set in non-Arctic environments. [...] As I am mainly concerned with outside views, my own use of “the Arctic” is relatively uncontroversial; it is a term coined by outsiders (for this reason sometimes avoided by Indigenous peoples), and it does not distinguish between heterogeneous localities. Although I will substitute the broad “Arctic” with specific placenames where this is important for the argument, my interest predominantly lies in larger discourses connected to the Arctic as both place and idea (4).

The Arctic is then more of a conceptual zone than a sharply defined area. It shifts depending on what lens you are looking through: in science, it is fluid because climate and ecosystems change over time; in politics, countries draw their own Arctic boundaries based on both national and Indigenous interests, highlighting political conflicts and tensions; and in culture, for Indigenous peoples, the Arctic might mean something else entirely linked to ancestral lands

and seasonal ways of life. Even the ice, which should provide an objective physycal boundary to the Arctic, is not consistent: sea ice moves with the seasons and is retreating due to climate change, which adds even more fuzziness to the idea of what the Arctic is. Similarly, 'Arcticness' is not a single quality, but something that is created in relation to place, identity and the surrounding world. As Kelman states, "[i]n the end, Arcticness cannot be easily defined; no more than the region itself can be neatly placed within latitudinal lines. [...] And indeed, Arcticness perhaps should not be limited to semantic boundaries, should not be rendered static on the pages of a dictionary" (2017: vii). Consequently, 'Arcticness' is not just a word; it is rather a way of understanding the changing Arctic world. Thus, 'Arcticness' is an open and promising framework, and an opportunity to create new meanings in multidisciplinary ways – through a set of attitudes – in the encounter between people, places and times.

The above-mentioned cryonarratives and, in particular, the five chosen novels, are particularly fertile for an ecocritical analysis that focuses on the new insights of 'Arcticness' these narratives convey. They share indeed the same multiple features pertaining to the vast domain of the term 'Arcticness'. In fact, all four speculative novels are relational – created in relation to "something else" and, at the same time, creating new interrelations; they are based on, and create, an emotional grip, linked to identity, belonging, coming-of-age processes and possible futures. Finally, they can also be controversial when considering non-Arctic authors such as Ele Fountain and Nicola Penfold, who have never been in the Arctic. This reflection opens up to the question related to fictional Arctic realities, both factual and imagined. Arctic imaginaries, Arctic realities and their intersections in and outside of the Arctic pervade numerous historical, contemporary and future discussions (Kelman 2017), and these narratives are pervaded by the ever-ending double perspective that also pervades the field of

academic research – inside and outside – of the Arctic. Through the examples taken from my analyses of the novels and of the multifaceted feeling of ‘Arcticness’, I position myself closer to the two British authors, since I share the same interest in loving, understanding and speaking for the Arctic, while often – but not always – being “outside” in a geographical or institutional sense. This reflects an important aspect of ‘Arcticness’: it is possible to carry ‘Arcticness’ with you, even outside the region – as a way of thinking, feeling and acting.

1.3 ECOCRITICISM: RECENT METHODOLOGICAL DEVELOPMENTS AND THE NEED FOR BROADER ECOCRITICAL DISCOURSES APPLIED TO YOUNG ADULT LITERATURE

Ecocriticism is now considered a part of the environmental humanities. A deep perception of nature and a keen sense of place are the main distinguishing features of ecocriticism, a term synthesising ‘ecology’ and ‘literary criticism’. Its roots lie in ecology, which emerged as an autonomous science in the mid-19th century as the comprehensive study of the relationships between organisms with their surrounding physical environment. Almost a century later, an ecological movement emerged in the Western world that also encompassed literature, notably when American biologist Rachel Carson published *Silent Spring* (1963). Drawing attention to the problem of the indiscriminate use of pesticides, Carson’s work became a manifesto for the environmentalist movement (Salvadori 2016: 672).

Applied to economic development, the ecological method later gave rise to the concept of ‘sustainable development’ as a project to protect the rights of future generations³¹. In Norway, the philosopher and ecologist Arne Næss (1912-2009) developed the movement of deep ecology (nor. *dypøkologi*), which

³¹ United Nations, URL: <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf> (accessed 22 April 2025).

served as a response to traditional ecology, also using for the first time the term 'ecosophy' ('philosophy of ecology'). Næss' attack is on Western philosophy, religion and culture, for promoting a dualistic split between human beings and nature (Mortensen 2013: 285). Deep ecology therefore implies an ecosophy, "a philosophy of ecological harmony or equilibrium" (Næss 1997: 110-111) aimed at an interaction between organisms and their environment. Deep ecology is thus the ecological movement that most questions the current system of life, based on economic growth and progress.

A similar concept is expounded by Glen A. Love in *Revaluing Nature: Toward an Ecological Criticism* (1990), one of the most influential essays of the ecocritical movement. Love asserts that literary studies have remained indifferent to the environmental crisis, considering it as a problem irrelevant to the humanities, more focused on an anthropocentric vision. Consequently, the re-evaluation of nature-oriented literature can systematically redirect us from an ego-consciousness to an environmental consciousness (Glotfelty 1996: xxx). Today, ecology as a systemic science is constantly evolving and has become one of the keys to understanding our time, thanks to its exploration of the interrelation between entities and the mutual exchange that exists between living beings and their natural habitats.

1.3.1 Brief Historical Developments of the Term 'Ecocriticism'

Not immune to this change of perspective, the humanities gave rise to ecocriticism, which applies contemporary ecological issues to literary analysis and challenges traditional, anthropocentric (human-centered) viewpoints by emphasizing the interdependence between human culture and the physical environment.

The origin of the term ecocriticism dates back to William Rueckert's 1978 essay "Literature and Ecology: An Experiment in Ecocriticism", in which he uses

concepts and ideas drawn from ecological science to develop new literary approaches. Rueckert analyses poetic texts making use of terms such as 'symbiosis', 'energy exchange' and 'biosphere', and claiming that "See[ing] even the smallest, most remote part in relation to a very large whole is the central intellectual action required by ecology and [...] an ecological vision" (Rueckert 1996: 108). However, Rueckert's definition of the term is very restrictive today, given that ecocriticism has been extended nowadays to other fields of research, such as 'ecopoetics' and 'ecosemiotics'.

Since the 1990s, the term 'ecocriticism' has been used more widely, first and foremost in the Anglo-Saxon literary-critical scene. In the American context, organizations such as ASLE (The Association for the Study of Literature & Environment, founded in 1992)³² were born, identifying its mission as "to promote the exchange of ideas and information pertaining to literature that considers the relationship between human beings and the natural world" (Glotfelty 1996: xviii), encouraging "new nature writing, traditional and innovative scholarly approaches to environmental literature, and interdisciplinary environmental research" (Ibid.). The journal *ISLE* (*Interdisciplinary Studies in Literature and Environment*)³³ was founded a year later to provide "a forum for critical studies of the literary and performing arts proceeding from or addressing environmental considerations" (Glotfelty 1996: xviii). In 1990, Cheryll Glotfelty became the first academic to hold a university position as a professor of Literature and Environment at the University of Nevada. Glotfelty immediately noted the absence of an environmental perspective in contemporary literary studies (1996: xv) and, in particular, how theory and the consequent attention to the formal aspect of the text had generated a discrepancy between academic publications (whose predominant

³² ASLE website: <https://www.asle.org> (accessed 24 April 2025).

³³ Oxford Academic, "ISLE". URL: <https://academic.oup.com/isle> (accessed 24 April 2025).

themes were ethnicity, class and gender) and newspaper headlines denouncing environmental degradation. A more accredited use of the term ecocriticism began in 1996, with the collection of essays edited by Cheryll Glotfelty and Harold Fromm, *The Ecocriticism Reader: Landmarks in Literary Ecology*, often considered one of the founding texts of the ecocritical movement. In her introduction to the collection, Glotfelty proposes a general definition of ecocriticism as

the study of the relationship between literature and the physical environment. Just as feminist criticism examines language and literature from a gender-conscious perspective, and Marxist criticism brings an awareness of modes of production and economic class to its reading of texts, ecocriticism takes an earth-centered approach to literary studies (1996: xviii).

Glotfelty also drew key analytical question drawn that ecocritical analysis should address, including

- 1) How is nature represented, and what role does physical setting play in the plot?
- 2) How do metaphors of landscape influence our treatment of the real world?
- 3) How does the environmental crisis reshape our reading of contemporary culture? (1996: xviii-xix).

In addition to an analysis based on these questions, particular attention should be given to the environmental conditions of the authors' lives, to better understand the influence of the places of birth or, more generally, of the places of belonging throughout the life of a writer on the imagination in the writing phase; it would therefore be interesting to demonstrate that the places where

an author grew up, where he travelled and where he wrote are relevant for the understanding of the literary text (Glottfelty 1996: xxiii).

1.3.2 Between Realism and Post-Structuralism

According to Lawrence Buell (1995: 6-8), there are four key elements that constitute the 'environmental text' and everything that is considered nature writing in the strict sense: 1) the non-human environment is an active agent (actor) and not simply the background of human experience; 2) environmental problems are placed alongside human problems on the same level; 3) environmental responsibility is part of the ethical orientation of the text; 4) the text suggests an idea of nature as pre-eminent – and not merely as a background – in the development of human activity. These are essentially thematic criteria that only indirectly introduce the formal means that the writer can employ to write about nature. According to this approach, the literary text is considered a cultural, historical or political document and the criticism of its 'ecological content' is what is focused on. This is how the ecocritical project is more open to other fields of knowledge, such as scientific ecology, politics, biology, environmental history, philosophy and geography. A typical example of this openness to interdisciplinarity is given by debates around wild nature – the so called 'wilderness'. Yet, nature writing and the concept of wilderness are not the only aspects that ecocriticism wishes to consider; the ecocritical approach also aims to extend to all those texts in which nature – at least until the end of the last century – seemed to be only a mere background of human activity and experience, thus contradicting Buell's restrictive focus.

In the last three decades, the number of scholars, professors, students and writers who identify with the demands of ecology applied to literature has increased significantly and globally, so much so that it has given rise to targeted university courses and a network of organizations affiliated with ASLE, including

the European EASLCE (European Association for the Study of Literature, Culture and the Environment)³⁴. Indeed, a new type of sensitivity is emerging in the humanistic field but also in the wider multidisciplinary field, which Buell has defined as “environmental unconscious” (2005: 54). Ecocriticism has moved towards a real rearticulation of nature/culture relationships in the examination of recent literary texts, also considering the language of a literary text as a human artefact.

However, there is still a significant theoretical schism within the field of ecocriticism: on the one hand, the neorealist scholars who, during the 1990s, tried to reject the then dominant post-structuralist theory (which focuses, in their view, too much on the study of the structure and internal coherence of the text to the detriment of the notion of ‘representation’) in favour of the more traditional concept of mimesis, or what has been renamed outer mimesis (Buell 1995: 93), that is, the world outside the text, also defined as “ecomimesis” by Timothy Morton in his work entitled *Ecology without Nature: Rethinking Environmental Aesthetics* (2007: 8); on the other hand, those who still persist in defending post-structuralism as the main method of analysing the relations between literature and the world (Vignola 2017: 1).

Today the predominant aspect is a certain overcoming of the idyllic concept of wilderness. Glotfelty assumes that, if the etymology of ‘ecology’, coming from the Greek *óikos*, refers to ‘home’, ‘abode’, and to the continuous reciprocity of encounters between human beings and other species in the biosphere, it seems somewhat paradoxical to exclude cultural landscapes, or the areas of interchange between nature and civilization. It is therefore necessary to take into account the transition to a culturalist approach, through which the literary work is considered on the basis of the cultural identity projected onto the setting, and therefore it is possible to read in an ecocritical

³⁴ EASLCE website, URL: <https://www.easlce.eu/> (accessed 24 April 2025).

key even those texts that, although not equipped with a realistic-mimetic structure, equally convey any ecological orientation. Ultimately, it is a question of broadening one's interpretative horizon, going beyond the examples of nature writing and also and above all considering mixed, contaminated environments, where language is not limited to simply duplicating the extra-text in a photographic or vedutistic type of replication (Salvadori 2016: 680).

However, trends intersect and theories evolve. Still divided between realism and post-structuralism, ecocriticism currently finds the advantage of an extended domain of intent: on the one hand, the ability of a text to refer to the external world (outer mimesis); on the other, an approach that demonstrates how the text problematizes and addresses the formal constructions aimed at building nature/culture relationships.

1.3.3 Recent Developments: Third and Fourth “Waves”

Following the developments from a chronological point of view, in the first and second decade of the 21st century, ecocritical thought has evolved towards what Diego Salvadori has called the third and fourth “waves” of ecocriticism (Salvadori 2016: 681-682). The third wave works by providing interpretations of the sense of belonging to the natural context conveyed by a text. In “The Notion of Place in Contemporary Ecocriticism” (2009), Scott Slovic analyses the concept of ‘place’ within ecocritical theory. His opinion is that the term ‘place’ presents a certain ambivalence, a consequence of two opposing theories, both promoted by American thinkers. The first, introduced by Ursula K. Heise in her book *Sense of Place and Sense of Planet: The Environmental Imagination of the Global* (2008), argues that the localist orientation of bioregional thinking is an outdated way of conceiving place. Although the valorisation of the sense of place is a fundamental prerequisite for environmental awareness and activism, the times we live in push us to overcome the limits of bioregionalism, which can

only deal with one place at a time. According to Heise, the point of an “eco-cosmopolitan critical project” would be to go beyond the ethic of proximity to “investigate by what means individuals and groups in specific cultural contexts have succeeded in envisioning themselves in similarly concrete fashion as part of the global biosphere, or by what means they might be enabled to do so” (2008: 62).

However, there are also opposing pressures that consider the founding role of local identities. In the same year, another American scholar, Tom Lynch, reiterated the importance of a bioregionalistic approach, which can be significant for analysing the connections between literary texts and the specific places that inspired the ideas and voices of their authors (2008). Lynch’s opposition to globalist tendencies may appear today as anachronistic with respect to modernity, but it is only apparently so. Indeed, according to Lynch’s theory,

bioregionalism, like any other form of place-based identity, can undoubtedly degenerate into solipsistic and antagonistic provincialism. However, with its sense of the permeability and overlapping nature of borders, and its idea that bioregions are connected and intertwined at various levels, from the local to the planetary, bioregionalism discourages peremptory and exclusive assertions of place-based identity [...] and seems far less prone to the vices of provincialism (2008: 29).

Despite their different orientations, Heise and Lynch share the same adherence to the concept of trans-locality, that is, the belief that all local realities are connected to each other at various levels and that an individual, although intimately linked to a specific place, must understand its connections with the planet as a whole (Slovic 2009: 32).

The publication, in 2014, of the volume *Material Ecocriticism*, edited by Serenella Iovino and Serpil Oppermann, marks the beginning of the fourth wave of interpretation in the field of literary ecology, namely the ecocriticism of matter and things. According to this vision, non-human forms – whether natural or artificial – tell us something about the world we inhabit (Salvadori 2016: 682). The definition of ecocriticism of matter proposed by Iovino is explanatory: “Material Ecocriticism is the study of how material forms (natural and otherwise – bodies, things, elements, toxic substances, chemical agents, inorganic matter, landscapes, etc. – interact with each other and with the human dimension, producing configurations of meanings and discourses that we can interpret as stories” (Iovino and Oppermann 2014: 7). This material turn may also concern aspects that had previously had a strong traction within ecocriticism; for example, the passage from ecofeminism to materialist feminism, according to the thought of Stacy Alaimo. Originally, ecofeminism, as analysed by Glotfelty (1996: XXIV), oriented literary discourse on the question of symbolic construction, whose main theme is the underlying connection between women’s oppression and the domination of nature. More recent is the turn towards ‘materialist feminism’ proposed by Alaimo in her book *Bodily Natures: Science, Environment, and the Material Self* (2010). Given that women have a body, there is a need to find a way to talk about these bodies and the materiality in which they inhabit. Materialist feminism plays an important role in the ecocriticism of matter, because it explores the question of the non-human by looking at bodies and their material relationship with nature, on an equal level, encouraging “the interaction of culture, history, discourse, technology, biology and environment, without privileging any of these elements” (Salvadori 2016: 683).

1.3.4 Other Trends: More-Than-Human, Econarratology, Spatial Analysis, and Transversal Ecocritical Methods

While ecocriticism originally applied to texts explicitly concerned nature, it now encompasses a broader literary corpus, reflecting on the underlying human-nonhuman dynamics in a variety of genres. By challenging the anthropocentric foundations of literary analysis, ecocriticism is currently evolving in scopes and methods. Anthropocentric narratives often fail to contain more-than-human agencies, revealing themselves as constructs: this interpretation suggests that even seemingly non-ecocritical texts may contain “leakages” where nonhuman agency disrupts human-centred narratives (Lönngren 2024: 67). Thus, ecocritical reading should not be about rendering texts merely intelligible through current norms (Lönngren 2024: 72), but to question these very norms and explore the unruly, unexpected meanings that emerge when human centrality is decentred. Strictly linked to this concept, the “more-than-human” refers to an expanded understanding of agency and subjectivity that reaches beyond the human domain, encompassing nonhuman animals, plants, objects, materials, environments, and even atmospheric phenomena. Lönngren builds on this idea to critique anthropocentrism, not merely as a philosophical stance, but as an operational framework that underpins much of Western literary and cultural analysis. This anthropocentrism, she argues, organizes the world into a hierarchy that privileges human experiences, values, and perspectives, relegating nonhuman forms of life and matter to the *status* of backdrop or resource (64). The more-than-human approach is closely aligned with posthumanist and material ecocritical thought, particularly the idea that agency is not exclusive to human consciousness. Drawing on theorists like Jane Bennett (2010) and Stacy Alaimo (2010), the more-than-human discourse treats the material world as vibrant and active, capable of resisting human narratives and asserting its presence in literary texts. The “more-than-human” is not just

present but leaks into textual meaning-making in unexpected ways, disrupting anthropocentric frameworks and revealing alternative modes of relationality. This theoretical framework expands the scope of ecocriticism beyond merely identifying nature in literature. The more-than-human methodology urges readers to attune to silenced or backgrounded agencies, to rethink texts as entanglements of the human and nonhuman; that is, reconfiguring how meanings, narrative, and ethics are understood in literary studies.

In line with sustaining the need for broader linkages and entanglements, econarratology has emerged as a method that merges narrative theory with ecocritical inquiry, specifically to address the challenges posed by anthropocentric storytelling and to open narrative space for more-than-human perspectives (Lindbo 2024: 146; James 2015). The concept of econarrative imagination is based on the seemingly paradoxical premise that readers specifically and our culture more generally can become more knowledgeable about the physical world, including environmental and climate change, by immersing themselves in fiction (Kramshøj Flinker 2015). Based on this, econarratology examines how literature can influence the reader's affective, cognitive, and ethical beliefs in a greener direction. As Johanna Lindbo states, "there is room for aesthetic, thematic, and narrative studies in ecocritical analysis. This is both a development of narratology's methodology and a development of various ecocritical theories" (2024: 158). This includes analysing how narrative voice, focalization, metaphor, and temporal-spatial construction can disrupt traditional human-nature dichotomy. Of particular interest for this work, metaphors become a central analytical focus, not as a detachment from materiality, but as a way to bridge human experience and natural processes (Lindbo 2024: 146). In this sense, metaphors act as central and transformative elements in econarratology, bridging traditional rhetorical analysis with material and ecological concerns. Metaphors turn out to be much

more than merely symbolic. They can be read as material-semiotic acts that challenge anthropocentric assumptions and highlight the interconnectedness of life forms and environments. As I suggested previously (see Section 1.2.5), metaphors therefore become a method of ecological engagement, a way to narrate the more-than-human world that acknowledges its complexity, vitality, and agency.

As in the case of the Arctic Circle, where geographical spatiality knows no demarcating boundaries, spatiality in ecocriticism is assuming broader and borderless, wider meanings. An ecocritical spatial analysis investigates how place, space, and more-than-human elements contribute to storytelling and the construction of significance. Camilla Brudin Borg (2024) argues that space in literature should not merely be understood as a backdrop or setting, but as an active force that interacts with characters, events, and themes (251). Brudin Borg also incorporates metaphor analysis and econarratology to encode ecological relationships and representations of the environment. A key concept, according to Brudin Borg, is notion of “heterotopias”, a term of reference first elaborated by Michel Foucault (1986). Heterotopias, or “other places”, refers to places that are physically separated from normal society, and which thus allow or even require a different social norm. Heterotopias are spaces that are inherently “other,” where the conventional rules of behaviour, identity, or spatial logic are suspended or transformed. In heterotopias, such as certain sparsely populated areas, there is also often a drive towards achieving a utopia, a vision of a better world. Utopias constitute an incredibly innovative process, especially when enacted within a heterotopia where thought can flow freely and be exchanged among like-minded, highly committed people (Foucault 1986). It does not even matter whether utopia is eventually reached, or if it remains a distant goal: it’s the journey that matters. In ecocritical terms, these spaces can reveal how environments are charged with symbolic, cultural, or ideological

meanings, especially as they relate to human interactions with nature or the more-than-human (Brudin Borg 2024: 250). Brudin Borg's method underscores that places are not inert or passive, but vibrant, meaning-producing components of narrative. Her approach challenges anthropocentric habits of reading and offers new ways to think about how stories emerge from, and speak to, specific environments (Ibid.). This spatial awareness is crucial for cultivating the kind of ecological attention that ecocriticism seeks to promote.

The above-mentioned trends and approaches, together, form a new transitioning trend, yet to evolve. As Cecilia Åsberg highlights in her essay "Storying Exposure with the Transversal Methods of Ecocritique" (2024), "greater exposure to different disciplines – to interdisciplinary methodologies, to transversal conceptual borrowing across storytelling practices of science, literature, art and activism – offer new skills to the arts and humanities by way of ecocriticism" (272). Transversal criticism, I argue, means openness and implies the challenge of embracing a kind of 'critique' that leads to differences and multivalences. This practice of "storying exposure, of creative exposition, or *ecocritique* point at a rich diversity of different approaches in both more humane and more-than-human registers of fact and fiction" (Åsberg 2024: 274). Thus, in facing the challenges of conducting an ecocritical analysis on the diverse aspects and genres of contemporary fiction, ecocriticism is to be understood as dynamic and polyphonic, a hermeneutical tradition that is continually open to reinventing itself, rather than being a fixed set of tools applied in a mechanical manner.

1.3.5 Ecocriticism Applied to Children's and YA Literature

Children's and young adult literature play an important role in the mental and cognitive development of young readers and future citizens of the planet. While the ecocritical analytical approach has been applied to a large number of literary

texts for adults, the history of its application to texts intended for a younger audience is decidedly more recent. Karín Lesnik-Oberstein, in her essay entitled “Children’s Literature and the Environment” (1998), states that one of the first theories that correlated children and the environment comes from the thought of the English philosopher John Locke (1632-1704), more precisely from the work entitled *Some Thoughts on Education* (1693). Locke believed that a primordial form of ‘pure nature’ resided in young children. Through this observation, Locke argued that there were two facets of the same element: on the one hand, visible and tangible nature; on the other hand, the pure and simple nature of the child, inaccessible to an adult (Lesnik-Oberstein 1998: 217). A paradox follows which, nowadays, represents a challenge for every ecocritic who wants to propose an analysis of a text for children or adolescents: adults, who have lost the natural part inherent in the child in a Lockean sense, are nevertheless those who produce children and young adult literature. In this regard Cheryll Glotfelty refers to Locke’s thought by maintaining that ecocriticism is a discipline aimed at defining and understanding the most intrinsic signs of the natural element, in the belief, always Lockean, that nature itself can highlight itself through direct statements (“nature makes direct statements”, Glotfelty 1996: 71). From this point of view, nature would become the main educator, and young readers should become interpreters of these manifestations.

Many writers have left stories and imaginaries aimed at making children capable of developing a sense of environmental protection in the most formative period of their lives. The idea underlying this type of text is that, if children establish a certain familiarity with environmental and ecological issues from an early age, not only will respect for nature be more spontaneous and immediate to the extent of learning an habit. Consequently, they will also be able to establish a bond with the natural element such as to be able, in adulthood, to

restore an ecological balance in an era marked by progressive environmental degradation. It is clear that, following the dictates of an ecocritical perspective, if today we wish to change our anthropocentric point of view for a more ecocentric vision, it would be desirable to learn to value the natural element from childhood. Children's and young adult literature have always shown an entertaining nature, but at the same time it is designed to stimulate interest, imagination and create in the reader a certain predisposition to solve certain problems and challenges that can occur throughout the plot of the story (Massey and Bradford 2011: 108).

An advantage of children's literature and, at the same time, pertinent to an ecocritical vision, is the frequent use of comparisons between humans, plants and animals. Furthermore, in the case of illustrated books, images can be an effective tool to transform the narrated concepts into visual reality. The ultimate goal is for children to be able to put into practice the teachings learned from literature in real everyday life through various activities conducted outdoors, also helped by their curiosity towards the world. According to a study conducted by the organization Children and Nature Network in 2012, "children's outdoor activities with the 'wild' nature will encourage positive attitude and behaviour towards the environment when they grow up"³⁵. It follows, in the case of children's literature, that an ecocritical text must treat the natural element as the main category on a par with others, such as gender and ethnicity. One of the main assumptions about ecocritical literature for children and young adults is that this type of texts can serve the function of instilling environmental education in young readers and that they can develop not only an ecocentric approach, but also a certain sense of belonging to the planet, as 'ecocitizens' of the world. This is a reference term for the initial classification that Geraldine

³⁵ Children and Nature website, URL: <https://www.childrenandnature.org> (accessed 24 April 2025).

Massey and Clare Bradford make of environmental literature as a genre for young readers in their essay entitled “Children as Ecocitizens: Ecocriticism and Environmental Texts” (2011):

Children’s environmental texts – that is, texts which thematize contemporary ecological issues – [...] predict future possibilities. One of their primary functions is to socialize young people into becoming the responsible and empathetic adults of tomorrow by positioning readers as ecocitizens (Massey and Bradford 2011: 109).

Massey and Bradford identify at least three main characteristics that distinguish the notion of ‘ecocitizenship’. The first suggests that the use of the prefix eco- is at the basis of the Four Laws of Ecology articulated by the American biologist Barry Commoner (1917-2012) in his work *The Closing Circle: Nature, Man, and Technology* (1971) as a need to understand that everything is interconnected to something else and that what affects or damages one thing, affects and damages another thing in a long chain of cause and effect (Massey and Bradford 2011: 110). Secondly, the term ‘ecological’ opens up more conceptual possibilities than the term ‘environmental’, in the sense that the prefix eco- implies a greater awareness of the relationships of interconnection and interdependence also in the theoretical field of ecocriticism. Finally, the term ‘ecocitizen’ signals the attempt to avoid anthropocentric connotations typical of the term ‘environmentalist’ which presupposes a controlled action originating from the human being (Ibid.). Through the act of reading, the future ecocitizen can learn a lot about the ways and attitudes to adopt. Consequently, as proposed by Massey and Bradford, if readers are able to adopt the point of view of the protagonists of the texts, they could potentially also assume and make their own the vision of the world suggested within them and then apply its

teachings in real life. In this way, children's literature can raise environmentalist issues which, in turn, can provoke an autonomous reflection on the world and, subsequently, imagine future scenarios (Ibid.).

As Nina Goga points out (2018), the child/nature relationship presented in a literary text can be, at various levels, more or less celebratory and/or problematic (Goga 2018: 353). The first analyses of this relationship date back to the second half of the 18th century, when the writer and philosopher Jean-Jacques Rousseau (1712-1778) already hinted at a dichotomy and opposition between nature and culture (Rousseau 2016: 43-44) and considers open spaces as the best places for learning and the most suitable for the education and training of children. Rousseau's idea was that of the 'angel-child', an innocent creature linked to nature and who must be protected and strengthened on her or his path, so that she or he can develop in harmony with the surrounding environment (2016: 40-41). This notion of innocence has left its mark on the subsequent production of children's literature. Locke, considered a precursor of Rousseau, asserted that the child must be raised through education since, although nature is inherent in him, the child himself is at the same time 'in a wild state', irrational and unpredictable (Locke 1996: 216). Rousseau instead connects the child to the category of nature, a category that in the Romantic age will be seen exclusively as positive and idyllic. In his work *Émile, ou De l'Éducation* (1762), Rousseau identifies the child as "the real, the natural and the pure" (2016: 37) and sees him or her as the representative of an authenticity that he thinks is lacking in adulthood. The figure of the child is thus mythologized and romanticized.

Today, a greater awareness of the climate crisis and the adherence of many scholars to ecocritical thought have led to a less idyllic and less harmonious view of the relationship that children can establish with nature (Goga 2018: 353). Among the various problematic aspects, the one that stands

out is that of nature seen as an element of threat – plants and animals that can prove dangerous – or as an element that generates fear (for example, due to natural disasters). This dualistic aspect is identified by Peter Mortensen as the basis of two different positions regarding the relationship of children and young adults with nature: one celebratory (dan. *naturcelebrerende*) and one that instead problematizes nature (dan. *naturproblematiserende*) (Mortensen 2013: 284). The celebratory approach is characteristic of all those thinkers who have advanced criticisms of Western modernity, including Thoreau, Nietzsche, and Næss. The demands of the second approach to the ecocritical analysis of a literary text according to Mortensen, namely the problematizing one, do not intend to argue that the debate promoted by deep ecology is wrong, though.

On the contrary, attention is maintained on concepts such as biodiversity, alternative energies, urbanization projects and integration of green areas, sustainable development, however what is mostly focused on is the development of a social and political conscience; in this context the concept of trans-locality is important, given that some local environmental problems can be understood and interpreted in a more global perspective (Mortensen 2013: 286-287). The demands of this approach are the following:

- today, on the planet, it is difficult to find uncontaminated areas;
- humans have already irreversibly changed the chemical composition of air and water;
- over half of the world's population lives in cities;
- finally, the encounter with nature in our hyper-urbanized, deterritorialized and globalized world often no longer occurs directly, but is mediated by complex techniques of representation and communication.

It is on this theoretical and dualistic basis that the research project NaChiLitCul

(“Nature in Children’s Literature and Culture”)³⁶ challenges the seemingly implicit and positive connection between young people and nature in the field of educational theory and ecocriticism, examining whether the various representations of nature found in literature correspond to those found in educational practices. The project NaChiLitCul was founded in 2013 at the Høgskulen på Vestlandet in Bergen (Norway) by Nina Goga, in response to the observation of a lack of ecocritical writings dedicated to children’s and young adult literature in the Nordic context. In her essay “A Feeling of Nature in Contemporary Norwegian Picturebook Maps” (2017), Goga argues that the goals to be pursued are “to map out and critically analyse the representations of nature in children and young adult literature, and explore how the interaction of children and young adults with literary texts and outdoor may shape their environmental awareness” (2017: 82).

To conduct this type of critical analysis, the NaChiLitCul research group has developed a reference matrix according to which to analyse and understand all the literary examples that one wants to analyse. The matrix (see fig. 2) takes the form of a coordinate system, where cultural expressions can be discussed in relation to a vertical continuum that goes from a celebration to a problematization of nature, and to a horizontal continuum that goes from an anthropocentric perspective – that is, the act of conferring intrinsic value only to humans, while non-human entities are seen as instrumental – to an ecocentric view of nature, in which the intrinsic value of interrelations between humans and non-humans on an equal footing is emphasized (Goga 2017: 82). In addition to these two axes, the matrix is circumscribed by a third dimension, that of *techne*, a term that refers to the art of shaping reality. The ever-present and constant dimension of *techne* signals the fact that all literary texts for children and young

³⁶ NaChiLitCul (Nature in Children’s Literature and Culture), URL: <https://www.hvl.no/en/research/group/nachilit/> (accessed 10 February 2025).

adults, however much they pay attention to the representation of nature, are already mediated, as human ‘artefacts’ (Goga 2017: 83).

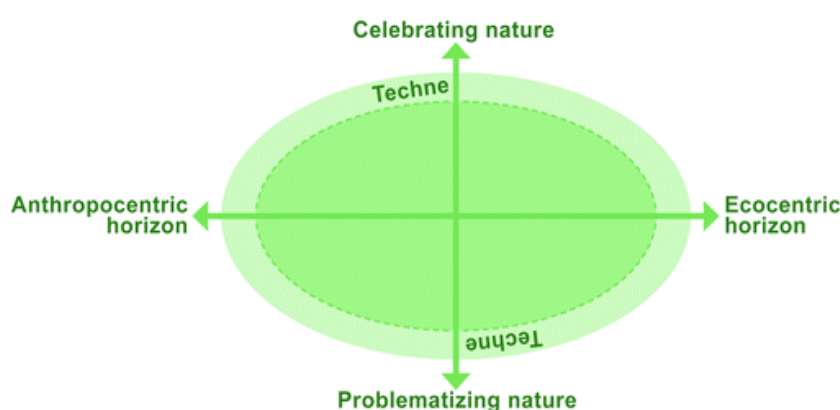


Figure 2: The “Nature in Culture matrix” developed by the NaChiLitCul research group³⁷.

The matrix (see fig. 2) takes the form of a coordinate system, where cultural expressions can be discussed in relation to a vertical continuum that goes from a celebration to a problematization of nature, and to a horizontal continuum that goes from an anthropocentric perspective – that is, the act of conferring intrinsic value only to humans, while non-human entities are seen as instrumental – to an ecocentric view of nature, in which the intrinsic value of interrelations between humans and non-humans on an equal footing is emphasized (Goga 2017: 82). In addition to these two axes, the matrix is circumscribed by a third dimension, that of *techne*, a term that refers to the art of shaping reality. The ever-present and constant dimension of *techne* signals the fact that all literary texts for children and young adults, however much they pay attention to the

³⁷ (Ibid.).

representation of nature, are already mediated, as human 'artefacts' (Goga 2017: 83).

Literary works can certainly influence our behaviour and our attitude towards nature in real life, but at the same time every cultural work is always the result of human ideas and actions. It is not only a question, I would further argue, of analysing the presence of an ecological dimension in literature or of applying a certain method of interpretation, but also of the belief that literature itself can have beneficial effects on the ecosphere in the future. Conducting literary research in this area can also contribute constructively to a wider scientific project, which concerns the understanding of the complex interaction between nature and culture, and between young people and their environment. A multi- and interdisciplinary research into the ecocritical analysis can be decisive in addressing issues related to the environmental crisis and the loss of ethical and cultural values, also by offering an eco-pedagogical frame especially to young readers who, in their liminal age, can assume pro-environmental behaviours inspired by the peer protagonists of fictional works. It is not, therefore, a matter of questioning human beings and their peculiar human traits, but rather of reversing biased perspectives towards an ecocentric view according to which we can feel as part of an ecocentric balance, despite the climate challenges we need to face.

1.3.6 Main Goals of Conducting an Ecocritical Analysis

Despite its great theoretical and methodological variety, ecocriticism distinguishes itself from other approaches to literary criticism by its focus on the role of the non-human domain within literary texts, promoting a perspective – cultural and political, as well as theoretical – that decentres the human being to better focus on the natural and environmental element. Such an objective has, however, raised an important objection from literary critics: when questioning

the methodology to be applied to the literary field – which focuses mostly on human dramas and on specific human culture, habits, customs and behaviours – it might seem contradictory to be interested in the non-human domain *tout court*. It is therefore necessary to insist on the fact that humans and non-humans are mutually correlated in order to better understand the environmental crisis of our times.

Ecocriticism studies – and questions – the dichotomy between human (cultural) and non-human (natural) elements present in the literary text, giving fundamental importance to the concept of ‘place’, the examination of which must constitute a central part of the analysis, on a par with other founding categories such as ‘gender’ and ‘ethnicity’. But one can also go beyond the dichotomy in question, problematizing and challenging it. In this sense, the monograph *Ecocriticism. The New Critical Idiom* (2004) by Greg Garrard is significant. Most ecocritical studies are based on the existence of something that goes beyond mere human and material reality; the role that language, culture and society have in shaping human perceptions of the natural world is recognized. But Garrard’s definition of ecocriticism itself aims to overcome the nature/culture binomial, defining ecocriticism as “the study of the relationship of the human and the non-human, throughout human cultural history and involving critical analysis of the term ‘human’ itself” (2004: 5). The importance of this assertion lies in the assumption that environmental problems require analysis in both cultural and scientific terms since they are the result of an interaction between ecological knowledge and its cultural declination (2004: 14). Garrard is therefore inclined to more hybrid parallels, which he defines as cross-cultural, human-animal and human-machine identities, which play in favour of a “social ecology” (2004: 162). From this point of view, the aim would no longer be the denial of the Self and submission to the natural order promoted by deep ecology, but rather an attitude “attuned to environmental justice, but not dismissive of the

claims of commerce and technology; shaped by knowledge of long-term environmental problems, but way of apocalypticism; informed by artistic as well as scientific ecological insight; and committed to the preservation of the biological diversity of the planet for all its inhabitants" (2004: 182).

It is imperative that the ecocritical orientation (regardless of which one is chosen) promotes the fundamental integration of other disciplines, such as history, economics, philosophy, ethics and psychology, to enrich the analytical phase. This reinforces ecocriticism as a form of critical thought that, as previously underlined, fosters a strongly interdisciplinary approach. The common foundation across these fields is the recognition that we have entered an era in which the consequences of certain human actions are ruinously damaging the Earth's life-support systems. As historian Donald Worster (1993) argues, "we are facing a global crisis today, not because of how ecosystems function but rather because of how our ethical systems function" (cit. in Glotfelty 1996: xxi). It is therefore essential that all disciplines make their united contribution towards a true and deeper understanding of the problem. In this sense, as already proposed by Cheryll Glotfelty (1996: xxii), literary scholars and literary critics can address problems and issues that revolve around values, meanings, traditions, point of view and language, making a significant contribution to ecological and environmental thought. Certainly, awareness raising is the most important goal of ecocriticism. How can we solve environmental problems if we do not start to think that they really exist? The ecocritic's work is to give greater importance to the natural element, its meaning and its implications in the literary text. As Peter Mortensen underlines in his essay entitled "Natur" (2013), literary research can contribute constructively to a broader scientific project, which concerns the understanding of the complex interaction between nature and culture and between people and the environment (2013: 280). This is why, today, ecocriticism also has a

fundamentally educational value. It is a discipline that is based on the transmission of a message with strong social and ecological implications and that invites readers and scholars to think seriously and analytically about the relationship of human beings with nature and the ethical and aesthetic dilemma posed by the ongoing environmental crisis (Glotfelty 1996: xxv).

REFERENCE LIST

Alaimo, S. (2010). *Bodily Natures: Science, Environment, and the Material Self*. Bloomington: Indiana University Press.

AMAP. (2019). *AMAP Climate Change Update 2019: An Update to Key Findings of Snow, Water, Ice and Permafrost in the Arctic (SWIPA) 2017*. Oslo, Norway: Arctic Monitoring and Assessment Programme (AMAP).

AMAP. (2025). *Arctic Climate Change Update 2024. Key Trends and Impacts. Summary for Policy-makers*. Tromsø, Norway: Arctic Monitoring and Assessment Programme (AMAP).

Aviales.ru, URL: <https://aviales.ru/popup.aspx?news=9323> (accessed 30 May 2025).

ASLE website: <https://www.asle.org> (accessed 24 April 2025).

Authors4Oceans, "Authors and artists unite to help oceans recover", URL: <https://www.authors4oceans.org/> (accessed 5 April 2025).

Barnett, T., et al. (2005). "Potential impacts of a warming climate on water availability in snow-dominated regions". In *Nature*, 438, 303-309. URL: <https://doi.org/10.1038/nature04141> (accessed 19 May 2025).

Benn, D., Evans, D. J. A. (2010). *Glaciers and Glaciation*, (2nd Edition). London: Routledge. URL: <https://doi.org/10.4324/9780203785010> (accessed 17 May 2025).

Bennett, J. (2010). *Vibrant matter: a political ecology of things*. Durham, North Carolina: Duke University Press.

Born, D. (2018). "Bearing Witness? Polar Bears as Icons for Climate Change Communication in *National Geographic*". In *Environmental Communication*, 13, 649-663. URL: <https://doi.org/10.1080/17524032.2018.1435557> (accessed 19 May 2025).

Bouchard, F., et al. (2018). "Frozen-ground cartoons: permafrost comics as an innovative tool for polar outreach, education, and engagement". In *Polar Record*, 54(5-6), 366-372. URL: <https://doi.org/10.1017/S0032247418000633> (accessed 9 April 2025).

Brudin Borg, C. (2024). "Ecocritical Spatial Analysis Methods". In Brudin Borg, C. et al. (Eds), *Contemporary Ecocritical Methods*, Lanham, Maryland: Lexington Books, 243-264.

Buell, L. (1995). *The Environmental Imagination. Thoreau, Nature Writing, and the Formation of American Culture*. Cambridge: Harvard University Press.

Buell, L. (2005). *The Future of Environmental Criticism: Environmental Crisis and Literary Imagination*. Malden, Massachussets: Blackwell Pub Wiley-Blackwell.

Carey, M. (2007). "The History of Ice: How Glaciers Became and Endangered Species". In *Environmental History*, 12(3), Oxford University Press, 497-527.

Carson, R. (1963). *Silent Spring*. London: Hamilton.

Children and Nature website, URL: <https://www.childrenandnature.org> (accessed 24 April 2025).

COAL, "The First-Ever Bulk Freighter To Pass Through The Arctic Was Carrying Coal", URL: <https://coalnewsandviews.wordpress.com/2013/09/26/the-first-ever-bulk-freighter-to-pass-through-the-arctic-was-carrying-coal/> (accessed 19 May 2025).

Cogos, S., et al. (2017). "Sámi Place Names and Maps: Transmitting Knowledge of a Cultural Landscape in Contemporary Contexts". In *Arctic, Antarctic, and Alpine Research* 49(1), 43-51.

Cohen, J., et al. (2014). "Recent Arctic amplification and extreme mid-latitude weather". In *Nature Geoscience*, 7, 627-637. URL: <https://doi.org/10.1038/ngeo2234> (accessed 19 May 2025).

Commoner, B. (1971). *The Closing Circle: Nature, Man, and Technology*. New York: Knopf.

Cunningham, C. X., et al. (2024). "Increasing frequency and intensity of the most extreme wildfires on Earth". In *Nature Ecology and Evolution*, 8, 1420-1425. URL: <https://doi.org/10.1038/s41559-024-02452-2> (accessed 19 May 2025).

Cunsolo, A., Ellis, N.R. (2018). "Ecological grief as a mental health response to climate change-related loss". In *Nature Climate Change* 8, 275-281. URL: <https://doi.org/10.1038/s41558-018-0092-2> (accessed 25 May 2025).

Corry, O. (2019). "Nature and the international: towards a materialist understanding of societal multiplicity". In *Globalizations*, 17, Issue 3: Multiplicity: A New Common Ground for International Relations?, 419-435. URL: <https://doi.org/10.1080/14747731.2019.1676587> (accessed 11 April 2025).

Cuffey, K. M., Paterson, W. S. B. (2010). *The physics of glaciers* (4th Edition). Amsterdam: Academic Press.

Demezhko, D. Y., Gornostaeva, A. A. (2015). "Geothermal paleoclimate: Evaluation of long-term surface temperature changes by the study of borehole temperature profiles". In *Geothermics*, 53, 190-199.

EASLCE website, URL: <https://www.easlce.eu/> (accessed 24 April 2025).

Estilow, T. W., et al. (2015). "A long-term Northern Hemisphere snow cover extent data record for climate studies and monitoring", in *Earth System Science Data*, 7, 137-142.

Express.co.uk, "Panic in Russia as state of emergency declared after huge fires rage out of control", URL: <https://www.express.co.uk/news/world/2054586/russia-state-emergency-buryatia-wildfires> (accessed 16.5.2025).

Fawzy, S., et al. (2020). "Strategies for mitigation of climate change: a review". In *Environmental chemistry letters*, 18(6), 2069-2094.

Finger-Higgins, R., et al. (2021). "Increasing shrub damage by invertebrate herbivores in the warming and drying tundra of West Greenland". In *Oecologia*, 195, 995-1005. URL: <https://doi.org/10.1007/s00442-021-04899-7> (accessed 19 May 2025).

Ford, J. D., Pearce, T. (2010). "What we know, do not know, and need to know about climate change vulnerability in the western Canadian Arctic: a systematic literature review". In *Environmental Research Letters*, 5(1), 014008–014008. URL: <https://doi.org/10.1088/1748-9326/5/1/014008> (accessed 10 February 2026).

Ford, J. D., et al. (2015). "The adaptation challenge in the Arctic". In *Nature Climate Change*, 5(12), 1046-1053. URL: <https://doi.org/10.1038/nclimate2723> (accessed 10 February 2026).

Forsberg, L. (2024). *Rekordstor minskning av svenska glaciärer*, URL: <https://www.forskning.se/2024/10> (accessed 3 April 2025).

Foucault, M. (1986). "Of Other Spaces". Translated by Jay Miskowiec. *Diacritics*, 16(1), 22-27.

Fountain, E. (2021). *Melt*. London: Pushkin Press.

French, H. M. (2017). *The Periglacial Environment* (4th Edition). Hoboken, New Jersey: Wiley-Blackwell.

- Garrard, G. (2004). *Ecocriticism: The New Critical Idiom*. New York: Routledge.
- Glotfelty, C. (1996). "Introduction". In Cheryll Glotfelty and Harald Fromm (Eds), *The Ecocriticism Reader: Landmarks in Literary Ecology*, pp. xv-xxxii. Athens: The University of Georgia Press.
- Goga, N. (2017). "A feeling of nature in contemporary Norwegian picturebook maps." In *Encyclopaideia: Journal of phenomenology and education*, XXI (49), 81-97. URL: <https://encp.unibo.it/article/view/7605/7329> (accessed 24 April 2025).
- Goga, N. (2018). "Bærekraftig litteraturundervisning." In Ruth Seierstad Stokke and Elise Seip Tønnessen (Eds), *Møter med barnelitteratur: Introduksjon for lærere*, pp. 351-369. Oslo: Oslo Universitetsforlag.
- Hamlington, B. D., et al. (2024). "The rate of global sea level rise doubled during the past three decades". In *Communications Earth & Environment*, 5(1), 601. URL: <https://doi.org/10.1038/s43247-024-01761-5> (accessed 16 May 2025).
- Haraway, D. (1988). "Situated knowledges: the science question in feminism and the privilege of partial perspective". In *Feminist studies*, 14, 575-599.
- Harris, S. A., et al. (1988). *Glossary of permafrost and related ground-ice terms* (Vol. 142). Permafrost Subcommittee, Associate Committee on Geotechnical Research, National Research Council of Canada.
- Heise, U. K. (2008). *Sense of Place and Sense of Planet: The Environmental Imagination of the Global*. Oxford: Oxford University Press.
- Hjort, J., et al. (2018). "Degrading permafrost puts Arctic infrastructure at risk by mid-century". *Nature Communications*, 9 (1), 5147, URL: <https://doi.org/10.1038/s41467-018-07557-4> (accessed 31 March 2025).
- Hjort, J., et al. (2022). "Impacts of permafrost degradation on infrastructure". In *Nature Reviews Earth and Environment*, 3, 24-38. URL: <https://doi.org/10.1038/s43017-021-00247-8> (accessed 26 April 2026).
- Hugelius, G., et al. (2013). "The Northern Circumpolar Soil Carbon Database: spatially distributed datasets of soil coverage and soil carbon storage in the northern permafrost regions". In *Earth System Science Data*, 5(1), 3-13. URL: <https://doi.org/10.5194/essd-5-3-2013> (accessed 26 April 2026).
- ICCI (International Cryosphere Climate Initiative). (2024). *State of the Cryosphere 2024. Lost Ice, Global Damage. We cannot negotiate with the melting point of ice*. URL: <https://www.iccnet.org/statecryo24> (accessed 9 February 2025).
- Iovino, S., Oppermann, S. (2014). *Material Ecocriticism*. Bloomington: Indiana University Press.

Irrgang, A. M., et al. (2022). "Drivers, dynamics and impacts of changing Arctic coasts". In *Nature Reviews Earth and Environment*, 3, 39-54. URL: <https://doi.org/10.1038/s43017-021-00232-1> (accessed 26 April 2026).

IPCC (International Panel on Climate Change). (2019). *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate* (H.-O. Pörtner et al. (Eds). Cambridge, UK and New York, USA: Cambridge University Press, 203-320. URL: <https://doi.org/10.1017/9781009157964> (accessed 31 March 2025).

IPCC (International Panel on Climate Change). (2023). *Climate Change 2023. Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, H. Lee and J. Romero (Eds)]. Geneva, Switzerland: IPCC.

ipcc.ch, "Climate change: a threat to human wellbeing and health of the planet. Taking action now can secure our future". URL: <https://www.ipcc.ch/2022/02/28/pr-wgii-ar6/> (accessed 19 May 2025).

ipcc.ch, "The evidence is clear: the time for action is now. We can halve emissions by 2030". URL: <https://www.ipcc.ch/2022/04/04/ipcc-ar6-wgiii-pressrelease/> (accessed 19 May 2025).

Jahn, A. (2018). "Reduced probability of ice-free summers for 1.5 °C compared to 2 °C warming". In *Nature Climate Change*, 8(5), 409-413. URL: <https://doi.org/10.1038/s41558-018-0127-8> (accessed 16 May 2025).

James, E. (2015). *Storyworld Accord: Econarratology and Postcolonial Narratives*. Lincoln: University of Nebraska Press.

Karlsson, M., Hovelsrud, G. (2021). "“Everyone comes with their own shade of green”": Negotiating the meaning of transformation in Norway's agriculture and fisheries sectors". In *Journal of Rural Studies*, Vol. 81, 259-268. URL: <https://doi.org/10.1016/j.jrurstud.2020.10.032> (accessed 7 April 2025).

Kelman, I. (2017). *Arcticness: Power and Voice from the North*. London: UCL Press.

Klenk, N., et al. (2017). "Local knowledge in climate adaptation research: Moving knowledge frameworks from extraction to co-production". In *WIREs Climate Change*, 8 (5), e475. URL: <https://doi.org/10.1002/wcc.475> (accessed 17 May 2025).

Koivurova, T., et al. (2021). *Overview of EU actions in the Arctic and their impact. European Commission final report 2021*. Kielce, Poland: EPRD office for Economic Policy and Regional Development Ltd.

Kramshøj Flinker, J. (2015). "Økolitteratur og økokritik i en apokalyptisk Verden". In *SPRING - tidsskrift for moderne dansk litteratur*, (39), n.d.

Kurki, M. (2021). "Relational revolution and relationality in IR: New conversations". In *Review of International Studies*, 48, Special Issue 5: Pluriversal Relationality, 821-836. URL: <https://doi.org/10.1017/S0260210521000127> (accessed 11 April 2025).

Laidre, K. L., et al. (2015). "Arctic marine mammal population status, sea ice habitat loss, and conservation recommendations for the 21st century". In *Conservation Biology*, 29, 724-737. URL: <https://doi.org/10.1111/cobi.12474> (accessed 19 May 2025).

Laestadius, A.-H. (2021). *Stöld*. Stockholm: Romanus & Selling.

Laestadius, A.-H. (2023). *Stolen*. Translation by R. Willson-Broyles. London: Bloomsbury Publishing.

Langer, M., et al. (2023). "Thawing permafrost poses environmental threat to thousands of sites with legacy industrial contamination". In *Nature Communications*, 14, 1721. URL: <https://doi.org/10.1038/s41467-023-37276-4> (accessed 26 April 2026).

Leane, E. (2022). "Cryonarratives for Warming Times." In Klaus Dodds and Sverker Sörlin (Eds), *Ice Humanities: Living, Thinking, and Working in a Melting World*, Manchester University Press, 250-265.

Lesnik-Oberstein, K. (1998). "Children Literature and the Environment". In Richard Kerridge and Neil Sammells (Eds), *Writing the Environment: Ecocriticism and Literature*, London: Zed Books.

Lindbo, J. (2024). "Econarratology and Metaphor Analysis". In Brudin Borg, C. et al. (Eds), *Contemporary Ecocritical Methods*, Lanham, Maryland: Lexington Books, 145-160.

Lindgren Leavenworth, M. (2024). *The Imagined Arctic in Speculative Fiction*. New York and London: Routledge.

Locke, J. (1996; orig. Ed. 1693). *Some Thoughts Concerning Education and Of the Conduct of Understanding*, Ruth Grant and Nathan Tarcov (Eds). Indianapolis: Hackett.

Lisiecki, L. E., Raymo, M. E. (2005). "A Pliocene-Pleistocene stack of 57 globally distributed benthic $\delta^{18}\text{O}$ records". In *Paleoceanography*, 20, PA1003. URL: <https://doi.org/10.1029/2004PA001071> (accessed 19 May 2025).

Love, G. A. (1990). "Revaluing Nature: Toward An Ecological Criticism". In *Western American Literature*, 25(3), 201-215. URL: <https://doi.org/10.1353/wal.1990.0079> (accessed 10 February 2026).

Lunde, M. (2022). *Drømmen om et tre*. Oslo: Aschehoug.

Lunde, M. (2024). *The Dream of a Tree*. Translated by Diane Oatley. London: Scribner UK.

Luo, B., et al. (2024). "Rapid summer Russian Arctic sea-ice loss enhances the risk of recent Eastern Siberian wildfires". In *Nature communications*, 15(1), 5399-4017.

Lynch, T. (2008). *Xerophilia: Ecocritical Explorations in Southwestern Literature*. Lubbock: Texas Tech University Press.

Lönngren, A.-S. (2024). "Power, Resistance, and More-than-Anthropocentric Leakages". In Camilla Bruding Borg et al. (Eds), *Contemporary Ecocritical Methods*, Lanham, Maryland: Lexington Books, 61-76.

Massey, G., Bradford, C. (2011). "Children as Ecocitizens: Ecocriticism and Environmental Texts." In Kerry Mallan and Clare Bradford (Eds), *Contemporary Children's Literature and Film: Engaging with Theory*, pp.109-126, Hampshire: Palgrave Macmillan.

Mead, L. (2022). "A Warming Arctic is a Warming for the World", IISD (International Institute for Sustainable Development). URL: <https://www.iisd.org/articles/deep-dive/arctic-warming> (accessed 31 March 2025).

Mission Blue, "About us", URL: <https://missionblue.org/about/> (accessed 16 May 2025).

Mission Blue, "Hope Spots", URL: <https://missionblue.org/hope-spots/> (accessed 5 April 2025).

Mortensen, P. (2013). "Natur." In Lasse Kjældgaard et al. (Eds), *Litteratur: Introduktion til teori og analyse*, Aarhus: Aarhus Universitetsforlag.

Morton, T. (2007). *Ecology without nature: rethinking environmental aesthetics*. Cambridge, Massachusetts: Harvard University Press.

Muth, A. F., et al. (2022). "High-frequency pH time series reveals pronounced seasonality in Arctic coastal waters". In *Limnology and Oceanography*, 67(7), 1429-1442. URL: <https://doi.org/10.1002/lno.12080> (accessed 16 May 2025).

NaChiLit, URL: <https://www.hvl.no/en/research/group/nachilit/> (accessed 10 February 2025).

National Geographic YouTube channel, "Heart-Wrenching Video: Starving Polar Bear on Iceless Land", published 11.12.2017. URL: https://www.youtube.com/watch?v=_JhaVNJb3ag (accessed 18 May 2025).

NATO, "'What happens in the Arctic, does not stay in the Arctic' - climate change in the Arctic will have global consequences and cannot be ignored". URL: <https://www.nato-pa.int/news/what-happens-arctic-does-not-stay-arctic-climate-change-arctic-will-have-global-consequences> (accessed 10 April 2025).

North Greenland Ice Core Project members (2004). "High-resolution record of Northern Hemisphere climate extending into the last interglacial period". In *Nature*, 431, 147-151. URL: <https://doi.org/10.1038/nature02805> (accessed 26 April 2026).

Notz, D., Stroeve, J. (2016). "Observed Arctic sea-ice loss directly follows anthropogenic CO₂ emission". In *Science* (American Association for the Advancement of Science), 354(6313), 747-750.

NSIDC (National Snow and Ice Data Center), "Frozen ground & permafrost", URL: <https://nsidc.org/learn/what-cryosphere#anchor-frozen-ground-permafrost> (accessed 16 May 2025).

NSIDC, "Glaciers", URL: <https://nsidc.org/learn/parts-cryosphere/glaciers> (accessed 16 May 2025).

NSIDC, "Ice shelves & icebergs", URL: <https://nsidc.org/learn/what-cryosphere#anchor-ice-shelves-icebergs> (accessed 16 May 2025).

NSIDC, definition of "talik" in Cryosphere Glossary. URL: <https://nsidc.org/learn/cryosphere-glossary> (accessed 31 March 2025).

Næss, A. (1997). "An Ecophilosophy Approach, the Deep Ecology Movement, and Diverse Ecosophies." In *The Trumpeter: Journal of Ecosophy*, 14(3), 110-111.

OA-ICC (Ocean Acidification International Coordination Centre). (2024). "Arctic Ocean acidification and carbonate undersaturation enhanced by coastal permafrost erosion". URL: <https://news-oceanacidification-icc.org/2024/12/31/arctic-ocean-acidification-and-carbonate-undersaturation-enhanced-by-coastal-permafrost-erosion/> (accessed 5 April 2025).

Ostenso, N. A. (2025). "Arctic Oceani". In *Encyclopedia Britannica*, URL: <https://www.britannica.com/place/Arctic-Ocean> (accessed 17 May 2025).

Overland, J., et al. (2019). "The urgency of Arctic change". In *Polar Science*, 21, 6-13. URL: <https://doi.org/10.1016/j.polar.2018.11.008> (accessed 19 May 2025).

Oxford Academic, "ISLE". URL: <https://academic.oup.com/isle> (accessed 24 April 2025).

Palter, J. B., et al. (2018). "Climate, ocean circulation, and sea level changes under stabilization and overshoot pathways to 1.5 K warming". In *Earth System Dynamics*, 9, 817-828.

Paul Nicklen Photography, URL: <https://paulnicklen.com/> (accessed 18 May 2025).

Pauli, J. N., et al. (2013). "The subnivium: a deteriorating seasonal refugium". In *Frontiers in ecology and the environment*, 2013-06, 11(5), 260-267.

Pearson, R. G., et al. (2013). "Shifts in Arctic vegetation and associated feedbacks under climate change". In *Nature Climate Change*, 3, 673-677. URL: <https://doi.org/10.1038/nclimate1858> (accessed 19 May 2025).

Penfold, N. (2022). *Beyond the Frozen Horizon*. London: Little Tiger Press Group.

Perovich, D. K., Polashenski, C. (2012). "Albedo evolution of seasonal Arctic sea ice". In *Geophysical Research Letters*, 39, L08501. URL: <https://doi.org/10.1029/2012GL051432> (accessed 19 May 2025).

Polarpedia.eu, "Equilibrium line altitude (ELA)", URL: <https://polarpedia.eu/en/equilibrium-line-altitude-ela/> (accessed 16 May 2025).

Post, E., et al. (2009). "Ecological Dynamics Across the Arctic Associated with Recent Climate Change". In *Science*, 325(5946), 1355-1358. URL: <https://www.science.org/doi/10.1126/science.1173113> (accessed 19 May 2025).

Post, E., et al. (2019). "The polar regions in a 2°C warmer world". In *Science Advances*, 5(12), eaaw9883. URL: <https://www.science.org/doi/10.1126/sciadv.aaw9883> (accessed 19 May 2025).

Robards, M. D., et al. (2018). "Understanding and adapting to observed changes in the Alaskan Arctic: Actionable knowledge co-production with Alaska Native communities". *Deep Sea Research Part II: Topical Studies in Oceanography*. URL: <https://doi.org/10.1016/j.dsr2.2018.02.008> (accessed 25 February 2025).

Rousseau, J.-J. (2016; orig. Ed. 1762). *Emilio o dell'educazione*. Milano: Liceo Agnesi Editore.

Rueckert, W. (1978). "Literature and Ecology. An Experiment in Ecocriticism." In Cheryl Glotfelty and Harold Fromm (Eds), *The Ecocriticism Reader: Landmarks in literary ecology*, Athens: The University of Georgia Press, 1996, 105-123.

Salvadori, D. (2016). "Ecocritica: diacronie di una contaminazione." *LEA: Lingue e letterature d'Oriente e d'Occidente*, 05, 671-699. URL: <https://oajournals.fupress.net/index.php/bsfm-lea/article/view/7736> (accessed 24 April 2025).

Sara, M. Á. (2013). *Ilmiiid gaskkas*. Kautokeino: DAT.

Sara, M. Á. (2016). *In Between worlds*. Kautokeino: DAT.

Schneegans, S. (2024). UNESCO, *Building resilience to the melting cryosphere*. Paris, France: United Nations Educational.

Screen, J., Simmonds, I. (2010). "The central role of diminishing sea ice in recent Arctic temperature amplification". In *Nature*, 464, 1334-1337. URL: <https://doi.org/10.1038/nature09051> (accessed 17 February 2025).

Seebacher, F., Post, E. (2015). "Climate change impacts on animal migration". In *Climate Change Responses*, 2 (5). URL: <https://doi.org/10.1186/s40665-015-0013-9> (accessed 19 May 2025).

Sea Legacy, URL: <https://sealegacy.org/> (accessed 18 May 2025).

Serreze, M. C., Barry, R. G. (2011). "Processes and impacts of Arctic amplification: A research synthesis". In *Global and Planetary Change*, 77(1-2), 85-96. URL: <https://doi.org/10.1016/j.gloplacha.2011.03.004> (accessed 19 May 2025).

Serreze, M. C., Stroeve, J. (2015). "Arctic sea ice trends, variability and implications for seasonal ice forecasting". In *Philosophical Transactions of the Royal Society A*, 373, 20140159. URL: <http://doi.org/10.1098/rsta.2014.0159> (accessed 17 May 2025).

Shankman, S. (2018). "These climate pollutants don't last long, but they're wreaking havoc on the Arctic". *Inside Climate News*, URL: <https://insideclimatenews.org/news/19032018/global-warming-arctic-air-pollution-short-lived-climate-pollutants-methane-black-carbon-hfcs-slcp/> (accessed 31 March 2025).

Sjöberg, Y., et al. (2018). "Involvement of local Indigenous peoples in Arctic research – expectations, needs and challenges perceived by early career researchers". In *Arctic Science*, 5(1), pp. 27-53. URL: <https://doi.org/10.1139/as-2017-0045> (accessed 5 April 2025).

Sjöberg, Y., et al. (2023). "Focus on Arctic change: transdisciplinary research and communication". In *Environmental Research Letters*, 18(1). URL: <https://doi.org/10.1088/1748-9326/acabd7> (accessed 9 April 2025).

Slovic, S. (2009). "Translocalità: la nozione di luogo nell'ecocritica contemporanea." In Caterina Salabè (Ed), *Ecocritica. La letteratura e la crisi del pianeta*, Roma: Donzelli, 17-26.

Sumata, H., et al. (2023). "Regime shift in Arctic Ocean sea ice thickness". In *Nature*, v. 615, no. 7952, 443-449. URL: <https://doi.org/10.1038/s41586-022-05686-x> (accessed 5 April 2025).

Sörlin, S. (2015). "The Emerging Arctic Humanities: a Forward-Looking Post-Script". In *Journal of Northern Studies*, 9(1), 93-98.

Tang, Q., et al. (2014). Extreme summer weather in northern mid-latitudes linked to a vanishing cryosphere. In *Nature Climate Change*, 4(1), 45-50. URL: <https://doi.org/10.1038/nclimate2065> (accessed 5 April 2025).

Tennberg, M., et al. (2022). *Indigenous peoples, natural resources and governance: agencies and interactions*. London: Taylor & Francis.

Terhaar, J., et al. (2020). "Emergent constraint on Arctic Ocean acidification in the twenty-first century". In *Nature. Waves of mutation*, 582 (7812), 379-383.

ThisVSThat, URL: <https://thisvsthat.io/aerobic-decomposition-vs-anaerobic-decomposition> (accessed 31 March 2025).

Toomey, P., Splettstoesser, J. (2013). "The World becomes the largest passenger ship to transit the northwest passage". In *Polar Record*, 49(3), 319-320. URL: <https://doi.org/doi:10.1017/S0032247412000812> (accessed 19 May 2025).

Tuck, E., Yang, K. W. (2012). "Decolonization is not a metaphor". In *Decolonization: Indigeneity, Education & Society*, 1(1), 1-40.

Turetsky, M. R., et al. (2020). "Carbon release through abrupt permafrost thaw". In *Nature Geoscience*, 13, 138-143. URL: <https://doi.org/10.1038/s41561-019-0526-0> (accessed 19 May 2025).

UN-glaciers, URL: <https://www.un-glaciers.org/en/key-messages> (accessed 27 February 2025).

United Nations, URL: <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf> (accessed 22 April 2025).

Unric.org, "Glaciers: a symbol of the climate crisis", <https://unric.org/en/glaciers-a-symbol-of-the-climate-crisis/> (accessed 3.4.2025).

Van Valkengoed, A. M., Steg, L. (2019). "Meta-analyses of factors motivating climate change adaptation behaviour". In *Nature Climate Change*, 9, 158-163. URL: <https://doi.org/10.1038/s41558-018-0371-y> (accessed 7 April 2025).

Vignola, G. (2017). "Écocritique, écosémiotique et représentation du monde en littérature." In *Cygne Noir: revue d'exploration sémiotique*, 5: 1-19. URL: <http://www.revuecygnenoir.org/numero/article/vignola-ecocritique-ecosémiotique> (accessed 24 April 2025).

Wanying, M. et al. (2024). "Devastating Wildfires and Mental Health: Major Depressive Disorder Prevalence and Associated Factors among Residents in Alberta and Nova Scotia, Canada". In *Behavioral Science*, 14(3), 209. URL: <https://doi.org/10.3390/bs14030209> (accessed 26 April 2026).

Wassmann, P. (2021). *Wither the Arctic Ocean? Research, Knowledge Needs, and Development en Route to the New Arctic*. Ciudad de México: Fundación BBVA.

WGMS, URL: <https://wgms.ch/> (accessed 3 April 2025).

Williams, P. J., Smith, M. W. (1989). *The Frozen Earth: Fundamentals of Geocryology*. Cambridge University Press.

Worster, D. (1993). *The Wealth of Nature: Environmental History and the Ecological Imagination*. Oxford: Oxford University Press.

Yershov, E. D. (2004). *General Geocryology*. Cambridge: Cambridge University Press.

Yua, E., et al. (2022). "A framework for co-production of knowledge in the context of Arctic research (Negeqlikacaarni kangingnaulriani ayuqenrilnguut piyaraitgun kangingnauryararkat), in *Ecology and Society*, 27(1), 34. URL: <https://ecologyandsociety.org/vol27/iss1/art34/> (accessed 9 February 2025).

Zemp, M., et al. (2023). WGMS: *Global Glacier Change Bulletin No. 5 (2020–2021)*. Zurich: World Glacier Monitoring Service, Zurich.

Åsberg, C. (2024). "Storying Exposure with the Transversal Methods of Ecocritique". In Brudin Borg, C. et al. (Eds), *Contemporary Ecocritical Methods*, Lanham, Maryland: Lexington Books, 265-278.

CHAPTER 2



***Analysing the Narrated Arctic through
a Diffractive Gaze: Defining Cryo-
Criticism and Young Adult Arctic
Speculative Fiction***

2 ANALYSING THE NARRATED ARCTIC THROUGH A DIFFRACTIVE GAZE: DEFINING CRYO-CRITICISM AND YOUNG ADULT ARCTIC SPECULATIVE FICTION

Ice in the inlet, ice in the sky. Ice in the bay. Ice in the air above us. Sounds of ice from the glacier. We are sleeping where ice had once been.

(Robert Macfarlane)³⁸

In the extra-textual realm, the polar ice functions as a site for scientific inquiry into global warming, military experimentation, and as a largely untapped resource for natural resource extraction, making it a critical geopolitical asset³⁹. The discomfort of contemporaneity produced by the disappearance of the cryosphere derives in large part from the comparison with a romantic and sublime landscape that has never been completely dislodged (the so-called “Arctic pastoral”, Wærp 2017: 112). When a landscape changes before our

³⁸ Macfarlane, R. (2019). “The blue of time. Landscape and the memory of ice”. In *Nature Writing*, TLS, May 10, 2019. URL: <https://www.the-tls.co.uk/science-technology/environment/the-blue-of-time> (accessed 26.4.2025).

³⁹ For instance, during President Trump’s administration, there is a clear emphasis on expanding U.S. presence and access in the Arctic to secure energy resources and assert strategic military influence amid growing competition from Russia and China. This included supporting drilling initiatives and advocating for enhanced infrastructure and icebreaker fleets to maintain strategic control over shipping routes and resource claims in the region.

eyes, the memory of the past inevitably resurfaces, leading to the perception of sentiments such as solastalgia, which links the impacts of climatic and environmental change to mental, emotional, and spiritual health (Galaway et al. 2019: 1). The sense of guilt and confusion regarding disappearing ice is also based on more nuanced but equally well-founded perceptions of ice based on scientific inquiry, which glaciology has deciphered in two centuries of studies (Clarke 1987) and through the examination of ancient layers of ice that are now emerging because of melting phenomena. As Klaus Dodds (2018) states, “[w]hile ice can and does disappear, it leaves an indelible mark on things it encounters. So, making sense of ice and snow means being attentive to multiple temporalities and spaces” (7). For example, when faced with the mighty signs left by glaciers, clearly visible in the modelling of valleys and moraine amphitheatres, there is no longer any room for doubt about the fact that the civilization of the anthropocentric era is undermining the most visible legacy of geological eras.

In human history, this is the first time we have known with certainty that we are responsible for climatic and environmental changes on a planetary level; we now possess clear projections of our impending future. Nevertheless, while science provides the data to forecast future scenarios, particularly those resulting from a lack of climate action, speculative fiction renders these in fictional form, representing projections and change. There are, then, variously convincing speculative literary versions of the future (Dědinová et al. 2021). Some are ruthless, others more unrealistically optimistic. While most scientific projections of the human and terrestrial future are based on ice archives⁴⁰ to

⁴⁰ An example of an ice archive is the “Ice Memory Foundation”, aimed at preserving ice cores from the world’s endangered glaciers in a sanctuary for scientists to have quality raw material to study in the future, for entirely unprecedented scientific discoveries or for understanding local changes in the environment (<https://www.ice-memory.org/ice-memory-database/ice-memory-database--934136.kjsp>, accessed 5 May 2025).

preserve samples for future generations to study, in speculative fiction, the shapes of ice and the whiteness of glaciers and snowpacks have the power to transform mere statistics into compelling narratives. This shift from abstract data to vivid imagery allows writers to engage readers' emotions and imagination in unique ways. When a speculative story begins with images like factory chimneys or car exhaust pipes, the trajectory is often predictable. However, if it opens with a stretch of transparent ice, the direction can feel both confusing and surprising, inviting readers to reconsider their assumptions and engage with the narrative in a deeper, more unexpected way.

The quality and variety of ice depend on the size, temperature and humidity that generate it (Knopf and Alpert 2023). The shapes and transparencies of the material, the colours, even the sounds, are present both in the boundless polar lands and in the micro formations architected by ice, which in nature manifest in the form of solid ice, snow, frost, hoarfrost, freezing rain and rime ice. Each variant corresponds to a range of different landscapes not only based on temperature and humidity but also on insolation, latitude, the influence of the wind and, last but not least, the action of human beings. Ice represents, more broadly, a wonderfully varied, fleeting, and dramatically fragile world, which human beings have learned to fear and admire over the millennia, to which they have adapted to coexist, fight and bargain, and finally, to enjoy and exploit to the point of compromising its existence.

It is precisely the multifaceted physical nature of ice that is here regarded as a source of strength and inspiration, rather than merely as a cause for concern or a subject for analytical scrutiny. Ice takes so many forms and is thus eminently useable in fiction; ice and snow hold manifold imaginative possibilities. This chapter begins by delineating the conceptual and methodological framework of cryo-criticism, positioning it within contemporary ecocritical scholarship and clarifying its analytical potential. It then considers

how this framework can be applied to speculative fiction, with the aim of interrogating the ways in which imagined futures and alternative realities engage with representations of ice. Finally, the chapter undertakes a close textual analysis of selected fictional works, chosen for their capacity to illuminate the intersections between ecocritical theory and cryology, speculative narrative strategies, and the cultural imaginaries of ice. Thus, I will first engage with the lack of a developed cryo-criticism by proposing a theoretical framework that could effectively contribute to the field of New Materialism by highlighting the multifaceted values and properties of ice as a potential subject of reference in the development of a broader ecocritical discourse. Building on this, the theoretical discussions will lead to literary analysis. After presenting features and potential of environmental literature in general, differences and commonalities among the chosen literary works will be considered in light of the theoretical assumptions. The third section will present the literary works from the UK, and the fourth will introduce the other two novels and visual literature that employ a perspective from within the Arctic.

2.1 CRYO-CRITICISM

Engaging intellectually with ice, both as a physical substance and a conceptual object, prompts critical reflection on the fundamental dynamics of human-nature relationships. Rather than reinforcing a binary between nature and culture, ice reveals their interdependence and co-interpretation. In both its solid and melting states, ice possesses the capacity to assume and dissolve form, rendering it a potent metaphor for complex and unstable entanglements, which are increasingly strained in the context of ecological crisis. The accelerating disappearance of ice, particularly in polar regions, serves as a stark indicator of humanity's own immediate and corporeal vulnerability to climate change on a global scale, i.e. due to rising sea levels. Consequently, ice has emerged as a

powerful symbol, frequently employed to provoke a reconsideration of prevailing perceptions of nature and to advocate for transformative shifts in human behaviour. In this sense, ice becomes an indicator of anthropogenic change. Beyond its physical and ecological roles, ice is a material deeply entangled with the cultural imagination. Historically perceived as remote, threatening, and sublime, polar ice landscapes symbolised extremity, danger, and the limits of human endurance. Yet, in the present era of climate change, ice has come to embody fragility and loss. Its rapid retreat offers perhaps the most visible evidence of planetary imbalance, transforming ice from an emblem of hostility into one of vulnerability. This duality reveals two defining characteristics of frozen water: its profound transience, expressed in its continual processes of growth and dissolution, and its extraordinary capacity for preservation, demonstrated in its ability to conserve organisms, landscapes, and histories for tens of thousands of years. Ice, therefore, is simultaneously ephemeral and archival, a fleeting presence and a long-term repository of the planet's memory.

The concept of diffraction, derived from physics and adapted by new materialist thinkers, provides a means of articulating this entanglement. Diffraction is the bending, spreading, or interference of waves (such as light, sound, or water waves), when they encounter an obstacle or pass through a narrow opening. This phenomenon occurs because waves tend to spread out after passing through small gaps or around edges, affecting the pattern and intensity of the wave beyond the obstacle. Diffraction is fundamental in many areas of physics, including optics and acoustics. Unlike reflection, which emphasizes mirroring and opposition, diffraction attends to patterns of overlap and interference, enabling an approach in which science and culture are read through one another rather than hierarchically arranged. A diffractive methodology has the potential of resisting reducing ice to either raw data or pure metaphor, instead highlighting how its scientific, ecological, and cultural

dimensions continually reshape one another. It foregrounds the ethical and epistemological stakes of studying the cryosphere at a time when its material transformations are inseparable from human narratives and responsibilities. Ice thus becomes a privileged site for exploring how natural processes, cultural meanings, and theoretical practices converge, making visible the dynamic interplay of matter, imagination, and ethics in a changing world.

This section explores ice as both a material and conceptual agent, emphasizing its structural, ecological, and epistemic significance. Ice typically crystallizes in a symmetrical hexagonal form, reflecting molecular behaviour and maximizing stability, yet variations abound due to atmospheric conditions and pressure changes, resulting in diverse ice structures (Dodds 2018). Snow accumulates in layers, forming firn, where air, dust, and particles become trapped. As pressure increases, snow undergoes sintering, transforming into ice and compressing air bubbles into diverse shapes, effectively preserving snapshots of past atmospheric conditions (Macfarlane 2019). The discussion then turns to theoretical frameworks, from new materialism, which challenges the subject-object binary and highlights matter as active and agential (Bennett 2010). Concepts such as Tuana's "viscous porosity" (2008) and Alaimo's "trans-corporeality" (2010) underscore the entanglement of human and non-human bodies within ecological systems.

Viscosity describes the malleability and relational stickiness of matter, including social collectivities and Arctic Indigenous practices, showing how ice and human bodies co-constitute one another through spatial, embodied, and affective interactions. Ice itself is viscous, deforming and flowing over temporal and spatial scales, acting as an active participant in ecological, social, and political processes. Trans-corporeality further frames ice as materially entangled with humans: Indigenous Arctic communities' subsistence, travel, and knowledge practices depend on intimate engagement with ice. Climate change

disrupts these interconnections, linking global emissions to corporeal effects, illustrating how ice functions as a trans-corporeal medium. Ice's resilience is conceptualized not as permanence but as dynamic adaptability: freezing, melting, reforming, and redistributing across systems, retaining vitality while enabling transformation.

From an ecocritical perspective, ice embodies multiple roles: an active agent in wider ecologies, a climate archive, a cultural and political material, and a liminal substance mediating between solid and liquid states. Ice preserves environmental memory in its structure, with trapped air bubbles and impurities documenting atmospheric histories. Projects like the Ice Memory project aim to archive these climatic records for future research, highlighting ice's value as both scientific and cultural repository. Ice cores reveal long-term correlations between CO₂ and temperature, illustrating historical climate variability and contextualizing current anthropogenic climate change.

2.2 EVERYTHING BEGINS WITH AN ICE CRYSTAL

When people say 'snowflakes', they often mean snow crystals. The latter is a single crystal of ice, within which the water molecules are all lined up in a precise hexagonal array; a snowflake, on the other hand, is a more general term. It can mean an individual snow crystal, but it can also mean just about anything that falls from the winter clouds⁴¹. Many stories are written on the surface of the snow. In order to understand the relevance of such stories in the fictional narratives here under analysis is crucial to have a better understanding of ice crystals' structure.

⁴¹ SnowCrystals.com, "Snowflake Science".

URL: <https://www.snowcrystals.com/science/science.html> (accessed 29 August 2025).

Among the first to study snow crystals scientifically was Johannes Kepler in 1611, he published a treatise on snowflakes⁴² in which he attempted to explain their hexagonal symmetry. The German astronomer suggested that the crystals' shape could be linked to the "packing" of small spheres of ice. He did not yet know their true atomic structure, which was first observed only three hundred years later, thanks to X-ray crystallography⁴³.

The first detailed images only came with Robert Hooke (1665), who in the second half of the seventeenth century carried out numerous microscopic observations⁴⁴. The term "crystal" refers to the basic geometric structure within which water molecules align in a hexagonal matrix, while "snowflake" refers to multiple crystals that aggregate, often while still falling (Nakaya 1954)⁴⁵. The story of a crystal begins in clouds, which are primarily composed of a collection of tiny water droplets suspended in the air. These droplets, approximately 20 µm in size (20 microns, or 20 thousandths of a millimeter), are the result of the condensation of water vapor, which is only possible in the presence of dust that acts as a condensation nucleus. This dust derives from evaporation from the sea, volcanic activity, and industrial activity, and in cold weather, starting at -12°C, it becomes a freezing nucleus. If the air were completely free of dust,

⁴² Kepler, J. (1611). *The Six-Cornered Snowflake* (Translated by L. L. Whyte, 1966). Oxford: Oxford University Press.

⁴³ X-ray crystallography determines the arrangement of atoms within a crystal by exposing it to an X-ray beam, which is diffracted by the atoms into "diffraction patterns" (<https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/x-ray-crystallography>, accessed 28 August 2025).

⁴⁴ In 1665 Robert Hooke published a large volume entitled *Micrographia*, containing sketches of the complexity and intricate symmetry of snow crystal structure he could view with the latest invention, the microscope. Hooke, R. (1665). *Micrographia, or some physiological descriptions of minute bodies made by magnifying glasses: with observations and inquiries thereupon*. London: Printed by J. Martyn and J. Allestry.

⁴⁵ Ukichiro Nakaya was the first person to perform a true systematic study of snow crystals, which resulted in a giant leap in our understanding of how snow crystals form. The bulk of Nakaya's work was published in 1954 in a book entitled *Snow Crystals: Natural and Artificial*. Though long out of print, Nakaya's book offers a superb look at a scientific investigation toward an accurate description of a fascinating natural phenomenon.

snow would need temperatures below -41°C to form; with a perfectly clean atmosphere, therefore, snowfall would be extremely rare (Ibid.).

The study of crystal chemistry and physics has taught us that water molecules, composed of an oxygen atom and two hydrogen atoms, arrange themselves in ice following a hexagonal lattice structure. This is why hexagonal symmetry is so common in snow crystals, although other shapes also exist. The ice “germs” that form around the nuclei are tiny hexagonal particles and grow within the clouds with regular branches called “plates” and “stars” (see fig. 3).

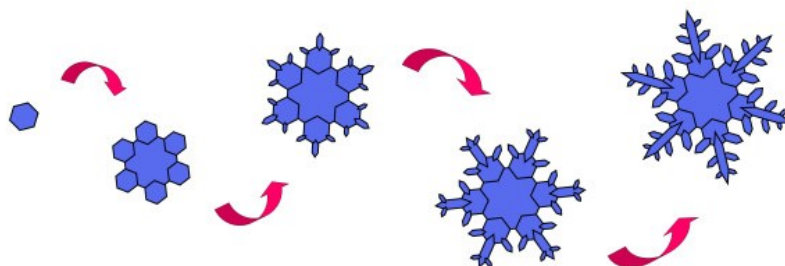


Figure 3: A stellar snow crystal begins with the formation of a small hexagonal plate, and branches sprout from the six corners when the crystal grows larger (Snowcrystals.com)⁴⁶.

The final shape of the snow crystal is determined precisely by the path it takes; the six branches all pass through the same clouds and undergo the same changes at the same time: this is why they grow synchronously, generating a complex yet symmetrical shape. Since no two snow crystals, as they fall, follow the exact same path through the clouds, no two snow crystals in nature will be perfectly identical. Hence, the common saying is that no two snow crystals are alike. If the temperature changes during the crystal's growth, a different type of

⁴⁶ SnowCrystals.com, “Snowflake Science”. URL: <https://www.snowcrystals.com/science/science.html> (accessed 29 August 2025).

growth occurs and the crystal takes on more complex shapes; for example, a “twin” structure is obtained, consisting of a column between two plates (Furukawa 2019). If the crystals are found within turbulent cloud masses, they attract additional water in the form of frost, creating a ball-like shape reminiscent of a mimosa flower. Once on the ground, this snow can form a sliding surface, which is the source of many avalanches. Needle- and column-shaped crystals form most easily when the temperature in the clouds is around -6°C , while the larger stellar crystals grow only in a narrow temperature range around -15°C (ibid.; see fig. 4).

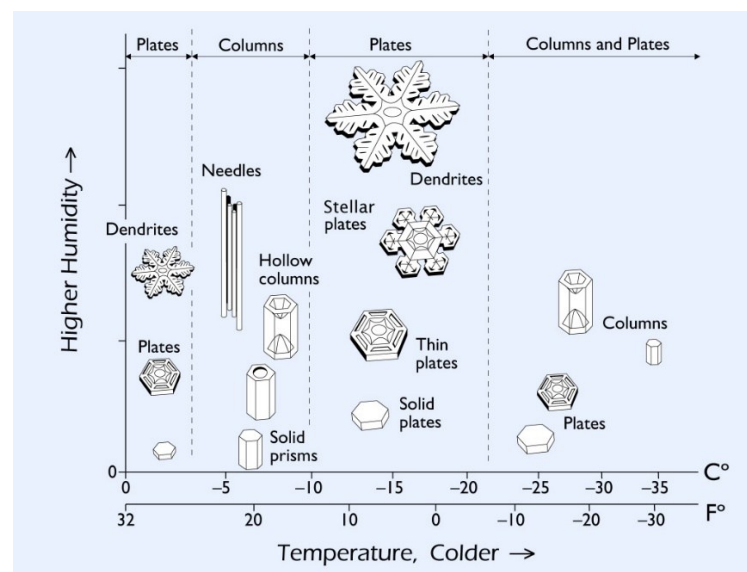


Figure 4: Snow Crystal Morphology Diagram, also called 'The Nakaya Diagram', after Japanese physicist Ukichiro Nakaya, who discovered this behaviour by growing snow crystals in his lab in the 1930s (snowcrystals.com)⁴⁷.

When there's no wind and temperatures are low (below -5°C), the crystals fall singly or in tangled flakes, piling up on the ground as light, dry snow (50-100

⁴⁷ <https://www.snowcrystals.com/science/science.html> (accessed 9 September 2025).

kilos per cubic meter), containing a lot of air—this is what we call “powder” snow. With milder temperatures approaching freezing, the crystals’ branches knit together and form large, heavy flakes; the snow on the ground is dense and moist, reaching 200 kilos per cubic meter (Furukawa 2019). If the wind blows, the crystals break and fall into fragments, stuck together; the wind then shatters them, reducing them to fragments, which fall into completely random positions and act like scattered pieces of snow, reflecting sunlight in all directions. The surfaces then shimmer as if covered in tiny diamonds. The snowpack that forms in winter retains the memory of individual snowfalls in its layers, which become visible if you dig a hole or observe the walls left on the sides of roads after the passage of a snow blower or snowplow (Libbrecht 2015).

The temperature of the snow rises as it approaches the ground: for example, with an air temperature of -10°C , the snow on the surface may be -12°C , but the lowest layer, the one closest to the ground, has a temperature that fluctuates between 0 and -1°C . Snow, therefore, prevents vegetation from freezing, even in the most extreme cold areas. This is useful for animals that live under the snow or hide there to protect themselves from storms (Marchand 2014). Fir and pine seeds land winged and light, and the passage through the cold activates spring germination. This is another example of how mistaken it is to think of cold as the opposite of life. Last year’s twigs sometimes fall from conifers, broken by a squirrel’s bite or a strong gust of wind. The result is that the snow around and closer to the forest is never perfectly white. Furthermore, all plant fragments provide food for insects that often find themselves crawling among the snow crystals from October to June, in the most remote areas of the Arctic. Butterflies and even mosquitoes can be found in the snow. What at first glance may seem like a desert is indeed an environment teeming with life (Golding et al. 2023).

A different story applies to artificial snow, which, for all intents and purposes, does not contain crystals. Creating snowflakes requires a slow and complex process that occurs under specific conditions of humidity, pressure, and temperature that are difficult to reproduce. Artificial snow is a collection of frozen droplets. The temperature of the water, which is blasted into the air by special cannons, must be near or below freezing. A suitable combination of temperature and suspension time, and sometimes the introduction of clay powder into the air-water mix, causes the droplets to solidify into grains, which have little in common with crystals (Liu et al. 2023). Unlike natural snow, which can host various microscopic life forms such as bacteria, algae, and fungi that thrive within its crystalline structures and microenvironments, artificial snow does not provide a suitable habitat for life (Lutz et al. 2016). Because artificial snow consists primarily of frozen water droplets lacking the complex crystalline architecture and porous structure of natural snow, it does not support the microbial communities commonly found in natural snowpacks (Rixen et al. 2003). Consequently, no life forms are known to dwell or reproduce in artificial snow, making it essentially sterile and biologically inert.

Another noteworthy aspect is the transformation that crystals, or larger flakes, or grains undergo after reaching the ground. This is called “metamorphism” and occurs when the temperature variation in the snowpack is slight. The grains become rounded, and the protruding parts become blunted, transforming into vapor that sublimates, changing to a solid state in the concave parts. The rounded grains heat each other through ice bridges and overall create a settled and stable snowpack (Gao et al. 2023). Conversely, when the temperature difference between the layers is medium, it is the warmer grains located below that sublime, changing from a solid to a gaseous state; the vapor thus produced refreezes at the base of the colder grains located above. These change shape, becoming flat-faced grains, with diameters of up to a few

millimeters, losing their cohesion and making the layer unstable (Ibid.). If the temperature variation in the snowpack is significant and prolonged, which is increasingly the case considering climate change, the grains continue to grow due to the sublimation of the grains in the underlying layers, up to several millimeters thick and in steps, giving them a pyramidal shape. These are called “goblet crystals”, which have no cohesive capacity, making the snowpack unstable and, solely due to the force of gravity of the underlying snow layers, can cause it to slide downward, i.e., an avalanche (Libbrecht 2015).

While bearing in it many stories, snow creates silence. According to Bernie Krause, snow creates a distinct acoustic environment, one that is as capricious in range as the conditions under which snow occurs (Krause 2013: 47). The crystals, as they bind together to form flakes, capture air, organizing it into spaces that absorb sound and prevent sound waves from bouncing back and forth as easily as they do in other conditions; consequently, noises in the snow are muffled. Cold aids this process. The effect is that snow is more voluminous when the temperature is very low⁴⁸. Snow’s work is one of removal. It takes away noises, shapes, details. Snow covers everything and fills spaces but then creates others through thoughts and images that usually remain locked away somewhere, somehow providing us with a moment of freedom. This is also why snow has a poetic quality and produces the beauty of silence, a silence that the sky patiently constructs and the ground gratefully welcomes.

Ice and snow create impressively inventing shapes within which, amidst the predominance of white, nuances of colour have often been detected: the snow can be streaked with pink, sometimes green, and more often blue. But unfortunately, the snowpack can also turn blood red. The so-called “watermelon

⁴⁸ 25 millimeters of rain at 0°C produces 25 centimeters of snow, but if the thermometer drops, for example, to -6°C, the snow can become as many as 50 centimeters and absorb all noise (Wang 2013).

snow” has been observed due to the presence of *Chlamydomonas nivalis*⁴⁹, a unicellular alga that differs from other algae of its genus, which live in freshwater and humus, by growing and sporulating within the snow. At the end of winter, the spores produced rise to the surface and are rich in astaxanthin, a reddish-purple carotenoid that protects the algae from strong ultraviolet rays and determines its colour (Quarmby 2020). Its presence has also been reported at the North Pole, demonstrating its exceptional ability not only to adapt but also to reproduce when temperatures are close to freezing, an extreme temperature range for all life forms. The coloration recorded in 2019 in the snows of southwestern Siberia, in the Kuzbass district, was dramatic: black flakes fell due to heavy air pollution caused by mining and initial processing in one of the largest coal deposits on the planet. The cause for concern, of course, was not the aesthetic issue but the serious health risk posed to the two and a half million people (not to mention plants and animals, as well as an entire ecosystem) who had to breathe that air⁵⁰.

2.3 ICE REVISITED: METAPHORICAL ANIMACY, LIVELINESS, VIBRANCY, AND MEMORY

A dawn inside the circumpolar North, that elusive but, at the same time, lasting moment compared to lower latitudes, is probably the best way to explain what ice is. This comparative longevity of the sunrise is possible thanks to the tilt of the Earth’s axis, which causes dawns and sunsets at the Poles to last longer.

⁴⁹ These algae are normally a green colour, but in the extreme temperatures of the Arctic, turn a reddish shade, imbuing the same hue into the snow around them. This makes the snow subtly darker and less effective at reflecting the rays of the sun, thus enhancing the rate at which it melts (Envirotech online, “Watermelon Snow Is Speeding Up Arctic Melt”. URL: <https://www.envirotech-online.com/news/environmental-laboratory/7/breaking-news/ldquowatermelon-snowrdquo-is-speeding-up-arctic-melt/39712>, accessed 29 August 2025).

⁵⁰ Smithsonian Magazine, “In Siberia, Toxic Black Snow Reveals the Toll of Coal Mining”. URL: <https://www.smithsonianmag.com/smart-news/siberia-toxic-black-snow-reveals-toll-coal-mining-180971525/> (accessed 29 August 2025).

During this extended period – when it is neither fully night nor fully day – horizontal light passes through everything. At that moment, a frozen hand rests on the ice, the stars fade, and a breath of wind restores the light. However, few have the fortune to witness the birth of the day on an expanse of ice, except for local communities or for tourists hunting for landscapes to immortalise. The imagination of most people has attributed other meanings to the Arctic ice: mysterious and repulsive matter; main feature of wild and inhospitable spaces; symbol of isolated outposts; extreme borders; *terminus* of the world and of life. For a long time, frozen Arctic landscapes and related explorations have been associated with reckless gestures, heroic challenges and polar odysseys, empowering the figurative sense of the dangerous mysteries of ice. It seems that between contemporary human beings and the ice there has been a distance that can only be bridged with imagination or recklessness, as if ice embodies the most distant meanings of civil and domestic life and therefore relates to us only in opposition to the certainties of common sense.

In the last decades, this imagination has changed significantly. Since scientists have warned humanity about the consequences of the greenhouse effect and in schools and squares people have been discussing global warming, ice has become the symbol of what is precious and ephemeral. Because ice is the most visible thermometer of climate change, and the lightning-fast melting of ice and glaciers is the most unmistakable representation of environmental collapse. In a few years the old image of cruel and vengeful ice (on the concepts of awe, terror, and the Arctic sublime, see Section 5.1.1) and ice allures have been replaced by the idea of something fragile which disappears without a trace, the latter imaginary being biased itself. Manipulative use of images often strips them from their proper context, exaggerates impact, and allows bias to creep in, leading to misunderstanding and misinformation. Ice does not disappear, it becomes something else, still being part of the planet and affecting planetary

water levels. Thus, ice does not vanish into nothingness, it undergoes a phase change. It melts into liquid water or sublimates into vapor, but the molecules remain part of the planet's system. Even after it changes form, the water continues to influence Earth's climate and cycles, moving through oceans, atmosphere, and rainfall. On a planetary scale, the amount of water remains essentially constant; what changes is whether it is ice, liquid, or vapor, and where it is stored. That's why the framing of ice "disappearing" oversimplifies the problem. The real issue is how its transformation redistributes water and reshapes climate systems, not that it ceases to exist.

The first characteristic of ice is precisely this: transience. Frozen water generates solids of infinite shapes that grow, change, unite, and separate, and finally melt and disappear with heat. The ephemerality of ice, its ability to vanish as if it had never existed, is an extraordinary process able to ignite the imagination of artists and writers. The second peculiarity of ice is quite the opposite: the transience of matter is paradoxically contrasted by its duration, persistence and conservative power. A body of ice can be born and die in a few hours, it can transform itself into phantasmagorical and plastic forms, but it can also resist for tens and tens of millennia. An example is the exceptional discovery⁵¹, in 2016, of two mammals, a caribou and a wolf cub, mummified in the Yukon ice, Canada, for almost fifty thousand years, that is, since the era of Neanderthal men and women. From this point of view, the most ephemeral and fickle matter in the world is at the same time a treasure chest of nature, the planet's most reliable natural coolant against the greenhouse effect, and the irreplaceable archive of the earth's evolution.

The colour of ice tends toward blue and emerald. When taking photographs of snow and ice, one almost always gets a blue cast, because of

⁵¹ BBC, "Mummified ice age wolf pup and caribou found in northern Canada". URL: <https://www.bbc.com/news/world-us-canada-45527525> (accessed 26 April 2025).

the Tyndall effect⁵². The compacted crystalline structure of glacial ice absorbs every other colour (such as yellow and red light) in the spectrum apart from blue or turquoise. So, the net effect is that it appears quite different to normal translucent ice, which reflects all visible light back without apparent preference. Blue light is the only form of light able to penetrate below its icy surface. This is “the blue of time” (Macfarlane 2019: 16), which is the colour of ice visible to the visual spectrum of the human eye; for glaciologists this range of colours corresponds to the temperature of ice; for artists and writers it is pure creativity, the very essence of it. If a rock face is covered in glassy ice, climbers refer to it as green ice.

Greenland ice explorer Robert Peroni (2015) claims that ice incorporates the colours of the nature it encounters: “What I have always loved about ice is its total availability towards others. If we put a rock behind it, it takes on its colour; if it contains flowers, it absorbs their scent and flavour. Ice knows that ‘the other’ will make it better, so it does not oppose, does not criticize, welcomes the different element towards itself, and exalts it” (107). The visual effect described by Peroni resonates with the phenomenon of diffraction (fig. 5), whether material and physical, or conceptual.

⁵² The Tyndall effect is a scientific phenomenon that takes place when light gets scattered as it goes through a colloidal solution, like water drops, layers of ice, dust particles, or air molecules. This phenomenon occurs when the visible spectrum of light interacts with the particles present in a colloidal solution. When particles interact more with the light beam, the scattering of light also increases, which makes it more likely to observe the Tyndall effect. The Tyndall effect causes blue light to scatter more intensely than red light. It was named after John Tyndall, an Irish physicist who presented evidence for this phenomenon in the year 1869 (<https://scienceinfo.com/tyndall-effect-causes-effects-examples/>, accessed 26 April 2025).



Figure 5: *Diffraction*. © Irene Bordignon⁵³.

Diffraction, the bending and spreading out of light or sound waves around an object, creates the most evident physical processes in ice transparencies. Both light and sound transfer energy through waves. When a light wave or a sound wave encounters an object such as a wall or an aperture such as a door, the wave energy bends around the object or opens, thus changing direction. According to classical physics, diffraction is thus a physical phenomenon that comes into being when a multitude of waves encounters an obstacle upon their path, and/or when these waves themselves overlap (Geerts and van der Tuin

⁵³ I took this photograph, named after the phenomenon of diffraction, during fieldwork in Vuotso, Finnish Lapland, May 2024 (part of Lila – the Living in the Arctic Landscape Spring/Summer school 2024, see chapter 4). This picture has not been edited, so that the transparencies of ice and the diffractive effect from the rocks behind it could show naturally. This photo entered the Arctic Council's photo contest (2024) for *Pathways* magazine (<https://arctic-council.org/news/photography-contest-pathways/>, accessed 26 April 2025).

2021: 173). To find new ecocritical ways to discuss ice in fiction, New Materialism is a promising branch which might embrace ice in its theoretical assumptions. In new materialist discourses, diffraction is often employed figuratively, to denote a more critical and difference-attentive mode of consciousness and thought. Waves, in fact, always overlap and extend into one another, so, metaphorically, “we can understand diffraction patterns – as patterns of difference that make a difference – to be the fundamental constituents that make up the world” (Barad 2007: 72).

Donna Haraway (2003) engaged with the metaphor of diffraction in her works in relation to thought, difference(s), and alterity. This engagement matters to the tradition of new (feminist) materialism, because the new materialist tradition approaches difference as ‘making a difference’ in terms of both genealogy, figurative conceptualization, and of ‘matter coming to matter’ (Butler 1993; Barad 2007). Haraway considers diffraction to be a more “critical consciousness” than reflexivity, as it gives us the opportunity to become more attuned to how differences are being created in the world, and what particular effects they have on subjects and their bodies (2003: 273). Seeing and thinking diffractively therefore implies a self-accountable, critical, and responsible engagement with the world. For Karen Barad, reading (and theorizing) diffractively expresses what a self-accountable type of intellectual critique and textual engagement ideally should consist of, “rather than employing a hierarchical methodology that would put different texts, theories, and strands of thought against one another, diffractively engaging with texts and intellectual traditions means that they are dialogically read ‘through one another’ to engender creative, and unexpected outcomes” (2007: 30). She also suggests acknowledging and respecting the contextual and theoretical differences between the readings in question. This methodology thus stays true to Haraway’s idea of diffraction: rather than flat-out rejecting what has been

theorised before, the foundations of the old, so to say, are being re-used to think anew (2003). As Evelien Geerts and Iris van der Tuin conclude (2021), by “[b]lurring the boundaries between different disciplines and theories to provoke new thought and theories, this methodology examines how and why boundaries between disciplines and strands of thought have been made and how they can be (re)made to matter more toward inclusion than apartheid” (175).

This study employs diffraction as a methodological approach, drawing on Barad’s (2007) revision of the term. Unlike reflection, which relies on comparison and mirroring, diffraction attends to patterns of interference, the ways in which discourses, practices, and materials overlap, diverge, and transform one another. For research situated between ecocriticism and cryology, diffraction provides a way of reading the entanglement of cultural and scientific knowledges without subordinating one to the other. Rather than positioning literature as commentary on science, or science as the grounding of literary interpretation, diffraction enables an approach that foregrounds how both are mutually constitutive practices of world-making. In this sense, ice and snow are approached not merely as scientific objects nor as literary metaphors, but as material-semiotic phenomena: entities that exist simultaneously as matter and as meaning (Haraway 1997). Cryological research into the physics of glaciers and the dynamics of sea ice (Cuffey and Paterson 2010; Notz and Stroeve 2016) intersects with cultural texts that grapple with the symbolic, aesthetic, ethical resonances of frozen landscapes (Clark 2015). A diffractive framework allows these domains to be read not in isolation but in intra-action, attending to how scientific accounts of ice loss inform ecological imaginaries, and how cultural narratives, in turn, shape public understandings and responses to cryospheric change (Bravo 2017). This method also foregrounds the ethical stakes of knowledge-making. Diffraction resists the reduction of ice to either data point or metaphor, instead tracing the interference patterns where science

and culture reshape one another. By keeping these entanglements visible, the method highlights the generative differences that emerge across disciplines, valuing transformation and complexity over disciplinary closure. Such an approach makes it possible to consider the cryosphere not only as a site of geophysical change but also as a cultural and ethical frontier where narratives, meanings, and material realities converge.

2.4 TOWARDS NEW WAYS OF UNDERSTANDING ICE

Ice appears both silent and still, yet it is spectacularly on the move, and not only in epochs of climate crisis: in its vibrancy ice groans, screams, and hisses. It also possesses a crystalline sound caused by sound diffraction. The American ice artist Tim Linhart⁵⁴, who transitioned from creating ice sculptures to sculpting functional musical instruments (such as violins and cellos) out of ice, discovered that these crystalline forms release a range of deep, delicate, harmonic, and paradoxically warm and intense sounds, claiming that ice has “an angelic voice”⁵⁵. In an almost linearly opposite manner, the sound of snow constitutes a kind of non-sound. According to biologist Bill Streever (2009), sound waves traveling through snow momentarily increase the air pressure, pushing it into the pores between the snowflakes and ice crystals. When wave pressure drops, air flows out of the pores, moving in and out between one hundred and eight hundred times per second, losing energy with each pass. Eventually, the snow ‘swallows’ the sound. To claim that ice reverberates sounds while snow swallows them would be reductive. Ice manifests in various forms in the Arctic,

⁵⁴ Linhart invented the new and difficult-to-fathom art form of “Ice Music”. He has built 19 ice orchestras and performed hundreds of Ice Music concerts in a wide variety of musical genres. Linhart has built nine gigantic igloo concert halls in different locations around the world including an ice cathedral on a glacier in the Alps (<https://www.egconf.com/presenters/tim-linhart>, accessed 26 April 2025).

⁵⁵ <https://cellomuseum.org/tim-linharts-ice-cellos-extreme-icemanship/> (accessed 26 April 2025).

and snow exists in almost infinite configurations. These variations bring to mind the concepts of liminality and trans-locality, as ice appears across remarkably diverse locations, shapes, and contexts.

To trace the human encounter with ice is to enter a world filled with cultural, folkloric, mythical, scientific and spiritual qualities (Dodds 2018: 79). In the continuous ambivalence between attraction and rejection, interest and detachment, love and terror, the story between humans and ice places spans from the most idyllic metaphor of winter to inexorably negative images and meanings – “heart of ice”, “glacial gaze” – underlining its ambiguous nature. As Klaus Dodds (2021) states, “[a]s metaphor, ice acts as a figure of speech that describes an object or action in a figurative rather than literal sense” (1140-1131); it is possible to find examples of our ambivalent relation to ice through metaphors and idiomatic expressions throughout the world. In Swedish, if someone report that they are feeling “under the ice” (*under isen*) it means that someone is (dangerously) out of shape. In Spanish, the phrase *quedarse de hielo* implies a sense of astonishment, with ice (*hielo*) being used to invoke the involuntary reaction of the body to shock (Dodds 2018: 14). In Chinese, being “ice- or snow-smart” is considered a compliment (Ibid.). Moreover, if Swedish speakers say “there is no cow on the ice” (*det finns ingen ko på isen*) then they mean to reassure us that there is nothing to worry about. The idiomatic flexibility of ice is therefore in keeping with the material itself.

The term ‘cryology’ was first proposed by the Polish geologist Antoni B. Dobrowolski (*The Natural History of Ice*, 1923), for the scientific study of ice and snow (Fairbridge 1968). Incorporating cryology and glaciology into an ecocritical analysis helps recognising the immediacy and urgency of our ecological reality. They add layers to interpretations that dissect the imaginative permeance of the sublime, beyond confined parameters and disciplinary margins. Incorporating cryology and glaciology into ecocritical analysis is essential for recognizing the

immediacy and urgency of our ecological reality. These scientific disciplines provide empirical evidence of the rapid changes occurring in polar regions, which are critical to understanding global ecological dynamics. By integrating these fields into ecocritical frameworks, we can better comprehend the interconnectedness of Earth's systems and the profound implications of polar transformations on global ecology. Ecocriticism, as a field that examines the relationship between literature, culture, and the environment, can benefit from the integration of cryological and glaciological perspectives. Polar regions have historically been depicted as remote and pristine, often serving as metaphors for untouched wilderness. However, scientific research reveals that these areas are undergoing rapid transformations due to climate change. For instance, microbial activity in Arctic glaciers has been found to accelerate ice melt, a phenomenon not fully accounted for in traditional climate models. By incorporating these scientific findings, ecocriticism can challenge prevailing narratives and highlight the urgency of addressing ecological degradation.

Integrating cryology and glaciology into ecocritical analysis enhances our understanding of the polar regions' role in global ecology. These scientific disciplines provide the empirical foundation necessary to grasp the full scope of ecological changes and their far-reaching impacts. By bridging scientific knowledge with cultural and literary analysis, we can foster a more comprehensive and urgent dialogue about our ecological reality. However, there are few ecocritical readings that have examined the potential of ice-related narrations. Although research in the Arctic- and ice Humanities is beginning to emerge and proliferate, as of today no work has yet been published that proposes and investigates the promising potential of ice within ecocritical studies. The reason for this lack of engagement probably stems from the dynamic and mobile nature of ice as predominant in the representation of the Arctic landscape. In multiple ways, ice is hard to grasp, literally as well as

cognitively, yet its melting is as such a convincing image of change. Established ecocritical frameworks, perspectives, and modes of analysis frequently prove inadequate when confronted with icy landscapes. Frozen environments do not readily present themselves as spaces where individuals can recognize their role within an ecosystem; at first sight, the barren expanses scarcely suggest a mode of organic existence in reciprocal relation to the land. Often, the extreme cold evokes a sense of hostility, in stark contrast to the refuge and familiarity typically associated with more hospitable environments, such as forests. Ice, as a dynamic entity, presents a distinct narrative, one that diverges from the more familiar representations of springtime mountains or trees. This raises critical questions such as: Where, precisely, do humans fit into such a landscape? And how do we conceptualize and articulate the inherent instability of ice?

The challenge lies not only in the materiality of ice itself but also in the way icy environments challenge human sensory perception. Such landscapes impede the ability to distinguish individual elements, thereby complicating the categorization and interaction with them in ways that are familiar to human experience for Indigenous populations. Nevertheless, ice-related texts hold considerable potential for ecocritical readings. They facilitate the exploration of critical human-nature relationships and offer a means of reevaluating the ways in which these connections are structured. Moreover, ice-texts compel us to rethink the possibility of coexistence with both endangered and threatening aspects of nature. While icy landscapes may be accessible to those who reside within the Arctic Circle or possess the financial means to engage in polar tourism⁵⁶, storytelling provides an alternative form of access: one that, in certain

⁵⁶ Polar tourism poses significant challenges to the fragile Arctic and Antarctic environments. The influx of visitors threatens delicate ecosystems by disturbing wildlife and contributing to pollution. Additionally, increased tourism accelerates climate change through greenhouse gas emissions from travel. Indigenous communities in the Arctic face cultural disruption and socio-economic impacts as their traditional lands become tourist destinations. Furthermore, the harsh polar conditions present safety risks for travelers, while limited infrastructure struggles to support

respects, is not merely secondary but offers information and context often not available on a large scale. In this kind of narrative, ice serves as a profound challenge to traditional notions of authenticity vehiculated by former colonial perspectives, interrogating the concept of authenticity itself on a fundamental level. Landscape authenticity refers to the degree to which a landscape genuinely reflects its historical, cultural, ecological, and aesthetic characteristics, as perceived by a particular group or society. It involves the preservation and representation of original features, traditional practices, and the sense of place that gives a landscape its identity. The concept is often applied in heritage conservation, tourism, and landscape planning to assess how faithfully a landscape retains its original or intended character. According to Ken Taylor and Jane Lennon (2011), landscape authenticity encompasses not just material aspects like architecture or land use, but also intangible elements such as cultural meanings, narratives, and the lived experiences of communities.

Ice indeed amplifies questions at the core of environmental storytelling and narratives even more broadly, isolating issues that, while not exclusive to ice, are intrinsic to human-nature relationships under changing conditions. Among these questions are: How does one narrate a landscape that could vanish without leaving a trace, an environment that is constantly in flux, spreading, retreating, melting, and growing? How does one interpret ice, whether as a reader, an ecocritic, or a scientist? Ice holds the potential of occupying a unique and significant role in ecocriticism if further unfolded and developed, both as a fragile archive and as a creator of human-environment relationships. Furthermore, Arctic ice is deeply entwined with discourses of postcolonial and neocolonial environmental protection and resource extraction,

growing visitor numbers. These issues call for stronger regulations and sustainable tourism practices to protect these vulnerable regions for the future.

which often marginalize the voices of Indigenous peoples residing in these regions. However, these voices are not necessarily silenced. Colonial representations of the Arctic are challenged by foregrounding local narratives and emphasizing the agency of Northern communities in shaping their own identities and futures through the lived experiences, voices, and power of the Arctic's own inhabitants (Kelman 2017). These voices are often represented and performed through arts as a form of Indigenous activism, since "Arcticness is therefore dependent on voices being heard" (McCauley et al. 2017: 81). Viewing ice through an ecocritical lens offers the chance to shift the narrative from one of conquest and loss to one of coexistence and creativity, thereby opening the possibility to highlight agencies of marginalized humans.

Finally, as ecocritics, we can also take the white spaces of the Arctic as a metaphor for the gaps that are yet to fill when it comes to cryo-criticism. Ice reveals that there is no single, unified method of ecocriticism; rather, there are multiple forms and multiple ecocriticisms, that integrate the humanities and sciences not through simple binaries, but as complex, interwoven layers. Multiple approaches intertwine these diverse threads to interpret and extract knowledge meaning from ice in ways accessible to non-specialists and non-experts. As Nancy Campbell writes in *The Library of Ice: Readings from a Cold Climate* (2018), "this knowledge can't be separated from the words in which it is expressed. But, like the ice, the reach of some languages is diminishing, to the extent that the state of the language may be of as much concern as the ecosystem it describes" (116). There are many ways to talk about ice, and just as many ways to read it ecocritically, and they all are equally pressing.

2.5 ICY MATERIALISM(S): BROADER CONCEPTS OF “INTELLIGENT MATTER”

Ice is commonly crystallized in a symmetrical hexagonal structure, which reflects molecular behaviour, forming a pattern based on minimizing attractive forces (Dodds 2018: 25-26). Symmetry brings with it the prospect of greater molecular stability. While water molecules in ice and snow form hydrogen bonds with a distinctive hexagonal structure, there is always variation within snowflakes and ice (Dodds 2018: 26). Atmospheric conditions such as temperature and humidity ensure that no snowflake is entirely identical to another. As pressure increases on ice, the standard hexagonal structure of ice crumbles and the hydrogen-oxygen bonds alter to form denser crystal structures and thus allow for even greater diversity of ice structures (Dodds 2018: 27). High on the ice cap, snow falls and settles in soft layers known as firn. As firn develops, air becomes trapped between the snowflakes, along with dust and other particles. Successive layers of snow accumulate on top, gradually sealing the air within the firn. With each new snowfall, the weight of the snow increases, pressing down on the earlier layers and altering the structure of the snow. The delicate forms of the flakes begin to collapse. Under mounting pressure, the snow starts to fuse and transform into ice through a process called sintering. As ice crystals grow, the trapped air is compressed into tiny bubbles (fig. 6). This process acts as a form of preservation: each bubble serves as a miniature museum, a silver capsule preserving a snapshot of the atmosphere from when the snow first fell. At first, these bubbles are spherical, but then the intricate geometries of the flakes (fig. 7) begin to collapse. As the ice sinks deeper and the pressure intensifies, they become stretched into rods, flattened into discs, or twisted into looping shapes (Macfarlane 2019: 16).



Figure 6: *Breathing*. © I. Bordignon⁵⁷.



Figure 7: *Geometries of Ice*. © I. Bordignon⁵⁸.

New Materialism has the potentiality to aid and develop the thought-processes around what methodological aspects cryo-criticism should include. It represents a key theoretical apparatus for many strands of contemporary eco-theory, above all for helping scholars and artists to think, create and speculate around entanglements. Most of the time, we think of matter as passive and stable, and from our point of view we humans are the active subjects in the world. In *Vibrant Matter: a Political Ecology of Things* (2010), new materialist scholar Jane Bennett wants to dissolve this binary between subject and object of reference, showing how matters can be ‘actants’: they have the capacity to “animate, to act, to produce effects dramatic and subtle” (6). So, matter is alive because of its capacities to make difference in the world, to have effects, to shape the web

⁵⁷ I took this photograph during the same fieldwork in Vuotso, Finland (May 2024). This picture has not been edited, so that air bubbles could show naturally.

⁵⁸ This photograph was also taken during the fieldwork in Vuotso, Finland (May 2024). This picture, like the other two, has not been edited, so that ice geometries could show naturally.

of interrelationships of which it is a part. On the other hand, humans are not sovereign or autonomous subjects. They are composed of a complex web of active bodies and materials: humans are “an array of bodies, many different kinds of them in a nested set of microbiomes” (113). In fact, there’s no such thing as ‘objects’ or ‘subjects’ from a certain perspective: they – ‘objects’, the matter – and we – humans – are never entirely passive or stable; bodies and matters are crystallizations of processes, and everything is in process, constantly undergoing transformation and modification. Consequently, all matter is alive and in process: a complex, interwoven web of materials, all affecting each other, competing, forming alliances, initiating new processes and dissipating others.

In order to further emphasise the usefulness of applying new materialist methodologies to ecocritical approaches in the analysis of contemporary cryonarratives, the notions of “viscous porosity” (Tuana 2008) and “transcorporeality” (Alaimo 2010) are key concepts. Viscosity originates in Newtonian physics as a measure of the extent to which a fluid resists deformation or opposes flow. In this context, it is typically quantified along a scale from high to low, distinguishing fluids whose molecular cohesion produces slow movement (e.g., oil) from those with weaker cohesion and more rapid flow (e.g., water). More broadly, the concept indexes the degree to which a substance sustains its form, movement, and appearance as a coherent entity, despite being constituted by numerous molecular units that may potentially separate, disperse, or intermingle with other substances (Wagner 2018). While the notion of viscosity has not been widely adopted within the social sciences, it has begun to gain traction in new materialist scholarship as a means of theorizing human embodiment and its entanglement with material worlds. This entry therefore highlights two prominent applications of viscosity within this paradigm: first, in relation to the integration of human embodiments with more-than-human

environments; and second, in relation to human embodiments and their configuration within social, political, and technological assemblages (Ibid.). These usages are not mutually exclusive but rather indicate complementary trajectories for the term's conceptual development. Tuana's articulation of "viscous porosity" (2008: 189) is a turning point in the deployment of viscosity in relation to environmental embodiment. Against nature/culture dualisms, Tuana demonstrates the interweaving of material and semiotic elements as constitutive of the human-environment *continuum* that coalesced in the event of Hurricane Katrina⁵⁹. Viscous properties emerge in phenomena such as racial and social divisions, the release of toxic chemicals into air and water, the hurricane's intensification due to ocean warming linked to climate change, and the material-semiotic reconfigurations these processes engender. Tuana's account of viscous porosity entails "recognizing the interaction of nature-culture, genes-environment in all phenomena" (2008: 209), extending beyond ostensibly human domains (e.g., gender, race) to encompass more-than-human dynamics. This usage has influenced a broader body of work attentive to human-nature contiguity, which interrogates how seemingly coherent social or material entities, such as the 'body', are in fact constituted through porous, viscous relations.

In parallel, viscosity has also been theorized as a way of conceptualizing the malleability and porousness of human collectivities. Arun Saldanha (2008) argues that viscosity provides a framework for analysing the corporeal modes through which bodies cluster into these collectivities. Distinctions between groups, in this view, are not only cognitively or discursively produced but also

⁵⁹ Hurricane Katrina was a Category 3 storm that made landfall off the Louisiana coast on August 29, 2005, with maximum sustained wind speeds of 120 miles per hour. Because of the ensuing destruction and loss of life, Hurricane Katrina is often considered one of the worst storms in U.S. history (<https://www.nationalgeographic.com/environment/article/hurricane-katrina>, accessed 9 September 2025).

emerge through sensuous, spatial, affective, and practical encounters among bodies. From this materialist perspective, social characteristics such as race and gender are enacted through viscous processes of embodiment and co-presence. As Saldanha observes, “in the framework of viscosity, the formation of racial difference becomes a literal term, an extremely complex configuration of bodies moving on a range of scales with a range of speeds, with shapes that can only be approximated on maps” (2008: 330). This conceptualization highlights how collectivities may be attracted to or repelled from space, thereby producing ‘sticky’ urban and social geographies (Wagner and Peters 2014), and how such collectivities traverse technological and social infrastructures across different locales (Wagner 2018). From this point of view, the framework of viscosity provides useful insights for understanding the experiences of Indigenous and minority groups of the Arctic, such as the Inuit and Sámi peoples. In line with Saldanha’s account, the formation of collectivities among these groups cannot be reduced to cognitive or discursive distinctions but is deeply rooted in embodied, spatial, and affective practices. For example, Inuit and Sámi identities are constituted through seasonal mobilities, environmental engagements, and corporeal practices of subsistence (e.g., reindeer herding, hunting, fishing), which enact social belonging through viscous forms of embodiment and co-presence. At the same time, these collectivities are shaped by porous interactions with non-Indigenous populations, state infrastructures, and global economic and political pressures, producing dynamic forms of inclusion, exclusion, and cultural negotiation. From a viscous perspective, then, the racialization and minoritisation of Inuit and Sámi peoples can be understood not as fixed or purely discursive impositions but as material processes involving spatial stickiness and bodily configurations. For instance, Sámi communities encounter forms of spatial viscosity in relation to national borders, extractive industries, and settlement infrastructures that restrict or redirect traditional

mobilities, thereby generating both attraction to and repulsion from specific territories. Similarly, Inuit experiences of urbanization, climate change, and state governance may be conceptualized as viscous reconfigurations in which collectivities are drawn into certain social and technological infrastructures while being marginalized or displaced from others.

In this sense, viscosity not only illuminates the ways in which Indigenous collectivities sustain coherence through embodied practices but also highlights the frictions, adhesions, and porous boundaries through which their identities and spaces are continually negotiated in relation to broader socio-political and ecological systems. As with any cross-disciplinary borrowing, the incorporation of viscosity into social theory offers both productive possibilities and conceptual tensions. On one hand, it enriches existing metaphors such as ‘fluidity’ and ‘assemblage’ by drawing attention to the textured qualities of flow, including speed, resistance, and friction. For both Tuana and Saldanha, what viscosity indicates is that entities’ intermixtures are neither arbitrary nor wholly free flowing; they are shaped by material propensities and resistances that give rise to stickiness and porosity (Wagner 2018). Viscosity thus calls for movement to be understood not as a linear unfolding but through exponential, non-linear dynamics: processes of infusion, coagulation, dissipation, and surface tension. These terms foreground contingency and adhesion as integral to the constitution of assemblages, rather than secondary effects. Yet, the social-theoretical deployment of viscosity does not yet fully engage with the concept’s additional dimensions as theorized in the physical sciences. In this sense, viscosity remains a promising, but still underexplored, conceptual tool for analysing the formation of complex entities and the adhesive relations that hold their constituent elements together.

Viscosity is a particularly productive concept for thinking with ice, because ice itself is neither simply solid nor liquid, but exists in a viscous

continuum that resists rigid categorization. While it is true that many materials can exhibit viscous behaviour under certain conditions, ice is particularly interesting because it occupies a unique position between solid and liquid states. Unlike typical solids that maintain a rigid fixed shape, ice, especially glacial ice, deforms and flows slowly over time, behaving much like a very slow-moving viscous fluid. This viscous behaviour occurs at temperatures where ice remains solid but can still creep and reshape, making its material properties more fluid than commonly perceived solids. Its liminality makes ice a strong candidate for building a cryo-critical paradigm. Glaciological research has long emphasized that ice deforms, creeps, and flows over extended temporal and spatial scales, exhibiting a measurable viscosity that complicates simplistic distinctions between solid and liquid matter (Paterson 1981). Glaciers, for example, sustain form while undergoing continual, slow transformation, a process that resonates with Tuana's theorization of viscous porosity, wherein apparently stable bodies are revealed to be dynamic, permeable, and relational. From an ecocritical perspective, viscosity highlights ice not as an inert backdrop but as an active participant in ecological, social, and political processes. Temporally, ice embodies archive climatic histories in ice cores while simultaneously melting at unprecedented rates under anthropogenic warming. Spatially, ice binds and reshapes landscapes through processes such as permafrost adhesion and glacial carving, while also fracturing, drifting, and liquefying into other environments. Socially, for Arctic Indigenous peoples, ice is both supportive, providing surfaces for travel and hunting, and precarious, rendered increasingly unpredictable by climate change. A cryo-criticism grounded in viscosity therefore emphasizes ice as a dynamic entity; rather than being conceptualized as fragile or inert, ice is understood as viscous: adhesive, resistant, and transformative.

Diffraction and the concept of viscosity can easily be situated within the framework of the *material turn* that occurred in the first decade of the 2000s. One of the absolute pioneers is Stacey Alaimo, who, in 2010, published the volume *Bodily Natures*. Within a disquisition on new feminist visions of New Materialism, Alaimo proposes ‘trans-corporeality’ as a new critical model to adequately theorize the often unpredictable and unwanted actions of human bodies, non-human creatures, ecological systems, chemical agents and other actors (2010: 2). She defines trans-corporeality in various ways, including “movement through bodies,” “exchanges and interconnections between various corporeal natures,” and “material interconnections of human corporeality with the non-human world” (2010: 2-3). Her argument is based on the recognition that material forces are often invisible, and that it exists flows of substances between people, places, and economic-political systems that, to be understood, require broader scientific and sociological knowledge (2010: 9). Trans-corporeality positions itself as a hermeneutic horizon that considers “the ways in which nature, the environment, and the material world itself signify, act upon, or otherwise affect human bodies, knowledge, and practices” (2010: 7-8). In Alaimo’s conception, trans-corporeality realigns the body with the material world from which it had been removed by the constructivist theories of the late years of last century; while these theories have provided valuable insights into the categories of ethnicity, gender, and class, they have also minimized the significance of matter itself. Trans-corporeality, on the contrary, “naturalizes” the body by reinserting it into a world made of biological creatures and ecosystems (2010: 115). Alaimo, therefore, proposes an environmental ethics “that refuses to see the delineated shape of the human as distinct from the background of nature, and instead focuses on interfaces, interchanges, and transformative material/discursive practices” (2010: 142). Alaimo’s originality lies in theorizing

the body, both human and non-human, as a trans-corporeal agent that operates with social, ecological, political, cultural, and material forces.

Stacy Alaimo's notion of trans-corporeality therefore insists on the entanglement of human bodies with the material world. When applied to the rapidly changing conditions of the Arctic, trans-corporeality provides a powerful way of understanding how ice melting is not only a distant environmental process but also a transformation that courses through human and non-human bodies. Again, for the Indigenous peoples of the Arctic, hunting practices, seasonal travel, and cultural narratives all depend upon close bodily attunement to ice and snow. As anthropologists such as Julie Cruikshank (2005) and Kirsten Hastrup (2014) have argued, glaciers, sea ice, and frozen ground are storied beings, shaping and shaped by human existence. In this sense, Indigenous epistemologies already recognize the inter-corporeality of humans and icy environments in ways that resonate with, though are not reducible to, Alaimo's trans-corporeality. Knowledge of ice conditions is acquired through embodied practice, for example by reading its textures, listening to its sounds, and feeling its thickness underfoot. This knowledge lives in bodies and circulates across generations, exemplifying the inseparability of human and cryospheric ecosystems. Climate change, however, disrupts these relationships. Melting ice alters hunting routes and endangers the availability of traditional food sources such as seal and caribou. Thus, the turn toward store-bought, highly processed foods introduce new health challenges, from diabetes to cardiovascular disease, inscribing climate change into the very metabolisms of Arctic peoples (Kuhnlein et al. 2004). This is an example of precisely what Alaimo's trans-corporeality names: the circulation of matter across scales, linking global emissions with local embodiment in ways that erase any strict boundary between human, environment, and politics. Trans-corporeality, then, can be seen as a conceptual bridge that allows academic discourse to acknowledge

what Indigenous peoples have long insisted upon: the inseparability of body, land, and ice. By situating the melting of Arctic ice within a trans-corporeal framework, we can better apprehend the ways in which climate change materializes as corporeal transformation.

Attending to the agency of ice further highlights the mutual constitution of bodies and environment. In this sense, ice, in its melting, is not merely a passive victim of warming but an active participant in remaking worlds. This thinking also solves a paradox that inevitably needs to be considered when we sustain ice agency and resiliency but, at the same time, it is still melting at a high pace. One could easily argue that, on the contrary, ice passively bows to the greater forces of climate change. The notion of resilience usually connotes the ability to withstand disturbance, to persist despite external pressures, or to return to an earlier state after disruption (Ogunbode et al. 2019). At first glance, applying resilience to Arctic ice seems contradictory, since the dominant story of ice is one of catastrophic melting. If resilience is equated with permanence or stability, then ice is the very emblem of fragility rather than durability. And yet, the concept of resilience, if reconsidered, still has something to offer in thinking about the paradoxical status of ice today. In ecological theory, resilience also describes the capacity of a system to transform, to absorb change and reorganize while maintaining some of its functions and structures (Holling 1973). When applied to ice, resilience may be located not in the preservation of identical frozen forms, but in the cyclical, dynamic, and adaptive qualities of ice itself. Ice, after all, has always been a mutable entity: freezing, melting, refreezing, breaking apart, and reforming. As previously stated in this chapter, ice materiality is not static solidity but processual transformation. From this perspective, the current melting is not the negation of resilience, but a dramatic manifestation of ice's fundamental capacity for phase changing and recompositing. The durability of ice, paradoxically, may be the very condition of

its disappearance: it can melt, it can flow, it can redistribute itself across planetary systems, entering oceans, groundwater, and even bodies. In this sense, its resilience is dispersed and trans-corporeal, as Stacy Alaimo might suggest. Melting ice does not simply vanish but becomes part of other materialities, by altering ocean circulation, sea levels, and human metabolisms through pollutants carried in its waters. On a planetary timescale, however, ice remains remarkably durable. Glaciers have advanced and retreated across epochs; ice ages have come and gone. What is new is not ice's capacity for change but the unprecedented acceleration of its transformation due to anthropogenic activity. To say ice is resilient, then, is to acknowledge its deep geological vitality, even while recognizing that this very vitality may undermine the forms of human and more-than-human life that rely upon its persistence. Thus, the paradox of ice's resilience in an era of climate change illuminates a deeper tension in environmental thought: resilience does not always align with human or ecological flourishing.

The difference it makes to think about the world these ways – diffractively, viscously and embodied – in defining what cryo-criticism potentially is resides mainly in trying to figure out why all this icy matter matters, and what implications might be for ecology, and for cultural everyday life. In addition to taking multiple crystalline forms, ice contains impurities such as rock, soil, plant and bacterial matter. It can also carve and shape rocks and soils, it can reflect solar energy, it can float on water, and it plays a crucial role in determining the Earth's energy balance (Weeks 2010: 193). Ice never forgets its origins. It is a substance after all which is perfectly capable of turning back into water. If ice endures, then, it can shape-change. As a mover and shaker, it can excavate, spread and deposit. It can and does support life below and above its surface to which fish, seals, polar bears, whales and smaller life such as algal meadows and microbes attest (Dodds 2018: 24). Ice is thus an ambiguous, transitional,

and shape-shifting substance, to the extent that it is no surprise referring to it as a liminal material. Ice materiality is not just about substance, but also about power, instability, change, and meaning; ice is materially volatile, politically active, and culturally rich (Dodds 2021). Even more importantly, ice is “dynamic and lively matter” (Dodds 2021: 1125). Consequently, I here refer to the expression “wider ecologies” in its dual sense of ecological issues related to the vanishing Arctic landscape, and as an expression broadly developed in new materialist discourses.

An Arctic wider ecology encompasses together many different ecologies, and to refer to it in plural terms (“ecologies”, or “ecologics”, see Herzogenrath 2013) help shape our perception of this liminal landscape. As Herzogenrath (2013) states, “[l]ike white encompasses the colors of the spectrum [...] in which different “ecologics” (different ecological fields, such as human, viral, chemical, etc., that all follow their own logics and trajectories) resonate with each other” (1). Inspired by new materialist insights of wider ecologies (as in Deleuze and Guattari 1987), I argue that a blank space might also take on peculiarities from both cultural and natural forces. That is, in the case of the novels here analysed, Arctic- related narrations on environmental concerns not only refer to “the natural” but also lead instead to the implementation of discourses in cultural ecology. From this point of view, the act of speculating on the Arctic in contemporary YA literature gives readers the chance to conceptualize a “nonanthropomorphic affectivity” (Herzogenrath 2013: 3) within dynamic (eco)systems, especially when the whiteness of the material Arctic landscape is evolving and involved.

Gilles Deleuze’s concept of matter (1990; 1994) is deeply influenced by his engagements with Spinoza, Bergson, and the Stoics, and it departs significantly from traditional substance metaphysics. Rather than treating matter as a passive substrate or inert stuff, Deleuze conceives of matter as dynamic,

expressive, and composed of multiplicities. In *A Thousand Plateaus* (1987), co-authored with Félix Guattari, matter is described not as a fixed or unified essence but as something that is always in the process of becoming. It is “molecular” “intensive” and organized through what they call “abstract machines” and “assemblages”, which shape how matter behaves and how it interacts (Deleuze and Guattari 1987: 40-41). Deleuze also draws from Spinoza in conceptualizing matter as immanent and expressive of power, thus not being separated from the power that organizes it; it is a mode of expression of a single substance, which is both thought and extension (Deleuze 1990, 172-174). For Deleuze, matter is not neutral; it is capable of being affected and of affecting, forming what he calls “bodies” conceived as compositions of relations. According to Deleuze, matter is therefore “a *continuum* of variation” (222), inherently linked to forces and affects, and shaped by differential relations rather than fixed forms.

Deleuze’s interpretation is close to the most recent new materialist thought, in which scholars speak of a certain agency of matter (Barad 2007; Iovino and Oppermann 2012, 2014). For Deleuze, matter is never static. It is active, multiple, and defined by flows, affects, and assemblages. It resists reduction to a simple or inert background, instead constituting a field of immanent potential and continual differentiation. Moving from Deleuze’s definition of matter, ice fits perfectly in this context, being prone to powerful expansion or retraction, and in constant movement as a shapeshifter in assuming different states. Indeed, ice is also a matter equipped with the capacity for self-organisation, alive, and “intelligent” (Deleuze 1997: 512). Given Deleuze’s definition, I consider ice as pertaining to the range of “intelligent matter” to which the philosopher refers, focusing on the richness and force of this material. Ice is a substance that does not need form to become alive, being itself animated, informed by, and a detector of climate disruption. Substances

that typically require a form to be considered “alive” would be living organisms, especially those whose life depends on structured, organised forms, such as plants, animals, and humans. These organisms rely on defined cellular and anatomical structures to carry out biological functions essential for life. In contrast, my perspective suggests that ice challenges traditional notions of life by being “alive” or dynamically meaningful without needing such a fixed biological form. Ice is “animated” and responsive through its physical interactions and changes in the environment, such as a reaction to climate disruption. So, while biological life usually requires a defined form (cells, tissues, organs), ice exemplifies a more fluid or non-traditional kind of “liveness” that operates through physical states and environmental responsiveness rather than biological structure. Narrative depictions confirm this concept of Arctic iciness, where the whiteness of the frozen ice-fields expands visibly as well as mentally, opening toward multiple interpretations and multisensorial perceptions, full of possibilities.

Ice’s ability to change shape and size while maintaining its constant nature, brilliance, and transparency is today a symbol of environmental adaptation: the ability of two hydrogen atoms and one oxygen atom that multiply and organize themselves in space, creating crystals of infinite shapes, yet always linked to their original structure, namely the hexagon. Ice also possesses a memory, capable of providing us with important information for climate reconstruction. The international *Ice Memory* project⁶⁰, launched by Professors Carlo Barbante and Jérôme Chappellaz, plans to collect ice cores from the Earth’s major glacial sites and, after a geochemical investigation aimed at dating and characterising them, catalogue and preserve them to make these precious yet fragile samples available to the scientific community of the future. These ice

⁶⁰ Ice Memory Foundation, “Our Vision”. URL: <https://www.ice-memory.org/english/home-939753.kjsp> (accessed 28 August 2025).

cores are cylinders of ice extracted from glaciers with a tool called a corer: a tube with a drilling head equipped with blades that penetrate the surface glacier down to the underlying rock, sometimes for hundreds of meters, excavating and extracting one-meter-long cylinders one after another (Myers and Criscitiello 2022). Ice thus preserves a wealth of information about past climate and environmental conditions. When snow falls, it carries dust particles and air to the ground, which are incorporated into the snowpack. In polar regions and some high-altitude sites in mid-latitudes, snow accumulates year after year, building a unique archive of information. Studying layers of snow and ice yields data on atmospheric contamination over past centuries, as well as on temperature and the concentration of gases in the air. Many of these glacial archives, however, are threatened by global warming, which is melting layers of snow and ice. Along with glacial water, already an essential resource, the vital information recorded within the layers of ice accumulated over past centuries and millennia will also disappear. Hence the need to preserve this information before it is lost forever (Ibid.).

REFERENCE LIST

Alaimo, S. (2010). *Bodily Natures: Science, Environment, and the Material Self*. Bloomington: Indiana University Press.

Barad, K. (2007). *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. Durham: Duke University Press.

BBC, "Mummified ice age wolf pup and caribou found in northern Canada". URL: <https://www.bbc.com/news/world-us-canada-45527525> (accessed 26 April 2025).

Bennett, J. (2010). *Vibrant matter: a political ecology of things*. Durham, North Carolina: Duke University Press.

Bravo, M. T. (2017). "A Cryopolitics to Reclaim our Frozen Material States". In Kowal, E. and Radin, J. (Eds), *Cryopolitics: Frozen Life in a Melting World*, Cambridge, Massachusetts: MIT Press.

- Butler, J. (1993). *Bodies that matter: On the discursive limits of 'sex'*. New York and London: Routledge.
- Campbell, N. (2018). *The Library of Ice: Readings from a Cold Climate*. New York: Simon & Schuster.
- Cello Museum, URL: <https://cellomuseum.org/tim-linharts-ice-cellos-extreme-icemanship/> (accessed 26 April 2025).
- Clark, T. (2015). *Ecocriticism on the edge: the anthropocene as a threshold concept*. London: Bloomsbury.
- Clarke, G. K. C. (1987). "A short history of scientific investigations on glaciers". In *Journal of Glaciology*, 33(1), 4-24. URL: <https://doi.org/10.3189/S0022143000215785> (accessed 26 April 2025).
- Cruikshank, J. (2005). *Do Glaciers Listen? Local Knowledge, Colonial Encounters, and Social Imagination*. Vancouver: UBC Press.
- Cuffey, K. M., Paterson, W. S. B. (2010). *The physics of glaciers* (4th Edition). Amsterdam: Academic Press.
- Deleuze, G. (1990). *Expressionism in Philosophy: Spinoza*. New York: Zone Books.
- Deleuze, G. (1994). *Difference and Repetition*. New York: Columbia University Press.
- Deleuze, G. (1997). *Negotiations, 1972–1990*. New York: Columbia University Press.
- Deleuze, G., Guattari, F. (1987). *A Thousand Plateaus: Capitalism and Schizophrenia*. Minneapolis: University of Minnesota Press.
- Dodds, K. (2018). *Ice. Nature and Culture*. London: Reaktion Books.
- Dodds, K. (2021). "Geopolitics and Ice Humanities: Elemental, Metaphorical and Volumetric Reverberations". In *Geopolitics*, 26(4), 1121-1149. URL: <https://doi.org/10.1080/14650045.2019.1697240> (accessed 20 April 2025).
- Dědinová, T., et al. (2021). *Images of the Anthropocene in speculative fiction. Narrating the future*. Lanham, Maryland: Lexington Books.
- Envirotech online, "Watermelon Snow Is Speeding Up Arctic Melt". URL: <https://www.envirotech-online.com/news/environmental-laboratory/7/breaking-news/ldquowatermelon-snowrdquo-is-speeding-up-arctic-melt/39712>, accessed 29 August 2025).
- Fairbridge, R. W. (1968). "Cryology, cryosphere, cryergy". In *Geomorphology. Encyclopedia of Earth Science*. Berlin: Springer. URL: https://doi.org/10.1007/3-540-31060-6_76 (accessed 29 April 2025).

Furukawa, Y. (2019). *Ice Crystals*. Basel, Switzerland: MDPI - Multidisciplinary Digital Publishing Institute. URL: <https://www.mdpi.com/books/reprint/1847-ice-crystals> (accessed 30 August 2025).

Galaway, L. P., et al. (2019). "Mapping the Solastalgia Literature: A Scoping Review Study". In *International Journal of Environmental Research and Public Health*, 2019; 16(15): 2662. URL: <https://doi.org/10.3390/ijerph16152662> (accessed 5 May 2025).

Gao, S., et al. (2023). "A novel global snow depth retrieval method considering snow metamorphism and forest influence". In *Remote Sensing of Environment*, 295, Article 113712. URL: <https://doi.org/10.1016/j.rse.2023.113712> (accessed 29 August 2025).

Geerts, E., van der Tuin, I. (2021). "Almanac: Diffraction and Reading Diffractionally". In *Journal of New Materialist Research*, 2(1), 173-177. URL: <https://doi.org/10.1344/jnmr.v2i1.33380> (accessed 26 April 2025).

Golding, D., et al. (2023). "Snow flies self-amputate freezing limbs to sustain behavior at sub-zero temperatures". In *Current Biology*, 33(21), 4549-4556. URL: <https://doi.org/10.1016/j.cub.2023.09.002> (accessed 29 August 2025).

Haraway, D. J. (1997). *Modest_Witness@Second_Millennium.FemaleMan © _Meets _Onco Mouse: feminism and technoscience*. New York: Routledge.

Haraway, D. J. (2003). "The Promises of monsters: A regenerative politics for inappropriate/d others". In Donna J. Haraway, *The Haraway Reader*, New York and London: Routledge, 63-124.

Hastrup, K. (2014). *Anthropology and Nature*. New York: Routledge.

Herzogenrath, B. (2013). "White." In Jeffrey Cohen and Lawrence Buell (Eds), *Prismatic Ecology: Ecotheory Beyond Green*, University of Minnesota Press, 1-23.

Holling, C. S. (1973). "Resilience and Stability of Ecological Systems". In *Annual Review of Ecology and Systematics*, 4(1), 1-23.

Hooke, R. (1665). *Micrographia, or some physiological descriptions of minute bodies made by magnifying glasses: with observations and inquiries thereupon*. London: Printed by J. Martyn and J. Allestry.

Ice Memory Foundation, "Ice Memory Database". URL: <https://www.ice-memory.org/ice-memory-database/ice-memory-database--934136.kjsp> (accessed 5 May 2025).

Iovino, S., Oppermann, S. (2012). "Theorizing Material Ecocriticism: A Diptych". In *ISLE: Interdisciplinary Studies in Literature and Environment*, 19(3), 448-475- URL: <https://doi.org/10.1093/isle/iss087> (accessed 6 May 2025).

- Iovino, S., Oppermann, S. (2014). *Material Ecocriticism*. Bloomington: Indiana University Press.
- Kelman, I. (2017). *Arcticness: Power and Voice from the North*. London: UCL Press.
- Kepler, J. (1611). *The Six-Cornered Snowflake* (Translated by L. L. Whyte, 1966). Oxford University Press.
- Knopf, D. A., Alpert, P. A. (2023). "Atmospheric ice nucleation". In *Nature Review Physics*, 5, 203-217. URL: <https://doi.org/10.1038/s42254-023-00570-7> (accessed 26 April 2025).
- Krause, B. L. (2013). *The great animal orchestra: finding the origins of music in the world's wild places*. New York: Back Bay Books.
- Kuhnlein, H. V., et al. (2004). "Arctic Indigenous Peoples Experience the Nutrition Transition with Changing Dietary Patterns and Obesity". In *Journal of Nutrition*, 134(6), 1447-1453.
- Libbrecht, K. (2015). *The Snowflake: Winter's Frozen Artistry*. Minneapolis: Voyageur Press.
- Liu, B., et al. (2023). "Analysis of the characteristics of the gas-liquid mixed artificial snow-making". In *International Journal of Refrigeration*, 149, 155-167. URL: <https://doi.org/10.1016/j.ijrefrig.2022.12.025> (accessed 29 August 2025).
- Lutz, S., et al. (2016). "The biogeography of red snow microbiomes and their role in melting arctic glaciers". In *Nature Communications*, 7, 11968. URL: <https://doi.org/10.1038/ncomms11968> (accessed 25 May 2025).
- Macfarlane, R. (2019). "The blue of time. Landscape and the memory of ice". In *Nature Writing, TLS*, May 10, 2019. URL: <https://www.the-tls.co.uk/science-technology/environment/the-blue-of-time> (accessed 26 April 2025).
- Marchand, P. J. (2014). *Life in the Cold: An Introduction to Winter Ecology* (4th Edition). Lebanon, New Hampshire: University Press of New England.
- McCauley, D., et al. (2017). Energy justice: A new framework for examining Arcticness in the context of energy infrastructure development". In Ilan Kelman (Ed), *Arcticness: Power and Voice from the North*, London: UCL Press.
- Myers, A. L., Criscitiello, A. S. (2022). "What Ice Cores Can Tell Us About Earth's Past". In *Frontiers for Young Minds*, 10. URL: <https://doi.org/10.3389/frym.2022.712036> (accessed 29 August 2025).
- Nakaya, U. (1954). *Snow Crystals: Natural and Artificial*. Harvard: Harvard University Press.

National Geographic, "Here's what made Hurricane Katrina one of the worst storms in U.S. history". URL: <https://www.nationalgeographic.com/environment/article/hurricane-katrina> (accessed 9 September 2025).

Notz, D., Stroeve, J. (2016). "Observed Arctic sea-ice loss directly follows anthropogenic CO₂ emission". In *Science* (American Association for the Advancement of Science), 354(6313), 747-750.

Ogunbode, C., et al. (2019). "The resilience paradox: flooding experience, coping and climate change mitigation intentions". In *Climate Policy*, 19(6), 703-715. URL: <https://doi.org/10.1080/14693062.2018.1560242> (accessed 29 August 2025).

Paterson, W. S. B. (2017). *The physics of glaciers* (2nd Edition). Oxford: Pergamon Press [1981].

Pathways magazine, "Photography contest". URL: <https://arctic-council.org/news/photography-contest-pathways/> (accessed 26 April 2025).

Peroni, R. (2015). *I colori del ghiaccio. Viaggio nel cuore della Groenlandia e altri misteri della terra degli Inuit*. Milano: Sperling & Kupfer, 107.

Quarmby, L. (2020). *Watermelon snow: science, art, and a lone polar bear*. Montreal: McGill-Queen's University Press. URL: <https://doi.org/10.1515/9780228005087> (accessed 29 August 2025).

Rixen, C., et al. (2003). "Does artificial snow production affect soil and vegetation of ski pistes? A review". In *Perspectives in Plant Ecology, Evolution and Systematics*, 5(4), 219-230. URL: <https://doi.org/10.1078/1433-8319-00036> (accessed 26 May 2025).

Saldanha, A. (2008). "The political geography of many bodies". In K. R. Cox, M. Low, and J. Robinson (Eds), *The SAGE handbook of political geography*. London: Sage, 323-333.

Science Direct, "X-Ray Crystallography". URL: <https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/x-ray-crystallography> (accessed 28 August 2025).

Science Info, "Tyndall Effect: Definition, Causes, Examples". URL: <https://scienceinfo.com/tyndall-effect-causes-effects-examples/> (accessed 26 April 2025).

Smithsonian Magazine, "In Siberia, Toxic Black Snow Reveals the Toll of Coal Mining". URL: <https://www.smithsonianmag.com/smart-news/siberia-toxic-black-snow-reveals-toll-coal-mining-180971525/> (accessed 29 August 2025).

SnowCrystals.com, "Snowflake Science". URL: <https://www.snowcrystals.com/science/science.html> (accessed 29 August 2025).

Streever, B. (2009). *Cold. Adventures in the World's Frozen Places*. New York: Little, Brown and Company.

Taylor, K., Lennon, J. (2011). "Cultural landscapes: a bridge between culture and nature?". In *International Journal of Heritage Studies*, 17(6), 537-554. URL: <https://doi.org/10.1080/13527258.2011.618246> (accessed 6 May 2025).

Tuana, N. (2008). "Viscous porosity: Witnessing Katrina". In Stacey Alaimo and Susan J. Hekman (Eds), *Material feminisms*. Bloomington: Indiana University Press, 323-333.

Wagner, L. B., Peters, K. (2014). "Feeling at home in public: diasporic Moroccan women negotiating leisure in Morocco and the Netherlands". In *Gender, Place & Culture*, 21(4), 415-430.

Wagner, L. B. (2018). "Viscosities and Meshwork: Assembling Dynamic Pathways of Mobilities". In M. Freudendal-Pedersen et al. (Eds), *Experiencing networked urban mobilities: practices, flows, methods*. New York: Routledge.

Wang, P. K. (2013). *Physics and dynamics of clouds and precipitation*. Cambridge: Cambridge University Press.

Weeks, W. (2010). "On sea ice". In *Journal of Glaciology* (2011), 57(201), 193-194. Fairbanks: University of Alaska Press.

Wærp, H. H. (2017). "The Arctic Pastoral". In Heide Hansson and Anka Ryall (Eds), *Arctic Modernities: the Environmental, the Exotic and the Everyday*, Newcastle upon Tyne: Cambridge Scholars Publishing.

CHAPTER 3



***From Crisis to Hope: Nicola Penfold's
Beyond the Frozen Horizon and Ele
Fountain's Melt***

3 FROM CRISIS TO HOPE: NICOLA PENFOLD'S *BEYOND THE FROZEN HORIZON* AND ELE FOUNTAIN'S *MELT*

We have to hope the world woke up in time.
We have to hope this place will survive.

(Penfold 2022: 184)

This chapter examines how the British young adult (YA) fantasy novels *Beyond the Frozen Horizon* (2022), by Nicola Penfold and *Melt* (2021), by Ele Fountain, engage with Indigenous perspectives and ecological knowledge within the context of the climate crisis. While Indigenous authors have anchored Arctic narratives in lived experience and cultural continuity, non-Arctic and non-Indigenous writers often approach the region from a distinct point, negotiating the Arctic through lenses of imagination, moral inquiry, and genre experimentation. This section examines such engagements, focusing on the works of British authors Nicola Penfold and Ele Fountain. These authors demonstrate that the Arctic functions as more than a geographic setting. It becomes a stage for exploring climate precarity and human agency towards nature. In Fountain's prose, the Arctic emerges as a site of intimate confrontation with mortality and the limits of human knowledge, while Penfold employs elements of suspense and ecological speculation to underscore the region's fragility.

Rooted in existing myths and cultural narratives, the two novels reflect shared understandings of reality, but risks of perpetuating stereotypical representations of cultural identities cannot be underestimated. Cultural stereotypes, often born from a mixture of historical context, media influences,

and personal biases, create invisible barriers that hinder our ability to empathize, connect, and thrive in a multicultural society. To reduce biased tendencies to a minimum, the application of a cryo-critical framework and of diffractive principles to these novels has to highlight the importance of incorporating Indigenous beliefs and identities, especially when regarding the Arctic and its cryosphere. Although these works do not claim historical or geographical accuracy, they evoke Sámi and other Indigenous interpretive traditions⁶¹ filtered through the authors' perspectives. Such representations reflect a broader pattern in YA literature where Indigenous identities are frequently portrayed through a non-Indigenous lens. Surely, the global publishing industry's power dynamics, notably the dominance of English-language literature and its wide translation compared to limited editions of other languages, influence how Indigenous discourses are circulating globally. Fantasy authors draw creatively on existing stories, which can both challenge and reinforce ethnic stereotypes, impacting audiences unfamiliar with these cultures. Despite these complexities, fantasy fiction serves as a meaningful platform to criticise social issues and convey urgent ecological messages, offering hopeful visions for the future.

Section 3.1 explores how the climate crisis has been narrated through environmental literature and speculative fiction, emphasizing the challenges and possibilities of imaginative storytelling. It questions the notion that the climate crisis is also a crisis of the imagination, derived from Amitav Ghosh's criticism of the anthropocentric focus of contemporary novels. In contrast, literature that views nature as an agent with its own voice, as advocated by

⁶¹ *Melt*, by Ele Fountain, is set in an unspecified Arctic location and, for this reason, readers are not informed about which Indigenous group Fountain refers to. In the section dedicated to a cryo-critical analysis of *Melt*, it is deemed appropriate to use the general term 'Indigenous' when referring to the local population. This is not the case for *Beyond the Frozen Horizon*, clearly set on Svalbard. Svalbard does not have an Indigenous population, but in Penfold's book there are Sámi people originating from Northern Scandinavia and Finland.

Lawrence Buell, challenges this paradigm by erasing rigid boundaries between humans and the representations of nature, incorporating an ethical engagement that positions the environment as dynamic and evolving. Speculative fiction, encompassing genres such as fantasy and climate fiction (cli-fi), emerges as a crucial space for envisioning futures shaped by ecological crises. Through its “what if” narratives, speculative fiction can channel environmental thinking, promoting hope and engagement. The section further traces the evolution of Arctic imaginaries in literature, showing how early depictions cast the Arctic as sublime, mysterious, and as a site of heroic conquest, largely ignoring Indigenous perspectives. In more recent works, Indigenous knowledge and environmental crisis have become central, reframing the Arctic as both a symbolic and ecological site of transformation. Speculative fiction plays a key role by blending realism with otherness, using the Arctic’s vast whiteness and ‘blank places’ to engage embodied perception and cognitive mapping. This allows readers to experience the Arctic as a place of both empirical observation and imaginative possibility, especially in YA speculative fiction, where protagonists often undergo psychological and moral growth through encounters with disrupted environments.

Section 3.2 focuses on Penfold’s *Beyond the Frozen Horizon*, that vividly portrays the Arctic’s icy landscapes, continually reshaped by climate forces. The narrative highlights a tension between the permanence traditionally associated with polar ice and its contemporary fragility due to unseasonal weather patterns and climate change. In the novel, Indigenous Sámi characters embody deep humility and resilience, constantly observing and predicting ice behaviours to adapt to ever-changing conditions. The novel presents scientists serving as mediators who interpret and disseminate environmental knowledge, playing a vital role in uncovering ecological harms and fostering awareness. Contrary to stereotypes that portray ice negatively, the narrative celebrates its life-

sustaining qualities, fostering respect and protection. Ultimately, *Beyond the Frozen Horizon* culminates in a message of collective hope, inviting readers to recognize the possibility of positive change through imaginative and coordinated climate action.

Section 3.3 turns to Ele Fountain's *Melt*, which offers an Arctic narrative deeply rooted in Indigenous ecological knowledge and the liveliness of the cryosphere. Characters learn to adapt to shifting landscapes, reading ice patterns and weather changes to experience and cross the Arctic tundra. The novel stresses the ongoing disruption of traditional ecological knowledge caused by climate change, with unpredictable seasons posing constant survival challenges. *Melt* blends scientific understandings with animistic and cultural meanings, highlighting ice as an agent integral to Indigenous identities. In considering the role of multidisciplinary approaches, the section highlights the need for ecocritical approaches in YA literature that integrate materiality, embodiment, and affect, moving beyond conventional representational paradigms to address climate crisis complexities.

This chapter positions *Beyond the Frozen Horizon* and *Melt* as works of YA speculative fiction that entwine Indigenous ecological knowledge, scientific insight, and embodied experience to narrate the Arctic's environmental crisis. Both novels imagine Arctic ice and landscapes as living, relational entities with cultural, material, and ethical significance. They challenge reductive stereotypes and convey urgent ecological messages while fostering hopeful visions for collective action. By bridging cryo-criticism and new materialist perspectives, the chapter calls for enriched critical approaches to YA literature that attend to the materiality of ice.

3.1 NARRATING THE CLIMATE CRISIS: ENVIRONMENTAL LITERATURE AND SPECULATIVE FICTION

3.1.1 Is the Climate Crisis also a Crisis of Imagination? Potentialities of Environmental Literature

Environmental literature deals with the relationship between humans and nature: it explores the climate crisis and the negative impact humans have on nature and the planet. Today, there is a wealth of literature published in which nature plays a central role: novels, children's and YA books, poems, short stories and non-fiction. Some authors write dystopias, or doomsday literature, about what the future could look like if we do not live more sustainably. These stories are often about societies that have disintegrated, where people struggle to survive. Others are about characters who go to war against those who destroy nature. In *The Environmental Imagination* (1995), Buell establishes a set of criteria that a work of environmental literature should meet. Within this framework, he emphasizes the need to represent the voice and interests of the non-human world, positioning nature not as a passive backdrop but as an active participant in ecological discourse. This shift aims encourage collaboration between human and non-human entities. According to Buell, the non-human environment must appear as more than a mere setting; it should assert a presence that implies human history within natural history. Furthermore, a legitimate environmental text recognizes that human interests are not the only valid ones. It also reflects an ethical commitment to environmental responsibility and conveys an understanding of the environment as dynamic and evolving rather than static (Buell 1995: 7-8). Based on these criteria, a defining trait of environmental literature is its erasure of the rigid boundary between human and natural histories, revealing the interconnectedness of humans and nature. Such texts must represent nature as an autonomous entity with its own agency and

priorities, rather than portraying it solely in reaction to human activity. They must also hold characters accountable for their impact on the earth, while illustrating that the environment itself is fluid and part of ongoing processes.

This kind of fluidity requires new and powerful metaphors that can efficiently capture the interplay of literature and science. As Ruiz et al. (2024) state, the instability of ice as an object provides a methodological lesson for our unpredictable age; consequently, “just as ice melts into water, so this volatility suggests metaphors of endless change. This also works in temporal terms. For, after the cryosphere as we know it is gone, perhaps what we are left with is ice as an exotic memory and ‘afterthought’” (20). Yet, engaging meaningfully with contemporary scientific advancements requires acknowledging that logic and reason are not the sole paths to understanding reality: cultural works, such as narratives, provide valuable perspectives. An important shift in how we regard and approach ecological issues could begin through the interplay between scientific and literary ways of seeing the world. For decades, the climate crisis has been treated as distant and slow-moving in both time and space; it happens elsewhere to someone else, or far in the future. Indigenous scholars also highlight how climate change is a continuation of colonialism, and therefore Indigenous peoples have already faced the end of the world, multiple times (Whyte 2018).

As a consequence, this failure to vividly imagine the impacts of climate change has delayed action. It is only recently, with wildfires, floods, and heatwaves directly impacting communities, that more people are starting to feel the immediacy of climate change. In *The Great Derangement: Climate Change and the Unthinkable* (2016), Amitav Ghosh criticises the limitations of contemporary fiction and public discourse, arguing that climate crisis is also a crisis of the imagination. He delineates several factors contributing to the imaginative shortcomings he criticizes, observing, for instance, that the realist

novel is typically constrained by a temporal framework limited to the lifespans of its characters and a spatially bounded setting. Moreover, he contends that the literary imagination is predominantly anthropocentric, privileging the individual over the collective, and relegating nature to a passive, scenic role. Traditional narrative techniques are largely rooted in human psychology, with minimal engagement with the nonhuman environment, which is often stripped of agency and instrumentalized as mere backdrop to human affairs. Ghosh further posits that while science fiction and cli-fi may possess greater potential to grapple with the complexities of climate change, they are frequently dominated by dystopian futures (Ghosh 2016: 124-134). This, he argues, only represents a fragment of the Anthropocene, which also encompasses the recent past and, crucially, the contemporary moment.

Almost ten years after Ghosh's book, while still recognising the fundamental necessity of a constant and pressing need for imaginative visions of the future, a growing body of work represents the kind of narrative he called for. In terms of contemporary fiction, the last decade has been massively productive. Speculative fiction, intended as an umbrella term to embrace different genres with some common features and aims – such as cli-fi, fantasy, and eerie stories – has recently become the most productive ground for storytelling the anthropogenic climate crisis. With imagination as a catalyst, speculative fiction helps people see that transformation is possible, and worth fighting for.

3.1.2 Arctic Imaginaries over Time

How the Arctic is imagined in literary works mirrors the ways in which writers have imagined, represented, and mythologised its landscapes, peoples, climates, and symbolism. This literary representation blends environmental, cultural, and often political themes with elements of wonder, fear, isolation, and

discovery. Nevertheless, different themes have been related to different imaginations. Early literary depictions (18th and 19th century) often portrayed the Arctic as a sublime, mysterious and terrifying place – vast, unknowable, and dangerous. Mary Shelley's *Frankenstein* (1818), for instance, opens and closes in the Arctic, which in the novel symbolizes both extreme isolation and the limits of human ambition (Lindgren Leavenworth 2024: 9). From the 19th to early 20th century, the Arctic was a literary and geographical frontier of exploration, exploited as a backdrop for imperial heroism, nationalism, and conquest. Jules Verne's *The Adventures of Captain Hatteras* (1866), for example, centers on a journey to the North Pole and captures the European fascination with the unknown. More than a century later, Barry Lopez's *Arctic Dreams* (1986) is a non-fictional text combining natural history, anthropology, and poetic meditation on the Arctic's meaning. Indigenous perspectives were thus largely ignored in earlier texts but are now central to postcolonial and decolonial readings, in symbiosis with a more contemporary trend of framing the Arctic as a site of environmental crisis. Margaret Atwood's *Oryx and Crake* (2003), for example, features polar themes that reflect ecological collapse. More recently, the Arctic has often become a metaphor for inner states, loneliness, purity, madness, or spiritual awakening. These narratives often blend environmental disruption with a search for isolation derived from the tension of psychological forces, and the literary corpus chosen for this study is proof of it.

The Arctic is now also a symbol of the Anthropocene, and its melting ice stands in for global loss, precarity, and reckoning. In *The Imagined Arctic in Speculative Fiction* (2024), Maria Lindgren Leavenworth analyses various forms of speculative fiction including science fiction, horror, fantasy, and cli-fi, and examines how each of them deploys the Arctic differently while still contributing to overarching Arctic discourses (Lindgren Leavenworth 2024: 9). The Arctic, often viewed as remote, mysterious, and otherworldly, serves both as a literal

and symbolic site for narratives that question the boundaries of human knowledge, environmental limits, and cultural identity. Lindgren Leavenworth also refers to ecological and scientific speculations (Lindgren Leavenworth 2024: 18, 98) in recent works which engage with the Arctic as ground zero for anthropogenic climate change. Speculative fiction extrapolates from current environmental issues to imagine post-apocalyptic futures, the collapse of ecosystems, and redefinitions of human and non-human entanglements. Thus, eco-speculations emphasise the Arctic as a both symbolic and ecological site of transformation, once seen as static and remote, now rendered vulnerable and central to global crises.

Lindgren Leavenworth (2024) uses the term “imagination” in several layered and interconnected ways. It refers not just to fantasy or invention, but to how the Arctic is culturally, politically, and ecologically constructed through narratives, especially speculative ones. In her analysis, she traces different but correlated meanings to the role of Arctic imagination, which can be understood as a cultural construction, where the Arctic assumes the status of an imagined space shaped by outsider narratives – often Western and non-Indigenous – that frame it as remote, sublime, hostile, or otherworldly. The very expression “the Arctic” is a concept expressing an idea, or better, different ideas of the same land, which have been accumulated through stories rather than direct knowledge. This imagination fosters discourses that influence how people think about the Arctic in contexts such as politics, literature, science, and environmentalism (Lindgren Leavenworth 2024: 21, 34). Imagination also functions as a speculative possibility, particularly in speculative fiction, where it becomes a tool to explore alternative realities. These include visions of lost Arctic civilizations, climate-altered futures, ghosts preserved in permafrost, and encounters with new species or more-than-human lifeforms. This kind of imagination invites fictional experimentation, enabling authors to transform the

Arctic into settings that challenge readers' assumptions about nature, humanity, and survival (Lindgren Leavenworth 2024: 13-25). As an epistemological framework, imagination interacts with the idea of the Arctic as an "atopic space" (Carroll 2015: 6) that is, a real place that resists being turned into a knowable, stable location. Carroll describes these spaces as atopias, "'real' natural regions falling within the theoretical scope of contemporary human mobility, which, because of their intangibility, inhospitality, or inaccessibility, cannot be converted into the locations of affective habitation known as 'place'" (Ibid.). Considering the Arctic as an atopic space help reframing climate change phenomena affecting the poles frequently imagined as belonging "to 'no one'" (Carroll 2015: 188). Yet the climate change problem is inherently collective⁶².

The elusiveness Carroll refers to when conceptualising the concept of 'atopias' makes the Arctic a fertile ground for imaginative projection. As Ryall et al. (2010) note, "the question is not where the Arctic begins, but where we think and have thought that the Arctic begins" (xii). In this sense, imagination becomes a method of sense-making, especially when dealing with the unknowable, unstable, or strange (Lindgren Leavenworth 2024: 28, 54, 143). Finally, imagination serves as a literary and aesthetic force. Through literary devices such as metaphor, symbolism, and narrative framing, authors render the Arctic both legible and strange. As a result, Arctic imagination is both a creative and critical act. It is the process by which the Arctic is turned into a narrative object, filtered through fears, desires, and ideologies. Most importantly, imagination in speculative fiction reflects and shapes real-world understandings (Lindgren Leavenworth 2024: 15).

⁶² As Hormio (2023) states, "the collective nature of the climate change problem has been conceptualized in the literature most prominently as either a collective action problem or a collective harm problem" (4). In collective action problems, an aggregation of individual actions together produces outcomes that are not intended at the level of an individual action. Collective harm problem is a species of collective action problems where individual actions are perceived to make no difference (Ibid.).

This imaginative grounding of the Arctic shapes not only literary interpretations but also the broader, often intuitive perceptions of 'Arcticness'. As Kelman (2017) argues, there seems to be an almost intuitive feeling of what 'Arcticness' might be, also for those who have never experienced the Arctic first-hand:

The examination of popular culture, literature and visual arts [...] shows that particular Arctic attributes dominate the popular imagination: snow, ice and cold weather; untouched, pristine and desert-like landscapes; long, dark periods versus long periods of eternal sun; [I]ndigenous communities; fishermen (this gendered term is used here intentionally) and masculinity; the intimate relationship between people and their environment, as well as an abundance of natural resources – or, in other cases, the scarcity of resources. In sum, the Arctic, the north, and the apparent Arcticnorth construct in the outsider's collective image resemble a near-binary dichotomy of simplistic generalisations and stereotypes of nature and culture(s) (41).

Arctic stereotypes lead to bias, and they ensure that perspectives from inside and outside travel on parallel but contrary tracks, and that the democratic thought in which the "majority wins" drags with it outdated visions that remain rooted in the common imagination. While heterogeneous perspectives contribute to creating visions of the Arctic, the constant tension between inside – the 'minority' – and outside perceptions – the "majority" – results in an amplification of the distance, more symbolic than geographical, between outsiders and 'northern peoples', as vast as the Arctic landscape itself (Robinson 2006: 223). When approached from an outside perspective, this vast landscape has indeed been seen as in line with a biased ideology of an empty Arctic devoid of life because of its whiteness and freezing wilderness. However, this prevailing perception overlooks the vital role that the Arctic's cold

environment plays in sustaining life. As Heidi Hansson and Cathrine Norberg argue, “instead of routinely associating cold with death, it is essential to show its crucial importance for continued life” (2009: 9). Recognizing the essential role of cold and ice in supporting Arctic ecosystems highlights how misconceptions about these elements can contribute to harmful stereotypes and misunderstandings. In this sense, Arctic biodiversity is thus put in danger not only because of anthropogenic climate change, but also by human imagination and perception which, in the long term, can generate wrong knowledge-based stereotypes that are difficult to eradicate.

The process to reverse this trend and to offer a counterweight to (often) faulty beliefs involves a proper and more accurate reframing of the cultural, literary, and humanist dimensions of the Arctic. This requires a huge effort that only multidimensional and multidisciplinary study and research can afford. Addressing different Arctic imaginaries, Daniel Chartier (2018) suggests a broader concept of “The North”, which has been imagined and represented for centuries by artists and writers of the world outside the Arctic. Over time, and through the accumulation of layers of discourse, this led to the creation of an “imagined North” – ranging from the “North” of Scandinavia, Greenland, Russia, to the “Far North” or the poles (11). Visitors from lower latitudes reached the North Pole only a century ago through expeditions, which reinforces the theory of a double perspective: an outside and an inside one, the latter being that of Northern cultures (Inuit, Sámi, etc.). The first ones are often simplified and the second ones, unfortunately, ignored (24). Because of this dual gaze, it is possible to distinguish between the ‘representations’ of the North and the works of Nordic cultures. In studying the ‘North’ from a comprehensive perspective, taking into account its dynamicity, two key terms must be considered as part of the process: *deconstruct* the bias and *recomplexify* the cultural Arctic, which means that “we must propose and defend the idea of ‘recomplexifying’ the North

and the Arctic to re-establish an “ecology of the real” that takes into account the richness and the variety of the circumpolar world” (Chartier 2018: 29). To achieve this, Chartier argues, several hypotheses must be upheld. Firstly, the North and the Arctic are seen as regions made up of places in constant interaction. Secondly, cultural and human dimensions shape the way people relate to territory. Finally, it is essential to view the North and the Arctic through a multicultural and circumpolar lens (Ibid.), grounded in a multidisciplinary approach.

3.1.3 Defining Contemporary Speculative Fiction

Speculative fiction is a broad literary category that encompasses narratives involving imagined worlds, events, or scenarios that, to various degrees, deviate from empirical reality. Margaret Atwood famously described speculative fiction as “a way of dealing with possibilities that are inherent in our society now, but which have not yet been fully enacted”⁶³; in this sense, as a genre embracing a broad range of possibilities, the term speculative fiction often functions as an umbrella for subgenres such as science fiction, fantasy, dystopian fiction, alternate history, and sometimes horror. According to Brian Attebery (2002), speculative fiction serves indeed not just as a genre, but as a mode of storytelling that foregrounds the “what if” as a method of inquiry, enabling authors to reimagine reality in transformative ways. Speculative fiction is best understood as “a field of cultural production” (Oziewicz 2017: 8) rather than a fixed genre, unconstrained by specific literary techniques. Its evolution does not follow a straightforward chronological path. Instead, today’s conception of speculative fiction marks a significant leap that bridges various established and

⁶³ Masterclass.com, “Writing Speculative Fiction”, online Masterclass with Margaret Atwood [video]. URL: <https://www.masterclass.com/classes/margaret-atwood-teaches-creative-writing/chapters/speculative-fiction#> (accessed 22 December 2025).

emerging traditions (Oziewicz 2017). An inclusive explanation of the concept of contemporary speculative fiction and its referential characteristics comes from Marek Oziewicz's definition of the term:

Despite its perplexing heterogeneity, speculative fiction across the board shares two qualities. First, it interrogates normative notions about reality and challenges the materialist complacency that nothing exists beyond the phenomenal world. This, incidentally, aligns it with science, which posits that all of the known kinds of matter and energy make up, at best, only about 4 percent of the universe, whereas the nature and properties of the remaining 96 percent remain anybody's guess. Given that dark matter and dark energy are now assumed to be a mathematical necessity, speculative fiction may well be theorized as an imaginative necessity: a mode of critical inquiry that celebrates human creative power. Second, speculative fiction offers no pretense of being factual or accurate. This denial endows it with a potential for challenging consensus reality, besides making speculative fiction politically scrappy, cognitively empowering, and affectively stimulating. With all its borderless messiness, the field of speculative fiction can thus be considered the unlimited cloud space for our multicultural world's non-mimetic traditions that help us share and reclaim forgotten or marginalized modes of engagement with reality (19).

Following Oziewicz's wide conception, Maria Lindgren Leavenworth (2020) defines speculative fiction as encompassing narratives that diverge from everyday reality while remaining partially grounded in real-world elements such as physical laws, geographic settings, and historical events. This framing allows the inclusion in the macro-genre of a wide range of texts, from near-realistic to overtly fantastical, under a single conceptual inclusive umbrella as a stage on which to enact contemporary concerns in different ways. When concerning the Arctic, its remoteness and seeming emptiness made "the area an ideal setting for strange occurrences in realistic works as well as speculative ones" (Lindgren

Leavenworth 2020: 217). This convergence of the real and the fictional in considering speculative fiction as inclusive of different sub-genres, Lindgren Leavenworth adds, “allows for examinations of how the Arctic as a real-world place is variously employed in the chosen novels: some aspects of it underscore the realism of the setting, whereas others produce a specific Otherness” (2020: 217).

The speculative fictional works that I will examine in the next chapters depict frozen seas, lakes and rivers, the snow coverings of mountains, glaciers and polar permafrost. A kind of travel narrative with a different connotation from that of travelogue and exploration literature, these novels narrate walks across endless white surfaces, including those nomadic routes that are now disappearing due to the loss of the cryosphere. In reading, one also encounters gigantic floating icebergs, skates on the frozen crust of Arctic rivers and explores the mysteries of glacier inlets and frozen soil. Or, by sharpening one’s gaze, these narratives linger on the glassy light of an ice stalactite or the surprising complexity of a snow crystal. These diverse landscape features highlight the need of conceiving speculative fiction as an umbrella term, also considering the coming-of-age process evolving throughout the narration. In works that examine the physical and psychological development of a young protagonist, in fact, disruptive events are deemed necessary (Lindgren Leavenworth 2020: 218). Additionally, while protagonists in speculative fiction must confront and overcome various limitations, the destabilizing effects of climate change they perceive serve to critically challenge their perceptions of the world, resulting in an irrevocable transformation of their sense of self-awareness and their place within it.

Whether narrating a fantastic or a factual Arctic, contemporary speculative fiction is based primarily on the interest in the roles of the imaginary and perceptions. “Whiteness” and “blank place” have the potential of giving rise

to a vastness to be fulfilled, rather than a void or emptiness. Consequently, the blank place can metaphorically contribute to a personal collection of several “micro-perspectives” through the reading (Bordignon 2024: 20). In adopting this point of view, the factor of simultaneously considering the space of the embodied mind as intertwined with the materiality of the landscape is fundamental. This observation can thus be considered as a link between new materialist openings and linkages, so far little applied, to YA literature and contemporary speculative ecofiction. Lindgren Leavenworth (2024) has discussed how the definition of speculative fiction should involve thematic resemblances rather than a strict categorization of a genre (14). Moreover, she refers to the same broader concept of the blank place of the Arctic that “as well as peculiarities connected to specific localities and landscapes lend themselves to fantasies about what hovers between known and unknown” (Ibid.). Indeed, YA speculative fiction reveals an alternative and uncommon way of speculating about the remoteness of the Arctic. An added value, strictly connected with perception and the creation of meanings, is the strong environmental and ecological message that these narratives convey to (young) readers.

3.2 SVALBARD’S ICESCAPES OF HOPE IN NICOLA PENFOLD’S *BEYOND THE FROZEN HORIZON*

Nicola Pensold’s middle grade novel *Beyond the Frozen Horizon* (2022) is set in the near future, just after 2030, when new Global Climate Laws are brought in response to the climate crisis, and the World Wild Zones established, absorbing carbon and acting as wildlife shelters. One of these zones is the High Arctic. There are strict Global Climate Laws. Low impact living is no longer optional – it must be compulsory if the world has any chance of recovery. Humans and scientists are working hard to slow the rate of global warming, and Earth is beginning to thrive once again. Rory’s mother, a renowned

environmental geologist, is working for the company Greenlight on a new project on Svalbard. When she gets a new job with Greenlight, a company aiming to extract rare earth metals from the Arctic using special bacteria, they are given the chance of a lifetime – to travel to the Svalbard archipelago, and Rory joins her for the trip. Mum must write a report about the impact of the company's plan while Rory is keen to avoid the loneliness of trying to fit in at school and see the northern animals she's always dreamed of. In the High Arctic Wilderness Zones are restoring nature. The animal population is finally increasing but it won't take long before the wilderness is not wild anymore. Every time a new person arrives, the natural balance is in greater danger. On their arrival, Rory and her mother unexpectedly meet inhabitants of the town, mostly Sámi children, who no one had mentioned before. In fact, no one told Rory's mother about the presence of Indigenous people who are opposed to further mining. Local people in the town of Pyramiden are very suspicious of the intruders working with Greenlight. Old mining families know what can happen when everything goes wrong and can see the impact of Greenlight's plans on the people, animals and the land. This encounter leads to ethical and ecological reflections in the young protagonist. Soon, Rory learns what is happening to the icy environment, people, and animals, and she learns to value this harsh but beautiful landscape, too. She gradually decides to uncover the sinister and unecological plans Greenlight is hiding and, at the same time, she shares a hopeful vision for the future. As truth is revealed, Rory tries to make friends with the local children, such as Mikkal, and takes it upon herself to investigate their claims about the company. She wants to help and bring peace to the ghosts of the past. Rory trusts her instinct and begins to question what is really going on as she sees sick reindeer and learns about what is at stake for the people of the land and the way they live. The connection Rory finds with nature marks the turning point in her path toward maturation and self-awareness.

Penfold's creation of a Sámi community on Svalbard serves multiple significant purposes. First, it challenges the historical erasure and marginalisation of Indigenous peoples in Arctic narratives by drawing attention to Sámi culture within the broader circumpolar context, even if fictionalized. This creative choice allows Penfold to explore themes of cultural identity and displacement from an Indigenous perspective, enriching the novel's ecological and social dimensions. From a functional perspective, Sámi presence on Svalbard provides a critical lens through which to question dominant geopolitical and colonial frameworks that often depict the Arctic as an uninhabited or solely state-controlled territory. It highlights alternative ways of relating to the land and sea that emphasize reciprocity and long-term sustainability. In this way, Penfold uses the 'invention' to expand the narrative possibilities within YA speculative fiction, encouraging readers to rethink assumptions about sovereignty, belonging, and environmental responsibility in the Arctic. Despite the dystopian outlook of the novel, Rory proves that "perhaps a child understands better than any of us" (Penfold 2022: 192). She sees the impact of wrong choices and fights to prevent further damage that could last thousands of years. The novel provides detailed and realistic descriptions of the main geographical features of the Svalbard archipelago, leading the reader to perceive the inherent potential of YA fiction even more intrinsically in disseminating both scientific and traditional knowledge. As Penfold states,

Climate change isn't a future fear, it's happening now. Communities are being devastated, and tragically they're usually those with the least resources to adapt, and most unfairly, and sickeningly, those with the smallest carbon footprint. People not to blame for this crisis are paying the highest possible price - for our ridiculous desire for consumption. I'm optimistic about change because this is the only way forward - what

worries me is how quickly it will happen, and what we lose along the way.⁶⁴

In articulating a vision for a world where meaningful climate action has been realised, Penfold⁶⁵ outlines a transformative framework grounded in ecological integrity and social justice. At the heart of this envisioned future is the cessation of fossil fuel extraction, presented in the novel as the most urgent and foundational step. Alongside this, Penfold emphasizes the need to significantly expand natural spaces, enabling large-scale ecological restoration and the implementation of natural climate solutions. These strategies are framed as essential not only for carbon mitigation but also for addressing the parallel crisis of biodiversity and ice loss. For Penfold, the climate and extinction crises are deeply interconnected and must be confronted together. This vision future is not conceived in merely technical or economic terms but is described as profoundly human and emotionally resonant. Penfold envisions a wilder, greener world that would reconnect people with the natural environment, offering not only ecological but also psychological and cultural benefits. Despite the scale of the challenges, Penfold insists that “optimism is necessary, not optional. Change is possible, and indeed, it is the only viable path forward”⁶⁶.

3.2.1 Arctic Icescapes and Industrial Exploitation

In *Beyond the Frozen Horizon*, icescapes such as glaciers, floating icebergs, and vast expanses of snow and ice define a dynamic perception of the Arctic

⁶⁴ ReadingZone.com, “A hopeful future for the planet”. URL: <https://www.readingzone.com/news/a-hopeful-future-for-the-planet/> (accessed 30 June 2025).

⁶⁵ For all biographical information on Nicola Penfold and her purposes in writing the novel, cf. her official website: <https://nicolapenfold.com/about/> (accessed 30 June 2025).

⁶⁶ ReadingZone.com, “A hopeful future for the planet”. URL: <https://www.readingzone.com/news/a-hopeful-future-for-the-planet/> (accessed 30 June 2025).

landscape, reminding humans that the temporality of once permanent Arctic ice is now illusive, yet being part of a solid environment. Penfold conveys this contradictory concept by describing the young protagonists moving cautiously through the variety of Arctic natural elements. This environment is constantly remade by the forces of cold, wind and ice. Ice sheets cover the sides of fjords, and glaciers march on, sculpting cliffs and coves in such a way that even maps are outdated. Rory, the fourteen-year-old narrator, describes the natural features of Arctic landscape through ice sheets that crack and stretch across the fjords, thus introducing the reader to an environment that continually produces new stories about climate change and environmental loss, while Indigenous peoples keep dwelling in it. In this context of environmental liminality and change, human adaptation and Indigenous humility emerge. Mikkal, Rory's Sámi peer and friend, describes Indigenous actions for survival in terms of rebuilding paths and reinforcing shelters. Every decision and every movement are taken and evaluated through constant watching against a climate that refuses to hold still.

This mix of empirical observation and re-framing of traditional knowledge floods the plot of the novel, showing ice sheets, fjords, and glaciers in detail while emphasizing their fluidity and unpredictability, in which the ice presses differently against the cliffs, the glaciers advance or retreat in unyielding ways. Still, in such unpredictability, "the world seems to be alive" (113). This perspective highlights a tension between fact and imagination, and between land-based traditional knowledge and new comprehensions of Arctic ecology. Speculative fiction set in Arctic environments often uses environmental processes to metaphorically explore ecological attitudes. Human and non-human characters alike inhabit networks of change where ice may fracture, rivers may dry or swell, glaciers may advance or retreat, and permafrost may expand or shrink. In the very first chapters of the novel, the Arctic establishes

the prominence of extreme and unseasonal phenomena through factual descriptions such as “rain is falling on the tarmac outside [...] like spilt oil” (14-15). These seemingly minor weather phenomena being associated with a negative and unnatural depiction (the “spilt oil” on the tarmac), assume a heightened significance within the Arctic context, especially in the late fall season and in the approach of winter, where snow is becoming rarer and rain replaces it as a new usual event. Such simple but effective descriptions relate observation to an eerie feeling for local communities of being strangers in their own homes, highlighting the significance of altered weather patterns affecting the perceptions related to one’s own identity.

Beyond the Frozen Horizon mirrors like much speculative fiction set in the Arctic, foregrounds the destructive consequences of human and capitalist intervention. Industrial exploitation and resource extraction intersect with ethical, cultural, and ecological concerns, constructing a complex frame in which the Arctic serves as both a literal and metaphorical site of anthropogenic environmental damage. From the opening pages of the novel, the intrusion of industrial capitalism into fragile Arctic ecosystems is a recurring motif: the Arctic and its coal mining towns are ideal places for corporate opportunity to extract rare earth metals, such as silvery grey elements, magnetic and electrical, “that make things faster, stronger, lighter, smaller” (7). Rory captures the debate around so-called ‘green’ extractions, environmentally friendly technologies marketed as good news but secretly sustaining industrial destruction. Rory’s perspective is thus from the very beginning critical of corporate sustainability rhetoric, illustrating how profit is so far too often used as justification for invading wilderness. To exemplify such sneaky extractive projects, the dangerous effect of industrial intrusion on local fauna and herding is described through the act of excavating the already fragile permafrost when the corporate Greenlight starts initial excavations. Rory refers to what Mikkal told her about the concerns Sámi

people have while observing the impact of industrial intrusion on local fauna and herding: “It’s a lot of disruption if that’s your home. They were worried it would upset the reindeer” (40). This negative trend is underscored by a historical perspective on exploitation, showing how the harm caused to environment is perpetuating and not coming to end if humans do not change their mindset.

Penfold underscores that the Arctic has in fact been plundered before. Firstly, “they came for the whales and the walrus, then it was furs, from polar bears and foxes” (122), and later, the world set the Arctic aside as a wilderness (yet, new forms of resource extraction are making their way). In this alternated exploitative cycle, Indigenous voices stand for the protection of a landscape they call home: “Was that just a game, a joke? How few years before you come back to destroy it all over again?” (123). Longyearbyen started out as a mining town, making money from extracting coal, back in the days “before people knew what that was doing to the planet. Or if they did know, they didn’t care. Didn’t care about the blackening air and the invisible gases collecting in the atmosphere, absorbing far more heat from the sun than our planet can stand” (40). By placing contemporary mining within a long history of colonial extraction through the lens of environmental ethics, Penfold draws attention to perpetuating cycles of environmental violence and human neglect of the most vulnerable ecosystems on the planet. From this point of view, during the assembly in which the two different factions (Indigenous peoples represented by Jonne, Mikkal’s father, and Greenlight’s chief executive officers) meet, Jonne asks: “You believe you can hack elements from under the ice without consequences for the wildlife here? For the people who have made this place their home? You think people can carry on taking riches from the earth and there is not a price to pay?” (125). He thus questions the anthropocentric view related to people’s right to exploit the natural world unshackled from ecological or social concerns. The inclusion of “the people who have made this place their home”

tackles the context of environmental and intergenerational justice as well by highlighting the disproportionate impact on local communities, and in particular Indigenous peoples whose cultural and physical existence can never be fully separated from the land.

In this context of subterfuge in which the sneaky plans of the corporate are falsely depicted as sustainable, the role of scientists and researchers – alongside with the voices of the Sámi population – in *Beyond the Frozen Horizon* is fundamental. They serve as mediators who uncover environmental truths, unmask conspiracies, and advocate for the landscape, often at personal cost. In Penfold's novel, scientists play a central role in interpreting and communicating knowledge about the Arctic environment and climate change impacts. Corporate forces pretend that "there are barely any people left here in the archipelago. Just a few climate scientists and university students, and of course people connected with Greenlight now, en route to the mine" (18); this reasoning mirrors the classic colonial rhetoric of *terra nullius* (Huggan and Tiffin 2015), something that does not correspond to the diegetic reality of things, given the presence of Sámi people, including children. Their existence is omitted by all collaborators, including Rory's mother who, at first, presents "an updated version to the Arctic Council when they make their final environmental assessment for the mine" (11), with expertise in permafrost from her master thesis informing industrial planning (13). Later on, she rebels against the project itself, guided by Rory's information derived from her conversations with local children on land use and subsidence. Moreover, individual scientists such as Pia, a glaciologist, act as guides and educators, explaining phenomena like glacial calving (184) and interpreting environmental signals, like the gradual yet massive deterioration of permafrost: "It's air, moving in the ice. You get used to it. The ice is talking to us. Part of my job is to learn its language" (186). Scientists thus facilitate translating ecological knowledge to inexpert audiences, including

children who, in turn, become activists dedicated to preserving fragile Arctic environments. As Rory firmly states when thinking about the anthropogenic “scars” (124) left on Earth, “What can one child matter in the face of worldwide catastrophe? [...] I consciously push that thought away. I don’t want to think about this place melting” (34-36), thus taking her first step towards ecological awareness and action.

3.2.2 Arctic Ocean Pan-Visions

Rory’s growing ecological consciousness invites a broader reflection on how the Arctic environment is conceptualised and depicted. Literary and visual representations play a crucial role in shaping spatial and mental maps of this region, revealing common challenges in accurately portraying its complex geography and geopolitical significance. As I recently discussed (Bordignon 2024), there are at least two common referential and representational problems in representing – cartographically or mentally – the Arctic. The first common mistake relies on considering the Arctic as divided into the eight states ruling it⁶⁷. The Arctic Circle and the sub-Arctic circumpolar North constitute a vast area that should be seen from above. This would facilitate the understanding of Arctic spatiality and the remote distance from the power centres of the eight Arctic states. In addition to this, the Arctic is a large frozen basin surrounded, on its edge, by the northernmost areas of the continental states: this means that the Arctic consists of water and ice surrounded by states at the margins, and it is not a land surrounded by water. As a matter of fact, the Arctic is a macro-region and defining it as a macro-region means that the Circumpolar North includes a portion, at the Northern edge, of all eight states, but the borders do not coincide with national geographical borders. This is the reason why it would be more

⁶⁷ This division is currently strongly impacting research activities and understanding of the region, considering the closure of Russia and current tensions between US and Greenland, for example.

fruitful, in general, to consider the Arctic as borderless and transcontinental, as a heterogeneous pan-Arctic territory.

The second common mistake concerns colours and their association to prominent features and matters. In the search box for one of the most used cartographic tools, Google Maps, the Arctic Ocean is represented as a vast blue area in which sea ice is totally absent. While, in a way, the blue ocean is a speculative fiction in itself, representing how the area will likely look in a climate-altered future, this visual representation forms one of the most dangerous aspects of inaccurate representation nowadays, because it leads to incorrect knowledge. It has indeed been standardized that sea, lakes, and oceans should be coloured blue when cartographically represented, and this colouring is frequently used in the case of the Arctic. This practice is also common in books about the Arctic and Arctic issues, where the Arctic is typically represented as an ice-free ocean surrounded by nation states. This depiction has two immediate consequences: on the one hand, such a representation contributes to strengthening the authority and legitimacy of nation states contra non-nation state groups, such as Indigenous people. On the other hand, the representation of a blue Arctic Ocean strongly collides with factual reality: the blue should be white. That ocean is, in fact, perennial ice, which the climate crisis is seriously putting in danger of extinction.

“Authors4Oceans”⁶⁸ gather authors and illustrators passionate about the natural world and willing to preserve it for future generations, committed to rid our lives and communities of plastic, combatting unsustainable fishery wherever possible, and inspiring young (and old) readers to do the same. Supporting the Svalbard Archipelago, Penfold has also joined the project, with *Beyond the Frozen Horizon* (2022) capable of conveying important ecological messages

⁶⁸ Authors4Oceans, “Authors and artists unite to help oceans recover”, URL: <https://www.authors4oceans.org/> (accessed 5 April 2025).

about the melting phenomena in the Arctic Circle to a young audience. The Arctic Ocean emerges in the novel as a site where science, observation, and ethical awareness converge. Penfold transforms the sea into a space of ecological learning, where knowledge arises not only from professional scientists but also from attentive local observers who translate environmental reality into understanding, thus reversing the trend of erroneous representations and *clichés*. The Arctic Ocean is described by Rory with precision reminiscent of scientific annotation, as when the fjords appear as “triangular rockfaces rise up from the navy water” (17). This kind of description situates young readers in a landscape defined by geology and light absorption, with navy waters and rockfaces evoking an empirical gaze focused on material forms and textures. Such details epitomise the novel’s educational impulse to teach observation with accuracy, involving Indigenous and local attitudinal approaches to environment as a complement to the figure of the scientist.

As the plot unfolds, the ecological basis of the plot becomes even more prominent when positioning Arctic waters as archives of change recording species decline and human impact over time. Penfold uses scientific and observational sensibility to render loss measurable, even when expressed in a childlike language due to this being a middle grade novel. Science enters the story through characters studying or explaining the Arctic; for example, when Rory first identifies a whale, she blends information from biology classes and personal excitement, as she cries “A bowhead! [...] They’re a type of baleen whale and one of the biggest whales alive” (53). Her knowledge from school here blends with awe and firsthand understanding, further enriched by the reflection made by the captain of the boat about the fact that “they’ve a lot more to fear from you” (54), reminding both Rory and readers that oceanic knowledge entails responsibility and deep understanding of non-human life forms.

The educational dimension deepens as the narrative accumulates observed facts about the ocean, such as “the further north we get, the more ice there is” (56), accompanied by Pia’s explanation of temperature gradients and salinity. For instance, when Rory spots two white shapes in the water, she identifies them as “belugas” and calls them “[t]he white Arctic whales” (191), referring to their natural camouflage in icy seas. Even sensorial experience, like the “sound of waves on the shore and ice cracking against the rocks” (192), captures the physical instability of melting ice. In this way, the novel links attentive observation to other related environmental processes, especially as Rory notices that ice does not vanish but melts into the waters of fjords, threatening aquatic life because “it’ll all spill out further into the fjords, killing the fish and seals, the walrus and whales” (270). Penfold in this way blends the child’s voice with the glaciologist’s data and conveys sectorial scientific knowledge through the means of shared and accessible understandings.

Despite its scientific focus, the novel occasionally questions the limits of scientific detachment. For example, Rory’s observation that, because of ocean acidification, “even the air feels dead and poisoned” (270) moves beyond detachment and prioritizes first-hand perception. This strategy helps to fully convey the lost vitality of the environment surrounding the protagonists. Here, Penfold emphasizes the belief that knowledge must be embodied to be truly meaningful, culminating in Rory’s encounter with a bowhead whale in the Arctic Ocean: “I looked into the eye of a bowhead. All power, beauty and serenity. One of the ancient ones, the slow swimmers of the Arctic Ocean” (291). This reflection simultaneously tells the reader about biology and temporal depth of the greatest mammals of the ocean, clearly illustrating the author’s belief that learning about the natural world represents a moral and emotional awakening. More generally, Penfold invites readers to connect industrial practices with visible damages in fragile environments as the Arctic. In this sense, as Rory’s

better understands the sides effects linked to industrialization, like when she finally states that “the chemicals that they use to take out the metals poison the tundra and wash away into the sea” (130), the novel positions science as a practice anyone can undertake, thereby democratizing scientific inquiry and challenging traditional boundaries between experts and the public. In this rely also the very purpose of the author when adhering to “Authors4Oceans”, especially in the attempt to turning these thoughts into a reality, so that the act of “saving our beautiful oceans for future generations is going to take action as well as words”⁶⁹ young people read.

Parallel to scientific interpretations, Rory presents the sea ice floating on the surfaces of the Arctic Ocean as a changing substance influenced by temperature, wind, ocean currents and other seasonal factors. She describes the intricate forms and geometric patterns of ice, which take on more romantic and symbolic features such as the delicate structures described as “flowers of ice in the dark water” (188), mirroring Rory’s enchantment emerging from her sensorial experience of frozen waters. Rory also presents the physicality of sea ice as she recognizes different layers and frozen effects on its surface, portraying ice as simultaneously transparent and hard, yet very fragile and dangerous. Through the eyes of young characters, *Beyond the Frozen Horizon* thus portrays the Arctic’s frozen world with a commitment to material truth even during subjective observation. Of course, this is just the beginning. It will take radical, creative choices for Rory to step out of her comfort zone and question general stereotypes. This is the preeminent lesson to learn and a central purpose of YA speculative fiction. As Penfold states, “If we come together as a community of writers, illustrators, cryologists, scholars, and young readers, and finally act by saying ‘Enough!’, just “imagine the difference we could make”

⁶⁹ Authors4oceans.org, “Our seas are in crisis”, URL: <https://www.authors4oceans.org/our-mission-1> (accessed 29 December 2025).

(Ibid.). This collective effort to challenge entrenched stereotypes and embrace diverse perspectives exemplifies the concept of Arctic Ocean pan-visions. By transcending state-centric representations and fostering collaboration, such pan-visions promote inclusive depictions grounded in both material realities and complex cultural meanings. Embracing this holistic perspective is indispensable for cultivating meaningful ecological awareness and motivating concerted action to safeguard the Arctic environment for generations to come.

3.2.3 Embodiment as a Form of Ecological Awareness

Far from being just a way to imagine alternative realities, fantasy is inspired by, and draws on, already existing fantastic traditions and narratives, such as myths and fairy tales (Lethonen 2019: 327). Fantasy's dependence on these contexts may result in reification of outdated narratives and stereotypes of cultural identities, and writers need to actively consider challenges stemming from discourses around ethnicity, age, gender, nationality, social class (Stephens and McCallum 1998: 201; Bradford 2007), or the role of ecological knowledge in coping with climate change. That is why, in order to apply cryo-criticism to narratives produced inside and outside the Arctic in YA fantasy novels, Indigenous peoples' beliefs and lifestyles are crucial elements, and respect to their identity and culture must be considered as a constant within ecocritical analysis. Bradford (2007) examines that genres dominated by non-Indigenous authors, such as contemporary fantasy, tend to mirror dominant cultural presuppositions related to Indigenous communities (10). While this is an appropriate perspective to adopt in this context, it is important to recognize the hierarchical nature of the global publishing sector and the power dynamics behind language: if YA literature in English is often translated in different languages, books from other languages are hardly ever translated into English (Lathey 2006: 2). Correspondingly, Anglophone best-sellers and their

translations, which convey a variety of discourses related to Indigenous identities, are far more likely to be transposed onto the global market (Lethonen 2019). Naturally, YA fantasy fiction is often rooted in the imaginations of authors, who draw on existing stories to create new literary forms, which in turn are seen as relevant representations of actual communities.

While fantasy novels do not specifically seek to achieve historical or geographical accuracy, these stories often reflect real-life power dynamics and ethnic relations. In such a context, YA fantasy has the capacity to maintain, or reject, ethnic stereotypes (Lethonen 2019). Therefore, the genre can transmit these same stereotypes to different contexts and audiences who are not previously familiar with them, rendering problematic the fact that their representations also point towards real-world groups. Thus, one may argue that what matters in this genre is “the artistic vision of authors who borrow stories by others to weave their own, new literary creations” (Ibid.: 339). Nonetheless, when fantasy is treated as an appropriate platform through which to criticise society within a broader discursive environment, these same literary worlds are crucial factors in conveying important ecological messages and, eventually, hopeful future visions.

The phenomenon of ‘cognitive mapping’ as a mental activity or orientation is typical in fantasy novels, as they strongly engage with the environment described in the story yet not always providing a map. Marie-Laure Ryan argues that a cognitive map is “a mental model of spatial relations” (2003: 215) that can represent individual experiences of existent landscapes. Moreover, Ryan avers that cognitive mapping is essential for the depiction and perception of space in narratives. This mental mapping of space, especially in relation to the representation of a specific place, is also an object of inquiry in YA literary studies. In general, the cognitive mapping of literary texts may function as a geographical *stimulus* for mental, emotional, moral, and physical

transformations of fictional characters, as they are positioned in a specific place which impacts on their feelings, thoughts, and behaviours (Goga and Kümmerling-Maibauer 2017: 3).

In *Storytelling and the Science of Mind*, David Herman refers to a cognitive approach based on the concept of 'embodiment' (2007: 317). According to Herman, the mind is always and inalienably embodied, and the mind should be viewed as the nexus of brain, body, and environment. This approach suggests not only that what can be seen, what is known about the world, alters with the spatial coordinates of the embodied self that is doing the reading, it also suggests that a self is in part constituted by what it reads, with narrative being the mean for tracing this perceptual flux (Ibid.: 318). As this last remark suggests, embodied minds are temporally as well as spatially situated. Penfold's novel can easily be situated in this context, as here embodiment intersects with the formative experience of the narrating-I of the young protagonist, who positions herself within a storyline (Herman 2007: 319) and a new spatiality: the one of the actual Arctic icescapes. *Beyond the Frozen Horizon* does not provide a map, even though Rory engages throughout the plot to create her own map to observe the territory and figure out the areas in which Greenlight secretly destroyed using chemicals, thus poisoning the reindeer. The absence of a map in Penfold's novel is of relevance for the contextualisation of the peculiar real-Arctic settings in the case of a lack of cartography in YA fictional narratives: everything occurs in the reader's mind, towards a 'sensing-the-place' process and during the recreation of a cognitive map, that is, a mental representation of the landscape the book depicts.

Set against the backdrop of the frozen landscape, this Arctic-related narration creates in readers an idea of the harshness of the land, the peril of being out on the ice and the danger of bears. Yet, the fact that just one encounter with a lonely polar bear occurs throughout the time of the narration (about six

weeks) reinforces the image of a vanishing landscape, where the Arctic is positioned as an indicator of the effects of climate change. At a time when the survival of cold regions is threatened, it is vital to change the paradigm that figures cold, ice and snow as negative, and instead highlight their positive characters (Hansson and Norberg 2009: 21). This concept finds fertile ground in *Beyond the Frozen Horizon*: snow, cold and, above all, ice are seen as elements which humans need to get used to for their own survival in the far North but, at the same time, they represent something rare to preserve, as habitat for other living beings: "How precious things are here, and how fragile. [...] This place is amazing, Mum. If you'd seen the whales in the bay, and if you'd meet the reindeer... It isn't the place for mining anymore. Maybe it never was" (Penfold 2022: 228-229). Many are the reflections of the young protagonist about the continuous ice-melting phenomena: "It won't last forever, this place. Even with the Global Climate Laws, the ice is still melting" (40), and later on: "Svalbard wouldn't make sense without its glaciers" (179). The trip to the glacier together with a Sámi family is a turning point towards the full acknowledgement of what the world is losing, and hope seems to represent an attitudinal catalyst that could lead to action:

The closer we get to the glacier, the more ice there is in the water. We pass a tall iceberg [...]. "The glacier is calving," Pia explains, leaving Jonne at the tiller to stand next to us. "Parts of it are breaking away".

"What will happen to the glacier now?" I ask.

"This one will probably drift south and melt," Pia says.

I snap a photo with my phone, imagining the ancient blue chunk of ice melting into the sea. We might be the last people to ever look at it.

"We have to hope the world woke up in time. We have to hope this place will survive. Either way, we're lucky we get to see it" (184).

Other references to a suffering icescape are disseminated throughout the narrative: “ice is clacking” (192); “there’s a creak from the glacier, [...] and another iceberg is calving out into the fjord. *What’s the glacier saying now?*” (195, original emphasis); “I worry suddenly about crevasses” (262). Yet, despite the challenges due to a fragile environment, the positive characters of a frozen Arctic are predominant. As a result of an embodied and direct experience in a harsh environment, the protagonist senses the place more, finally feeling like she belongs to it. This process occurs not only through visual, but also through tactile perception. In the beginning, the encounter with cold and ice is shocking for Rory, who tries not to spend too much time in the open air: “the air hits my face in a rush, crisp and cold, and I breathe it into my lungs, to experience it all through my body” (20). Little by little, and exploration after exploration, Rory radically turns in favour of a gradual appreciation as she develops a deep bond with the natural environment in all its aspects. Water and ice intersect ‘beyond the horizon’, as suggested by the title, and this causes the first re-evaluation of the common anthropocentric frame set in Rory: “We are all small and insignificant, eclipsed by the magnitude and starkness of the landscape around us. It’s weirdly soothing” (106-107). After feeling safe and relaxed despite the environmental challenges to face, it is the time for Rory’s interior awakening: “My senses have come alive out here [...]. I can’t explain how different I feel already being here in the vastness of this new landscape. Everything is raw and alive, it makes the blood run faster in my veins” (56). And later on: “I like it here. Honestly, I do. It’s no lie. Despite its remoteness and the plummeting temperature, it feels exactly right that I’m here. Even though I can’t begin to explain why” (145). Eventually, during her adventure on the snowy tundra, she feels proud of herself, braver, better, and faster in her movements (254). Her experiences in the Arctic wilderness turn out to be her most meaningful inner journey, just after realizing the better person she is, her mind moulded by self-

esteem, and with the awareness of starting a new way of living life once she is back in England.

From this comes the realization of her personal process of human maturation, from being considered too strange and quiet to the ability of making wise decisions, barely remembering her past self, and always feeling entangled with the iciness and whiteness around her. “Even though my nose is numb and my fingers burn with cold, I’m happier than I’ve been in ages” (187), Rory comments, “in this place where I can be myself” (230). Before leaving Svalbard, after six incredible weeks, Rory feels ready to travel back home, aware of the challenges ahead, but heartened by her formative journey that led to her new confidence:

Svalbard is what I’ll think of, on bad days at school, when I feel I don’t fit in, or that I’m trapped in a town with not enough space to breathe. I’ll come in my head to a rocky island in the middle of the Arctic Ocean, in the approach to winter when it only gets light a couple of hours a day, but my head was flooded with it (288).

The sensorial and cognitive mapping of the setting is also accompanied by the scientific explanation of certain natural phenomena, but also by traditional Indigenous knowledge. In this sense, this novel conveys environmental and ecological information, and specific cultural notions, perceptions and implications about ice and its materiality. Through the act of shifting its shape, ice holds in itself a multifaceted form that persuades the recognition of a ‘living’ substance. Its liveliness is highlighted, once again, through the acts of experiencing and sensing. Ice appears then in various forms: icy air hitting the skin, frozen snow glow reflecting back the moonlight, swirls of frost. Then, during the ferry trip from Longyearbyen to Pyramiden, Rory notices for the first time

that there are floating bits of ice in the water, where the sea ice edge extent begins, floes of ice looking like sculpted flowers (Penfold 2022: 56). Moreover, ice takes the form of flakes of snow blowing sideways in the wind like fat and soft crystals (80), other times like tiny shards (110), or icy splinters (137). Later in the narration, Sámi people are a resource of knowledge for Rory, when she marvels at the different colours ice can reflect according to thickness and brightness. When they arrive to the glacier at the bottom of a mountain, ice appears extremely blue, in contrast to the sea ice on the open water:

“Why’s the ice blue? Shouldn’t ice be clear, or white?”

“Not when it’s so tightly packed,” Pia answers. “The pressure forces out the air bubbles – that’s some of the sounds you’re hearing – and the change in structure means it absorbs light differently. Much more red light is absorbed than blue, and so here you have it. So blue that it’s turquoise” (186-187).

Not only scientific information, but also local and cultural interpretations of the same natural phenomena, which further emphasize ice movements, seasonal rhythms, and sensitivities of the snow- and ice-covered tundra soil life, freezing and thawing again. These cultural intersections highlight the role of cognitive mapping in the novel, and in YA econovels in general. These embodied encounters where all the five senses are involved, contribute to readers’ interrogation of “what it means to know, inhabit, experience, and encounter embodied space” (Springgay 2007: 38). Contemporary mapping theories argue that mapping is a creative activity that focuses on the process of mapping rather than on the object of maps (Cosgrove 1999). In this sense, the concept of mapping in its double meaning – map-making and mental representation –

creates an intertwining in which perception is doubled, embodied, and entangled (Springgay 2007: 39) also to the material landscape.

This space is covered in white but filled with imaginaries extrapolated from the narration. Despite environmental blank places, in this book there is no reference to a *terra incognita*, unknown and deprived of liveliness. This means, adopting an expression from Springgay, that the whiteness we perceive “is not a void or an absence in the sense of nothing” (2007: 40): blank and white spaces are linked to “the relationship of space to subjectivity, corporeality, and ways of knowing” (Ahmed and Stacey 2001). In other words, white as a colour takes on two connotations: on the one hand it is linked to natural features of a tundra landscape in winter and, on the other, it acquires the more symbolic dimension of a personal space of experience and encounter with the place itself. This bivalent aspect reconnects to the peculiarity of cognitive mapping of exploring how bodies and space define each other in the process of mental representation through the reading. In *Beyond the Frozen Horizon*, the whiteness of Svalbard goes beyond the vast expanses of ice, because it finally leads readers to encounter new knowledge, to produce new insights, and to fill Arctic imaginaries with life and liveliness.

3.3 CULTURAL NARRATIVES AND CRYO-CRITICAL INSIGHTS IN ELE FOUNTAIN’S *MELT*

Ele Fountain writes contemporary fiction with recurring themes of family, identity and hope. *Melt* (2021) is a middle-grade novel about the impact of climate change. This novel was written after being inspired by Fountain’s journey as an environmental activist in Ethiopia⁷⁰. Even so, she decided to write a criticism on climate change by addressing a different place, namely Alaska, and after doing

⁷⁰ For all biographical information on Ele Fountain, cf. her official website: <https://elefountainpen.com/about-me-2/> (accessed 30 June 2025).

some research and observing the life of the Inuit community there. In this novel, the researcher found how the environmental damage caused by climate change has a major impact on the life of the Indigenous community. From this issue, the author also found out about the reciprocal relationship between humans and their environment, which is proven through the actions or attitudes that humans take towards nature around them. In the novel, the characters are divided into two groups, namely native people consisting of the Indigenous community and outsiders corresponding to city people and oil industry workers. The novel also stresses that the treatment carried out by these humans reflected their relationship with nature and its impact. According to Fountain's statement in an interview⁷¹, "the component of climate change can be found in the form of mood and power of the weather and the character's role in the story" (James 2021).

Published in 2021, *Melt* narrates about the impact of climate change on humans as reflected in two different perspectives. First, the impact of climate change involves the pattern of Arctic community activity that leads to animal scarcity. Secondly, the impact of climate change is seen from environmental pollution. This novel takes the point of view of two characters with different backgrounds. Yutu lives with his elderly grandmother in a remote village in the Arctic where they follow the traditional ways handed down from generation to generation. However, things are changing for them. The weather patterns have altered, the ice melting is threatening their way of life, there are fewer animals to hunt, and their home is vulnerable. Meanwhile Bea, the young female protagonist, has moved house again and is struggling to adapt to her new city school and her new unfriendly classmates. Her father's new job for an oil company is taking up most of his time, and he appears distracted. One day

⁷¹ James, L. (2021). "Ele Fountain talks about MG novel *Melt*". In *Climate Fiction Writers League*, 11 May 2021, <https://climate-fiction.org/2021/05/11/ele-fountaintalks-about-mg-novel-melt/> (accessed 30 June 2025).

these two lives collide, and Yutu and Bea are caught up in a thrilling battle for survival and resolution. Yutu and Bea may have dramatically different backgrounds, but they support and help each other and soon pair up in a friendship forged in extreme circumstances as they struggle to survive in the Arctic tundra and find their way home. As they learn about each other's lives, Bea discovers more about the eroding ice, the traditions that are gradually being lost, and the threats to the Indigenous community's livelihoods. The environmental message is never explicitly spelt out but simply runs through the plot and this choice ensures that the adventure itself has greater impact. Both Yutu and Bea are likeable, possessing warmth and vulnerability beneath their capable exteriors. Meanwhile, Yutu's grandma, Miki, quiet yet patient, reserved yet wise, is representative of those whose way of life is in danger of being permanently lost.

Fountain does not specify where the plot is set in the Arctic, thus contributing, in a way, to conflating the Arctic into one homogenous place. The moods and power of the weather in *Melt* almost transform it into the role of 'character' within the story. In preparation for writing the work, the author engaged in comprehensive research encompassing a range of thematic and contextual domains⁷². These included the dynamics of seasonal sea ice, traditional Inuit narratives and customs, and the biodiversity of Arctic flora and fauna. Additionally, the author pursued more practical lines of inquiry, such as the operational range of snowmobiles per fuel tank, the mechanics of piloting a light aircraft, and traditional methods for preparing Bannock bread⁷³. This

⁷² ClimateFiction.org, "Ele Fountain talks about MG novel *Melt*". URL: <https://climate-fiction.org/2021/05/11/ele-fountain-talks-about-mg-novel-melt/> (accessed 30 June 2025).

⁷³ Bannock is a yeast free bread that can either be fried or baked. It is a staple in the diets of many North American Indigenous groups. Although this cultural reference linked to culinary tradition most likely geographically suggests the territories of Alaska, Fountain does not specify where in the Arctic the plot is set. In such an uncertainty, the choice to refer to the local population with the more general term of Indigenous (instead of, for example, 'Inuit') is considered the most preferable here.

multidimensional research process underpinned the authenticity and accuracy of the narrative. When addressing complex political and scientific issues for a younger audience, Fountain adopted an approach grounded in respect for children's cognitive and emotional capacities. Recognizing that children are acutely perceptive and often possess fragmented knowledge of significant global issues, the author sees literature as a means of synthesizing these fragments into coherent understanding.

Books, in this view, serve as structured and safe spaces for young readers to explore, question, and discuss complex topics at their own pace, enabling deeper engagement and critical reflection. Books, especially YA novels, provide young readers with a structured and safe space to explore complex issues, helping to develop both critical and environmental literacy. Through engaging narratives, readers are encouraged to question assumptions, consider multiple perspectives, and reflect on human impacts on the environment. This thoughtful engagement fosters deeper understanding and critical reflection, empowering young people to analyse social and ecological challenges and inspiring them to become informed, responsible agents of change. In this context, Fountain emphasizes the significance of integrating environmental themes into fiction, suggesting that narrative storytelling can render abstract or distant ecological concerns more immediate and emotionally resonant: "Fiction can provide a context and a narrative for subjects which may otherwise feel more abstract" (Ibid.). Fiction offers a contextual and imaginative framework through which readers, particularly young ones, can engage with complex environmental issues in a more accessible and meaningful way. A key excerpt from the book encapsulates this thematic focus can be found in the sentence: "The bonds which connect people and nature are beginning to fray. Something precious beyond imagining, is coming apart" (Fountain 2021: 9). This line, taken from the very first pages of

the novel, reflects the author's deep concern for the deteriorating relationship between humanity and the natural world, underscoring the urgent need for awareness and action. In terms of intended anthropogenic impact, Fountain hopes to inspire young readers with the belief that age is no barrier to agency. By reinforcing the idea that even small, individual actions can contribute to significant collective change, the work aims to empower children to see themselves as capable participants in environmental advocacy. The message is clear: one does not need to wait for permission or maturity to care about the planet and take meaningful steps toward its protection.

3.3.1 The Liveliness of the Arctic

Embodied experiences take place in Fountain's novel *Melt* too. Snow and frost are shaping forces, covering and uncovering the land, creating a whiteness on which it is difficult to hold one's gaze. "The landscape is a patchwork of snow-covered hills. The endless white makes my eyes ache" (88), Bea observes while searching for the trail that could lead her and her local friend Yutu home. While crossing the tundra, they follow "the soft curve of the shore, beyond lie lumpy peaks of sea ice are visible. [...] Hills rise and fall, some smooth, others with wind-blown patches of dark rock at the peak. Between them, flatter ground makes natural pathways" (111). These frozen surfaces guide their movements and perceptions; specifically, in *Melt* this relationship of dependence and constraint with the Arctic land is described at length:

Every step is measured against the rise and fall of the tundra. Snowdrifts hide gullies, ice sheets stretch beyond sight, and the hills form channels through which both man and animal must pass. We are constrained, directed, and taught by the land itself. Nothing is arbitrary; the curves, the hollows, the ridges, they all have their authority (119).

Again, a few pages later, the narrator's description of the ice deepens this sense of liveliness: "The ice is alive. It shifts with the tides, creaks under pressure, and sometimes opens without warning, revealing dark channels of water. The frozen rivers dictate our steps and the paths of the animals. Each year the ice is different, demanding attention and respect" (126). Additionally, sudden and extreme weather events occasionally shape perception and challenge survival; storms, for example, in which the wind "increases minute by minute" (8), while the icy air steals their breath. The unpredictability of weather conditions strengthens the responsiveness of the Arctic cryosphere due to human-caused environmental loss. Hence, the permafrost is "no longer stable" and cracks open "where they never existed before" (174). Moreover, snow melts too early, exposing bare ground, and the rivers swell in unpredictable ways, so that, every season "brings a lesson in adaptation; nothing repeats as it once did" (Ibid.). In this context, while anthropogenic consequences for Arctic ecology are certainly negative, humans need to become observers and adjust their schedules depending on the land's rhythms. Thus, ice is treated as alive:

We have learned to observe the ice like a living being. When it forms, when it cracks, when it drifts, we adjust our camps, our movements, our hunting. What was once a schedule set by tradition is now dictated by the whims of a shifting climate. Survival depends not on stubbornness, but on flexibility and respect for the new patterns that the earth imposes (177).

These words reflect Indigenous attempts to coping with climate change and the ways in which they narrate the fragility of ice, once strong and solid, now weakened and dangerous for creatures living in such environments. In this scenario, animals are better adapting to the daily challenges they need to face,

since Arctic foxes, seals, and bears successfully navigate shifting ice, learning and passing on knowledge to their cubs. This kind of knowledge transfer can eventually occur at an interspecies level, as the protagonists, trying to find their way back to the village, watch a fox that navigates snow and ice: “Every movement is informed by the landscape, every pause dictated by the slope or drift. Nothing it does is for us. Humans enter this space temporarily; the fox’s existence is continuous, independent, and aligned with the natural cycles that govern this frozen world” (153-154). Permafrost, shifting rivers, and snowdrifts dictate human and animal behaviour, and instability is at the basis of this formative novel that prominently leans toward an experiential narration. The liveliness is also projected into future scenarios: “Tomorrow, the ice may crack in places it never has before. The animals will follow new routes, the hunters will adjust. We are always responding, never dictating. The land writes its own story, and we are only allowed to read along” (178-179). Here, it is not a question of whether in this text the Arctic landscapes are factual or imagined; what matters is that the narrated Arctic is a place of possibility and calls forth the human need to constantly observe. On one specific occasion, Yutu even dramatizes future scenarios, in which local communities “no longer expect the seasons to repeat themselves. Each winter may bring storms that erase familiar tracks, each thaw may reveal hidden channels of water where solid ground once was”; consequently, Yutu says, they act “as the future has arrived, though it is only the present insisting on its novelty” (181). Future visions are also shaped in the experienced past, like the tragic story of Yutu’s parents when, seven years earlier, they went hunting for caribou in early spring. The days were calm and cold, suggesting optimal and safe weather, as it had always been. They went hunting with their friends, and an unseasonal storm arrived. Their friends managed to return to the village a few days later, but Yutu’s parents never did.

In this sense, the novel positions itself in the broad literary field of speculative fiction, however, not in a strictly futuristic or cli-fi register. Climate change on the one hand involves how weather patterns affect the behaviour of the Arctic communities (as seen, for example, in the resulting animal scarcity). On the other hand, human behaviours that pollute and destroy the environment becomes globally damaging. Nevertheless, the novel occupies a liminal place, emphasizing the typical 'what if' in a world shaped by extreme environmental processes, yet speculating on a possible hopeful vision. The ways in which Fountain renders environmental speculations start from an observational and scientific basis of the phenomena of melting ice to then depicting "cryo-human" (Nuttall 2019: 71-91) relations, which become even more objective and accurate in a comparison with *Beyond the Frozen Horizon*. As Mark Nuttall (2019) states, the Arctic is "contending with uncertain forms of melt but that nonetheless remains fundamentally icy, and in that state retains all the rights, responsibilities, and knowledges of 'cryohuman' relations – ones that should take precedence over experiences of economic claims" (cit. in Ruiz et al. 2024: 5). In this sense, a new kind of cryosphere is emerging among the uncertain horizons of melting ice. *Melt* looks at the consequences of an end to reliable cycles of freezing and thawing of permafrost, and the future of the cryosphere that is progressively shaped by human activity and conduct. The consequences predominantly harm Indigenous peoples throughout the Arctic and across the material complexity of icy environments (Ruiz et al. 2024: 7). The novel stresses sudden changes in temperature and storm conditions, in which "rhythms are becoming unpredictable. There shouldn't be a storm now. It shouldn't blow in this suddenly, and with such force" (9), as narrated in a flashback sequence through the perspective of Yutu's parents while out hunting just before facing their deaths. The irregularity of storms and blizzards outside the expected seasonal calendar points to the disruption of traditional ecological knowledge and so,

consequently, human expectations. Yet hope can be found in the simplest things: “As we race through the tundra”, Bea thinks, “the flicker of hope grows” (111). The stability and the quietness of the snow-covered tundra, compared to the unstable frozen sea-ice strengthens the young girl’s will of surviving, and the hope she now perceives is the main driver of action. Bea is a visitor in the Arctic, thus representing the perspective of an outsider. There is a meaningful difference in hope and willingness to act as it is awakened in a temporary visitor and in Indigenous (and settler) characters who will remain in the Arctic. Yet the purpose of such a diversified hopeful vision is that of caring and dissemination globally. Both *Melt* and *Beyond the Frozen Horizon* portray how young people visit the Arctic and are changed and shaped by it, for then bringing their newfound knowledge back with them (even if in both novels their return to England is not narrated).

The potentiality of hope in shaping willingness to act has been recently studied. As Lazarus (1999) states, hope is a “galvanizer of action” (666) and can lead readers to interpret pathways to solving problems, seek more challenging goals, and negotiate their agency (Vaughn and Massey 2021). Scholars who have studied hope in children have defined this construct as a sense of optimism for the future (Maholmes 2014). As Lucas et al. (2019) explain, hope is characterized as “a human strength that involves a person’s capacity to (a) clearly conceptualize goals (goals thinking), (b) create ways or strategies to achieve those goals (pathways thinking), and (c) initiate and sustain motivation for using those strategies (agency thinking) to effectively obtain what a person is looking for” (200). Hope is thus not solely an individual, cognitive pursuit. Rather, it is both something that individuals have some control to create and something that is nurtured within community (Massey et al. 2022: 575). Thus, the novel *Melts* confirms, in a sense, this recent debate, and emphasizes that hope for the future is found in “ably reflecting the situations in

which we live” (Smits and Naqvi 2014: 211), and finally actively pursue a life away from “culturally devastating events” (Ibid.: 133) with courage and practical reasoning.

In *Melt*, the voices and experiences of diverse peoples are used to express a group's history, present experiences, and cast a vision for their future (Turner 2016). Nevertheless, while a stance of hope means creating community (Massey et al. 2022: 576), the disruptive forces of climate change may question hope as a means of survival, especially for children who live on the margins of a society, as Yutu and (temporarily) Bea. Hope in this manner implies pursuing a pathway that is possibly dangerous (Lear 2006), because it tackles deep moral and emotional stressors. In the novel, hope is put to the test when the two children explore early seasonal warmth and anomalous melting events of sea ice “even though it’s early spring” (118), in a mid-season that should still be characterized by the persistence of winter temperatures and solid layers of compact ice. The novel amplifies the ecological dimension through Yutu informing Bea of the cascading effects of warming permafrost and the collapse of local infrastructure: “Every year the temperature rises and the permafrost melts a little more. Now the houses in our village are beginning to collapse, including Grandma’s. There is nothing solid to support them anymore.’ ‘First the animals start to disappear, then the sea ice, now our home” (200-201). *Melt* thus focuses on permafrost as the foundation of human dwelling; village houses are constructed on stilts to prevent them from sinking into thawing ground, illustrating the material dependency on frozen soil of human settlements that “are built on stilts, otherwise the warmth inside would melt the solid permafrost foundations and the houses would sink” (11). Permafrost is thus depicted as a tangible support system in which its erosion signals broader environmental vulnerability. Therefore, unlike *Beyond the Frozen Horizon*, which foregrounds

industrial intrusion, *Melt* underscores the impact of extractivism on the Arctic and on the modes of Indigenous survivance.

Most humans on this planet neither inhabit nor live in the cryosphere of the volatile ecosystems of the poles, or at higher latitudes (Ruiz et al. 2024: 7). Yutu is aware of this when he says that people sometimes struggle to understand Indigenous lifestyle and traditions, and explains to Bea that it is the land that shapes them, not the other way around. The land, the climate, the animals share the land with the dwellers of the Arctic, “there is a balance” (142) connecting humans and non-humans to their environment. *Melt* illustrates that ice and the cryosphere are about more than ‘cold matter’, and it does so by claiming that ice has a social status – as seen in the quotes above –, since it sustains social conditions that yield a range of human and nonhuman responses. Among the variety of consequences derived from anthropogenic climate change, one we are very much aware of is atmospheric and oceanic warming, with a notable amplification and urgency for Indigenous peoples who inhabit the Arctic. During her stay in the Arctic, Bea becomes more acquainted with these phenomena, with hope representing a contrast to negativity that may rage. She finally replies to Yutu that he has shown her another way of looking at what is before her eyes: “The simplest things, like enjoying silence, noticing the weather, the feel of the ground beneath my feet. Things I never even noticed before, because the bonds which connect people and nature are beginning to fray. Something precious beyond imagining, is coming apart. But it’s not too late to change that. Not yet” (201). Thus, hope ends the story. It is not a mere feeling anymore. Hope acts as a powerful catalyst for action in young readers, inspiring them to envision a better future. Additionally, hope involves goal-directed energy and planning to overcome obstacles, highlighting that challenges can fuel hopeful motivation (Snyder 2002). Thus, it is very often through challenging scenarios that humans primarily build hopeful visions.

3.3.2 Cultural Dimensions of Snow and Ice

Ice is a source of cultural praxis for Indigenous communities across the Arctic (Ruiz et al. 2024: 14). *Melt* highlights the cultural significance of the melting cryosphere, presenting ice as a register of the passage of time; not only its duration when threatened by climate change, but also the time it takes for different layers of ice to melt in different seasons. In this sense, the young protagonists observe how the rapidly changing climate accelerates certain seasonal phases, thus affecting daily and cultural expectations in the process. In doing so, *Melt* links environmental loss and related scientific observations to traditional ecological knowledge: “The weather is changing, and centuries of knowledge cannot keep up (9). Landmarks in the landscape that are imprinted in Indigenous individuals’ memories, which their ancestors, in turn, memorised, have disappeared.

The role of scientists in managing resources is emphasised through Bea’s father, a geologist: “Every oil company wants to get their hands on him. He finds the biggest reservoirs and the easiest extraction routes” (32). Nevertheless, Bea’s dad is the one who tries to stop the excavation plans after recognising the risks linked to the extraction process: “Oil can’t be extracted without risk to the public. [...] Sea ice and storms make the risk of a large spill likely, which would be catastrophic for the region. [...] They [the company owners] hope Dad will reconsider his decision. Dad replies to say he will never support drilling in the Arctic” (188). While this is a rather rosy vision of the relationship between scientists who work for oil companies and the companies themselves,⁷⁴ science, addressed through the figures of both scientists and

⁷⁴ This vision implies that the companies, if properly informed, will do the right thing against their interests, which they simply cannot within a capitalist system. Oil companies that first started studying the risks of climate change are an example of their choices: they know the risks well. As Malm (2021) states, the problem of how fossil investments is done is that, once done, it cannot be ‘undone’.

local knowledge, informs ethical and practical decisions about environmental preservation in the novel. Indeed, the narrator reflects: "I think of Yutu. About how his village is already suffering [from climate change]. [...] Now the Arctic is one of the only wildernesses we have left. We can destroy that too, or we can say enough is enough" (195). The novel also presents traditional ways of seeing the world through the blending of ecological knowledge with animistic interpretations: "Maybe the Sea Mother is angry. Perhaps we need to make her happy again. Petur says it's because it's too warm in our bay now. Climate change is why the seals go to the bay further north" (25). Yutu's grandmother tells him stories all the time: about the Sea Goddess, the gull-maiden, the sightless boy and the whale, and many others (38). These stories are now a part of him, that are the same stories every child hears even before they understand the words, Yutu explains. This animistic dimension of physical events has been deepened by Bénédicte Meillon and Lanham Boulder (2022) developed the idea of "liminal realism", that is, a narrative mode that situates characters and readers between human and other-than-human worlds, scientific and mythical, the material and spiritual. The landscape is thus not a liminal space in which transformation is possible. These theories are especially useful for YA or coming-of-age narratives: maturation often involves traversing physical, moral, and spiritual meshes. Nature itself becomes the ritual space in which ecological tensions structure local understandings of current environmental issues through old traditions and spiritualism. This intertwining of spiritual and environmental transformation also aligns with Haraway's insistence that becoming is always co-becoming (2008: 244) with the more-than-human world. Based on this understanding, spiritual growth and environmental awareness are inseparable, as both emerge through interactions that blur the boundaries between self and other, human and non-human. Haraway invites to rethink agency and responsibility by recognizing that transformation occurs

within these entangled relationships, highlighting that any meaningful change is fundamentally collaborative and multispecies in nature. This perspective is illustrated in the novel not just by the observation of ice itself, but by it as a material agent that shapes landscapes and communities' living conditions, showing the way for a deeper environmental engagement of all entities embedded within ecological entanglements.

Similarly, floating ice sheets and chunks act as material agents, shaping movement and survival. An example of this is the scene in which Yutu, crossing the ice for hunting. At first, Yutu emphasizes the beauty of the frozen waters he is supposed to cross over for hunting, describing them through the light of the sun shining on the sea ice of the bay and, "apart from the gentle creaking of the sea ice, and the swish of the wind on the tundra, it is completely silent" (52-53). Action occurs immediately after observation and personal evaluation, when Yutu uses the harpoon "like a probe, testing the ice for a hollow spot or a hole. [...] Most people wouldn't know where the land stops and the sea ice begins, but I know. I can read the different patterns in the ice, the shapes and textures" (54). Thus, Indigenous ability to 'read' the ice parallels scientific training from embodied and sensory experience. In this sense, the novel underscores the precariousness of traversing thin ice for the people living in the Arctic. Nevertheless, the new status of the weakened cryosphere is a constant challenge even for the most expert local dwellers; indeed, a few moments later, when Yutu steps onto unstable sea ice (61), his thoughts record the physical process with precision overcoming fear. He suddenly hears "a long, high-pitched, creaking sound" and the ice sheet beneath his feet feeling "suddenly soft" (Ibid.). After that, he immediately looks down and sees water slowly rising around the edges of his boots, realizing that there was nothing solid beneath him, "only freezing seawater" together with "a ridge of lumpy snow-covered ice" (Ibid.) that impede any movement. The fact that the only noise is an eerie

crackling of ice out of season makes the reader understand instantly that Yutu is practicing his observational skills, like when he remembers his parents by reflecting on the fact that they “fell through the ice. Many people die that way” (95), admitting that dwelling in the Arctic land is a real act of survival nowadays. Finally, when the sea-ice collapses under his feet, the transformation of solid ground into a potential threat is confirmed. Despite such a frenetic survival description, the reader learns alongside the character, through sensory and emotional involvement.

Later in the novel, when Bea and Yutu meet and explore the surrounding areas in an attempt of finding their way home, they follow the gentle shore of the Arctic Ocean. Usually imagined as still and frozen, the ocean appears here as an active system that undulates, breathes, and responds to wind and temperature. It is therefore not surprising that the narrative turns to ecological change, and that the ocean becomes the main tool for measuring the crisis. The close attention to detail is deeply educational, for example when Yutu explains that the ice “tells” him the direction to take, and that “if the wind blows from the west, it makes these peaks in the ice. So they always point east” (140). This is a moment of traditional ecological knowledge produces essential knowledge that may be comparable to that produced by science. These reflections mirror the authorial concerns in linking frozen ground to both human settlement and ecological integrity, situating instability within the broader context of anthropogenic intervention.

Finally, *Melt* provides equally detailed depictions of ice sculpted by environmental forces, like the wind shaping the ice into ridges pointing in different directions depending on its force and orientation (150), and floating fragments form a “puzzle of white pieces” drifting across deep blue waters (174). Taken together, all elements of Arctic cryosphere presented in the novel introduce readers to ice as patterned, layered, and constantly reshaped by wind,

temperature, and other weather phenomena. Through this lens, ice becomes a material that is deeply affected by anthropogenic change and relational, particularly as it is tied to the waning ability of the planet to maintain a steady temperature range and to social interventions and support (Gabrys 2020)⁷⁵. This is also the prominent reason why there is the need of a “postmaterial” approach (Ruiz et al. 2024: 7) that argues that the humanities are central to material sciences. Materials like ice need to be understood in the ways they are profiled according to their social relevance, dependencies, and use (Ibid.); in this process, the attention promoted from the environmental humanities toward the human and nonhuman relations requires further theorization, including the field of environmental literature intended for a young audience.

3.3.3 New Links between Ecocriticism and YA Literature

YA fiction occupies a peculiar position between children’s and adult literature, and the boundaries between the three are in fact quite flexible (Adami 2019: 127). According to Perry Nodelman (2008), young-adult literature “seems to involve an intersection of qualities of children’s literature with ideas about adolescent readers and various types of adult fiction” (97), but it is still part of the larger category of children’s literature. However, while children’s literature usually focuses on the child’s personal development, in YA fiction “the teenage protagonist must face social and political problems as he or she grows up” (Adami 2019: 128). This illustrates how YA literature has developed from the *Bildungsroman*. However, Roberta Seelinger Trites (2000) emphasizes the need to differentiate between the *Bildungsroman* and the *Entwicklungsroman*: in the former, the protagonist transitions into adulthood by the end of the story,

⁷⁵ Gabrys, J. (2020). “Plastiglomerates and Speculative Geologies”. URL: <https://www.jennifergabrys.net/2014/10/plastiglomerates-speculative-geologies/> (accessed 31 December 2025).

while in the latter, this transition remains incomplete (2000: 10). In YA literature, protagonists' emotional struggles are frequently intertwined with broader political, social and, I add, issues. These connections allow the narrative to explore societal concerns through the lens of adolescent identity formation, and as climate change is an ongoing process, various forms of transition are left uncompleted.

In *The Necessity of Young Adult Fiction: The Literary Agenda* (2023), Deborah Lindsay Williams emphasizes the cultural significance, pedagogical value, and sociopolitical potential of YA fiction. Williams challenges the dismissive attitudes often held by academics toward children's and YA literature, noting that such texts are foundational to the development of lifelong readers and, by extension, writers. Despite the proliferation of scholarly work on and institutional recognition of children's literature, YA fiction is frequently marginalized in academic discourse, yet "crucial to the development of adolescent agency" (Gruner 2022: 2). YA literature offers "arenas of thought" (Williams 2023: 12) for grappling with identity, community, and planetary crisis; it does not merely reflect adolescent experience but actively contributes to the formation of ethical, engaged, and imaginative future (eco-)citizens.

YA speculative fiction constitutes a particularly effective medium for narrating climate change, as it facilitates the imaginative projection of future scenarios through 'what-if' narratives that transcend conventional boundaries of plausibility. By centring its narratives on adolescents navigating the consequences of current ecological trajectories, this micro-genre engages directly with those most likely to be affected by environmental transformations, the next adults. Moreover, given that its intended audience occupies a liminal and formative developmental stage, "ecologically oriented YA speculative fiction is a powerful tool for addressing the challenges of the future and promoting awareness of the current ecological crisis, thereby contributing to shape public

discussions about our relationship with the environment” (Adami 2019: 132). Thus, YA econovels often aim to offer an opportunity to foster a sense of collective environmental responsibility in future citizens, serving as a catalyst for applying knowledge in real-world contexts and engaging actively in discussions on environmental justice. This is surely the way literary scholars and critics want to imagine econovels to work; nevertheless, although there is a growing body of research supporting the idea that YA ecofiction can foster a sense of collective environmental responsibility, this field still needs contributions. Two recent publications are noteworthy, however. Vanhove and De Backer (2025) have recently examined how YA novels portray adolescents’ responses to environmental crises. Their research highlights how these narratives shape young readers’ sense of self and collective agency, suggesting that such literature can empower youth to engage with environmental issues. Moreover, Firinci Orman, in 2024, discussed how YA literature plays a role in addressing the climate crisis and socio-political challenges. The scholar emphasizes the importance of lived experiences in developing eco-literacy, indicating that YA eco-fiction can be a tool for fostering environmental awareness and action among young readers.

In considering the vast range of possibilities and imaginaries, not only is there need for new and wider discourses on ice through an ecocritical lens, but it is also necessary to further develop some concepts in supporting and embracing multiple visions and the definition of meanings in conducting such an analysis. A focus on matter provides openings for research in YA literature, as it forces us as ecocritics to rethink adult–child relationalities and to reimagine critical interpretation with an attention to materialities that exceed the representational paradigm (García-González and Deszcz-Tryhubczak 2020: 45). In 2016, Maria Nikolajeva highlighted the ‘material turn’ as a key emerging trend in the field of children’s literature studies, focusing mainly on “the

physicality of children's bodies and their environments" (132). Although many studies claim a posthumanist perspective, they often limit their consideration of the non-human to animals, plants, toys, and machines (García-González and Deszcz-Tryhubczak 2020: 47). Only occasionally do they acknowledge other forms of non-human entities, such as ice, rivers, atmospheres, light, and various material assemblages. These natural elements, although ephemeral, can lead to interesting metaphors of growth, and can effectively provoke reflections on the coming-of-age process usually narrated in YA fiction. Developmentalism, for instance, is an important perspective in *Posthumanism in Young Adult Fiction: Finding Humanity in a Posthuman World* (2019), edited by Anita Tarr and Donna R. White. Although the editors and the contributors draw on posthumanism and "concentrate on anti-anthropocentrism, democratization of power and body enhancements, hybridity, melting of borders between human and nonhuman, multiplicity, and the body as networking with the environment" (xviii), they endorse the positioning of adolescence as a special stage in human life when people "are beginning to consider consequences, meaning, and purpose" or "are especially concerned with body issues" (xvi) without much reflection on how these processes occur regardless of age as a result of our affecting and being affected by other people and the non-human world.

To fill this attitudinal gap in research approaches, together with the conceptual theory of diffraction as a mode of research practice (see Section 2.1.2), the concept of 'response-ability' (which is a play on words that comes from the more common term 'responsibility') can also be of relevance. Response-ability constitutes a significant concept within the new materialist discourse, underscoring the ethical imperatives inherent in knowledge production. As articulated by Barad (2007) and Haraway (2008), 'response-ability' refers to a distributed capacity for response that encompasses both human and non-human agencies (Haraway 2008: 88). Barad emphasizes that

“we (but not only ‘we humans’) are always already responsible to the others with whom or which we are entangled, not through conscious intent but through the various ontological entanglements that materiality entails” (2007: 393). This conceptualisation reorients ethical inquiry from normative frameworks of justice toward a situated ethics of responsiveness, wherein the emphasis lies not on abstract principles but on the material and affective conditions of relationality. Closely aligned with emerging discourses on the ethics of care, response-ability foregrounds the question of “how to respond” rather than “what is just,” extending ethical consideration to the material world, non-human entities, the environment, and practices of self- and other-care (de la Bellacasa 2017: 135). Cultivating this capacity necessitates being attuned to affective and material dimensions of interaction, privileging embodied sensitivity over discursive reasoning. Response-ability consequently offers a valuable framework for examining how literature may function as a medium of care, and how new materialist methodologies, through their openness to the entangled dynamics of cognition and affect, illuminate the relationship between fictional engagement and the cultivation of empathy, especially in a time of climate turmoil.

REFERENCE LIST

Adami, V. (2019). “The Pedagogical Value of Young-Adult Speculative Fiction: Teaching Environmental Justice through Julie Bertagna’s *Exodus*”. In *Pólemos*, 13(1), 127-147. URL: <https://doi.org/10.1515/pol-2019-0007> (accessed 1 May 2025).

Ahmed, S., Stacey, J. (2001). *Thinking through skin*. London: Routledge.

Authors4Oceans, “Authors and artists unite to help oceans recover”, URL: <https://www.authors4oceans.org/> (accessed 5 April 2025).

Authors4Oceans.org, “Our seas are in crisis”. URL: <https://www.authors4oceans.org/our-mission-1> (accessed 29 December 2025).

Attebery, B. (2002). *Decoding gender in science fiction*. New York: Routledge.

Atwood, M. (2003). *Oryx and Crake*. London: Bloomsbury.

Barad, K. M. (2007). *Meeting the universe halfway: quantum physics and the entanglement of matter and meaning*. Durham, N.C. London: Duke University Press.

Bordignon, I. (2024). "The Colors of Vanishing Ice: Mapping the Arctic in Contemporary Young Adult Literature". In *ISLE (Interdisciplinary Studies in Literature and Environment)*, isae078, 1-22. URL: <https://doi.org/10.1093/isle/isae078> (accessed 5 April 2025).

Bradford, C. (2007). *Unsettling narratives: postcolonial readings of children's literature*. Waterloo, Ontario: Wilfrid Laurier University Press.

Buell, L. (1995). *The Environmental Imagination: Thoreau, Nature Writing and the Formation of American Culture*. Cambridge, Massachusetts: Harvard University Press.

Carroll, S. (2015). *An Empire of Air and Water: Uncolonizable Space in the British Imagination, 1750-1850*. Philadelphia: University of Pennsylvania Press.

Chartier, D. (2018). *What is the imagined North: ethical principles*. Harstad, Norway. Arctic Arts Summit.

ClimateFiction.org, "Ele Fountain talks about MG novel Melt". URL: <https://climate-fiction.org/2021/05/11/ele-fountain-talks-about-mg-novel-melt/> (accessed 30 June 2025).

Cosgrove, D. E. (1999). *Mappings*. London: Reaktion.

De la Bellacasa, M. P. (2017). *Matters of Care: Speculative Ethics in More Than Human Worlds*. Minneapolis: University of Minnesota Press.

EG Conference, "Tim Linhart". URL: <https://www.egconf.com/presenters/tim-linhart> (accessed 26 April 2025).

Ele Fountain's official website, URL: <https://elefountainpen.com/about-me-2/> (accessed 30 June 2025).

Firinci Orman, T. (2024). "Exploring youth eco-literacy through lived experiences. 'When you purchase a pair of jeans, you bear the burden of child labor in South Asia'". In *The Journal of Environmental Education*, 55(5), 363-377. URL: <https://doi.org/10.1080/00958964.2024.2345354> (accessed 24 January 2026).

Fountain, E. (2021). *Melt*. London: Pushkin Press.

- Gabrys, J. (2020). "Plastiglomerates and Speculative Geologies". URL: <https://www.jennifergabrys.net/2014/10/plastiglomerates-speculative-geologies/> (accessed 31 December 2025).
- García-González, M., Deszcz-Tryhubczak, J. (2020). "Research in Action. New Materialist Openings to Children's Literature Studies". In *International Research in Children's Literature*, 13(1), 45-60. URL: <https://doi.org/10.3366/ircl.2020.0327> (accessed 30 April 2025).
- Ghosh, A. (2016). *The great derangement: climate change and the unthinkable*. London and Chicago: The University of Chicago Press.
- Goga, N., Kümmerling-Meibauer, B. (2017). *Maps and Mapping in Children's Literature. Landscapes, seascapes and cityscapes*. John Benjamins Publishing Company.
- Gruner, E. R. (2022). "Children's Literature at Fifty: Pedagogy Under the Covers". In *Children's literature*, 50(1), Baltimore: Johns Hopkins University Press, 63-72.
- Hansson, H., Norberg, C. 2009. "Revisioning the value of cold". In *Cold matters: cultural perceptions of snow, ice and cold*. Umeå: Umeå University and the Royal Skyttean Society.
- Haraway, D. J. (2008). *When Species Meet*. Minneapolis: University of Minnesota Press.
- Herman, D. (2007). "Storytelling and the Science of Mind". In *Narrative*, 15(3), 306-334. Ohio State University.
- Hormio, S. (2023). "Collective responsibility for climate change". In *Wires climate change*, 14(4). URL: <https://doi.org/10.1002/wcc.830> (accessed 2 February 2026).
- Huggan, G., Tiffin, H. (2015). *Postcolonial ecocriticism: literature, animals, environment* (2nd Edition). Abingdon, Oxon: Routledge.
- James, L. (2021) "Ele Fountain talks about MG novel Melt", In *Climate Fiction Writers League*. URL: <https://climate-fiction.org/2021/05/11/ele-fountaintalks-about-mg-novel-melt/> (accessed 30 December 2025).
- Kelman, I. (2017). *Arcticness: Power and voice from the North*. London: UCL Press.
- Lathey, G. (2006). "The translator revealed: Didacticism, cultural mediation and visions of the child reader in translators' prefaces". In Van Coillie, J. and Verschueren, W. P. (Eds), *Children's Literature in Translation: Challenges and Strategies*, London: Routledge, 1-18.

Lazarus, R. S. (1999). "Hope: An Emotion and a Vital Coping Resource Against Despair". In *Social Research*, 66(2), 653-678.

Lear, J. (2006). *Radical hope: ethics in the face of cultural devastation*. Cambridge: Harvard University Press.

Lehtonen, S. (2019). "Touring the magical North: Borealism and the Indigenous Sámi in contemporary English-language children's fantasy literature". In *European Journal of Cultural Studies*, 22(3), 327-344. URL: <https://doi.org/10.1177/1367549417722091>(accessed 26 December 2025).

Lindgren Leavenworth, M. (2020). "Orientation and Disorientation in Realistic and Speculative Young Adult Fiction". In Heidi Hansson, et al. (Eds), *The Arctic in Literature for Children and Young Adults*, New York and London: Routledge, 217-229.

Lindgren Leavenworth, M. (2024). *The imagined Arctic in speculative fiction*. New York: Routledge.

Lopez, B. (1986). *Arctic dreams. Imagination and desire in a northern landscape*. London: Macmillan.

Lucas, C. V. et al. (2019). "Bibliotherapy as a hope-building tool in educational settings". In *Journal of Poetry Therapy*, 32(4), 199-213. URL: <https://doi.org/10.1080/08893675.2019.1639883> (accessed 2 January 2026).

Maholmes, V. (2014). *Fostering resilience and well-being in children and families in poverty: Why hope still matters*. Oxford: Oxford University Press.

Malm, A. (2021). *How to blow up a pipeline: learning to fight in a world on fire*. London: Verso.

Massey, D. D., et al. (2022). "Fostering Hope with Children's Literature". In *The Reading Teacher*, 75(5), 575-582.

Masterclass.com, "Writing Speculative Fiction", Margaret Atwood [video]. URL: <https://www.masterclass.com/classes/margaret-atwood-teaches-creative-writing/chapters/speculative-fiction#> (accessed 22 December 2025).

Meillon, B., Boulder, L. (2022). *Ecopoetics of Reenchantment: Liminal Realism and Poetic Echoes of the Earth*. New York and London: Lexington Books.

Nicola Penfold's official website, URL: <https://nicolapenfold.com/about/> (accessed 30 June 2025).

Nikolajeva, M. (2016). "Recent Trends in Children's Literature Research: Return to the Body". In *International Research in Children's Literature*, 9(2), 132-45.

Nodelman, P. (2008). *The Hidden Adult: Defining Children's Literature*. Baltimore: The Johns Hopkins University Press, 97.

Nuttall, M. (2019) "Icy, Watery, Liquescent. Sensing and Feeling Climate Change on North-West Greenland's Coast". In *Journal of Northern Studies*, 13(2), 71-91.

Oziewicz, M. (2017). "Speculative fiction". In *Oxford research encyclopedia of literature*, URL: <https://doi.org/10.1093/acrefore/9780190201098.013.78> (accessed 25 May 2025).

Penfold, N. (2022). *Beyond the frozen horizon*. London: Little Tiger Press Group.

ReadingZone.com, "A hopeful future for the planet". URL: <https://www.readingzone.com/news/a-hopeful-future-for-the-planet/> (accessed 30 June 2025).

Robinson, M. F. (2006). *The coldest crucible. Arctic exploration and American culture*. Chicago: University of Chicago Press.

Ruiz, R., et al. (2024). "Introduction: a cold humanities after ice". In Rafico Ruiz et al. (Eds), *After Ice: Cold Humanities for a Warming Planet*, Vancouver and Toronto: University of British Columbia Press, 3-25.

Ryall, A. et al. (2010). *Arctic discourses*. Newcastle upon Tyne: Cambridge Scholars.

Ryan, M.-L. (2003). "Cognitive maps and the construction of narrative space". In David Herman (Ed), *Narrative Theory and Cognitive Sciences*, Stanford CA: CSLI, 214-241.

Shelley, M. W. (2014). *Frankenstein, or The modern Prometheus* [1818]. Minneapolis: First Avenue Editions.

Smits, H., Naqvi, R. (2014). *Framing peace: thinking about and enacting curriculum as radical hope*. Peter Lang Incorporated: International Academic Publishers.

Snyder, C. R. (2002). "Hope theory: Rainbows in the mind". In *Psychological Inquiry*, 13(4), 249-275. URL: https://psycnet.apa.org/doi/10.1207/S15327965PLI1304_01 (accessed 3 February 2026).

Springgay, S. S. (2007). "An Intimate Distance: Youth Interrogations of Intercorporeal Cartography as Visual Narrative Text". In *Visual Arts Research*, 33(2), 38-48.

Stephens, J., McCallum, R. (1998). *Retelling Stories, Framing Culture: Traditional Story and Metanarratives in Children's Literature*. New York: Garland.

Tarr, A., White, D. R. (2019). *Posthumanism in Young Adult Fiction: Finding Humanity in a Posthuman World*. Jackson: University Press of Mississippi.

Trites, R. S. (2000). *Disturbing the universe: power and repression in adolescent literature*. Iowa City: University of Iowa Press.

Turner, J. D. (2016). "Tales and testimonies: Viewpoints on diverse literature from Duncan Tonatiuh and Violet J. Harris". In *Language Arts*, 94(2), 124.

Vanhove, J., De Backer, S. (2025). "Do I Dare to Leave the Universe Alone? Environmental Crisis, Narrative Identity, and Collective Agency in Contemporary Young Adult Fiction". In *Humanities* (Basel), 14(3), 59.

Vaughn, M., Massey, D. D. (2021). *Teaching with children's literature: theory to practice*. New York: Guilford Press.

Verne, J. (2005). *The Adventures of Captain Hatteras* [1866]. Oxford: Oxford University Press.

Williams, D. L. (2023). *The Necessity of Young Adult Fiction: The Literary Agenda*. Oxford: Oxford University Press. URL: <https://doi.org/10.1093/oso/9780192848970.002.0003> (accessed 1 May 2025).

Whyte, K. P. (2018). "Indigenous science (fiction) for the Anthropocene: Ancestral dystopias and fantasies of climate change crises". In *Environment and Planning. E, Nature and Space* 1(4), 224-242.

CHAPTER 4



***Re-imagining Arctic Futures:
Ambivalence, Hope, and the Uncanny
in Maja Lunde's Drømmen om et tre***

4 RE-IMAGINING ARCTIC FUTURES: AMBIVALENCE, HOPE, AND THE UNCANNY IN MAJA LUNDE'S *DRØMMEN OM ET TRE*

Because Svalbard was always in movement.
From a distance the mountains appeared to be
stable, enormous formations of stone, partly
covered with silent ice. But nothing stayed still.

(Lunde 2024: 60-61)

This chapter focuses on Norwegian writer Maja Lunde's *Drømmen om et tre* (*The Dream of a Tree*) as a critical eco-dystopian climate fiction that imagines Arctic futures and addresses issues of ambivalence, hope, and the uncanny while foregrounding the dynamic relationships between humans and the fragile Arctic environment. The novel is the last volume in Lunde's "climate quartet", and the first in this series in which she employs a young adult protagonist. In a discussion concerning the definition of YA literature, Svein Slettan (2020) notes that the field comprises diverse works across various genres, typically authored with an age-specific audience in mind. Problematising this age-based delimitation, Slettan proposes a more inclusive definition: literature that "deals with young adults, is suitable for young adults, or is read by young adults" (13). Adopting such a broad definition, *Drømmen om et tre* may be classified as YA literature, as it centres upon the life of the adolescent Tommy. The plot follows a group of children, stranded on the specific land mass that holds the Global Seed Vault. Lunde centers Tommy's memories to evoke the landscape and inhabitants, alongside the hardships they endure in an environment where half the year is spent in darkness, and landslides and avalanches are a constant threat. The people of Svalbard are depicted as proud of their self-sufficiency

and the community they have established. They have developed expertise in repairing and recycling all materials, in relying on coal, wind, and solar power, and manage both wildlife and extensive greenhouse sustainably for subsistence.

The first section of this chapter discusses how the novel simultaneously aligns and clashes with both ecocriticism and dystopia. Climate fiction is established as a literary genre addressing climate change and natural disasters in general, and anthropogenic climate change in particular. The role of ecocriticism in reading climate fiction is emphasised. Ecocriticism has a long history of interrogating literature and its representation of environments, but its engagement with climate fiction is progressively growing. The dominant tendency in ecocriticism tends to narrow focus to individual perspectives and downplay collective social forces. Approaches to climate fiction need a more sophisticated stance that takes into account the reciprocated relations between humans and the environment, and the reality of climate change as a lived cultural event. In response to this complexity, a comprehensive interdisciplinary ecocritical interpretation that complements a classical theoretical framework with other-academic approaches, i.e. cryology, is recommended to illuminate the multiple layers of stories. Thereafter, this section investigates how current YA dystopias, including critical dystopias, combine dark visions with unceasing optimism. Unlike classical dystopias, critical dystopias not only present oppressive societies that offer little chance of change in the short term, but also allow their plots to become utopian, through open and hopeful endings and a suggestion that an oppressive situation can be resisted or resolved. In eco-dystopian novels, this hope is bound up with nature, which becomes a place of freedom, self-realization, and the possibility for renewal for young protagonists. Such a framing can be identified in Lunde's novel, which also balances dystopian urgency with something akin to an ethics of resilience.

Section 4.2 considers the ecological and embodied perspective in the novel's central character, Tommy, as the "red thread"⁷⁶ that ties together knowledge and ethics. From the very beginning of the novel, his strong affinity with natural Arctic elements is evident; when Tommy encounters a washed-up tree, his relationship to natural systems emerges clearly. Yet Tommy is pragmatic and reflective, characterised by an interest in knowing. His pragmatism rests on a clear, ecocentric worldview that counters human efforts to indiscriminately alter wilderness. This multifaceted characterization establishes Tommy as a figure through whom readers may examine several ethical choices, all encapsulated in the metaphors of trees and seeds, symbolising growth and hope. The Svalbard Global Seed Vault serves as an icon of sustainability and ecological futures in the novel. Tommy's grandmother, Louise, has a pivotal role in Tommy's overall ecological vision. Her thoughts on chaos, the necessity of survival, shame, and the footprint of humanity offer ethical underpinnings to Tommy's quest for responsibility to the seed vault and Svalbard itself. Through Louise's mentorship, the novel foregrounds the inter-generational transmission of values and knowledge as critical for sustaining hope in the face of environmental disaster.

In the last section of this chapter, the focus is on the environmental elements of Svalbard, presented as an uncanny, ambiguous space of loneliness, through the lenses of the sociological theories of Bruno Latour. The novel renders familiar landscapes suddenly threatening or eerie for Tommy. Arctic nature becomes a hybrid "quasi-object", in which the uncanny constitutes an important narrative device that Lunde uses to convey climate instability. In this context, a 'blank place' takes on a more positive meaning than that of an

⁷⁶ The Norwegian expression "den røde tråden" ("the red thread") corresponds to the English "common thread", but in one quotation (see Section 4.2.1) there is reference to a literal red thread that is then also used metaphorically, meaning something (or someone) that holds various elements together.

empty area; it rather refers to spaces still suffering from environmental loss but capable of being reimagined. Additionally, the concept of 'heterotopias', that is, places that are physically or socially distinct from the broader society and that allow for alternative social structures, effectively illuminates Tommy's isolation as a site that might contain innovation and change rather than hopeless despair alone. In this sense, Tommy's ecological values reveal the prioritization of natural integrity relative to human selfishness, reflecting Lawrence Buell's principles of environmental literature: nature as a dynamic presence, ethics as the call for human agency, and the recognition of the environment as process-driven rather than static.

Finally, the analysis focuses on the ending of the novel which positions *Drømmen om et tre* as a contemporary hopeful dystopia. In fact, while the novel depicts a relentless struggle of climatic and social injustice with brutal realism, the ending holds the belief that kindness is the key for resilience and adaptation. The rich and poetic accounts of Arctic light and landscape beauty contribute (and provoke) an intellectual wonder. The novel's open ending invites readers to envision Arctic futures worlds wherein ecological awareness is the main tool in addressing climate change. Through its different sections, this chapter also suggests that *Drømmen om et tre* is a novel that provides not just a caution about ecological devastation, but an ethical, emotional structure from which hope grows progressively, even in controversial and contradictory representations and emotions.

4.1 "CRITICAL DYSTOPIAS" AND HOPEFUL FUTURES IN YA CLIMATE FICTION

Maja Lunde's climate fiction quartet started with *Bienes historie* (*The History of Bees*, 2015), in which readers meet Tao, one of the young protagonists, who, together with Tommy, appears in the last instalment, *Drømmen om et tre* (*The*

Dream of a Tree, 2022). Serving as a bridge between the two English novels analysed in Chapter 3 and the two Indigenous novels at focus in Chapter 5, this fourth chapter is dedicated to *Drømmen om et tre* alone. The story takes place in a windswept Svalbard, where mysterious viruses have wiped out most of the population, storms have torn away the wind turbines and the houses stand like empty shells, patched with driftwood. Nevertheless, although the bleak scenarios may invoke feelings of climate grief or anxiety, it is important to note that the story ultimately ends on a moment of hope.

Central to environmental literature are questions about how humans should view themselves. Children and adolescent characters in Lunde's are intricately linked to symbolic motifs that connect them with notions of growth and hope. This association helps transitioning Lunde's novel throughout the reading from a dystopian narrative towards a more utopian conclusion. The contemporary trend of dystopian YA novels with a pronounced environmental theme largely reflects the environmental debate and current social issues that circulate around the Arctic today. An important point is that eco-dystopian YA novels inspire hope for the future by showing opportunities to act and make a difference, and that they open up alternative perspectives to human egocentric attitudes. As Lunde states in the interview included at the end of the English edition of the novel, "as long as we have hope, we are also willing to take the steps we need to make our planet better and safer" for children of the future. In using ecological catastrophe to motivate personal and ecological change, *Drømmen om et tre* thus qualifies as a critical eco-dystopia. As Raffaella Baccolini (2000) explains, critical dystopias are marked by "an opening for utopian elements in dystopian science fiction" (13), and this blending of the two related genres, combined with a critical focus, can have strong effects on readers' understanding of their current environments. Thus, by attaching a hopeful ending to an otherwise dystopian story, readers can learn to transform

their ideas of a fragile scenario into something productive, without falling into despair, and with the Arctic being the *fulcrum* around which testing one's emotions and one's ability to act revolves.

4.1.1 Climate Fiction

The term 'climate fiction' was first introduced by the American literary scholar Dan Bloom in the mid-2000s, and he defines it as a "collective term for works that share a specific thematization of the problem of man-made global warming" (cit. in Eggersen 2020: 46). Jens Kramshøj Flinker further defines the characteristics of the genre as follows: when referring to climate fiction, "we are not talking about environmental disasters or natural disasters – such literature can be found far back in literary history. We are specifically talking about man-made, global climate change" (2018: 44). One challenge with this term is precisely that it is relatively new. Susanne Leikam and Julia Leyda (2017) have reviewed American research on climate fiction and have concluded that there is no general agreement on how climate fiction is defined, and the same pertains to its conceptual frameworks, methodological approaches, and theories. For my purposes, I see climate fiction as literary works that combine both imaginative and factual aspects of the climate crisis shaping our perception of climate change's effects on Arctic ecosystems and Indigenous populations. This literary genre allows readers to grapple with intricate challenges, fostering a vision of potential futures alongside an awareness of the current transformations occurring in the Arctic.

The common abbreviation for climate fiction, 'cli-fi', has a close association with 'sci-fi', which is the abbreviation for science fiction, a term for literary works with a future perspective that falls under what can be called speculative fiction. In recent years, two new central themes have emerged in sci-fi: technological innovations' effect on society and ecological themes (Trexler

and Johns-Putra 2011: 186). When science fiction deals with a future perspective, literary productions often use utopias or dystopias and, in cli-fi, dystopia is prominent. The similarity in the abbreviations and partly common themes has led to the equating of these two genres, although this comparison is both controversial and very simplistic. In recent decades, the focus on climate and the environment has influenced writers outside the science fiction genre, and the future perspective and dystopia have spread to other literary genres (Trexler and Johns-Putra 2011: 187). This means that the connection previously drawn between cli-fi and sci-fi is even less clear. As mentioned, several cli-fi texts depict a dystopian society which has a warning effect, describing what could happen if a given development continues. Specifically, in the case of cli-fi, novels show what could happen in the future if we do not change our patterns of action today. It is a matter of debate where the line between realistic and dystopian can be drawn when we talk about climate change, and how we should treat this when the dystopias begin to resemble reality.

While it is challenging to give a good answer to this question, the potential of conducting an ecocritical analysis applied to such texts is pivotal. If ecocriticism has a close relationship with science, so has cli-fi. Although it often reflects scientific facts, these narratives provide no certainty around the exact prediction of what will happen in the future. Nevertheless, the use of scientific facts helps make cli-fi a more objective form of representation (Trexler 2015: 71). Trexler claims that media images and depictions of climate-related issues also help to create objectivity when it comes to cli-fi, perhaps rendering it more credible (2015: 71). This is because cli-fi provides a different representation of what is already known through media and, as a result, what cli-fi novels tell about climate change sounds more familiar and credible.

The quest for truthfulness in cli-fi is often supported by the presence of a scientist. As demonstrated in the previous chapter of this study, in Nicola

Penfold's *Beyond the Frozen Horizon* (2022), the scientist is represented by the glaciologist Pia. Caren Irr (2017) claims that the figure of the scientist in juvenile literature is often a man, focused on his work and ultra-masculine (8). This is not the case for the corpus of this study, in which the adult scientists that explain cryological phenomena to the young protagonists are mainly women. The switch towards feminine figures seems to be a new trend, simultaneously emphasizing potential eco-feminist readings of these novels⁷⁷ and demonstrating the importance of the presence of science in fiction (Trexler 2015: 32). Kramshøj Flinker (2015) poses important questions in this context: "If facts are both real and fabricated, what is the status of scientific truth in a literary text, itself fiction? How do scientific things come into the novel, and how does the truth come out?" (58). Answering these questions is a central task in comparative ecocritical analysis.

Location is another complex but central feature in cli-fi. In contrast to nature writing (traditionally the works at focus in ecocriticism), cli-fi is often set in more urban areas (Trexler 2015: 76) somehow likely to be known to the reader. Indeed, by depicting landscapes that the reader is familiar with through their own experience or through media, climate change effects in fiction can become more immediate and "a threat to [readers'] centers of felt value" (Trexler 2015: 76). Consequently, when the action in cli-fi is set in a near climate-changed future, the reader is confronted "with possible and future consequences of his or her lifestyle" (Kramshøj Flinker 2018: 50). The Arctic is challenging because it is not a place known to many readers, but still central in

⁷⁷ As a movement that sees a historical and symbolic link between the oppression of women and the degradation of nature, ecofeminism examines how modern fiction writers are retelling the story of the Anthropocene. It argues that contemporary authors are moving away from the old romantic view of nature as a passive backdrop. The discussion covers the shift from merely depicting nature to giving it a voice, often through female characters who possess a specific, grounded ecological wisdom that scientific institutions often ignore (Plumwood 1993; Gaard 1993).

processes associated with climate change. Irr considers the representation of climate changes the main feature of cli-fi texts, because they look “at a change that has already begun to occur and to which humans and other species must adapt” (Irr 2017: 6). Thus, in those narratives in which climate change has begun to manifest itself more clearly, the main characters in the novels have no way of changing or minimizing these changes; they must adapt to the society in which they live.

4.1.2 Ecocriticism and Climate Fiction

While the ecocritical research tradition is extensive, research on cli-fi is growing but still relatively small in scope. Trexler and Johns-Putra (2011) suggest that one can conduct “historicist investigations of older literary texts and authors for the way in which they shed light on the current environmental situation” (189). This is done by reading older texts from a perspective which focuses on how humans have exploited the earth to their advantage. These readings can elucidate a historical development in how humans have adapted and utilized the resources the earth has given us, and this is reflected in today’s society. Eggersen also advocates such reading of older texts (2020: 42-46), looking at how we can read older texts to investigate precisely how humans have adapted to the earth, and how this is a way of thinking and acting, which still stands today. By reading them in a new way, we look at the texts with through a new lens, and this is proof that the traditional ecocritical analysis cannot show all the perspectives that cli-fi has made us aware of.

Early ecocritics aimed to criticise “current environmental ideas, draw attention to environmental issues, develop new ways of thinking about the environment, and energize activism” (Trexler 2015: 17). Yet, ecocriticism was late at examining climate change, as its focus was on how people lived and the landscape in which they lived, not examining how to see a connection between

climate and literature (Trexler and Johns-Putra 2011: 192). There is general agreement that ecocriticism has focused too much on the perception and choices of the individual, not enough on “the state, ideology, [and] modes of production” (Trexler 2015: 19). The use of an ecocritical approach to reading cli-fi has been on the rise in recent years. Trexler and Johns-Putra have reviewed several studies that have examined cli-fi and concluded that there is “a major development in ecocriticism, i.e. a shift in its focus and methodologies to accommodate a sustained investigation of climate change and literature” (2011: 193). There are essentially two different ways of using ecocriticism to read cli-fi. On the one hand, one tries to highlight cli-fi as something we can use to learn how to deal with climate change, and on the other hand, one simply wants to analyse how this somewhat difficult topic is presented in literature (Johns-Putra 2016: 274). Despite this, Johns-Putra still argues that examining cli-fi, which she calls climate change criticism, is developing separately from ecocriticism (2016: 274). Such criticism investigates first of all climate change as a cultural phenomenon, using conventional literary theory; secondly, it studies how cli-fi is changing the social perception of climate change from something that used to be theoretical and is now becoming a lived experience (Johns-Putra 2016: 275). This is a crucial aspect when reading cli-fi, and it will also be one of the most important things to look for when analysing cli-fi. How is climate change portrayed, and is literature able to do this concretely and realistically enough to make it feel real? In addition, it is important to point out that cli-fi, unlike ecocriticism, does not see the relationship between people and nature as a one-way influence, but that this is something that goes both ways. People affect nature, but nature also affects people.

To conclude, an ecocritical reading approach is currently not comprehensive enough to address the complexities of cli-fi. While ecocriticism offers a wealth of theory and research applicable to cli-fi, a singular reliance on

this framework may fail to capture the genre's multifaceted nature. Analysing cli-fi primarily requires a perspective that perceives the totality of the humans-nature relationship as one of mutual influence. Furthermore, it is essential to treat cli-fi as a representation of human culture that seeks to render climate change concrete, thereby informing the reader of potential present and future scenarios. Ecocriticism can be a good point of departure to read cli-fi, but it must be supplemented by other frameworks, cryology being a case in point in this study. Based on this, given the necessity for a more integrated approach, such as cryo-criticism, I term my analysis of the selected literary corpus an 'extended ecocritical reading'. This methodology is grounded on ecocritical theory yet intentionally looks beyond its traditional boundaries to address the inherent gaps within the discipline.

4.1.3 Dystopias and Utopias in Contemporary Young Adult Literature

Dystopia and its subgenres have been defined and divided into different categories by literary theorists Raffaella Baccolini and Tom Moylan in their introduction to *Dark horizons. Science fiction and the dystopian imagination* (2003). From a rhetorical and narrative point of view, in utopias the protagonist travels to a world that is perceived as better than readers' society and can thus compare the two worlds against each other. A dystopia rather begins in a frightening or otherwise dysfunctional world, often without connection to any other society. The protagonist thus begins to question the dystopian society and its premises (Baccolini and Moylan 2003: 5). Moylan (2000) has previously discussed utopia from a historical context, where it can be understood as a "pre-genre" (70) to dystopia, and he introduces a classification of dystopia, utopia, eutopia and anti-utopia, arguing that the categories negotiate different degrees of optimism and pessimism – which is expressed in the degree of social criticism

and irony (74). Dystopia can be defined as a non-existent society described in considerable detail and normality located in time and space that the author intends a contemporary reader to view as considerably worse than the society in which the reader lives (Moylan 2000: 70-75).

Dystopian works can be divided in several different ways, but for the purpose of this study the division between classical and critical dystopia is the most relevant one. Classical dystopia depicts a totalitarian society and examines the reactions it gives rise to, for example in George Orwell's *1984* (1949) and Karin Boye's *Kallocain* (1940). A characteristic feature of classical dystopias is the monitored society and the depiction of a situation where the protagonists have little opportunity to change their condition for the better (Moylan 2000). During the mid-1980s, a turn occurred in dystopian Anglophone literature, through authors such as Margaret Atwood, with an increased emphasis on identity and gender roles in post-industrial society. In literary studies of feminist science fiction, attention is paid to these new structures and motifs. These identity-political dystopias differ from their predecessors because they contain both utopian and dystopian features, which resulted in problems when defining these works. Moylan finds a solution to the definitional difficulties by calling these hybrid works "critical dystopias" (2000: 187-188). Baccolini and Moylan subsequently argue that "the new critical dystopias allow both readers and protagonists to hope by resisting closure: the ambiguous, open endings of these novels maintain the utopian impulse within the work" (2003: 7). In other words, a critical dystopia conveys a sense of hope for both the protagonists and the readers, suggesting that the oppressive and menacing forces can be challenged and transformed. Hope is also a central motif in YA dystopias, both in the protagonists and for the readers, as I will discuss.

What distinguishes critical dystopias is then the open outcome and the possibility of change. There are several studies that deal with environmental

themes in dystopias. Alexa Weik Von Mossner (2013) discusses climate change as a theme in YA dystopias and the genre's hopeful function. She shows that the role of nature has shifted in YA critical dystopias and that the ecocritical perspective has been increasingly emphasized in recent years. Ecological motifs have become very popular, which is expressed in critical, complex and provocative depictions. The critical "ecodystopias" contain a mixture of dystopian and utopian elements (Weik Von Mossner 2013: 79-80). What is significant about the ecocritical dystopia, according to Weik von Mossner, is that it opens up the reader's own relationship with and understanding of the world and inspires a "radical hope" (69-70). Megan McDonouch and Katherine A. Wagner (2014) further discuss the role of nature in YA dystopias, firmly believing that the protagonists discover freedom in nature (157), which fulfils the function of a place where young people are not supervised or controlled, but free to achieve their own self-fulfilment through natural experiences, as harsh as they may be.

4.2 EMBODIED ECOLOGY AND THE RED THREAD OF RESPONSIBILITY IN MAJA LUNDE'S *DRØMMEN OM ET TRE*

Lunde's novel mainly takes place on Svalbard through two timelines, featuring several anachronisms. The story shifts within a 'present-day' setting of 2110, yet it is characterised by frequent analepsis. Furthermore, the novel employs a circular composition between the second and penultimate chapters. This structure starts following the description of the tree's arrival on Svalbard in the first chapter, at which point the narrative moves *in medias res* to the year 2110 with the exclamation "No! Stop!"⁷⁸ (2024: 11). The reader is thus thrust into the central plot: Tommy's brothers, Hilmar and Henry, have joined Tao and the team

⁷⁸ "Nei! Stans!" (2022: 15).

from China to depart from Svalbard. While the following chapters follow Tommy in the present, most of the narrative unfolds in retrospect. In the penultimate chapter, the repetition of the exclamation “No! Stop!”⁷⁹ (2024: 369) signals a return to where the novel began in chapter two. This circularity serves to reorient the reader, echoing the novel’s beginning as it approaches its conclusion.

In the narrative present, Tommy remains alone on Svalbard, after his brothers has left for China with Tao. He only keeps in touch with the ship through the satellite station “Svalsat” and talks to Tao over a satellite phone. A good example of the novel’s temporal fluctuations occurs when Tommy attempts to sleep after his brothers’ departure; here, the narrative shifts to evoke what family life was like when his mother was still alive, and how she eventually died. By the conclusion of Tommy’s first chapter, the reader is confirmed that he is alone, and that no one will ever take the trouble to look at him and check on him (19). This establishes the central tension regarding Tommy’s survival: “They left without me, they left without me”⁸⁰ (2024: 12). In this lament, readers follow Tommy’s story with the hope of a happy ending. In the remainder of the work, the reader gains insights into Tommy’s history and the decisions that shaped the narrative present in 2110. The structure created by frequent analepsis introduces an element of indeterminacy, requiring the reader to interpret and engage with the action. While these flashbacks provide essential context, they help creating tension, by interrupting the present-tense progression. This perceived slowness serves as a structural parallel to the subsistence lifestyle depicted on Svalbard, a life defined by cultivation, hunting, and the painstaking repair and reuse of materials. Ultimately, the circular composition and the reliance on analepsis underscore that the novel’s present is a consequence of past choices and events.

⁷⁹ “Nei! Stans!” (2022: 459).

⁸⁰ “De dro uten meg, de dro uten meg” (2022: 16).

The novel employs a third-person limited narrator, positioning the reader as a spectator of the unfolding plot from an external vantage point. Nevertheless, the narrative particularly follows two specific characters, Tommy and Tao. While this style does not allow the reader to directly access the characters' thoughts and feelings, rendering much of the text as a sequence of observable actions, the narrative voice occasionally permits insight into their private thoughts. For instance: "Everything is going to be all right, he thought. We are going to be fine"⁸¹ (2024: 295). Only Tommy and Tao have this internal point of view; the remaining characters are depicted through an exclusively external lens. In other words, the reader gets the most insight into Tommy's life and experiences, fostering a sense of sympathy towards him. The novel is characterized by extensive dialogue, which imbues both the prose and the plot with a sense of vitality.

4.2.1 Tommy, the "Red Thread"

Drømmen om et tre has an overall ecocentric attitude towards nature, and a clear environmental message. At the same time, it shows the anthropocentric attitudes of humans, even though there is a gap in this anthropocentrism represented by Tommy's sustainable behaviours, especially when the 'empty spaces' of the Arctic future landscapes are presented. The novel addresses climate change and highlights the priorities that must be faced to preserve nature, explaining to readers how a functioning ecosystem requires diversity in nature. Human attempts to tame nature have resulted in climate change, which has inevitably rendered this diversity highly vulnerable, highlighting the urgent priorities necessary for nature's preservation. Here lies the interpretative key not only for the analysis of Lunde's text, but also for underlying the position at

⁸¹ "Alt kommer til å bli bra, tenkte han. Vi kommer til å få det bra" (2022: 366).

the basis of this study, namely: that it is absolutely essential to convey a clear and unwavering message of hope for the future. This hope serves as the driving force that motivates action and sustains resilience in the face of adversity and distress. Lunde's novel is the most apocalyptic literary work of the corpus, and it is pivotal to analyse the novel's intrinsic message, and what feeling and understanding we are left with after reading it. In essence: does the novel inspire hope for a better future, or does it raise a sense of paralysis? As I am going to show, the characters' perception of empty cryo-places challenges dystopian narrative structures in order to engage young readers in a sustainable future.

Drømmen om et tre tells us about seventeen-year-old Tommy who lives on Svalbard with two younger brothers, his father and grandmother in 2110. Society on Svalbard lives off recycling, hunting and fishing, and they live in alignment with the cycles of nature. Svalbard has no contact with the outside world, and the people on the island live completely isolated in the middle of the Arctic Ocean. Svalbard Global Seed Vault, which is a safety deposit box for all the seed collections found around the world, and is actually located on Svalbard, plays an active role in the novel when an unknown epidemic hits Svalbard and all the inhabitants die. The protagonists are only saved thanks to their grandmother, who takes them to a cabin, away from Longyearbyen. Tommy's father is left behind in the city, where he becomes infected and dies. The novel thus narrates how Tommy and Rakel – his antagonist peer – are left on Svalbard with their younger siblings, and how they will survive there. Whether the seeds of Svalbard Global Seed Vault should be used by humans or not becomes the central question in the plot.

The factual Svalbard Global Seed Vault, opened on 26 February 2008, offers safe, free and long-term storage of seed duplicates from all gene banks and nations participating in the global community's joint effort to ensure the world's future food supply. The facility serves a humanitarian purpose and is

part of the international system for conserving plant genetic diversity guided by the UN organisation for Food and Agriculture (FAO). While there may be a role for the Seed Vault in the event of a global catastrophe, its value is considered to lie much more in providing back-up to individual collections in the event that the original samples, and their duplicates in conventional genebanks, are lost due to natural disasters, human conflict, changing policies, mismanagement, or any other circumstances⁸². Svalbard Seed Vault is described in Lunde's novel as damaged by thawing permafrost (along with higher temperatures and more rain), illustrating how warming's material effects impact human systems within and across the globe.

To explore the novel's 'blank places' – intended here as geographical and metaphorical areas⁸³ that may eventually be filled with hope –, it is important to first get to know the main character, Tommy, together with his grandmother, both bearers of values, actions and attitudes. The concept of 'blank place' derives from Alice Curry's theorization of 'blind space' (2013), in the context is the "apocalyptic" in the contemporary YA fiction because of a previous climate scepticism. 'Blind space' is thus placed in a contrasting relationship to what Curry calls "planetary consciousness", which, she claims, is about distance, control, and visual order. Instead, she consequently pleads for the embedded poetics of the earth that emanates from the senses. The concept of "blind space" is about this: Curry argues that both the body and the earth as living material, and not as a visual and aestheticized object, are such spaces. But it is also in this that one can perceive an inconsistency in Curry's emphasis on a

⁸² Seedvault.no, "Svalbard Global Seed Vault: Safeguarding Seeds for the Future". URL: <https://www.seedvault.no/> (accessed 2 January 2026).

⁸³ 'Space' and 'place' are terms of common use, which nonetheless hide complex and stratified meanings. There has been considerable semantic confusion within and across disciplines about the conceptual relationship of space and place (Furia 2022). This study considers place and space as interconnected; nevertheless, I prefer using the term 'place' to rely in its theoretical difference compared to 'space', considering the common distinction between abstract space and lived place.

phenomenological approach to the earth. Which senses are permitted in our experience of the body and the earth? The idea of “blind space” becomes an intriguing correlative to such a phenomenological preference, but, as such, it brings with it limitations. This is also why I prefer the use of the term ‘blank’ instead of ‘blind’; my objection is that, from an environmentally critical perspective, sustainable environmental poetics and politics require the engagement of all the senses. From this point of view, the adjective ‘blank’ naturally implies absence or emptiness that can open opportunities for potentiality and possibility. In literary theory and cultural studies, “blank places” may be sites of indeterminacy: places where meaning is not predetermined, and where active meaning construction or reinterpretation can occur. This openness makes ‘blank’ a potent relational term because it draws attention to the interrelation of absence and presence, lack and fulfilment. It suggests that these spaces are not voids but are receptive spaces ready to be inscribed with new meanings, such as hope, depending on the interpretive or narrative act.

Tommy’s story begins when he is five in Longyearbyen, Svalbard, in 2097, and he finds a tree that has washed ashore with the ocean currents. Being the first time he has ever seen a tree, he approaches it with great enthusiasm, through an instinctive embodied perception, and examining it carefully, “He stroked the green surface with his fingertip and turned the leaf upside-down. He could see how it clearly had a back and a front, and how the green colour on the front was brighter than on the back”⁸⁴ (2024: 3). We discover that, from a noticeably young age, Tommy has been fascinated by Arctic nature and its phenomena, and by how he is described, he is inwardly fascinated by nature, both physically and psychologically. Tommy is therefore depicted at the very beginning of the novel as being preoccupied with nature and with how all life

⁸⁴ “Han strøk fingeren over den grønne overflaten, snudde det opp ned og så hvordan det helt tydelig hadde en for- og en bakside, og hvordan forsiden var kraftigere grønn enn baksiden” (2022: 6).

forms are interconnected. He has also taken responsibility for both his brothers after his mother died giving birth to his younger brother. Tommy is aware of this and compares himself to a thread:

On the sofa in the living room lay a tattered, burgundy blanket, the fabric worn as thin as silk from years of use, in several places it had been mended with red thread, the colour a little too bright. Tommy used to trace the weave with his fingers. I am the thread, he thought, without me this family will unravel (2024: 31).⁸⁵

Tommy feels responsible for the family, even though his father is still alive. He says that his father, David, was a lively and brave man, who however disappeared when “his mother died”⁸⁶ (2024: 29). Consequently, it is only natural that Tommy, in his teens, tries to define what it means to be an adult, thinking that “one becomes an adult when one takes responsibility for others out of necessity, and when that necessity is inextricably connected to the guilty conscience one knows will arise if one *doesn’t* take responsibility”⁸⁷ (2024: 333, original italics). Similar questions are asked directly to the reader in the text: “When does one become an adult? What does it mean to become an adult?”⁸⁸ (2024: 333). At the same time, the reader is presented with Tao’s impression of Tommy: “Tommy told them he was eighteen years old, but he looked younger. He still didn’t have any beard stubble on his face and his eyes were childish and

⁸⁵ “På sofaen i stua lå et utslitt, burgunderfarget teppe, stoffet tynt som silke av årenes bruk, flere steder var det lappet sammen av en rød tråd, litt for lys i fargen. Tommy pleide å følge tråden med fingrene. Jeg er tråden, tenkte han, uten meg revner denne familien” (2022: 51).

⁸⁶ “Forsvant da moren døde” (2022: 56).

⁸⁷ “Man blir voksen når man av nødvendighet tar ansvar for andre mennesker og når den nødvendigheten uløselig er knyttet til den dårlige samvittigheten man vet vil oppstå hvis man ikke tar ansvar” (2022: 415).

⁸⁸ “Når blir man voksen? Hva innebærer det å være voksen?” (2022: 414).

round”⁸⁹ (2024: 109), thus emphasizing his inner depth, in stark contrast to his appearance. Moreover, Tommy is portrayed as realistic and pragmatic, yet possessing his own private ‘sanctuary’ in the library on Svalbard, where he spends most of his time acquiring knowledge, but also escaping tough social dynamics by entering the universe of books:

For that reason, he had to do *everything* he could. This became his job from the moment he got up in the morning until he went to bed at night and he never questioned the nature of this work, he never expected time off. There was only one place where he allowed himself to forget his role in the family: at the library. He rested in the books’ world, in the stories they gave him, in the people he met, the places he could travel (2024: 50, original italics).⁹⁰

The books, in combination with his grandmother’s words of wisdom, have given Tommy a lot of knowledge, ensuring him to always find an explanation for why things are the way they are and why he must deal with his solitude, given that “he has always felt that he was missing something. Ever since Mother died, he has known what longing is. But longing isn’t dangerous, he thinks, longing is just a feeling, just thoughts, electric signals in the brain”⁹¹ (2024: 31). This shows that Tommy relies on the knowledge he has gained, and also his grandmother noticed his “hunger for knowledge”, as she tells Tommy that this is what “you

⁸⁹ “Tommy fortalte at han var atten, men han så yngre ut, fremdeles uten særlig skjeggvekst og med barnlige, runde øyne” (2022: 135).

⁹⁰ “Derfor måtte han gjøre alt han kunne. Det var et arbeid som pågikk fra han sto opp om morgenen til han la seg om kvelden, og han stilte aldri spørsmål ved arbeidets vesen, han forventet aldri å få fri. Det fantes bare ett sted han tillot seg å glemme den rollen han hadde i familien: på biblioteket. Han hvilte i bøkernes verden, i historiene de ga ham, i menneskene han møtte, stedene han kunne reise til” (2022: 63-64).

⁹¹ “Han har bestandig savnet, siden moren døde, har han visst hva savn er. Men savn er ikke farlig, tenker han, savn er bare en følelse, bare tanker, elektriske signaler i hjernen” (2022: 42).

the person you are. That is something you must never lose”⁹² (2024: 44). The fact that Tommy knows a lot, but always wants to learn more, becomes part of his characteristics and personality in the novel and actively shapes his pro-environmental behaviours.

More importantly, this hunger for knowledge even distinguishes Tommy from the other young people on Svalbard; in fact, he is depicted as lonely, as “the stories they shared, weren’t relevant for him, nor interesting. Parties, sex, breakneck joyrides on borrowed snowmobiles that ran out of power far out on the mountain plateau. He had never taken part in any such escapades”⁹³ (2024: 125). Such depictions take the reader into his emotional life, tightly linked to attitude towards the environment, as he reflects that humans “had evolved into a species that had to exploit others to survive. The human race was not satisfied with living a life of balance, it demanded more all the time. But we, up here, rose above all that, we rose above human nature. Yes. It was the ideal society”⁹⁴ (2024: 268). Tommy is then steadfast in the way of life they have on Svalbard, and he values that they have managed to rise. During a conversation with Tao, they discuss whether the seeds from the vault should be used or not: “‘There are only agricultural seeds in the vault,’ he said, and his voice was hard. ‘Robust agriculture is good for human beings, but animals, plants, everything else has no need for your agriculture’”⁹⁵ (Ibid.). Tommy expresses with conviction that the seeds that are safeguarded on Svalbard are of value for food and agriculture, and of importance for research, plant breeding and education; for this reason,

⁹² “Gjør deg til den du er. Det må du aldri miste” (2022: 56).

⁹³ “De historiene de delte, var ikke relevante for ham, ikke interessante heller. Fest, sex, halsbrekkende turer på tyvlånte scootere som gikk tomme for strøm midt ute på vidda. Han hadde aldri vært med på noe sånt” (2022: 156).

⁹⁴ “Blikket hans begynte å brenne. «hadde utviklet seg til å være en art som måtte utnytte andre for å overleve, det nøyde seg ikke med å leve i balanse, det krevde hele tiden mer. Men vi, her oppe, hevet oss over alt det der, vi hevet oss over menneskets natur. Ja. Det var et drømmesamfunn” (2022: 331-332).

⁹⁵ “Et robust jordbruk er bra for menneskene, men dyr, planter, alle de andre, trenger ikke jordbruket ditt” (2022: 333).

they should be left where they are, and humans should not cultivate the Arctic wilderness as they have done before, but rather live ecologically and in accordance with natural cycles.

4.2.2 Trees as Metaphors of Responsible Growth and Potential Hope

Like trees, seeds are significant in *Drømmen om et tre*, both in the form of the actual seeds in the Svalbard Global Seed Vault and as metaphors for hope and potential growth (Guanio-Uluru 2024:79). Michael Ferber (2007) invokes Socrates' metaphorical connection to seed dispersal⁹⁶ for "the sowing of knowledge", as a phase in which the mind "a student's mind is implanted with seeds of knowledge" (185). The "seeds of knowledge" that Lunde aims to seed in the reader of her climate quartet is not least an appreciation of climate change effects (Guanio-Uluru 2024: 80). *Drømmen om et tre* is in this sense a kind of literary 'seminar' (Ibid.) in which the true function of seeds is focused and entwined with Tommy's self-awareness. Dixie D. Massey et al. (2021) describe hope as "a sense of optimism for the future" (575). This definition effectively illustrates how hope embodies a latent positive potential. Lunde employs this metaphorical connection to associate hope with flora: "The hope is bright green, the hope is a shoot, but before the shoot comes the seed. [...] The seed is the core of hope"⁹⁷ (2024: 62). It is therefore noteworthy that the storyline primarily focuses on the accumulation and protection of seeds, representing latent

⁹⁶ Seed dispersal is defined as the mechanism by which plant seeds are transported to new sites for germination and the establishment of new individuals, often mediated by animals. This process affects the dynamics and genetic structure of plant populations and influences the long-term maintenance of communities (ScienceDirect.com, "Seed Dispersal". URL: <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/seed-dispersal>, accessed 5 January 2026).

⁹⁷ "Håpet er lysegrønt, håpet er en spire, men før spiren kommer frøet. [...] Frøet er håpets kjerne" (2022: 82).

potential, rather than their realized potential (Guanio-Uluru 2024: 83) in the form of their dissemination and growth.

The tree that Tommy encounters in the beginning of the novel, symbolizing the natural evolution of a seed, serves as a *leitmotif* for Tommy throughout the story, with Tommy being described as a “frail body of a child with his arms around a tree, on a black, rocky beach”⁹⁸ (2024: 6), metaphorically embracing his early dream of hope. Later in the novel, he cries himself to sleep two nights in a row after the population of Svalbard had exploited the same tree and made oars and axe handles from it, asking himself what kind of person he really was, someone “who hugged trees, who cried over trees?”⁹⁹ (2024: 99). It may seem that, in retrospect, he does not fully understand why he is the way he is, in this way not having yet become fully aware of his identity, but simply accepting his role influenced by the vicissitudes of life. As previously described, Tommy experiences responsibility early on, and the first responsibility is when he gets to plant a seed from the tree he found: “It was Tommy’s responsibility to water the little tree [...]. The tree and the boy grew up side-by-side, the tree reaching for the sky, its branches stretching upwards and entwining themselves around the life-giving lights in the ceiling”¹⁰⁰ (2024: 100). At a certain point, the growth of the tree in the ceiling stops, it cannot grow any longer, just as Tommy cannot grow alone on Svalbard. Yet, when things become difficult on several occasions throughout the novel, Tommy thinks of trees and he dreams away: “Trees, trees, he tried to cling to images of trees. And even though he lay in a box made of pine, it was leafy trees he dreamed of. Ash, birch, aspen and

⁹⁸ “En spinkel barnekropp med armene rundt et tre, på en svart steinstrand” (2022: 8).

⁹⁹ “Som klemte trær, som gråt for trær?” (2022: 123).

¹⁰⁰ “Det var Tommys ansvar å vanne det lille treet [...]. Det vokste i takt med gutten, strakk seg mot himmelen, rakte sine greiner oppover og viklet seg rundt de livgivende lampene i taket” (2022: 124).

maple”¹⁰¹ (2024: 203). When he wanders into Svalbard’s old mines and sees the remains of coal, the “dream of trees” is described nostalgically:

The trees were still here, in another form. If he closed his eyes, he could hear the music of the leaves, the birds twittering, the insects buzzing. A lush forest, perhaps near a coastline, when Svalbard once lay somewhere else on the globe: animals and insects, marshes, swamps and forests. Tall, swaying trees, hardwood forests, maple, beech, horse chestnut and the ground covered with horsetail plants (2024: 344).¹⁰²

Tommy further dreams that the mine tunnels can lead him to a secret forest (345). Although this is not possible on Svalbard’s natural areas, he finds trees when he lies on his side in the fertile heather, acknowledging that it is all about perspective: “We also have trees, he thought. I must show my brothers this, our little forest”¹⁰³ (2024: 340), trying to be content with what he has and showing the importance of switching perspectives to gain self-consciousness and build one’s identity. At the very end of the novel, seeds from the same tree that the reader is introduced to in the first chapter are sent into the air by Henry, Tommy’s little brother: “He blows at it, and something organic soars upward. I can see small, narrow petals like wings. They swirl through the air and disappear”¹⁰⁴ (2024: 381). Thus, the novel begins and ends with a cyclic evolution of the same tree, and even though the tree was dead when it first arrived on Svalbard, its

¹⁰¹ “Trær, trær, han forsøkte å holde fast i bilder av trær. Og selv om han lå i en boks bygget av furu, var det løvtrær han drømte om. Ask, bjørk, osp og lønn” (2022: 252).

¹⁰² “Trærne var her ennå, i en annen form. Lukket han øynene, kunne han høre sangen i bladene, fuglenes kvitring, insektene som summet. En frodig skog, kanskje like ved en kyst, den gangen Svalbard lå et annet sted på kloden: dyr og insekter, myr, sump og skog. Høye, vaiende trær, løvskog, lønn, bøk, hestekastanje og en bakke dekket av snelle” (2022: 428).

¹⁰³ “Vi har også trær, tenkte han. Dette må jeg vise brødrene mine, vår lille skog” (2022: 423).

¹⁰⁴ “Han blåser mot den, og noe organisk farer opp, jeg skimter små, smale blader, som vinger. De virvler gjennom luften og blir borte” (2022: 474-475).

seeds live on elsewhere. Finally, Tommy and the tree are further linked because “books are trees”¹⁰⁵ (2024: 266). Books are thus the seeds for education and the dissemination of knowledge which are crucial in the novel.

4.2.3 The Role of Grandmother Louise in Shaping Sustainable Thought

Tommy’s pro-environmental behaviours and embodied attitudinal approaches are most likely the result of his grandmother’s lessons in life. Louise has moved from Southern Europe to Norway and then to Svalbard, where she settled down. There are several examples of when Louise takes on a teaching role, like when she says that their “natural state is chaos, everyone warring against everyone else, an eternal battle for own survival. And this vault was created precisely for that purpose: to ensure survival of the human race”¹⁰⁶ (2024: 94). Grandma’s words have a strong impact on Tommy’s formative journey, especially as he grows older and reflects on cryosphere loss, rendering pathways unstable. Then she says: “‘A glacier can never be held responsible, Tommy.’ [...] ‘Only human beings can be held responsible, only human beings can feel ashamed’”¹⁰⁷ (2024: 120). These words are fundamental in highlighting the context of the climate crisis, guilt, and shame. This instructive dialogue between Tommy and his grandmother gains its full sense only when the reader eventually understands that she believes him to be the one who will take over responsibility for the seed vault once she is dead. The reader therefore follows Tommy on his journey from gaining knowledge about the Arctic to becoming a fully responsible seed keeper, thus transforming the Arctic from a dystopian empty space to a

¹⁰⁵ “Bøker er trær” (2022: 330).

¹⁰⁶ “naturlig tilstand er kaos, alles krig mot alle, en evig kamp om overlevelse. Og dette hvelvet ble skapt nettopp med det formålet: å sikre mennesket” (2022: 117).

¹⁰⁷ “‘En isbre kan aldri bære skyld, Tommy’ [...] ‘Bare mennesker kan bære skyld, bare mennesker kan skamme seg’” (2022: 150).

utopian place where all trees of the future are preserved. Despite Svalbard's extreme climate and absence of trees, this paradox can contribute to dampening hope for Arctic futures, thus softening the apocalyptic visions. This causes his emotional reaction while he is completely alone on an island in the middle of the Arctic Ocean, and it makes it easier to relate to his negative consideration of agriculture on Svalbard. The most central issue in the novel is whether the seeds should be used to start the world over, but it is in this very issue that the novel conveys hope. What makes the new beginning challenging is the ecocentric view that humans should not cultivate the land for their own benefit, something to which Tommy strongly adheres to. He lives indeed in accordance with the prevailing principles on Svalbard (2024: 111): harvest only from the surplus, do not cause undue impact, do not put a species at risk.

For the novel to be considered a 'hopeful dystopia' it is then essential to signal the role of conveying hope for Arctic futures based on the theory of increasing climate anxiety¹⁰⁸. By Tommy ensuring that Tao does not find the seeds to take them to China, the text stands by its ecocentric stance, which in turn gives hope for a sustainable future. At the same time, readers can perceive it as unlikely that humanity would go back to such a primitive way of life on Svalbard as the one presented in the novel. This is an apparently controversial scenario, since the story is at first perceived as very hopeless, a characteristic of the dystopian genre (Røsvik 2018), but it ends on a more positive note. Society on Svalbard has no contact with the outside world, they are struck by a fatal disease for which there is no cure, and the main character, Tommy, is left all alone on the island. Climate anxiety does not contribute to action and is rather demotivating¹⁰⁹, yet the dystopian characteristics of the novel can be

¹⁰⁸ Bufdir.no, "Småprat om barn og klimaangst".

URL: <https://www.bufdir.no/foreldrehverdag/smaprat/smaprat-om-barn-og-klimaangst/> (accessed 10 December 2025).

¹⁰⁹ Ibid.

questioned. Indeed, the novel has an open ending. Tommy, while dystopically left alone on Svalbard, hopefully watches spring taking hold, with the environment around him depicted as much more thriving compared to how it looks nowadays.

In this sense, *Drømmen om et tre* can still convey a utopian sense, because the story unfolds after the collapse of Svalbard society. Before they are hit by the epidemic, Svalbard society is well-functioning and in step with nature, something that today may seem utopian to many, but is indeed something to strive for. As the post-apocalyptic-future novel is increasing in popularity (Garrard 2023), it may still be relevant to consider the advantage of dystopian representations, conveying the need of a balancing act in contributing to youth engagement for the future. As Garrard states, “only if we believe human life on Earth has a future, after all, will we strive to secure it” (2023: 122). This positiveness must deal with something that could be redefined as a revised developmental tool in contemporary narratives though, that is, the more and more detectable presence of something ‘eerie’ when narrating environmental loss. This type of eeriness does not refer to the kind of ghost story that makes readers jump in fright at the reveal. Rather, an eerie ecological story today is one that suggests something is ‘not altogether right’. That something about a given present is broken in a way to suggest reality is not as rationally ordered as assumed. For Mark Fisher, the eerie is “constituted by a failure of absence or by a failure of presence. It occurs either when there is something present when there should be nothing, or there is nothing present when there should be something” (2016: 61). Melted ice is increasingly spreading through an invasive absence, both on a geographical and a perceptive pace, thus reversing the common interpretation of what has been defined as ‘the uncanny’.

4.3 SVALBARD AS AN UNCANNY DIMENSION OF ISOLATION

4.3.1 ‘The Uncanny’ and its Role in Contemporary Cli-Fi

The uncanny is a concept that has been investigated by psychologists, philosophers, but also literary scholars¹¹⁰. Sigmund Freud’s essay “Das Unheimliche” (1919) and Martin Heidegger’s main work *Sein und Zeit* (1927), are at the foundations of the term. The uncanny is relevant for an ecocritical reading of Lunde’s novel, since cli-fi conventionally thematizes humans’ uneasy feelings towards the climate and nature. The uncanny is usually perceived as either a feeling in humans or an atmosphere connected to humans’ perception. I regard the concept as valuable for my analysis of Lunde’s novel, since emotions such as anxiety and fear are not uncommon in dystopian stories. Historian Gregory Claeys (2017) defines literary dystopia as literary narratives that describe “negative pasts and places we reject as deeply inhuman and oppressive”, and project “negative futures we do not want but may get anyway” (498). Since the uncanny does not form the core of the framework for my analysis, the account of the concept below is strongly limited to what is most relevant to this analysis.

Freud defines the uncanny as “the kind of horror that goes back to the well-known, the since long well-known”¹¹¹ (1919: 298). He establishes that the uncanny belongs to the frightening, which recalls a terrible feeling of anxiety. According to him, the uncanny is a feeling of discomfort that arises when something familiar becomes unfamiliar, or vice versa. He also devotes a part of

¹¹⁰ In *The Fantastic* (1975), Tzvetan Todorov examined hesitation between natural and supernatural explanations, closely related to the uncanny in fiction. Later, Nicholas Royle wrote his book *The Uncanny* in 2003: this is the first book-length study of the uncanny as an important topic for contemporary thinking on literature, film, philosophy, psychoanalysis, feminism and queer history. Moreover, Mark Fisher, in *The Weird and the Eerie* (2016), distinguished the uncanny from related modes while expanding its relevance to modern and contemporary culture by encapsulating the pull of the outside and the unknown.

¹¹¹ “Jene Art des Schreckhaften, welche auf das Altbekannte, Längstvertraute zurückgeht”.

his investigation to the uncanny in literature, especially in works where the boundary between reality and fiction is blurred. Freud illustrates the uncanny with various examples, such as an accidental recurrence of the same situation, for example losing one's orientation, getting lost in the fog, or in the dark. Another example he provides, which mainly occurs in fiction, is the 'safe home' that becomes an unsafe and anxiety-inducing place. Although Freud wrote a lot about the uncanny and how it works in human psychology and fiction, he states that it remains difficult to determine what is uncanny or not. Heidegger, on the other hand, claims that the uncanny does not lie in an encounter between humans and uncanny objects, but rather in humans themselves, in their essence. According to Heidegger, the uncanny arises when humans feel like strangers in their own existence. Heidegger (1927) confirms Freud theorization that the uncanny manifests itself in anxiety, which must be interpreted as a mood or atmosphere. An important concept in Heidegger's theory is the feeling of "not-being-at-home"¹¹² (188) in one's homeland, even though he does not extend his research in the literary field.

The concept of the uncanny is relevant for an ecocritical reading of cli-fi because it helps us understand how nature is experienced as both familiar and alien in a climate context. When individuals are confronted with the possibility of a world that is no longer recognisable, this can lead to feelings of anxiety and grief. In *Drømmen om et tre*, the uncanny manifests itself in different ways, the two most important of which are a representation of the uncanny future world on the one hand, and a more general representation of the uncanny nature on the other. The most important tool for the uncanny in this analysis is Latour's concept of quasi-objects, which he describes as "monstrous hybrids of the extreme intermingling of humanity with nature (and thus [...]) a product of the Anthropocene)" (cit. in Andersen 2016: 862), and this is the way in which nature

¹¹² "Das Nicht-zuhause-sein".

is represented in the novel. In contemporary stories, eerie quasi-objects bear witness to humans' otherwise invisible influence on the climate and humans' intimate relationship with nature, while in the future stories they express the consequences of climate change for humans. Similarly to Claeys who states that "the task of the literary dystopia [...] is to warn us against and educate us about real-life dystopias", I argue that an uncanny effect also lies in the meeting between reader and literature (2017: 501). The reader is confronted with a potential image of the future that, to a certain extent, agrees with the reader's reality, but deviates on another level. This combination makes the fictional world recognizable enough for the reader to be able to relate to it. However, Lunde uses a dystopia that also implies hope, for example Tao's China in *Drømmen om et tre* develops in a well-functioning society.

Recent research has shown that uncanny experiences, and particularly uncanny descriptions of nature, play a large role in cli-fi. In the article "Cli-Fi and the Uncanny" (2016), Andersen examines how the uncanny is depicted in cli-fi and what role is attributed to it. He establishes that the fictitious world of cli-fi often has to do with humanity being punished in the form of a doomsday, where nature strikes back and becomes humans' adversary. The uncanny within the quasi-object agrees with Freud's view, as it is about an encounter between humans and something foreign. In addition, Andersen refers to the idea of the uncanny according to Heidegger, i.e. the uncanny as atmosphere or the essence of humans, which he perceives as a result of humans' ecological awareness (Andersen 2016: 855). Svalbard is a special case because of its geographically isolated position, but despite this the novel questions humans' dominant position in nature and concentrates on a solution-oriented future. Thus, in contrast to other more apocalyptic climate fictions, *Drømmen om et tre* offers a more hopeful picture of the future.

4.3.2 Eerie Landscapes: Isolation and Contradiction

Most of the descriptions of Svalbard's landscape can be found at the beginning of Lunde's novel, especially in Tao's first chapter, where she arrives on the island. She has sailed for a long time on the sea and finally gets to see the mountains, a feast for her eyes; the first thing Tao feels is "relief over the change, an end to the monotony. Then they drew closer and the brutality of the landscape frightened her"¹¹³ (2024: 25). This is Tao's first impression of the new landscape she encounters; it is both a welcome change from the sea, which makes her feel relieved, and a terrifying experience. What scares her are the big mountains: "on the ocean the size of the ship was relative, small when the waves rose high above them, large and heavy when the ocean was flat, the mountains caused it to shrink" (Ibid.)¹¹⁴. Here, sea and land are in dialogue with each other: while the sea and the ship cooperate – sometimes the waves are big and the ship is small, sometimes the sea is calm and the ship is big – the land always has an overwhelming influence on the ship. Tao adds that she is ready to leave the sea, where everything was in constant motion, while the horizon was "the only stable point"¹¹⁵ (Ibid.). However, this is not the case for Tommy, who also feels that Svalbard's landscape is constantly changing. This has to do with the weather on the island: the winter rain transforms the ground which was once permafrost into loose clay that causes the houses to fail.

When Tommy's family returns to town after the quarantine period outside Longyearbyen, they learn that everyone has died. No one in the whole town survived the virus, and only six people are left. During the walk back to town, he feels that the landscape "grew around them, the mountains darkened,

¹¹³ "Fjellene der, en lise for øynene», «lettelse over endringen, opphøret av monotoni. Så kom de nærmare, og landskapets brutalitet skremte henne" (2022: 36).

¹¹⁴ "Mens skipet på havet var omskiftelig i størrelse, lite når bølgene slo høyt, stort og tungt når havet lå flatt, fikk fjellene det til å krympe" (Ibid.).

¹¹⁵ "Dødet eneste stabile" (Ibid.).

looming”¹¹⁶ (2024: 217). This feeling confirms the liveliness of the landscape, which contrasts with dead people and the empty city. Here, then, it is the landscape that functions as an intervening and active agency, while humans have to endure it passively. Thus, there is no question at all about a coexistence between humans and the non-human environment, which differs greatly from the world Tao comes from, the “fertile Sichuan, where insects buzz in the forest, where the birds twitter and the summer is long and sunny”¹¹⁷ (2024: 196). In addition, it is not only the mobility of the landscape that affects the characters’ sense of place, but the fact that this mobility is characterized by a certain aggressiveness. It is, for example, “dark water [which] broke against tall rock walls where recent landslides had created gashes in thin layers of vegetation”¹¹⁸ (2024: 6). The water is a moving force against the mountain, and the mountain is in turn a moving force against what grows. A similar thought is expressed in “the waves break against the cliffs in rhythmic collisions of water with land”¹¹⁹ (2024: 11); here, the landscape is again pointed to as dynamic, but also to the almost violent relationship between water and land. Such descriptions, where not only humans and non-humans fight with each other, but also nature itself fights against other natural elements, evoke an even more frightening and threatening image of this environment.

The dominant power of the landscape lies in its relationship with humans. About this, Tommy says that “each individual human being was so infinitely tiny in the enormous landscape that they were almost devoured”¹²⁰ (2024: 72). The idea of humans being swallowed up by their surroundings often

¹¹⁶ “Vokste rundt dem, fjellene mørknet, hevet seg” (2022: 272).

¹¹⁷ “Fruktbare Sichuan, der insekter summer i skogen, der fuglene kvitrer og sommeren er lang og lys” (2022: 244).

¹¹⁸ “Mørkt vann [som] slo mot høye fjell hvor nylige skred hadde laget sårkanter mellom tynne lag av vegetasjon” (2022: 10).

¹¹⁹ “Brenningene slår mot klippene, vann og land barker taktfast sammen” (2022: 18).

¹²⁰ “Hvert enkelt menneske var så uendelig lite i det enorme landskapet, ble nesten slukt” (2022: 94).

recurs in Lunde's novel. This represents an alternating subject-object relationship between the human and the non-human; the verb 'devoured' also implies the nuance that the object that is devoured no longer exists as an individual being. Thus, the devoured person loses his or her individuality by disappearing in the surroundings, while his or her independent existence is gone. Especially on Svalbard, people run the risk of being almost literally absorbed by the landscape, for example due to avalanches. In the novel, the protagonists refer to landslides that have taken lives, but Tommy seems to see salvation in it: if he causes an avalanche that covers the seed bank, Tao and the rest of the world will leave him isolated on the island, so that he can continue his independent life. This way, Tommy embodies a problematic relationship with the locals; he does not want to cooperate with Tao and only sees a solution in an even stronger anchoring in the local place, which may have fatal consequences for him.

Just as water and land are presented as opponents in this novel, the landscape consists of several contradictions on a broader level. When conducting a cryo-critical analysis, dealing with contradictory concepts and descriptions represents a challenge, but it accurately exemplifies the bond between cryosphere loss and extreme weather events with the novelty around the transformations through which the Arctic is going. Since the time of polar explorations, there has always been a certain degree of exoticization when describing the Arctic landscapes in opposite terms (i.e., awe and sublime, see Section 5.1.1); today, contradictions do not represent an obstacle within ecocritical analysis. On the contrary, they may be the most powerful starting point to portray and reframe the cascading effects that ice-melting is causing to vast Arctic environments. David Edwin Nye (2014) even refers to the so called 'anti-landscapes', which are spaces that do not sustain life and are dysfunctional spaces. They may have natural causes but can also be created by unintended

consequences of human actions. Some of these non-landscapes are temporary, Nye states, while others are intractable and difficult to restore. With the rapid industrialization over the last two decades, the uneven circumstances between industrial development and environmental conservation of the Arctic have caused diverse geographical landscapes (Xue 2023: 43), some of which are anti-landscapes. The Arctic anti-landscapes undergird the narratives of climate change, environmental degradation, dystopia, grotesqueness, sustainability, heroic exploration and so forth (Ibid.).

Additionally, to reinterpret and channel these opponents, or to better focus on the liveliness of the landscape even when at first impression seems to be nothing left, one must keep in mind that multidisciplinary approaches are even more needed, positioning the analysis between literary depictions, visual culture, and human geography. Although in this study the terms 'place', 'landscape', and 'place' are often synonymous and sometimes interchangeable, the choice of the term 'space' for the concept of 'blank space' is not accidental. I consciously adopt Xue's (2025) reframing of the three terms: space refers to the formal frameworks that organize a region (i.e., laws, maps, policies, and scientific models). Place means the situated, material, and felt dimension (that is, what people do, sense, and remember, including what does not fit the framework of space), and these connotations of the term, clearly closer to my intent, mirror the choice of adapting this term for my reflection. Landscape is the in-between, the ongoing meeting point between the two: the images, narratives, and practices through which people perceive a region and orient their movements and actions within it (Xue 2025).

In the context of this terminological categorization, to fill up blank spaces means learning to see beyond the apparent void. In our culture, ice is both omnipresent and invisible. Reducing it to a landscape feature or a source of symbols is tantamount to not seeing it. But what if we learned to look at it with

new eyes? Cryo-criticism has the potential to offer the tools to discover the cryosphere as a teeming web of ancestral stories, hidden relationships, and new and diverse meanings, towards a more conscious, respectful, and harmonious way of relating to nature. For example, *Drømmen om et tre* portrays a vivid picture of a change in weather and the children's playful interaction with nature. Tommy remembers that, as a child, he loved to stomp on the ice to hear it crunch, thus adding a sensory dimension to the joy he experiences:

For weeks there had been heavy rain and fog, but in the past few days the temperature had dropped below freezing and they had had clear days of sun and frost. Ice formed on the mud puddles, thin frozen water paintings, which the children made sure to stomp to pieces as soon as they discovered them, for the sheer joy of hearing the sound of the ice crunching under their feet (2024: 33).¹²¹

It is precisely in this type of playful visions often characterising YA literature that hope is to be found: when the Arctic transforms from its familiar stability into something unpredictable, eerie atmosphere lies something different than mere terror. Indeed, as in the metaphor of Pandora's box, once all the evils that poured into the world after its opening were brought to light and the world became a desolate and inhospitable place, there still is a remaining drop of hope for healing on both ecological and ethical levels.

The first contradiction that Tommy perceives is that the city of Longyearbyen is a counterforce to the landscape itself, because "Longyearbyen offers resistance to Svalbard's landscape. The buildings provide something

¹²¹ "I flere uker hadde det vært kraftig regn og tåke, men de siste dagene hadde temperaturen falt under frysepunktet, og de hadde hatt klare dager med sol og frost. Is dannet seg på gjørmepyttene, tynne, frosne vannmalerier, som barna sørget for å trampe i stykker så snart de oppdaget dem, av ren glede over å høre lyden av isen som knaset under føttene deres" (2022: 30).

upon which to train one's gaze and the people's movements counteract the stolidness of the rocky terrain"¹²² (2024: 29). Humans are thus a threat or a force against the landscape. In this, however, lies not only the dichotomy between humans and nature, and between an area inhabited by humans and the broader Arctic wilderness, but also the idea that Svalbard is a moving and living landscape, while nature is shrouded in silence ("stillness"). Another instance in which humanity distances itself from the landscape is exemplified by the greenhouse, which stands in contrast to the Indigenous flora of the island. Indeed, "while the colours of the landscape outdoors are muted and cold, in the greenhouse the colours explode against the retina"¹²³ (2024: 42). In this sense, anthropogenic environment of the greenhouse facilitates a broader experience of nature, albeit within an entirely artificial site.

Many of the landscape's contradictions are also about the difference between darkness and light. Winters are dark, while the northern lights dance in the sky. Summer, on the other hand, is characterized by a constantly shining sun. Tommy describes how these extreme transitions cause the landscape to take on a completely different shape and mood according to seasonal changes. The Christmas period is particularly special, since there is a torchlight procession out along the fjord, "a luminous worm that twisted in the dark" which makes the landscape "both black and luminous all at once"¹²⁴ (2024: 66). And when the first sun comes after the long and dark winter period, nature changes violently: "It wasn't just the light that was unfamiliar, but the shadows, too. The uniform, diffuse natural landscape had suddenly acquired hard contours, keen-

¹²² "Longyearbyen yter motstand mot Svalbards landskap, husene er noe å feste blikket på, menneskenes bevegelser en motvekt mot stillstanden i den steinete naturen" (2022: 41).

¹²³ "Mens landskapet utenfor er dempet i kalde farger, eksploderer fargene i drivhuset mot netthinnen" (2022: 55).

¹²⁴ "En lysende orm som vred seg i mørket som gjør landskapet svart og lysende på samme tid" (2022: 88).

edged lines and sharp contrasts”¹²⁵ (2024: 306). Through this diffractive light, nature now has a more prominent feature, it goes from a homogenous or uniform place to a place that stands out with character. The landscape is thus perceived as in contradictory harmony; it is both dynamic and calm, dark and light, and these alternations occur in wide-ranging extremes.

In addition to the descriptions of Svalbard’s landscape, *Drømmen om et tre* also focuses on Longyearbyen’s isolation from the rest of the Arctic islands. The novel echoes the idea that this isolation is not only determined by geographical reasons but also implies a need to be alone and separated from others. According to Nye (2014: 20), the narratives of anti-landscapes often imply three stages, and Lunde’s novel seems to proceed accordingly:

- Stage 1: There once was a healthier, sustainable place that supported life but was vulnerable. In *Drømmen om et tre*, Svalbard was in fact a quasi-utopian place, before being hit by the pandemics.
- Stage 2: Whether by accident or design, that place was severely damaged and could no longer support human communities: Svalbard then becomes an isolated and depopulated area, and Tommy is forced to live in accordance with natural rhythms, without imposing himself on the cycles of the Arctic.
- Stage 3: Nevertheless, that place might be recuperated and again become a landscape: here, the open ending of the novel might suggest something similar to this evolvment, even though the reader is left in-between both dystopian and more hopeful future visions.

As previously noted, Tommy isolates himself on various levels: geographically (Svalbard), emotionally (separated from his brothers), and socially (from society). Tao notices that the people on Svalbard are different, and that perhaps

¹²⁵ “Det var ikke bare lyset som var uvant, men skyggene også. Den ensartede, diffuse naturen hadde brått fått harde konturer, hvasse linjer og skarpe kontraster” (2022: 383).

they had been trained “to look at other people, the outside world, as a threat”¹²⁶ (2024: 108). She thus distinguishes between Svalbard and the “outside world” (nor. *verden utenfor*), between Svalbard residents and “other people”, which confirms the isolation both geographically (“the world”) and socially (“the people”). Tao also points out that the people on Svalbard perceive the rest of the world as a danger, which is not necessarily based on experience, but rather on what Svalbard residents are “taught”. The residents’ perception that the rest of the world is more dangerous than Svalbard thus contributes to their “sense of place, [...] which can only be constructed by linking that place to places beyond” (Massey 1991: 29). Massey adds that “a progressive sense of place would recognize that, without being threatened by it” (Ibid.), but we see in this novel that Tommy still feels threatened by the world outside, and he tries to keep communication between Svalbard and the world to a minimum.

Even the inhabitants of Svalbard themselves are aware of their isolated position. Grandmother Louise calls the island “the end of the world” and dad David comments that there is “no way out”¹²⁷, only death (2024: 134). Additionally, the city has a specific policy of isolation, as it no longer receives Norwegian support: “In 2069 all contact with the society in Longyearbyen came to a halt. The place faded into oblivion”¹²⁸ (2024: 106). Other places in the city are characterized by emptiness, where there are only few traces of people left, “but these signs of human habitation are now nothing more than artefacts. The emptiness has crept into the city to stay”¹²⁹ (2024: 29). Yet isolation does not necessarily mean negativistic dystopias; on the contrary, Tommy’s choice to

¹²⁶ “Til å se på andre mennesker, verden utenfor, som en fare” (2022: 137).

¹²⁷ “Ikke lenger [finns] noen vei ut” (2022: 163-164).

¹²⁸ “I 2069 stanset kontakten med samfunnet i Longyearbyen. Stedet gled inn i glemselen” (2022: 134).

¹²⁹ “Men nå er disse sporene etter mennesker ikke annet en relikvier. Tomheten har for alvor seget inn i byen” (2022: 41).

staying isolated reflect is personal turning point towards his own 'heterotopian' transition to more positive views.

Heterotopia, or "other places", is a concept originally described by French philosopher Michel Foucault and Jay Miskowiec (1986). It refers to places that are physically separated from normal society and that thus allow or even require a different social norm. Foucault and Miskowiec focus mostly on places where children are involuntarily— for example prisons, mental hospitals, but also the military or segregated boarding schools. But they also mention heterotopias of transition, where citizens choose to have a refuge for a limited time during major changes or to be able to recover in seclusion from ordinary society. Later, it is Kevin Hetherington in *The Badlands of Modernity* (1997) who identifies heterotopian places within society as a source of innovation within social order. The possibility of alternative social norms enables free, creative thinking outside the current norms and thus promotes innovation. In self-imposed heterotopias, such as certain sparsely populated areas, there is also often a struggle towards a utopia, that is, a better world. This endeavour can be described as 'utopics', which position itself as an incredibly innovative process, especially when it can be carried out in a heterotopia, where thinking can flow freely and can be shared with like-minded and highly committed people, as is the case for Tao, holding long and engaged conversations with Tommy. It does not even matter whether utopia is eventually reached or if it remains a distant goal – what matters is the journey.

At the beginning of the novel, Mei-Ling, the project manager who accompanied Tao to Svalbard, notes that the landscape looks terrifying from the boat. Her feeling comes from the fact that there are no trees on Svalbard, unlike the forests in Sichuan: "Not a single tree. There is nowhere to hide here"¹³⁰ (2024: 26). In this dystopian universe, one needs to be able to hide from danger

¹³⁰ "Ikke et tre. Her er det jo ingen steder å gjemme seg" (2022: 48).

and heat. The fact that there is no possibility of hiding gives Mei-Ling uncomfortable feelings, as if it were a sign that the place is not safe or does not offer protection. The motif of humans hiding often recurs in the novel. When almost all the inhabitants of Longyearbyen, including David, Tommy's father, are infected by a deadly virus, Grandmother Louise takes the children to a cabin outside the city, where they can safely wait in quarantine, hoping that no one will discover them. But the sun makes this task dangerous: "The sun was low in the sky, dipping towards the mountains. Go down, he [Tommy] thought, go away, let us have darkness, but the sun did as the sun wished, as reliable as ever, and there was nowhere to hide"¹³¹ (2024: 170). Even when, later in the novel, they are the only ones left in Longyearbyen, Tommy still feels the need to hide: "It was light when she [Rakel] walked the road beside Adventfjorden, it was soon light around the clock, as if nature had decided that they should no longer be allowed to hide"¹³² (2024: 335). This may symbolically suggest that humans are now confronted with the climate problems they have created themselves. Humans have long been able to hide from the consequences of their actions, but now they are forced to take responsibility. Nature can be seen as a force that reminds humans that they cannot ignore environmental issues without serious consequences.

One last motif in the novel that contributes to the narrative of isolation is the question of place belonging. When Tommy sees the children leaving Svalbard with Tao, he shouts that "they belong up here"¹³³ (2024: 13) and that they are "residents of Svalbard"¹³⁴ (2024: 14), which is repeated several times.

¹³¹ "Solen lå og vippt mot fjellene. Kom deg ned, tenkte han [Tommy], ha deg vekk, la oss få mørke, men solen gjorde som solen ville, like pålitelig som alltid, og det var ingen steder å gjemme seg" (2022: 212).

¹³² "Det var lyst da hun [Rakel] gikk veien langs Adventfjorden, det var snart lyst hele døgnet, som om naturen hadde bestemt seg for at de ikke kunne gjemme seg lenger" (2022: 420).

¹³³ "De hører til her oppe" (2022: 20).

¹³⁴ "Innbyggere av Svalbard" (2022: 28).

The novel here questions what it means to belong to a certain place, and to be an inhabitant. About dad David as a resident of Svalbard, Tommy says:

He wanted to be a proper resident, who deserved to live there, who was respectable. Father felt both a sense of duty and gratitude about the island and people of Spitsbergen. Tommy believes that his father, perhaps until the very end of his life, felt that it was Longyearbyen that had raised him, Longyearbyen that had given him love and all the structure a child needs (2024: 39).¹³⁵

The mutual dependence between David and Longyearbyen, that is, between the person and the place, is tangible. The person can be part of the place (with “gratitude”), and this goes hand in hand with a responsibility towards this place (“obligations”). It is specifically in this interdependence between humans and place that a certain sense of belonging to place arises. The idea of mutual interdependence returns when the community holds a torchlight procession in the mountains on Christmas Eve: “Now they had to listen to the mountains. [...] And fortunately, no further sounds were issued from the mountains, they were at rest, listening to the people with the same intensity as when the people listened to them”¹³⁶ (2024: 72). Here, the mountains engage in a dialogue with the people, they listen to each other and are dependent on each other. The city raises its inhabitants (“it was Longyearbyen that had raised him”), the mountain listens, and the place has its own will: “Rakel was a child of Svalbard [...], the

¹³⁵ “Han ønsket å være en fullverdig innbygger, som fortjente å bo der, var skikkelig. Faren kjente både forpliktelser og takknemlighet overfor stedet og menneskene på Spitsbergen. Tommy tror at faren, kanskje helt til det siste, følte at det var Longyearbyen som hadde oppdratt ham, Longyearbyen som hadde gitt ham kjærlighet og alle de rammene et barn trenger” (2022: 52).

¹³⁶ “Nå måtte de lytte til fjellene. [...] Og fjellene ga heldigvis ikke mer lyd fra seg, de lå bare der og lyttet til menneske, like intenst som menneske lyttet til dem” (2022: 94).

kind of child that Svalbard wanted”¹³⁷ (2024: 172). All this contributes to the strong connection between the place and the person, mostly in those cases when an extremely locally oriented perspective is used to manage the global crisis.

4.3.3 The Ambivalence of (Future) Svalbard

Climate change is now taking its toll. The combination of the characters’ identity as nomads, the representation of the world as a global ‘risky landscape’, the uncanny and living character of nature, and the various human relationships to nature contribute to the significance of the place in Lunde’s novel. Place plays a major role here, since the place itself threatens the characters’ existence, and can be perceived as a catalyst for the events of the stories. Lunde uses an eerie and ambiguous representation of nature, so that nature is not perceived as an unchanging environment, but rather as a place that stands in a dialectical relationship with humans.

Svalbard as a place can create a distance for the reader, because it is after all far from Norway, and it is an island with an ice ocean on all sides. This can create ambivalence, and one can question why the story is set in such a place. Exactly because the action is set on Svalbard, the place becomes a blank place’ in the text, and it may also reflect the novel’s motif. The reader learns that the grandmother, Louise, actually escaped from Norway by boat to Longyearbyen in the late 2060s, before Svalbard cut off all contacts with the outside world, making the Arctic a utopian *locus amoenus* for the reader. Norway is portrayed as “a land of outlaws”¹³⁸ (2024: 82), and despite Svalbard’s extreme climate, they would rather live there than with people they cannot trust in Norway (104-105). The novel’s depiction of Norway and Svalbard creates

¹³⁷ “Rakel var et barn av Svalbard [...] et sånt barn som Svalbard ville ha” (2022: 216).

¹³⁸ “De lovløses land” (2022: 104).

further distance, since life on Svalbard is portrayed throughout the story as demanding:

The threats were large and tangible, landslides sweeping away entire mountainsides, polar bear attacks, storms rolling across the landscape and taking with them everything in their path. But maybe the tangible threats from nature were liberating, Tommy thinks now, simpler than her previous life, in spite of everything, where an eternal vigilance and lack of trust in other people had demanded so much from her (2024: 83).¹³⁹

This description appears in a context where Tommy thinks through what he knows about his grandmother's story and how her escape from Southern Europe meant she ended up on Svalbard (82). His reflection that it is easier to live with an unpredictable force of nature than with humans shows some of his valued views on nature and people.

In *The Environmental Imagination* (1995), Lawrence Buell, perhaps the most important provider of premises for literary ecocriticism in Norway (Furuseth and Hennig 2023: 55), presents four criteria that help determine the degree to which a text is environmentally oriented or not:

- 1) The nonhuman environment is present not merely as a framing device, but as a presence that begins to suggest that human history is implicated in natural history.
- 2) Human interest is not understood to be the only legitimate interest.

¹³⁹ "Livet på Svalbard var krevende. Truslene store og konkrete, hele fjellsider skled ut, isbjørn angrep, stormer rullet over landskapet og rev med seg alt som stod i deres vei. Men kanskje var de konkrete truslene fra naturen frigjørende, tenker Tommy nå, enklere enn livet tidligere, tross alt, hvor evig påpasselighet og mangel på tillit til andre mennesker hadde krevd så mye av henne" (2022: 105).

- 3) Human accountability to the environment is part of the text's ethical orientation.
- 4) Some sense of the environment as a process rather than as a constant or a given is at least implicit in the text (Buell 1995: 7-8).

The first criterion, that of nature having a place in the story, is successfully fulfilled. Several of the descriptions are based on the idea that nature is constantly taking back from humans: "The houses far below resembled grey stones, which were already in the process of being conquered by nature"¹⁴⁰ (Lunde 2024: 365). The life they live on Svalbard is in tune with nature; they hunt, they fish, and they must deal with the elements of nature in a perpetual struggle "battles against animals when out hunting, battles against the carcasses that had to be quartered and transformed into something edible. The battle against the weather, the rain that forced its way into the houses, the mud upon which the houses were built, the faulty foundation"¹⁴¹ (2024: 77). These descriptions give the reader an ambivalent feeling towards nature, because on the one hand nature is something humans should protect, but on the other hand nature can make it difficult to survive. The point of view in the quote above is Tommy's, one of the characters through whom the reader experiences the story. The question therefore becomes whether readers' sympathy can be with Tommy who lives in "battle" against nature. Even though Tommy seems to have ecocentric attitudes, such thoughts reverberate in the reader's anthropocentric attitude, striving to find a balance in the young protagonist's dilemma.

When Tommy hides the seeds from Tao and the Chinese team, the novel fulfils Buell's (1995) second criterion for the text to be environmentally oriented,

¹⁴⁰ "Husene lignet grå steiner der nede, var allerede i ferd med å tas over av naturen" (2022: 453-454).

¹⁴¹ "Kamp mot dyr på jakt, kamp mot skrotenne man skulle partere og foredle til noe spiselig. Kamp mot været, regnet som presset seg inn i husene, gjørma de var bygget på, den sviktende grunnen" (2022: 97).

in that human interests should not be the only legitimate interest in relation to nature and other living beings. Tommy shows that humans do not have the right to cultivate and transform the natural wilderness in nature: “They would use the seeds to remake the world in their image and that image depicts the world as it was one hundred years ago, a globe on which there was scarcely any wild nature left at all”¹⁴² (2024: 261). The novel clearly places the natural course above humans’ desire to adapt nature to them. Another example in which nature is prioritised over humanity occurs when the protagonists are attacked by a polar bear. As a predator often associated with Svalbard, the bear occupies a sovereign position in the novel: “The bear was here for human beings; it was the bear that was Svalbard. It owned this land, the people on it were only visiting”¹⁴³ (2024: 206). This description is particularly striking given that Tommy and Rakel are face to face with the bear: they must defend themselves against it yet seeking to avoid shooting the animal. The text thus posits a hierarchical shift in which the intrinsic rights of nature should take precedence over humans.

Through Tommy’s ecocentric attitudes, it emerges that he feels responsibility for nature and the future of the earth when he hides the seeds from Tao. This means that the novel fulfils the third criterion suggested by Buell (1995), which is that human responsibility for the environment should be part of the ethical purpose of the text. When Tommy is alone on Svalbard after his brothers have left, he finds company in what he has, that is, the seeds: “He has the seeds. He must remind himself that the seeds are what is most important. His brothers are merely individual human beings, connected to him through signals in the brain, nerve fibres and hormones. The seeds are a legacy for

¹⁴² “De vil bruke frøene til å omskape verden i sitt bilde, og det bildet forestiller jorden slik den var for 100 år siden, en klode hvor det knapt fantes vill natur” (2022: 323).

¹⁴³ “Bjørnen var her før menneskene, det var den som var Svalbard. Den eide dette landet, menneskene var bare på besøk” (2022: 256).

eternity”¹⁴⁴ (2024: 285). The quote shows that Tommy puts himself aside as a human being, his feelings and connection to the brothers are secondary to when it comes to taking care of nature, which here is to ensure that humans do not get seeds to grow as they wish in the wilderness. Tommy even uses his knowledge of the brain and the human body to locate the origin of emotions, namely, to manage his emotional distress and be realistic on a very inhuman situation – that of being alone on a deserted island. The novel’s ethical aim seems therefore to suggest that humans are the ones who must feel responsible and act for the planet and the future, or the consequences for the future may be fatal.

On this desolate island of Svalbard, nature is depicted as constantly changing, both with the seasons and because of the forces of nature. This means that the novel fulfils the last criterion from Buell (1995), as it conveys an understanding of the physical environment as a process rather than a static system. This becomes clear, for example, when the reader gains insight into how the seasons change: “After weeks of rain and fog, snow had finally arrived, a thick blanket that turned Longyearbyen white”¹⁴⁵ (2024: 86). The seasons therefore form a backdrop for the action in the novel. It also states how the landscape is always moving on Svalbard: “Because Svalbard was always in movement. From a distance the mountains appeared to be stable, enormous formations of stone, partly covered with silent ice. But nothing stayed still”¹⁴⁶ (2024: 61). The environment on Svalbard is clearly presented as constantly changing, and the reader therefore knows that the ground beneath Tommy and

¹⁴⁴ “Han har frøene, han må tenke at det er det viktigste. Brødrene er bare enkeltmennesker, knyttet til ham gjennom signaler i hjernen, nervetråder og hormoner. Frøene er en arv for evigheten” (2022: 355).

¹⁴⁵ “Etter uker med regn og tåke hadde de omsider fått snø, et tykt lag som farget Longyearbyen hvit” (2022: 108).

¹⁴⁶ “Kamp mot landskapets bevegelser. For Svalbard beveget seg alltid. På avstand så fjellene stødige ut, enorme formasjoner av stein, delvis dekket under taus is. Men ingenting lå i ro” (2022: 97).

the others never lies still. The environment is therefore constantly at the back of the reader's mind through its unpredictability.

4.3.4 The Ever-Changing Arctic: A Hopeful Dystopia?

By taking into consideration the ambivalence through which Svalbard is portrayed in the novel, it becomes clear that wilderness assumes the status of a rhetorical strategy. Based on how Garrard (2023) and Hessen (2008) discuss about "wilderness", the novel shows both untamed and tamed wilderness. Svalbard is described as untamed through its unstable ground and harsh climate. Words such as "inexorable" (nor. *ubønnhørlig*) are used to describe the forces of nature when they first take effect (2024: 62). This use of words tells the reader that it is not possible to control or counteract the forces of nature. Moreover, the risk of "avalanche hung over their heads year-round"¹⁴⁷ (2024: 77). People thus become small in the face of a large avalanche, and nature, the wilderness, is portrayed as ruling and brutal. Since the climate on Svalbard is harsh, little can grow there. That is why it is mostly planted in greenhouses which "gave Svalbard's residents protection from scurvy"¹⁴⁸ (2024: 82). The greenhouse is the opposite of the wilderness, where they have tamed the plants and selected them for the benefit of mankind. Without the greenhouse and the subsistence that they get from it, it would not be possible to survive. This is, once again, a paradox to Tommy's belief that the seeds in the vault should not really be used, precisely because cultivating the soil removes the wilderness. It can be argued that a greenhouse is not "soil", since it is cultivated inside a human-made building. Still, there is a constant tension at the poles of the thin line that indicates the division between ecocentrism and anthropocentrism.

¹⁴⁷ "Skredfaren hvilte over dem gjennom hele året" (2022: 98).

¹⁴⁸ "Ga Svalbards innbyggere en skjold mot skjørbuken" (2022: 103).

Furthermore, the preservation of wilderness is also well expressed in how Tommy thinks about the seed vault. This is clearly expressed in this quote:

The people who were coming here, who were on their way, they wanted nothing but to save themselves and their descendants. He knew that they would use the seeds to destroy the natural wilds. They gave the little love precedence over the great love, they would consume the contents of the vault, squander the treasure (2024: 341).¹⁴⁹

Plant shoots and seeds are symbols of growth and fertility, yet the scenario at Svalbard reflects a less optimistic outlook, where Tommy's conservative tendencies, both in his personal life and regarding the seed vault, inhibit the emerging hope associated with growing trees. The seeds are compared here to a treasure; they are valuable to humans because they can help humans to keep control of the wilderness. It is made clear to the reader that neither Tommy nor Grandma want the seeds from the vault to be used because: "They have settled on huge tracts of land, which they made their own, they have created societies where before there was wilderness"¹⁵⁰ (2024: 137). The novel's protagonist therefore has an attitude towards the seeds in the vault as an inheritance that should never be used by humans again: "humans are just one species. This vault is worth infinitely more than us"¹⁵¹ (2024: 94).

Nevertheless, as Kay Sambell (2003) points out, literature aimed at younger audiences often concludes with greater ambiguity to maintain "the future possibility, however slim, of a safe space that child protagonists may

¹⁴⁹ "De som kom hit, de som var på vei, de ville ingenting annet enn å redde seg selv og sine etterkommere, det visste han, de ville bruke frøene til å ødelegge vill natur. De satte den lille kjærligheten over den store, de ville tære på hvelvet, ødsle med skatten" (2022: 424).

¹⁵⁰ "De har gjort landområder til sine, de har skapt samfunn der det var villmark" (2022: 170).

¹⁵¹ "Og mennesket er bare én eneste art. Dette hvelvet er verdt uendelig mye mer enn oss" (2022: 118).

inhabit" (172). This kind of ambiguity is introduced as a result of Tommy's fate in *Drømmen om et tre*, when he, at the end of the novel, reconnects via radio with his younger brother, Henry, but cannot speak, and the ending is left up for the reader's interpretation. In the concluding chapter, which gets emphasized through Tao's point of view, the utopian direction of the happy ending is less ambiguous, and carried out by the metaphorical interweaving of seeds, children, and hope, as Henry, on a forest picnic with Tao, slips away into an idyllic forest glen. Although the wilderness is described as relentless and brutal, nature is also depicted in a romantic way:

Pastel winter was what they had called these weeks, when the sky was flooded with shades of pink and blue that washed over the mountains, when the light from the sun, which had not yet risen above the horizon, highlighted all the contours of the large, white surfaces. Not twilight, but blue light, because the days were hours of blue, and the world re-emerged, but in dreamlike shades, as if not fully awake (2024: 303).¹⁵²

Such evocative descriptions of Svalbard despite its harshness are fundamental. When the description also goes on to say that one needs experience to understand the beauty of a landscape¹⁵³ (2024: 304), it gives the reader room to reflect on the beauty that exists in the landscape around him. It can be questioned which experience Tommy is referring to, whether it is personal life experience in general, such as him taking on onerous responsibilities early in life, or experience with nature surrounding him.

¹⁵² "Pastellvinter, hadde de kalt disse ukene, hvor himmelen spilte i rosa og blått og spilte seg i fjellene, hvor lyset fra solen, som ennå ikke hadde steget over horisonten, fremhevet alle konturer i de store, hvite flatene. Ikke grålysning, men blålysning, for dagene var blåtimer, og verden trådte frem igjen, men i drømmeaktige farger, som om den ikke var ordentlig våken" (2022: 378).

¹⁵³ "Lyset ga Tommy oversikt, muligheter, frihet, det var alt. Men kanskje trenger man erfaring, tenkte han nå, for å forstå skjønnheten i et landskap" (Ibid.).

As Hessen (2008) argues, humans seek the untouched, they want to at least know that it is there, and that there is something calming in being human in the untouched. The novel's open ending suggests that humans will survive this climate collapse if people live more soberly than they do today. In this sense, it is important to recall Garrard's (2023) words that humans will only want to save the planet if they believe that they actually have a future on earth. The novel suggests that there is a concrete future, like when Tommy reflects on his own human nature and thinks that "it could be that *Homo sapiens* will, in the end, learn from their mistakes, if they only make the most of their time"¹⁵⁴ (2024: 95). This contributes to a general feeling of potential hope despite the clear dystopic setting, making *Drømmen om et tre* a novel bringing along a crucial message on the urgency of taking (climate) action.

REFERENCE LIST

Andersen, G. (2016). "Cli-Fi and the Uncanny". In *ISLE: Interdisciplinary Studies in Literature and Environment*, 23(4), 855-866. URL: <https://doi.org/10.1093/isle/isw068> (accessed 6 January 2026).

Baccolini, R. (2000). "Gender and Genre in the Feminist Critical Dystopias of Katharine Burdekin, Margaret Atwood, and Octavia Butler". In Marleen S. Barr (Ed), *Future Females, the Next Generation: New Voices and Velocities in Feminist Science Fiction Criticism*, Lanham: Rowman, 13-34.

Baccolini, R., Moylan, T. (2003). "Introduction. Dystopia and histories". In Raffaella Baccolini and Tom Moylan (Eds), *Dark horizons. Science fiction and the dystopian imagination*, New York and London: Routledge.

Boye, K. (2018). *Kallocain*. Stockholm: Modernista [1940].

Buell, L. (1995). *The Environmental Imagination: Thoreau, Nature Writing, and the Formation of American Culture*. Harvard: The Belknap Press of Harvard University Press.

¹⁵⁴ "Det kan hende *Homo sapiens* til slutt lærer av sine feil, hvis det bare tar tiden til hjelp" (2022: 218, original italics).

Buudir.no, "Småprat om barn og klimaangst". URL: <https://www.buudir.no/foreldrehverdag/smaprat/smaprat-om-barn-og-klimaangst/> (accessed 10 December 2025).

Claeys, G. (2017). *Dystopia: A Natural History*. Oxford: Oxford University Press, 498.

Curry, A. (2013). *Environmental crisis in young adult fiction: a poetics of earth*. New York: Palgrave Macmillan.

Eggensen, D. V. (2020). "Bæredygtighed og bæredygtig udvikling: uddannelse, dannelse og fagdidaktik i skole, erhvervs- og professionsuddannelser". In Garsdal, J. (Ed). *Then came antropocæn. Litteraturens og litteraturundervisningens rolle i disse præapokalyptiske tider*. Aarhus: VIA University College, 40-55.

Ferber, M. (2007). *A Dictionary of Literary Symbols*. Cambridge: Cambridge University Press.

Fisher, M. (2016). *The weird and the eerie*. London: Repeater Books, an imprint of Watkins Media Ltd.

Foucault, M., Miskowiec, J. (1986). "Of Other Spaces". In *Diacritics*, 16(1), 22-27. URL: <https://doi.org/10.2307/464648> (accessed 6 January 2026).

Freud, S. (1919). "Das Unheimliche". In *Imago. Zeitschrift für Anwendung der Psychoanalyse auf die Geisteswissenschaften*, 297-324. URL: <https://archive.org/details/dasunheimlichesigmundfreudpdf> (accessed 6 January 2026).

Furia, P. (2022). "Space and Place. A Morphological Perspective". In *Springer Nature*, 32, 539-556. URL: <https://doi.org/10.1007/s10516-021-09539-6> (accessed 8 February 2026).

Furuseth, S., Hennig, R. (2023). *Økokritisk håndbok*. Oslo: Universitetsforlaget.

Gaard, G. (1993). *Ecofeminism: Women, Animals, Nature*. Philadelphia: Temple University Press.

Garrard, G. (2023). *Ecocriticism* (3rd Edition). New York: Routledge.

Guanio-Uluru, L. (2024). "Seeds of latent hope: In The figurative entwinement of children, adolescents, and plants in Maja Lunde's *The Dream of a Tree*". In *Ecozon@*, 15(1), 73-89. URL: <https://doi.org/10.37536/ECOZONA.2024.15.1.5198> (accessed 5 January 2026).

Heidegger, M. (1967). *Sein und Zeit*. Tübingen: Max Niemeyer Verlag [1927].

Hessen, D. O. (2008). *Natur hva skal vi med den?* Oslo: Gyldendal Norsk Forlag.

Hetherington, K. (1997). *The badlands of modernity: heterotopia and social ordering*. London: Routledge.

Irr, C. (2017). "Climate Fiction in English". In *Oxford Research Encyclopedia of Literature*. URL: <https://oxfordre.com/literature/view/10.1093/acrefore/9780190201098.001.0001/acrefore-9780190201098-e-4> (accessed 29 August 2025).

Johns-Putra, A. (2016). "Climate change in literature and literary studies: From cli-fi, climate change theater and ecopoetry to ecocriticism and climate change criticism". In *WIREs Climate Change*, 7(2), 266-282. URL: <https://doi.org/10.1002/wcc.385> (accessed 25 June 2025).

Kramshøj Flinker, J. (2015). "Økolitteratur og økokritik i en apokalyptisk Verden". In *SPRING - tidsskrift for moderne dansk litteratur*, (39), n.d.

Kramshøj Flinker, J. (2018). "Den skandinaviske cli-fi: en ny genre i antropocæn?". In *SPRING - tidsskrift for moderne dansk litteratur*, (42), 41-66.

Leikam, S., Leyda, J. (2017). "Cli-Fi and American Studies: An Introduction". In *Amerikastudien*, 62(1), 109-114.

Lunde, M. (2015a). *Bienes historie*. Oslo: Aschehoug.

Lunde, M. (2015b). *The History of Bees*. London: Atria Books.

Lunde, M. (2022). *Drømmen om et tre*. Oslo: Aschehoug.

Lunde, M. (2024). *The Dream of a Tree*. Translated by Diane Oatley. London: Scribner UK.

Massey, D. D. (1991). "A Global Sense of Place". In *Marxism Today*, 38, 24-29.

Massey, D. D., et al. (2021). "Fostering hope with children's literature". In *The Reading Teacher*, 75(1), 575-582. URL: <https://doi.org/10.1002/trtr.2069> (accessed 5 January 2026).

McDonough, M., Wagner, K. (2014). "Rebellions Natures: The Role of Nature in Young Adult Dystopian Female Protagonists' Awakenings and Agency". In Sara K. Day et al. (Eds), *Female Rebellion in young adult dystopian fiction*, Surrey: Ashgate Publishing.

Moylan, T. (2000). *Scraps of the untainted sky. Science fiction, utopia, dystopia*. New York and London: Routledge, 70-75.

Nye, D. (2014). "The anti-landscape". In David Edwin Nye and Sarah Elkind (Eds), *The Anti-Landscape*. Amsterdam: Rodopi, 11-25.

Orwell, G. (1949). *1984*. London: Secker & Warburg.

- Penfold, N. (2022). *Beyond the frozen horizon*. London: Little Tiger Press Group.
- Plumwood, V. (1993). *Feminism and the Mastery of Nature*. London: Routledge.
- Royle, N. (2003). *The uncanny*. Manchester: Manchester University Press.
- Røsvik, M. (2018). "Ville tilstandar i undergangslendet". In *Samtiden*, 127(1), 92-101. URL: <https://doi.org/https://doi-org.ezproxy1.usn.no/10.18261/ISSN1890-0690-2018-01-15> (accessed 11 December 2025).
- Sambell, K. (2003). "Presenting the Case for Social Change: The Creative Dilemma of Dystopian Writing for Children". In Carrie Hintz and Elaine Ostry (Eds), *Utopian and Dystopian Writing for Children and Young Adults*, New York: Routledge, 163-178.
- ScienceDirect.com, "Seed Dispersal". URL: <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/seed-dispersal> (accessed 5 January 2026).
- Seedvault.no, "Svalbard Global Seed Vault: Safeguarding Seeds for the Future". URL: <https://www.seedvault.no/> (accessed 2 January 2026).
- Slettan, S. (2020). "Introduksjon. Om ungdomslitteratur". In Svein Slettan (Ed), *Ungdomslitteratur – ei innføring*, Oslo: Cappelen Damm Akademisk, 13-35.
- Todorov, T. (1975). *The fantastic: a structural approach to a literary genre*. Ithaca, New York: Cornell University Press.
- Trexler, A. (2015). *Anthropocene Fictions: The Novel in a Time of Climate Change*. University of Virginia Press. URL: <https://doi.org/10.2307/j.ctt13x1r99> (accessed 2 July 2025).
- Trexler, A., Johns-Putra, A. (2011). "Climate change in literature and literary criticism". In *WIREs Climate Change*, 2(2), 185-200. URL: <https://doi.org/10.1002/wcc.105> (accessed 2 July 2025).
- Weik von Mossner, A. (2013). "Hope in Dark Times: Climate Change and the World Risk Society in Saci Lloyd's *The Carbon Diaries* 2015 and 2017." In Carrie Hintz et al., *Contemporary Dystopian Fiction for Young Adults: Brave New Teenagers*, edited by Carrie Hintz, Bala (Eds), New York and London: Routledge, 69-83.
- Xue, C. (2023). "Chapter 3: The anti-landscapes of the Arctic: understanding circumpolar sea-land relationships from a Lacanian perspective". In Savitri Jetoo et al. (Eds), *Understanding Marine Changes*, Cheltenham, UK: Edward Elgar Publishing, 43-65.

Xue, C. (2025). *The Dynamics of Space, Place and Landscape: Understanding the Arctic Landscape from a Lacanian Perspective*. Doctoral Dissertation. Painsalama, Turku: Finland. URL: <https://www.utupub.fi/handle/10024/194302> (accessed 23 January 2026).

CHAPTER 5



***Echoes of Land and Identity: Sámi
Perspectives in Ann-Hélen Laestadius'
Stöld and Máret Ánne Sara's In
Between Worlds***

5 ECHOES OF LAND AND IDENTITY: SÁMI PERSPECTIVES IN ANN-HÉLEN LAESTADIUS' *STÖLD* AND MÁRET ÁNNE SARA'S *IN BETWEEN WORLDS*

And now she could joik clearly [...]. It was just her, the ice, and her lands.

(Laestadius 2023: 131)

To read about the Arctic is often to encounter a landscape already framed from the outside, imagined as wilderness, frontier, or melting ice. Yet, for Indigenous peoples of the region, the Arctic is home. Specifically, for the Sámi, Europe's only recognised Indigenous people, literature becomes a space to assert their presence and transmit cultural knowledge. This section turns to Sámi authors whose work broadens the scope of Arctic literature by rooting it in perspectives grounded in kinship with land, reindeer herding, natural phenomena, and community. By directing analytical attention to this body of work, the study seeks to foreground the distinctive aesthetic and epistemological contributions of Sámi writers.

The authors introduced here – Ann-Hélen Laestadius and Máret Anne Sara – bring distinct yet interconnected voices to contemporary Sámi literary production. Their works span genres as varied as ecofiction and fantasy, and reveal the Arctic as a place of biodiversity and complexity. Ann-Helén Laestadius (1971–) is an author and journalist from Kiruna, Sweden. Her ancestry reflects two of Sweden's national minorities: she is a Sámi of Tornedalian descent. In 2016, Laestadius was awarded the prestigious August Prize for Best Young Adult and Children's Novel for *Ten Past One* (original title: *Tio över ett*, 2016), for which she was also awarded Norrland's Literature Prize.

She is the author of *Stöld* (2021), which was named Sweden's Book of the Year, longlisted for the Dublin Literary Award, and adapted for a Netflix film¹⁵⁵. Laestadius addresses questions of ecology, belonging, and intergenerational survival in the face of systemic pressures.

Máret Anne Sara (born 1983) is an artist and author¹⁵⁶ from a reindeer herding family in Kautokeino, Northern Norway, where she currently lives and works. Sara's work deals with political and sociopolitical issues affecting the Sámi and Indigenous communities, and the Sámi reindeer-herding community. In 2014 Sara was nominated for the Nordic Council's Children and Young Literature Prize for her debut book *Ilmmid gaskkas* (2013) published in the North Sámi language in 2013 and translated into English as *In Between Worlds* (2014). The sequel, *Doaresbealde doali*, came out in North Sámi in 2014 and was recently translated into English as *Crossing Over* (2025; translation from North Sámi by Laura A. Janda). Sara weaves narratives that bridge reality and the fantastic, offering political allegory while also drawing from Sámi cosmologies.

By bringing these works together, this last chapter foregrounds how Sámi authors are reshaping the literary Arctic, animating it with moral dilemmas and imaginative futures rooted in tradition. This chapter thus investigates the evolving interplay between Arctic environmental transformations, and Sámi cultural, literary, and ecological responses to climate change. It foregrounds how shifting landscapes and seasonal cycles intersect with Indigenous identities, highlighting both vulnerability and resilience in a rapidly changing region. Through a cryo-critical lens, the chapter explores the Arctic as a liminal space characterised by ecological instability and cultural metaphor, while also amplifying Sámi perspectives on adaptation, tradition, and future sustainability.

¹⁵⁵ The film *Stolen* (2024) is Elle Márjá Eira's feature directorial debut. It was released on Netflix on 12 April 2024.

¹⁵⁶ Máret Anne Sara's official website, URL: <https://maretannesara.com/> (accessed 4 July 2025).

Section 5.1 lays the conceptual foundation by examining the liminal nature of the Arctic landscape through metaphors and cultural imaginaries. Drawing on literary and artistic representations (from Romantic depictions of sublime icy wilderness to contemporary understandings of unseasonal changes), this section interrogates how the Arctic is not only a physical space but also a symbolic threshold marked by instability and transformation. It reviews Sámi traditional knowledge of eight distinct seasons, and it highlights how climate change is unsettling these established temporal rhythms, introducing unpredictability and novel seasonal experiences such as the emerging “non-winter” phenomenon. This section then aims at emphasizing the Arctic’s dynamic liminality as central to ecological and cultural survival.

Section 5.2 grounds these theoretical frameworks in a literary context, analysing how Ann-Hélen Laestadius’ novel *Stöld* reflects the tensions and adaptations within Sámi communities confronting climate disruptions and colonial antagonism. This section foregrounds Sámi identity as intimately tied to land and nature, depicting the emotional and cultural consequences of environmental change. It highlights Indigenous traditional ecological knowledge as a vital, evolving resource that guides survival and resistance strategies, while emphasizing the necessity of reframing this knowledge to address unprecedented climatic challenges.

Section 5.3 aims to extend the discussion into the realms of fantasy and myth as vehicles for articulating ecological and cultural crises. Máret Anne Sara’s novel *In Between Worlds* intertwines Sámi folklore, oral tradition, and contemporary Arctic challenges to dramatize the tensions between tradition and contemporary adaptation, environmental degradation, and Indigenous agency. The novel weaves together spiritual and empirical knowledge systems, emphasizing holistic Indigenous epistemologies and the ethical principles of care and hope within the context of ecological destruction and political

marginalization. This section also highlights the importance of Sámi languages and terminologies related to ice and snow as profound repositories of cryosphere knowledge. Finally, it focusses on the broader framework of cryo-criticism, reinforcing Indigenous knowledge as a crucial resource for understanding climate change and adapting to it.

Together, these sections illuminate the multifaceted dimensions of Arctic change – ecological, cultural, and narrative – while showcasing the resilience and (potential) innovation of Sámi communities as they navigate the fluid temporalities of past, present, and future in a world of melting ice and shifting conditions.

5.1 ARCTIC IN-BETWEENS: LANDSCAPES OF GROWTH AND THE IMPACT OF CLIMATE CHANGE ON SEASONAL CYCLES

5.1.1 Arctic Liminalities: In-between Metaphors

Metaphors on the Arctic landscape that are commonly used both verbally and in writing contribute to the linguistic and symbolic definition of a significant environmental vastness. The primary challenge in dealing with literary texts involving the Arctic landscape is that its geography is not uniform: elements like snow and ice, rivers, coastlands, wetlands, and urban spaces all coexist in this unique and vast ecosystem (Bordignon 2024). Metaphors are affected and benefit from the Arctic landscape, they contribute to the imaginaries that we have of it but at the same time they are themselves direct expressions of ideas, paradigms, debates and discourses on landscape liminality.

Spatially, liminal experiences can range from specific thresholds and border zones to entire regions or civilizations. In the introduction of *Liminal Landscapes: Travel, Experience and Spaces In-Between* (2012), Hazel Andrews and Les Roberts highlight the conceptual convergence of liminality and

landscape, arguing for their mutual imbrication in processes of transition, marginality, and becoming:

Landscape is understood as something that is 'shaped' and 'produced', and which is thus contingent on human or natural 'processes and agents'. Insofar, then, as, ontologically, landscapes are processual and in a constant state of transition and becoming is there not a case for suggesting that landscapes themselves are intrinsically liminal? [...] Yet in approaching landscape through the prism of liminality (and vice versa) a 'back-to-basics' stripping down of the complex and in many ways plenitudinous structures of meaning that have coalesced around these concepts might be a fruitful way, for the purposes of this introduction, of taking stock of the 'place' of the liminal (rhetorically and spatially) in contemporary theory and debate (1-2).

Liminality is understood by the two scholars not only as a spatial concept but also as temporal one, marking beginnings, ends, and the duration of transformative processes. Similarly, landscapes can represent – and can be represented by – visual depictions and material, inhabited environments, shaped by natural and human processes. Thus, liminal landscapes are less about fixed attributes and more about dynamic processes, affective potential, and epistemological frameworks through which space and identity are navigated and performed (Andrews and Roberts 2012: 1).

Moreover, in *Liminal Space* (2024), Aspman delineates liminality as a concept that breaks down the idea of fixed borders and absolute truths. It is a zone that unsettles clear divisions between self and other, inside and outside, past and future. It is a passage which offers a moment to reflect and transcend. Rather than being merely transitional, liminality might represent a continual process of becoming. It disrupts our sense of linear time and challenges the idea of a stable identity. This in-between zone plays a vital role in human creativity and artistic exploration (Aspman 2024). A liminal place is also a space

of ambiguity where shapes and meanings are waiting to be formed. In narratives, the concept of liminality can be a powerful tool to tell stories that slip between layers of reality.

While, rhetorically, metaphors operate as a deliberate figure of speech to shape meanings, metaphors for liminal landscapes have a foundational role in constructing and organising scientific knowledge (Dodds 2021: 1124). In the case of the Arctic, I consider the use of metaphors not only as a key device for ecocritical analysis, but also as a methodological apparatus of investigative approach. Arctic liminality is a metaphor itself. It refers to a real and urgent condition, that is: an environmental, cultural, and existential threshold that demands interdisciplinary attention. The Arctic is not just changing but it is the metaphor of a site of change, an edge but vast world where the futures of climate, culture, and consciousness are powerful symbols inspiring imagination.

Metaphors referring to the Arctic are transitioning into old and new imaginaries that intersect while the Arctic landscape is experiencing ice loss. As Klaus Dodds explains, “[t]he territorial volume is being put to work while at the same time it is being melted, thawed, opened and closed by human and more than human forces” (1121). Ice itself, as a metaphor, is often complicitous with the settler colonial framing of empty, unstable, and ungoverned spaces. The territorial volume of the Arctic region has attracted a medley of metaphors, tropes and geographical analogies such as the “ends of the earth”, “tip of the iceberg”, and snow and ice acting as a “blanket” and a “veil” (Dodds 2021: 1125).

Since the time of polar explorations, the Arctic has been depicted as sublime and beautiful, terrifying yet overpowering. Early paintings of the Arctic often reveal early colonial representations that exoticize and romanticize it.



Figure 8: The Sea of Ice (c. 1823-25) by Caspar David Friedrich. Artchive.com.

The Sea of Ice by Caspar David Friedrich (1823–1824), is a masterpiece encapsulating the essence of Romanticism. It presents a dramatic and tumultuous scene of icy chaos, depicting jagged shards of ice thrusting upward in a convergence of forms that evoke a sense of both awe and foreboding. The central focus is a cataclysmic pile-up of ice blocks, which seems to tower and topple simultaneously, creating a dynamic interplay of line and form. The colour palette is dominated by cold, pale blues and whites, which reinforce the frozen nature of the scene, while subtle hints of brown and dark hues contrast against the icy environment, lending the artwork a stark realism. Against the chaotic backdrop, remnants of a shipwreck are discernible, partially crushed and ensnared within the ice. This inclusion of the human element – a futile man-made object overwhelmed by the raw power of nature – underscores the Romantic fascination with human vulnerability in the face of natural forces. The

artwork lacks human figures, further emphasizing the isolation and the impression that nature, indifferent to human endeavours, reigns supreme. The distant background fades into a lighter, misty horizon, perhaps signifying the vast, insurmountable expanse of the Arctic Sea. The painting is terribly distressing, with the stern of a ship crushed by the cold and is inspired by the failed expedition of Sir William Edward Parry in search of the Northwest Passage conducted in 1819-1820, an event that was covered by newspapers across Europe at the time¹⁵⁷. According to Laura Messina (2002), during the time of the expeditions

[t]he North Pole, a place understood as a succession of always equal cycles, as an obsessive reiteration of days, seasons, years and centuries, becomes a metaphor for eternity. Repetition as temporal and spatial cancellation. The human attempt to penetrate its mystery, therefore, is destined to fail¹⁵⁸.

In Friedrich's imagination, the mystery is embodied by the cold, and this is the novelty for the time. This view invites contemplation of the infinite and the unknown, key themes of the Romantic period that sought to explore the edges of human experience and understanding. Looking at the whole, *The Sea of Ice* masterfully conveys the sublime awe and terror, and majestic beauty of the Arctic world¹⁵⁹.

¹⁵⁷ Encyclopedia Arctica, "Sir William Edward Parry", in *Encyclopedia Arctica 15: Biographies*. URL: <https://collections.dartmouth.edu/arctica-beta/html/EA15-53.html> (accessed 19 May 2025).

¹⁵⁸ Original Italian version: "Il Polo nord, luogo inteso come succedersi di cicli sempre uguali, come ossessiva reiterazione di giorni, stagioni, anni e secoli, diventa metafora dell'eternità. La ripetizione come annullamento temporale e spaziale. Il tentativo umano di penetrarne il mistero, quindi, è destinato a fallire". L. Messina, (2002). "Caspar David Friedrich's *The Sea of Ice*", in *Exibart*, 3. URL: <https://www.exibart.com/opera/caspar-david-friedrich-il-mare-di-ghiaccio/> (accessed 19 May 2025).

¹⁵⁹ Artchive.com, "About The Sea of Ice", URL: <https://www.artchive.com/artwork/the-sea-of-ice-caspar-david-friedrich-c-1823-25/> (accessed 22 April 2025).

In September 2014, the Northwest Passage revealed its secrets, and once again the reason is the warming of the Arctic. The sea returned the wreck of the English ship *Erebus* and, exactly two years later, also the ship *Terror* on the bottom of Terror Bay¹⁶⁰. Among the most coveted trophies of underwater archaeology, these are two famous and, at the time, very modern British ships that set sail in 1845 to open the Northwest Passage, and which mysteriously disappeared along the way in the polar waters. The last sighting was of a whaling ship off the coasts of Greenland, then commander John Franklin and his 128 men disappeared in the “extreme seas” (Ibid.). Despite the evident failure of the polar voyage and the shadows of cannibalism¹⁶¹ that hung over the ill-fated expedition, the Victorian media celebrated Sir Franklin as a hero. Monuments in his honour credited him with the discovery of the Northwest Passage, while the sacrifice of the explorers became the subject of works of art, poetry, drama, stories and novels, and heartbreaking folk songs such as *Lady Franklin’s Lament* (1850), which sings of Lady Franklin’s love for her husband who had disappeared in the ice.

In addition to that, Wilkie Collins’ and Charles Dickens’ play *The Frozen Deep* (1857) was performed at the Manchester Trade Union Hall and at the Royal Gallery of Illustration, where a special performance was given for Queen

¹⁶⁰ ABC News, “Sir John Franklin’s doomed 1846 Northwest Passage expedition ship found in Canadian Arctic”, 9 Sep. 2014. URL: <https://www.abc.net.au/news/2014-09-10/canada-locates-british-explorer-ship-lost-in-1846/5732292> (accessed 19 April 2025).

¹⁶¹ Archaeologists have identified the cannibalised remains of a senior officer who perished during an ill-fated 19th century Arctic expedition, offering insight into its lost crew’s tragic and grisly final days. Accounts gathered from local Inuit people in the 1850s suggested that some of the crew members resorted to cannibalism. While these reports were initially met with disbelief in England, subsequent investigations conducted over the past four decades found a significant number of bones had cut marks that offered silent evidence of the expedition’s catastrophic end (CNN Science, “‘It went horribly wrong’: DNA analysis sheds light on lost Arctic expedition’s grisly end”, URL: <https://edition.cnn.com/2024/10/11/science/franklin-lost-expedition-cannibalism/>, accessed 19 May 2025).

Victoria¹⁶². Finally, it was the icy sea that immortalised and sealed the tragedy, sinking the wrecks of the ships.

According to Benjamin Morgan, “[t]he Arctic sublime is a well-studied Romantic and Victorian aesthetic of threatening landscapes, terrible creatures, and deathly danger [...], including massive paintings of barren landscapes wrecked ships, and a tremendous amount of adventure fiction idolizing the Arctic explorer” (2016: 2-3). In contemporary discourse, this sublime shifts toward climate anxiety and humans overpowering nature, rather than vice versa. There is a form of irony, Morgan states, in the perception of the present era, in fact, “regions that had for centuries dramatized the fragility man life have, in a few short decades, been refigured as the earth’s profound vulnerability to collective human agency” (Morgan 2016: 3). More than a century after the making of Friedrich’s masterwork, among the pages of the classic allegorical adventure posthumously published novel *Le Mont Analogue* (1952), French novelist René Daumal (1908 - 1944) presents a memorable description of a glacier, in which he asserts that ice lives and reproduces:

For glaciers are living creatures; their substance renews itself in an unending periodic process.

The glacier is an organized being, with a head or névé through which it gulps snow and rock debris, a head well separated from the rest of its body by the *rimaye*; then an enormous stomach in which snow is transformed into ice, a stomach riddled with crevasses and internal passage for expelling excess water; and in its lower portions it secretes it wastes in the form of moraine. Its life follows the cycle of the seasons. It sleeps in winter and comes to life in the spring with deep creakings and boomings. Certain glaciers even reproduce themselves, by means

¹⁶² *The Frozen Deep* was written by Collins in 1856, although conceived, cast and revised by Dickens. It was based on the ill-fated 1845 Franklin expedition to discover the Northwest Passage. Dickens had published several articles in *Household Words* rebutting the charge of cannibalism (later proved to be true) made by John Rae in 1854. The play was first performed at Tavistock House on 6 January 1857 (Wilkie-Collins.info, “The Frozen Deep: a Drama in Three Acts”, URL: https://www.wilkie-collins.info/play_frozen_deep.htm, accessed 19 May 2025).

that are little more rudimentary than those of unicellular beings – either by conjunction and fusion or by division, which gives birth to what are called regenerate glaciers (Daumal 1974: 81).

Glaciers are here portrayed with an almost mystical, living quality that reflects the novel's blend of spiritual allegory, metaphysical exploration, and symbolic adventure. Though Daumal never overtly states that glaciers are "alive" in the biological sense, he imbues them with a consciousness or animacy that aligns with icy liveliness. Ice represents a threshold between material and spiritual worlds, and every part of it, including the glaciers, participates in this ontological duality. The glacier seems to respond to the two climbers exploring it, not merely as physical obstacles, but as intelligent forces. They are spiritually alive, mirroring the seekers' inner conditions, just as much as they shape the physical contours of their journey. The glacier, then, becomes both a literal and figurative terrain for transformation. This idea is reinforced by the novel's use of non-Euclidean geometry as a metaphor for altered perception and higher dimensions of awareness. In such a space, the glacier is not bound by ordinary physics; its shifting forms and mirrored surfaces can obscure or reveal, depending on the state of mind of the observer.

The characters' experiences crossing the glacier often involve moments of deep introspection and metaphysical insight, as though the glacier itself were guiding or challenging them. One particularly illustrative moment occurs when the narrator reflects on the nature of crossing the glacier: "The glacier does not reveal itself to eyes that do not know how to see; it shifts, obscures, reflects, and only sometimes shows a path, which vanishes if your intention falters" (67). This passage encapsulates the glacier's symbolic life: it is not static, but responsive. It demands clarity of purpose and alignment of will. If the climbers

lose their inner focus, the glacier becomes unreadable and dangerous; but, if they remain clear and attuned, it offers a way forward.

The evolving idea of ice liveliness shows the stepping beyond the linear timeline of historical eras and human-defined national boundaries. At present time, more contemporary metaphors such as melting and thawing become vehicles to articulate an unstable Arctic, “the net-result being to destabilise territorial imaginaries [...], as sea ice that might once have been considered semi-permanent is now thinning, retreating even disappearing” (Dodds 2021: 1128). While once the liminal qualities of ice and its capacity confused and complicated elemental distinctions between land and sea in the winter season, in recent times the thinning process and inhomogeneous and less compact distribution of sea ice have highlighted the fragility and liminality of the Arctic. In this regard, critical scholarship has tended to concentrate on how the volume, duration and extent of ice has produced new metaphors for altered Arctic environments (Dodds 2021: 1129). These shifts signal a broader change in how we understand literature in the context of planetary change, advocating for a more integrated approach that unites literary analysis with ecological and scientific awareness, also being at the basis of broader ecocritical interpretations.

5.1.2 Climate Change Challenging the Eight Seasons of the Arctic

Sámi people have four main seasons and four ‘half-seasons’¹⁶³. They structured time into eight periods: autumn-winter; winter; spring-winter; spring; spring-

¹⁶³ Kirunalapland.se, “Our Eight Seasons”, URL: <https://kirunalapland.se/en/our-eight-seasons/> (accessed 27 October 2025). There are approximately ten distinct Sámi languages, many of which are mutually unintelligible among speakers; for the purposes of this study, I will only refer to North Sámi, since both Laestadius and Sara writes in this language. About 90% of Sámi language speakers speak North Sámi, and there are three main North Sámi dialects.

summer; summer; summer-autumn, and autumn. Traditionally, the first of the eight seasons in the yearly cycle is frosty winter (North Sámi *Dálvi*, from mid-December to mid-February). During high winter, the reindeer are divided into smaller winter groups, called *sijda*, which stay separate as they move between different grazing grounds through the cold season. In the winter pastures, they mostly feed in the coniferous forests, where their diet largely consists of lichens and sprigs from berry bushes. Reindeer are finely tuned to life in the Arctic: their winter coat combines a dense underlayer of wool with long, hollow hair that trap air for insulation. This helps them conserve both heat and moisture even in severe cold. The availability of winter pasture depends not only on how much land and lichen there is, but more crucially on whether the animals can reach it.

Winter grazing is a limiting factor for reindeer herding. Problems arise when ice seals the ground or when snow hardens into a crust the reindeer cannot break through. Logging makes conditions worse by changing the texture of the snow and damaging the fragile lichen cover. When there is no hanging lichen left on the trees, reindeer can quickly face severe nutritional stress. In those cases, herders may need to supply extra feed, or in the worst situations, replace natural grazing entirely to prevent large losses. Winter pastures are rarely continuous since they're fragmented by logging, roads, railways, airfields, military zones, and other developments. This forces the winter groups to move between separate grazing areas and, through all this, the herder's task in winter is to watch over the herd and protect it from predators¹⁶⁴.

From mid-February to the end of March is the season of crusty snow (spring-winter, North Sámi *Giđđadálvi*), the light shines bright, but nights remain dark and cold. For herders, the timing of the moves to the spring areas varies depending on the snow and grazing conditions. The cows return willingly to their

¹⁶⁴ Kirunalapland.se, "Our Eight Seasons", URL: <https://kirunalapland.se/en/our-eight-seasons/> (accessed 27 October 2025).

traditional calving grounds. The mountain reindeer chooses southern slopes of the low fells or the open birch zones, where the snow melts early and bare patches appear. During this time, their food consists mainly of lichens. Access to hanging lichens is especially important, since the snow crust of late winter still covers most of the ground vegetation¹⁶⁵. With the increasing amount of light, nature is revived to face a new period of growth, and April and May are months for revival (spring, North Sámi *Gidđá*); this is the departure-of-ice season (approximately from 15th April to 15th May), when snow is still on the ground but the first plants begin to appear, and reindeer give birth to their calves. During the spring, the first boats are launched into lakes and rivers. In May, reindeer calves are born across the low fells and, in some regions, within the forests. The cows seek out south-facing slopes where the snow disappears early, opening access to fresh grazing and allowing new plants to emerge quickly. They tend to return to the same calving grounds each year, often giving birth at nearly the same time. The landscape they choose is gently uneven and offers shelter from the wind. This period is especially delicate; too much disturbance can indeed cause a cow to leave her newborn behind¹⁶⁶.

Once the sun no longer sets, the time of the midnight sun begins (spring-summer usually occurs in June, North Sámi *Gidđageassi*). After calving, both the reindeer and their herders enter a quieter phase. The animals move into birch forests, wetlands, and along streams where the vegetation comes early. Wetlands hold great importance for the forest Sámi. Early summer is a time of rest and recovery for the reindeer, a brief calm before the heat and insects arrive. Good grazing during this period helps the adults regain the weight lost over winter. Herders spend these weeks maintaining fences, shelters, and other

¹⁶⁵ Kirunalapland.se, "Our Eight Seasons", URL: <https://kirunalapland.se/en/our-eight-seasons/> (accessed 27 October 2025).

¹⁶⁶ Ibid.

structures essential to reindeer husbandry¹⁶⁷. With twenty-four hours of daylight a day, the entire Arctic ecosystem lives to the fullest in high summer (North Sámi *Geassí*, until mid-July). As summer advances, the reindeer move up to the high fells or out onto open plains, where the heat and insects are less oppressive. They are especially vulnerable to the warble fly and the nose botfly, both of which lay larvae that parasitize the animals. By late June, herders begin gathering the reindeer to mark the new calves. This is one of the busiest periods of the year, and it often implies shifting to a nocturnal rhythm, since calf marking is preferably done during cooler evenings and nights. Collecting the herd can take several days, depending on the weather and wind conditions. Because the reindeer are scattered over wide areas, herders use helicopters and motorbikes alongside traditional methods on foot to bring them together. Each Sámi village maintains several marking enclosures in different locations, chosen according to where the herds are found. Inside the enclosure, calves remain with their mothers, allowing herders to identify ownership easily. Each calf is caught with a lasso and marked by a unique combination of ear cuts, a traditional system where every owner has their own distinct pattern¹⁶⁸.

Autumn-summer (North Sámi *Čakčageassí*) occurs in August, when reindeer graze across birch forests and wetlands, taking advantage of the lush green vegetation. They feed on leaves, grasses, and other herbaceous plants, and they particularly enjoy mushrooms, which provide valuable protein and phosphorus. From late July onward, the reindeer enter a crucial period of growth, building both muscle and fat reserves that are vital for surviving the winter. It is essential that they are allowed to graze undisturbed during this time, as these weeks directly influence their ability to endure the harsh season

¹⁶⁷ Kirunalapland.se, "Our Eight Seasons", URL: <https://kirunalapland.se/en/our-eight-seasons/> (accessed 27 October 2025).

¹⁶⁸ Ibid.

ahead¹⁶⁹. Autumn-summer is also called ‘the harvest season’ and begins when the willow herb starts to bloom (approximately from 16th July to 9th September). People head for the bogs to pick cloudberries and search for other berries; these summer days, filled with light, begin to get shorter and grow dimmer, but people still hunt and fish to preserve food for winter¹⁷⁰.

Nature’s last feat, before winter arrives, takes place during the colourful autumn season (North Sámi *Čakča*, from 10th September to 14th October); by mid-October, the reindeer have mostly moved into the low fells. Nighttime frosts in late summer have reduced the nutritional value of the grazing, so the animals begin digging for the underground parts of bogbean and other herbaceous plants. With the arrival of the first snow in October, their diet shifts primarily to ground lichens. During this period, reindeer are largely left to fend for themselves. For the herder, it is a quieter time of year, allowing space to fish for the household and to focus on other tasks necessary for maintaining the reindeer husbandry operation¹⁷¹.

The short first snow season (typically from 15th October to 15th November) is part of the last season (autumn-winter, or pre-winter, North Sámi *Čakčadálvi*, up to mid-December) and represents the end of the yearly cycle. This phase begins once frost and snow settle in for the season. The reindeer move to areas where some vegetation remains, including grassy forests and bogs. These pastures are used while the snow cover remains below about thirty centimetres and before the severe winter cold sets in. As conditions worsen, the reindeer gradually shift to feeding on lichen and begin their move toward the winter grazing grounds¹⁷².

¹⁶⁹ Kirunalapland.se, “Our Eight Seasons”, URL: <https://kirunalapland.se/en/our-eight-seasons/> (accessed 27 October 2025).

¹⁷⁰ Ibid.

¹⁷¹ Ibid.

¹⁷² Ibid.

These carefully structured seasonal patterns have become increasingly difficult to follow in recent years. Climate change has brought greater unpredictability to the Arctic, with winters that are warmer or punctuated by sudden thaws, early or delayed snowfalls, and shifting patterns of frost and ice. As a result, reindeer grazing conditions no longer align with the traditional eight-season calendar. The timing of calving, growth periods, and migrations is increasingly influenced by weather rather than by the fixed rhythms that Sámi herders once relied on. What was once a dependable cycle of movement and care has become more chaotic, requiring herders to respond flexibly and continuously adjust their strategies. This growing unpredictability underscores how deeply reindeer herding is intertwined with the natural environment and how vulnerable these centuries-old practices are to a changing climate. As Elsa, the protagonist in Laestadius' *Stöld*, experiences change in Arctic environments, she immediately reflects on modifications in seasonality:

In late August, when the forest glowed red and gold, she could breathe again. Elsa loved autumn-summer, *čakčageassi*, most of all. The summer had been way too hot and the forest fires that had ravaged their area had burned away all the reindeer lichen. Still, they hadn't been hit as hard as the south Sámi lands, where thousands of acres of forest had burned. It would take twenty or thirty years before the lichen grew back. If it ever did (2023: 429).¹⁷³

Such events directly threaten the availability of critical grazing for the reindeer, showing that the rhythms of the seasons are no longer guaranteed. Similarly,

¹⁷³ "I slutet av augusti när skogen glödde i rött och guld gick det att andas igen. Elsa tyckte allra mest om höstsommaren, *čakčageassi*. Sommaren hade varit alldeles för varm och skogsbränderna som härjat i deras närhet hade bränt sönder renlaven. Ändå var det inte lika drabbade som på sydsamiskt område där tusentals hektar skog brunnit och man nu skulle stå inför tjugo, kanske trettio år innan laven kom tillbaka. Om den överhuvudtaget gjorde det" (2021: 235).

the timing of natural transitions is becoming unreliable. In the late summer, Elsa notices that

The sleety snow had come on suddenly, more than a month earlier than normal. Not that it would stick. But today the snow mixed with the blazing yellow of the leaves. Two of eight seasons fighting for space, way too early. It wasn't yet time for the shift from *čakča* to *čakčadálvi*, from autumn to autumn-winter (2023: 481).¹⁷⁴

Both descriptions highlight how deeply intertwined Sámi herding is with the natural environment, and how climate change is turning what was once a dependable rhythm of life into a cycle of uncertainty. Herders must now respond flexibly to both sudden disruptions and gradual shifts in timing, adapting their practices to preserve the survival of their reindeer in an increasingly unpredictable Arctic landscape.

5.1.3 The “Non-Winter”: A New Arctic Season Making its Way

Contemporary studies of meteorological change increasingly claim an end to the seasons as we know them. When speaking of the Arctic, many extremes in air and sea-surface temperatures, snow and ice melt, wildfire extent, and other physical and ecological events recorded in the past five years are unprecedented in the observational record: for example, the ice melt across Svalbard in June and July 2022 was 1.5 times larger than the previous record set in 2018 (AMAP 2024: 2). Ethnologists Erika Lundell and Matilda Marshall (2025) tackle climate change from a contemporary and meteorological

¹⁷⁴ “Det [snön] kom plötsligt och mer än en månad tidigare än snön brukade lägga sig. Men i dag blandade sig snön med det brinnande gula. Två av åtta årstider bråkade om att ta plats alldeles för tidigt. Än var det inte dags för skiftet mellan *čakča* and *čakčadálvi*, höst och höstvinter” (2021: 263).

perspective; drawing on a wealth of newspaper material, they examine how seasons are constructed, through observations, measurements and linguistic constructions. Lundell and Marshall thus state that the absence of winter has become a new phenomenon – even a new season: winter has become a “non-winter” (119), as both a concept and a cultural phenomenon. At the same time, they also claim that seasons and climate are connected to emotions. The absence of winter is not just a matter of measurements of plus degrees and thin ice, but is also connected to an experience of loss and grief, as proved by Sámi expressions such as “winter grief” or “snow grief”, but also with new approaches to, and practices around, winter.

This concept reflects the fact that seasons can be understood as cultural frameworks through which we interpret our surroundings and organise society, meaning that seasons are not fixed and natural categories, but as fluid and flexible (Bremer 2024; Bremer and Wardekker 2024). Thus, there are also different ways of understanding and living with seasons. At the same time, certain norms and beliefs dominate. Despite the fact that the weather looks different depending on the location, people tend to associate and use certain seasonal symbols, such as snow and skiing for winter (Bremer 2024: 12). This phenomenon results not only in challenging the organization of everyday life, but also in the cultural understandings of seasons and their expected temperatures (Bremer and Wardekker 2024). In Sweden, for example, some meteorologists and journalists have increasingly started to talk about winter, and the ways in which the concept can be understood in relation to the meteorologically measurable winter based on low temperatures, and simultaneously in relation to the cultural perceptions and expectations that exist about winter (Lundell and Marshall 2025: 119).

Rising temperatures are the underlying driver for most of the climate-related changes under way in the Arctic. The greatest increase in temperature

was observed in October through May, and the largest near-surface warming was in marine environments due to declining sea ice, which allows more heat to escape from the ocean into the atmosphere. Warming is concentrated in the winter months, due to an increase in atmospheric heat and moisture influx from lower latitudes (AMAP 2024: 5). The Arctic surface area with above freezing temperature has also increased with general warming and is connected to a more widespread melting of ice and thawing of permafrost (see fig. 9).

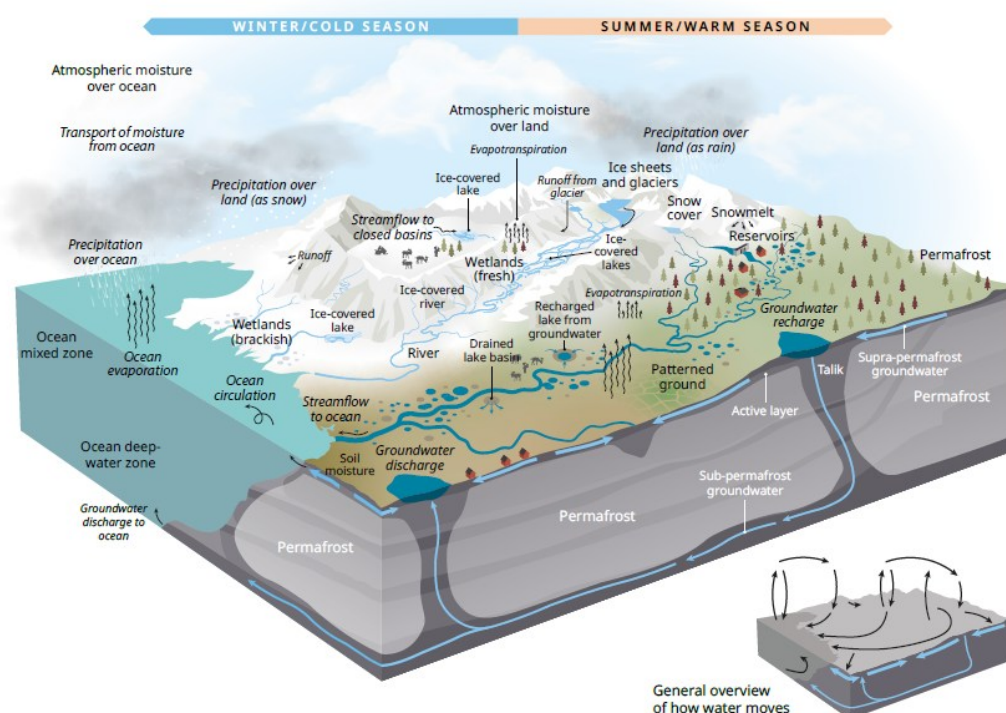


Figure 9: Disruptions to Arctic hydrology (AMAP 2024: 10, amap.no).

The reduced duration of snow cover in northern Sweden has forced Indigenous Sámi reindeer herding communities to move to summer pasturing areas earlier

in the spring so they can travel on snow before it melts (AMAP 2024: 10). In general, the Arctic has been receiving more rain in all seasons, whereas snowfall has decreased in summer but had spatially varying trends in winter. Consequently, high-water events related to snowmelt are occurring earlier in the spring throughout most of the Arctic; river and lake ice, which among other things serves as an important transportation resource for Arctic Indigenous Peoples, and northern communities in winter, has declined in duration over the past several decades in cold regions of the Arctic (AMAP 2024: 11). This trend has then intensified since the beginning of the 21st century. From this point of view, the emphasis on a 'missing' winter in contemporary literary works dealing with the ongoing changes in the Arctic makes visible different kinds of imagined and experienced absences of ice and snow.

Using absence and presence as analytical concepts (Bille et al. 2010), in both Laestadius' and Sara's novels non-winter takes the form of a new season filled with meanings. The analysis proposes this as a cultural making, i.e. an active process where people create meaning around and live with weather and seasons. By identifying recurring themes in both novels, the analysis proceeds through a close reading of textual contexts. Ethnologist Karin Gustavsson (2017) describes close reading as a method that is based on linguistically oriented reading, where the focus is on word choice and linguistic context (127). Close reading makes it possible to direct our gaze towards the seemingly insignificant, such as a 'chronicle' about the changing Arctic.

As explained in the previous section, different ways of defining seasons affect how winter is understood and imagined. Different divisions of seasons clearly have different cultural connotations of what winter or spring should be like, for example: winter should be cold and involve snow, while spring is imagined bringing warmth and greenery. However, these cultural notions are usually based on a clear (European) geographical location (Bremer 2024) and

are not generalizable across time and space. Notwithstanding, the dominant seasonal notions originating in Europe create expectations of real and authentic seasons, which means that people in other places may experience their seasons as wrong or out of place (Bremer and Wardekker 2024). The common notion of four seasons is therefore a cultural construction, standing in contrast, for example, to the Sámi eight seasons that structure reindeer herding. In this sense, the seasonal divisions can be understood as a way for people to organise and understand time and weather. This naming, structuring, and meaning-making is naturally done by people, just as people need to relate to and live with weather in different ways, meaning that how we live with and understand weather and seasons is simply cultural (Hulme 2015). These understandings are therefore not stable but changeable, partly because culture changes, partly because of external circumstances (firstly, the climate) and actualize the need for new understandings and ways of living.

New names for changed weather and climate conditions can also be seen as part of organizing and understanding their environment. For example, Ben Orlove (2003) believes that people put words on what they need to talk about in their daily lives. Talking about seasons shows the “temporal dimension” in human everyday life (136). Putting words to seasons helps to keep order in time. According to Orlove, the season of winter can be seen as part of a cultural construction, where words create meaning and order in the passage of time. Talking about seasons and how seasons are characterized becomes meaningful, not least as a way of structuring the year and the weather. Orlove points out that seasons as an organizing category make it possible to remember previous weather conditions and predict future ones (136). As mentioned above, a warmer climate means that previously established definitions and understandings of winter and its features, primarily such as snow and ice, are challenged when the future is expected to be increasingly warmer.

5.2 SÁMI RESPONSES TO CLIMATE-INDUCED VULNERABILITY IN ANN-HÉLEN LAESTADIUS' *STÖLD*

The protagonist of *Stöld* is Elsa, and the reader meets her when she is nine years old and out skiing alone in the forest. Outside the enclosure with the family reindeer, she sees a man she recognises: it is Robert Isaksson, standing with a bloody knife in his hand and Elsa's reindeer Nástegallu at his feet. When he acknowledges that Elsa has seen him, he makes a gesture that Elsa knows means "if you tell, you die". She is frightened into silence about what she has seen that will last for over ten years. While Elsa mourns her reindeer, she notices that her father and older brother are angry, but no one tells her anything and she has to guess what the adults are talking about. Further into the book, the plot moves ten years forward, when Elsa is nineteen. She still has not dared to say anything about what she saw ten years before, but she is angry. Robert continues to kill and torture their reindeer; she sees racism against the Sámi every day and is tired of not resisting. She begins to resist, against the police who do not listen to her and her people, against Robert, and against the sexism of the Sámi village. When she was young, she was not allowed to participate in the adults' conversations and discussions, but now, as an adult, she becomes aware of everything that is happening. Her father is tired, and her brother expresses hopelessness and anger that he turns inward. Elsa directs her anger outward.

The violence perpetrated against the reindeer and Elsa's experience of systemic prejudice within the police force are not that the sole concern accommodated by the narrative. Indeed, the work addresses complex familial dynamics, death – both due to age and to suicide – and the generational trauma inherited by the nomad school system¹⁷⁵. Furthermore, it explores cross-cultural

¹⁷⁵ A nomad school system refers to an educational model designed specifically to serve the needs of nomadic or semi-nomadic communities. These communities frequently move from place

marriage, the evolution of childhood friendships and to the pervasive reality of racism. Withing these hardships, the novel carves out space for profound beauty, specifically through evocations of the natural worlds and the intimate bond Elsa and her family maintain with their reindeer.

Elsa is the main narrator of the book, but some chapters are written from the antagonist's perspective, Robert Isaksson. Because the book makes a time jump, the reader gets to experience two versions of Elsa, the younger and the older. This is noticeable in the choice of words and the emotions conveyed as well as what the reader learns through the narrator's voice. The reader becomes more omniscient when the older Elsa tells the story, which makes the whole story both more believable and sadder. It is frustrating and poignant to experience a nine-year-old's sadness and lack of understanding of what is happening, but in the same way the reader shares Elsa's anger and fighting spirit when she is an adult.

Arctic nature is present throughout the novel, with picturesque descriptions of the landscape and of the different seasons, which give the reader a chance to sense a connection with nature. As Elsa and her family work as reindeer herders, nature is an element that plays a large role in their lives, and consequently in readers' experience. An ecocritical reading allows different views of nature to emerge. Elsa and her family and acquaintances tend to have a more ecocentric view of nature, one in which humans do not trump the non-human. In Elsa and her *ákkhu*, Elsa's grandmother, it is also possible to read a metaphysical view of nature. Robert and the non-Sámi voices in the novel take a more anthropocentric starting point instead. As Lars Schulz writes, the place – nature – can end up in a difficult position in relation to political positions, something that clearly emerges in the novel (2007: xii).

to place, often due to seasonal migrations related to livestock herding, agriculture, or other traditional livelihoods. Because of this mobility, conventional fixed-location schools are often inaccessible or impractical.

This novel denounces that climate change occurs at such a pace that humans can no longer distinguish between nature and its degradation and the societies we live in, as it is not only nature that is drastically affected by the climate threat we are facing. When ecosystems break down, change, or disappear, this is reflected in human societies. However, it is not only about material loss but also about aesthetic and emotional loss of nature (Schulz 2007: ix-x). The climate threat is a clearly prominent theme in *Stöld*, in which the characters are affected by material loss and how it affects their working lives, but climate change also affects them emotionally, and it is reflected very well in the society Elsa lives in, given the close-to-nature life they live. As a result, characters have a strong connection to the geographical location and an expression of vulnerability (Nilsson Skåve 2020: 131) when the location is changing.

5.2.1 Sámi Identity Coping with Climate Change

Stöld is set in a Sámi village in 2008, with shifting chapters filling up information about Elsa's life until years 2018 and 2019. The novel has in its main themes present-day problems experienced by the herders, such as the influence of climate change on their livelihoods, the impact of Swedish colonial policies on Sápmi, and above all, hostility and racially charged violence towards the Sámi community. Such antagonism is embodied in the violent manner of non-Sámi individuals who kill reindeer, like Robert Isaksson, and the non-Sámi voices heard in the novel take a more anthropocentric starting point instead. As Lars Schulz (2007) argues, nature can end up in a difficult position in relation to political positions (xii), which is something that emerges clearly in the novel.

Conflicts about nature, often linked to politics, are made visible on several occasions, including one day when the family is out shopping. Elsa, her father and her brother Mattias are left in the car and watch Robert drive into the

parking lot. He drives an old Jeep and has a reindeer antler strapped to the tire on the tailgate, and Mattias believes the antlers belong to a reindeer that their family owned. In addition to the antler, Robert has a sticker on the car that reads “Don’t ratify ILO 169”¹⁷⁶ (2023: 168). ILO is the International Labour Organization, which is the UN’s specialized agency for labour issues¹⁷⁷. Convention number 169 refers to “Indigenous and tribal peoples in self-governing countries”¹⁷⁸, which exists to protect them and their rights. If the convention is ratified, the land traditionally inhabited by the Indigenous peoples will be recognised as theirs; in the book this applies to the Sámi and their land. In the various chapters written from Robert’s perspective, there is often dissatisfaction with how politics benefits the Sámi, in terms of land rights and financial support: “The Lapps¹⁷⁹ were always going on about how their reindeer were starving, demanding subsidies to feed them, but here, right in front of him, was proof that they were lying”¹⁸⁰ (2023: 193). He believes that the Sámi are lying and that politicians are too accommodating to them. Therefore, his opposition to ILO 169 is not deviant but in line with the character’s other actions, because he does not want the Sámi to have more rights to land, or rights at all.

Elsa is involved in reindeer herding from early childhood. While nature provides the family’s livelihood, Elsa observes that “everyone” understands that the environment demands respect and reverence:

¹⁷⁶ “Ratificera inte ILO 169” (2021: 136).

¹⁷⁷ Svenska ILO-kommittén, “Om ILO”. URL: <https://svenskailo-kommitten.se/om-ilo/> (accessed 21 December 2025).

¹⁷⁸ “Ursprungsfolk och stamfolk i självstyrande länder” (Sveriges riksdag, “ILO:s konvention nr 169 om ursprungsfolk och stamfolk i självstyrande länder”, URL: https://www.riksdagen.se/sv/dokument-och-lagar/dokument/kommittedirektiv/ilos-konvention-nr-169-om-ursprungsfolk-och_glb1103/, accessed 21 December 2025).

¹⁷⁹ As nouns, the difference between “Sámi” and “Lapp” is that a “Sámi” is a member of an Indigenous Finno-Ugric people of Lapland, while “Lapp” is an Indigenous person from Lapland when the group membership is not specified. Due to a derogatory sense of the term “Lapp”, the Sámi people now prefer to be called “Sámi”. The fact that Robert still refers to them with the term “Lapp”, as they were formerly called, it is significant of the position taken towards them.

¹⁸⁰ “Lapparna pratade alltid om svältande renar som de skulle ha bidrag för att mata men här framför honom fanns bevis på att de ljög” (2021: 157).

In the summer, when they went up to the mountains to mark the calves, it was *Siessá* who welcomed the grounds with her laugh. She only said that when she was extra bold, because as Elsa and everyone else knew it was the other way around, the grounds welcomed *them*, and that it was important to feel gratitude for what nature gave them and the reindeer (2023: 84).¹⁸¹

Siessá is Elsa's aunt and, in this passage, she is a clear example of the reverence for nature that often shines through in the book. The Arctic land gains an agentive connotation when it welcomes people. Elsa's distinction between "what nature gave them and the reindeer" is particularly striking, as it suggests a symbiosis between the Sámi people and their herds. This reflects the ecocentric perspective described by Salomonsson (2018), who posits that humans and nature are fundamentally inseparable (149). This bond is further reinforced through the family's physical presence on the land, as seen when her brother Mattias, her father, and other men from the Sámi village move their herds between the settlements and the forest:

It was so quiet once they left the house, but somehow it was just as quiet when they came home again. They made sandwiches and stood by the kitchen window to eat them, their eyes gazing into the distance. It was as if they were looking past the snowmobile trail on the ice, past the trees, straight into the reindeer grounds. As though they were there even though they were home. They were never truly home (2023: 58).¹⁸²

¹⁸¹ "När hon kom hem på somrarna och de vandrade upp till fjälls för att märka kalvarna, då var det *siessá* som hälsade markerna välkomna med sitt skratt. Så sa hon bara när hon var extra mallig, för det visste ju Elsa och alla att det var tvärtom, att det var markerna som hälsade dem välkomna och att det var viktigt att vara tacksam för det naturen gav dem och renarna" (2021: 68).

¹⁸² "Det blev tyst när de lämnade huset men på ett sätt var det lika tyst när de kom hem. De bredde smörgåsar och stod och åt vid köksfönstret med blicken liksom långt i fjärran. Som om de

The forest and their house are first presented as opposites when the text suggests that the men are coming home from the forest. But they are standing and looking out into the distance, which gives the reader the feeling that they would rather be with the reindeer in the forest than at home. Even though the men are home physically, they are never really at home in their thoughts.

Humans' thoughts lingering on nature is a recurring theme in the novel, often linked to the reindeer's and humans' relationship with them. Schulz (2007) argues that ecocriticism emphasises the significance of geographical location to the human existence (xii); indeed, the passage above suggests that nature constitutes a 'second home' for the men. Elsa shares this feeling, as evidenced by her desperate "need for nature"¹⁸³ (2023: 326): and "She had to get out. She had to get away, go to the forest" (2023: 435). For her, nature is not merely a setting but a psychological necessity – a place of refuge where she feels truly at home. When Elsa thinks about the forest and life close to nature, the reader gets the feeling that the forest brings something greater with it, a feeling that cannot be put into words. This innate predisposition stands in stark contrast to the environmental dysfunction of the Arctic ecosystem, driven by anthropocentric actions.

The traumatizing event Elsa witnessed at nine, when Robert violently killed her calf Nástegallu, eventually drives her to be involved in fighting racism alongside increasing awareness about Sámi issues (Brovold 2023). The reindeer personification – often referred to by name – demonstrates the intense emotional bond that exists between people and their animals. As Elsa puts it, "We don't just work with the reindeer, they're part of our way of life"¹⁸⁴ (2023: 195). Her use of the expression "our life" shows that this lifestyle symbolises not

såg förbi skotergatan på isen, över träden och rakt in i markerna där renarna fanns. Som om de var där fast de var hemma. De var aldrig riktigt hemma" (2021: 58).

¹⁸³ "Hon måste ha naturen" (2021: 267).

¹⁸⁴ "Vi jobbar inte med renar, det är en del av vårt liv" (2021: 195).

only Elsa's personal identity, but all people who participate in the traditional Sámi activities. Moreover, threats to nature as the foundation of traditional Sámi life, as well as resource extraction within Sápmi and the effects of climate change, are touched on. These local concerns point to examples of how most of the society ignores important Indigenous knowledge systems:

“They all knew something was seriously wrong. Rain in the middle of winter. It frightened Elsa. How they had raised the alarm, trying to get people outside the reindeer grazing grounds to understand – can't you see what's happening? We've known for a long time! For years we've been warning you that the climate is changing. But as always, their voices were too weak, and the wind hadn't been strong enough to carry them where they needed to go”¹⁸⁵ (2023: 230).

The sudden introduction of the personal pronouns “we” and “you” underlines the emotional and fundamental importance of nature for the Sámi culture. Valkonen (2014) and Berg-Nordlie (2022) highlight three aspects that often characterise ‘Sáminess’, that is, the belonging to a Sámi community from a Sámi perspective itself. First, Sámi identity is innate; secondly, it is important to preserve cultural elements; finally, an individual must be recognized as Sámi by the rest of Sámi society. As a first instance, “the notion of ‘innate identity’ is linked to an essentialist view in which ethnic identity appears as continuous, homogeneous and stable” (Sachse 2025: 101). Sámi identity is understood here from a constructivist perspective as “the individual's identification with the Sámi collective” (Amft 2000: 171), thus as a changing, non-homogeneous

¹⁸⁵ “Nog visste de alla att det var något som var allvarligt fel. Regn mitt i vintern. Det skrämde Elsa. Och som de hade larmat, försökt få folk bortanför renbetesmarkerna att förstå – ser ni inte vad som händer? Vi har sett det länge! I årtal har vi varnat för att klimatet är på väg att förändras. Men som alltid hade deras röster varit för kläna och vinden hade inte orkat föra dem ända fram” (2021: 189).

construction that is shaped through social processes (Barth 1969). In *Stöld*, this definition is expanded through a postcolonial perspective, and Sámi identity is seen and described as a dynamic, socially and historically constructed phenomenon. Hence, as Lina. S. Sachse (2025) states, “‘what it means to be Sámi’ is a recurring theme in Sámi fiction” (101), written by authors who, with reference to their family origins, identify themselves as Sámi, as in the case of both Laestadius and Sara.

Metaphorically, Elsa describes the Sámi cultural heritage as a heavy backpack to be carried on a daily basis, from childhood onwards: “Being Sámi meant carrying your history with you, to stand before the heavy burden as a child and choose to bear it or not”¹⁸⁶ (2023: 260). Choosing a reindeer herding life and identifying with the Sámi society here simultaneously appear as paradoxical decisions to shoulder the difficulties and carry a colonial legacy, in a sense, which appears unchangeable, and is passed on to future generations (Sachse 2025). Reindeer herding is attributed to a special significance in relation to issues of land use and against the background of ongoing climate change. However, what appears to be the most important criterion for ‘Sáminess’ is a shared history (Sachse 2025: 116). Memories and land-based experiences are passed on to future generations and elevated to the central part of Sámi identities while dwelling in their own Arctic land. This culture of memory thus functions as the foundation for Sámi identities and implicitly transcends any strategic-essentialist notions when coping with climate change.

¹⁸⁶ “Att vara same var att bära sin historia med sig, att stå inför den tunga ryggsäcken som barn och välja att bära den eller inte” (2021: 213).

5.2.2 Indigenous Perspectives and Land-Based Memories for Sustainable Futures

Åsa Nilsson Skåve (2020), who has studied places, nature, and belonging in Ann-Helén Laestadius' novels, claims that the conflict that can arise between ecological, economic, and social interests appears as central. Nilsson Skåve highlights the bond between minority cultures, nature, and environmental issues in Laestadius' literary works by pointing out that issues of sustainability and the future are something that engage young people, especially when it is a young protagonist to share these thoughts (2020: 130). Climate change in the Arctic is happening at such a pace that we humans can no longer distinguish between nature and the progressive degradation of it (Sachse 2025). For this reason, memory and oral transmitted experiences constitute an important term of comparison. When ecosystems break down, change or disappear, it is reflected in our human societies, thus also affecting young peoples' perspectives. However, it is not just about material loss, but about aesthetic and emotional loss of nature too (Schulz 2007: ix-x). The climate threat is a clearly prominent theme in *Stöld*, where the characters are affected by material cryosphere loss and by how it affects their working life. Climate change also affects them emotionally: Elsa and other Indigenous characters often have a strong connection to the geographical location and an expression of vulnerability when the location is changing (Nilsson Skåve 2020: 131).

The first time climate change and environmental threats are mentioned in the novel is when Elsa goes skiing. Temperature changes rapidly, and the snow melts enough to become soft and airy before the freezing temperatures form again. When Elsa's father hears about her experience in fast and unpredictable snowy environments, he shakes his head and talks about climate threats. Climate change is not directly addressed in the first part of the book. However, Elsa thinks about temperature oscillations from summer to summer,

remembering the reindeer laying beaten by the heat for one summer, and another one in which Elsa needed to dress in a winter jacket (2023: 121). As far as the reader knows, this is Elsa's understanding of climate change when she is only nine years old. As she grows older, the presence of the climate issue in the novel intensifies, as does the presentation of the impact of climate change. As a near adult, Elsa has a better understanding of what climate change means and how it will affect her family's future as reindeer herders.

A clear sign of climate change in the novel is the variability in precipitation from snow to rain. As recent Arctic climate reports demonstrate, changes in snow cover are disrupting the lives of northern residents, and particularly Arctic Indigenous Peoples, who rely on the Arctic ecosystem for sustenance, culture and well-being, with impacts on travel, harvesting of traditional foods, mental health, food security, and livelihoods (AMAP 2024: 8). One evening, Elsa is out looking for her grandmother (*áhkku*, in North Sámi, as Elsa prefers to call her) who, being mentally unstable because of progressive senility, runs away from home; at this juncture, Elsa thinks that there is very little snow for that time of the year and that it would have been easier to find *ákkhu* if she could only see some traces in the snow (2023: 196). It is indeed warmer than the forecast said, and the reader learns that the Sámi peoples in Jämtland County have built a roof over their dividing reindeer fence because they could no longer stand all the work in the strong wind and cold precipitation. In Elsa's town, the elders said it was an unnatural weather phenomenon, and Elsa in turn was afraid of rain in the middle of winter as a dangerous trend procrastinating to the future.

Beside fear, a sense of desperation is also present. While visiting her friends Anna-Stina and Per-Jonas, Elsa observes the disastrous winter snow conditions through her binoculars. The weather has changed quickly, and temperature fluctuations have left the ground unable to absorb all the water; as

a result, the moisture freezes into an impenetrable layer of ice, that prevents the reindeer from reaching their (2023: 246). This illustrates how climate change disrupts the delicate balance of human and more-than-human societies. Elsa no longer recognises the seasonal transitions in her land, which she calls 'home'; even the spring ice break—once a thunderous, powerful event—has become a soft, diminished occurrence. Before affecting her emotionally, weather unpredictability highlights the gap in human comprehension of certain phenomena, resulting in desperation and anger. She conveys that feeling to the reader on several occasions, but one particularly significant moment is when Elsa is looking for Mattias and she finds him in the underground cellar where he is drunk. Mattias, in his altered mental state, questions why they should even continue their herding, as he screams “And it was raining! In fucking February!”¹⁸⁷ (2023: 316). The fear of change awaiting them if the climate threat is not dampened shines through his words.

In the same scene, Mattias expresses anger and frustration because their pastures are to be plowed up to build the new mine (Ibid.). Mattias's arguments on climate change and the impact of the mining industry on the landscape mirrors Nilsson Skåve's ideas about the vulnerability of living in a place that is changing. In addition, Kari Haarder Ekman (2018) points out that land that to someone appears as unspoiled wilderness, is “a place for sustenance” for someone else (55). *Stöld* depicts alternating snow, increased rain precipitations, and warmth, creating layers of warmth that alternate rapidly and, consequently, the ground could not “absorb the moisture and turned to ice.

¹⁸⁷ “Det regnar. I jävlarimigfebruari” (2021: 258). Despite being translated into English as “damn” or “bloody”, the common Swedish expression *jävlar i mig* (sometimes written together as *jävlarimig*, as in the case of the first part of the one-word expression *jävlarimigfebruari*) depends on the tone of voice, and it can express anger, surprise, frustration, or reinforcement of something being said. Put together, it sounds here like a frustrated nickname for February, implying a rough month made of a mix of bad weather, stress, illness, or general annoyance, with poor weather conditions being the primary factor for distress.

And that meant the reindeer wouldn't be able to paw through the hard-packed snow and ice to reach their pasturage"¹⁸⁸ (2023: 146). This constrains access to essential ecological resources. Being a text representing the reality of Sámi experience, *Stöld* further intensifies the connection between climatic unpredictability and human livelihoods, particularly in Indigenous Sámi contexts. Rain in the heart of winter eventually becomes a marker of ecological rupture, amplifying the tension between human expectations and environmental reality, since extreme weather events have had enormous impact on Arctic cryosphere in recent years (see fig. 10).

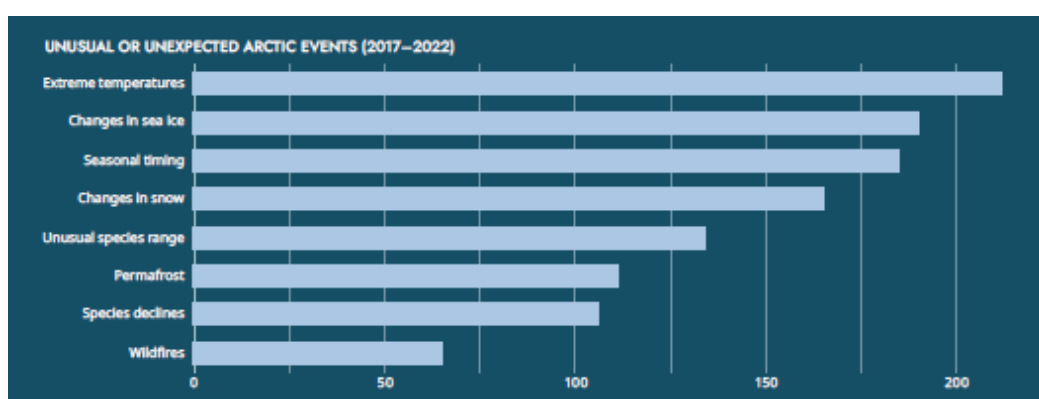


Figure 10: Examples of recent record-breaking extreme events in the Arctic (AMAP 2024: 7).

In the novel, further anomalies occurring in late spring raise the stakes of extreme weather:

¹⁸⁸ "Klarade inte av att suga upp vattnet och blev till is. Och då fanns inget hopp längre om att renarna skulle klara av att ta sig igenom både den hårdpackade snön och isen när till betet" (2021: 133-134).

The end of May had been horrid as usual. It was too late in the year to go snowmobiling, the water in the river was too high for fishing, and just as all of Sweden appeared to be in bloom the snow paid another visit. They'd watched the winter snow melt and the hopeful blades of grass stretching skywards. The mercury unexpectedly climbed above eighteen degrees Celsius for a few days, only to dip back down to a few measly degrees above freezing (2023: 406).¹⁸⁹

Sudden temperature swings create chaos in both the natural and human worlds, demonstrating that even brief weather events can have cascading effects on subsistence practices and mobility. Yet *miessemánnu* was the most beautiful month, the month in which the calves were born, which marked the beginning of a new year; in May, things began anew, and with the arrival of the newborns, hopes for a good year renewed (2023: 407). Once again, climate change and its vast consequences are something perceived as unusual by local communities, yet traditional knowledge seems to be the best educator in explaining new factors.

5.2.3 A Necessary Reframing of TEK

The transition towards the prominence of traditional knowledge among the chosen literary corpus finds its peak in *Stöld*. Indeed, while *Melt* and *Beyond the Frozen Horizon* explicitly feature scientists, *Stöld* effaces them entirely. Elsa acts as environmental observer and interpreter of climatic shifts. She monitors patterns of snow and ice melt, and reindeer migration, with precision, through the only means of observation that functions as a continuous ecological study in her own land. Elsa's attentiveness is expressed through a sense of

¹⁸⁹ "Slutet av maj hade som vanligt varit en förfärlig månad, det gick inte längre att köra skoter, vattnet i älven var för högt att fiska i och när hela Sverige tycktes grönska gjorde snön en ny visit. De hade sett vintersnön smälta och gräset förhoppningsfullt sträcka på sig. Termometern klättrade oväntat över arton grader i ett par dagar för att sedan dala till några ynka plusgrader" (2021: 222).

orientation, while she follows the tracks in the snow, noting every shift, every depression, and every mark left by the reindeer or fox. The forest speaks its language, and she has learned to read it, to move along it without imposing herself, and to live within its continual rearrangement. Such liveliness becomes a medium of speculative thought, projecting ecological resilience, and challenging anthropocentric assumptions, thus positioning it at the basis of the principles sustaining the cryo-critical framework. In *Stöld*, Laestadius presents frozen waters in all their shifting forms, from lake ice to river melting. In this sense, ice is an open relation to other states, location, and matters. However, water itself, as the result of ice melting, is matter that contains the potential of ice, a synecdoche that is perpetuated through the reach of global warming. In these cyclical terms, *Stöld* highlights that ice is a dynamic material that structures Sámi life and reveals the fragility of the Arctic environment in the attempt of rebuilding an ecological stability.

Even though the action takes place in this context of unpredictability, the setting of the novel is established from the very beginning through land-based knowledge and sense of place: “The lake gave way to the forest, but she wasn’t afraid. She was never afraid, because she knew exactly where she was and could always find her way home”¹⁹⁰ (2023: 10). For Elsa, the frozen lake is a spatial coordinate that guides orientation in her childhood, and exactly ten years earlier, when the effects of climate change were much less perceivable. Everyday contact with ice is rendered with tactile realism, in which human mobility and adaptation are shaped by the physics of frozen surfaces: “The kicksled creaked beneath her. It went fastest in the center of the road, where the surface had been plowed and packed into hard ice”¹⁹¹ (2023: 56). Here, the

¹⁹⁰ “Sjön övergick i skog, men det fanns ingen rädsla. Hon var aldrig rädd eftersom hon visste precis var hon var och hittade alltid hem” (2021: 2-3).

¹⁹¹ “Sparken knirkade under henne. Det gick fortast mitt på vägen där det var plogat och blivit till hårdpackad is” (2021: 28).

compacted ice becomes an instrument of movement, thus transforming frozen waters into accessible infrastructures. A decade later, when Elsa is in her late teens, the situation changes, showing unseasonal events, such as snow still frozen on the surface, with roof ridges not yet dripping (2023: 329); the frozen crust and absent dripping in spring are physical signals of a delayed season. Moreover, an evocative description finally reveals one of the saddest moments of Elsa sensing the altered timing of natural cycles: “In pasty ears, the river would have been creaking with ice floes that had broken free from the banks, but ice-out wasn’t the same anymore. The ice gave up listlessly, with no vigor”¹⁹² (2023: 405). The river, once predictable, dominated by passive inertia. Climate change is articulated here not through catastrophe but through subtle changes in the behaviour of matter. In this sense, *Stöld* teaches consequential scientific and cascading effects on the cryosphere: thaw leads to refreezing, and refreezing to starvation.

Elsa’s observational skills challenge the still deep-rooted bias – denounced, among others, by Nick Estes (2019) – that Indigenous knowledge is often erroneously defined as “static” or “trapped in the past” (29), a view that is increasingly being challenged thanks to Indigenous contributions to climate change research. Echoing this objection for Arctic communities, Sámi authors and academics Elina Helander-Renvall and Inkeri Markkula (2017) have written about the present-day responsiveness to rapidly changing living conditions as a key feature of Traditional Ecological Knowledge (TEK):

TEK is living and evolving knowledge. When TEK is documented, it easily becomes “frozen” in time. However, TEK includes both old and new knowledge and its continuity is rooted in the past. [...] Today, in Arctic regions, the temporality of TEK is partly determined by the

¹⁹² “Förr om åren brukade älven braka av isflaken som släppte taget om strandkanterna, men islossningen var inte heller sig lik längre. Isen gav upp håglöst och utan kraft” (2021: 222).

climate warming: Arctic nature is changing fast and therefore knowledge founded on it changes at the same rate. In the era of climate change, it might even be that Indigenous knowledge, which is based on constant observations, changes faster than scientific knowledge (116).

Within this context, it must be noted that Laestadius' book is a coming-of-age novel which challenges ideas of progress as "moving beyond past events and of distance from apocalyptic events seen as located in the future by providing readers with a Sámi perspective on these" (Ahlberg and Ericson 2025: 60) through continuing practices of environmental care. In fact, Elsa's despair is constantly coupled with hope that there may be a future for the herders, in spite of all hatred and violence coming from individuals and systems of wider non-Sámi communities living in the surroundings, and from the challenges that climate change brings with it.

Even though the winter season appears to be the most affected by abnormal changes, relevant unseasonal factors are also observed with the progression of spring and early summer. Elsa vividly portrays the intimate connection between the Sámi people and their environment when nature is supposed to flourish again after the long winter, capturing moments that underline both the fragile continuity and the ongoing disruption caused by climate change in the Arctic. The novel brings to light how spring, long monitored and interpreted through traditional ecological knowledge, is now challenged by unprecedented shifts in temperature and landscape, thus leading to ecosystem changes also in terms of flora and fauna, with insects flourishing beyond normal patterns due to warmer temperatures, clearly indicating an unstable ecosystem. For instance, Arctic mosquitoes possess distinct physical and physiological traits that enable their survival in frigid environments; therefore, they have always been thriving at higher latitudes. They exhibit cold hardiness, a capacity to endure freezing temperatures by employing a form of hibernation known as

diapause, particularly in their egg stage. These specialised eggs contain a fertilized embryo with a very slow metabolism, which allows them to remain dormant through the winter and hatch once temperatures warm. Some species can also diapause as larvae, surviving under ice, or as adults, seeking shelter in places like animal burrows or hollow logs¹⁹³. Despite their constant presence in the Arctic, the number and species of mosquitoes inside the Arctic is now multiplying; as temperatures warm, mosquitoes above the Arctic Circle emerge earlier, grow faster, and survive as winged pests even longer¹⁹⁴.

The presence of persistent heat influences not only the natural rhythms but also the lived experience of the Sámi, whose knowledge has long been tied to predictable seasonal cues. The impact of early autumn climate-induced wildfires¹⁹⁵ on crucial ecological components such as the lichen, vital for reindeer grazing and therefore central to Sámi livelihoods, is notable. Factors affecting wildfire risk include changes in precipitation and soil moisture, thawing permafrost and poleward shifts in vegetation (which can create more fuel for fires), and changes in the polar jet stream (AMAP 2024: 7). The devastation of lichen pastures threatens the foundation of Sámi subsistence practices and calls for a re-evaluation of their ecological knowledge in a changing environment. However, the connection to the land and the tradition of land-based knowledge and survival strategies are deeply ingrained, as shown in

¹⁹³ BiologyInsight.com, "Arctic Mosquito: Characteristics and Adaptations". URL: <https://biologyinsights.com/what-are-arctic-mosquitoes-and-why-are-there-so-many/> (accessed 12 December 2025).

¹⁹⁴ NationalGeographic.com, "Why the Arctic's Mosquito Problem Is Getting Bigger, Badder". URL: <https://www.nationalgeographic.com/animals/article/150915-Arctic-mosquito-warming-caribou-Greenland-climate-CO2> (accessed 12 December 2025).

¹⁹⁵ The distribution, frequency, and severity of Arctic wildfires vary strongly from year to year. Carbon and mercury emissions from Arctic wildfires were especially high in 2019 and 2020 (carbon emissions were approximately 35 million metric tonnes in 2019 and 60 million metric tonnes in 2020, roughly equivalent to the annual emissions from the Netherlands or Spain in 2023, respectively). Emissions in 2021 and 2022 were lower, but increased again in 2023. During 2024, the number of fires (and emissions from wildfires) above the Arctic Circle was higher than from 2021 to 2023 (AMAP 2024: 7).

Elsa's intimate familiarity with the forest trails: "Out on the bog she knew exactly where to step without sinking. She leapt and balanced with equal amounts of agility. [...] Not once did she make a misstep: the entire forest was hers"¹⁹⁶ (2023: 437). This profound understanding of land and environment is a product of lived experience and ancestral teaching. However, the changing conditions, such as shifting vegetation and more unstable grounds, challenge the accuracy and safety of this traditional knowledge. Moreover, cultural and traditional wisdom intertwines with survival strategies: "When she was little, *áhkku* told her to sing in the forest. You must never sneak up and surprise a bear. Her steps were sure, but when there was a sudden crack in the forest, her song faltered. Just sing louder, said *áhkku*"¹⁹⁷ (2023: 438). The songs Elsa's grandmother refers to are the so-called *joik*, chants that Sámi people sing when out in the nature, melodies that have the power to reconnect the human soul with the natural elements. Elsa too sings her *joik* while spending time in nature alone (2023: 131). A *Joik* is therefore not only a form of singing, but also carries oral traditions, stories, and emotions that have been passed down from generation to generation. Through this musical form of expression, the Sámi have preserved their history, experiences, and worldview.

Sámi *joik* is an ancient singing tradition that differs from other forms of music in its focus on conveying emotions and the essence of people, places and animals, rather than stories with structured lyrics. It is a way of singing to establish a relation to, and not about, something, which makes it a personal and deep experience. Each *joik* is unique and has an emotional connection to its object, whether it is a person, an animal or a landscape. The *joik* acts as a living

¹⁹⁶ "Ute på myren visste hon precis var hon skulle sätta ner sina fötter. Hon hoppade över och balanserade med samma vighet. [...] Inte en gång trampade hon fel och så var hela skogen hennes" (2021: 239).

¹⁹⁷ "När hon var liten sa *áhkku* åt henne att sjunga i skogen. Man fick aldrig smyga fram och överraska en björn. Och stegen var morska men om det knakade till i skogen blev sången svajig. Sjunga bara högre, sa *áhkku*" (2021: 239).

story, with each song carrying a message or emotion that is meaningful to the people and events it is aimed at. It is a flexible and adaptable medium that allows stories and traditions to evolve and change over time, while the core of the message remains intact¹⁹⁸. The importance of nature in Sámi *joik* cannot be underestimated, since the close relationship with nature is clearly reflected in their traditions. Many *joiks* are dedicated to places that have a special meaning for the singer, that is, the 'joiker'. These places can be mountains, forests, lakes, or the wider Arctic landscape, and each *joik* carries with it an emotional connection to the place it describes. In fact, through the *joik*, knowledge about the landscape and natural resources is preserved. And it is precisely through their *joiks* that the Sámi people express their reverence and gratitude for nature, thereby teaching important lessons about natural cycles and ecology (Ibid.). This singing tradition simultaneously links respect and care for the land to self-protection and instant awareness of the risks connected to the polar wilderness, reinforcing a subtle balance in the relationship humans can establish with nature. Yet, as the environment changes, such customs may require adaptation to new realities, such as altered animal behaviours or increased hazards brought by climate instability.

Finally, the rapidity of ongoing environmental transformations in the Arctic is constantly recalled by Elsa who, for example, remembers "when the warm weather took them by surprise up in the mountains, melting sheets of snow and making narrow streams that were hard to cross"¹⁹⁹ (2023: 491). Such abrupt events underscore the volatility of the current climate crisis and the limits of relying solely on past knowledge patterns, based on slower, more predictable

¹⁹⁸ Svenska Kulturlandskap, "Hur samisk jojk bevarar muntliga traditioner". URL: <https://svenskakulturlandskap.se/hur-samisk-jojk-bevarar-muntliga-traditioner/> (accessed 27 December 2025).

¹⁹⁹ "När värmen överraskat och fick snöflak att smälta och släppa till fjälls och göra smala bäckar svåra at sig över" (2021: 269).

shifts. The passages analysed above make clear that the Sámi's traditional ecological knowledge is deeply tied to stable environmental rhythms that are now disrupted. Adapting to climate change demands reframing this knowledge, blending ancestral wisdom with scientific understanding and contemporary observations. Indigenous communities are applying TEK to develop effective climate adaptation strategies. These approaches often blend traditional practices with modern technologies, resulting in innovative solutions tailored to local environments. These methods, based on careful observation of cloud patterns, wind directions, and animal behaviours, are proving remarkably accurate in predicting short-term weather changes in the rapidly changing Arctic environment. By combining this traditional knowledge with modern meteorological data, communities are better able to prepare for extreme weather events and adapt to changing seasonal patterns. While the value of TEK in climate adaptation is increasingly recognised, challenges remain in fully integrating this knowledge with Western scientific approaches. Issues of intellectual property rights, cultural appropriation, and scepticism from some in the scientific community can create barriers to collaboration. However, there are growing efforts to bridge these gaps. Many universities and research institutions are now partnering with Indigenous communities to conduct collaborative research that incorporates TEK. Government agencies, too, are beginning to recognize the importance of TEK in policymaking, particularly in areas related to environmental management and climate adaptation²⁰⁰.

A reframing of TEK in the context of climate change is necessary not only to preserve Sámi culture and livelihoods, but to foster resilience in a rapidly transforming Arctic landscape. Laestadius's narrative illustrates the profound need for the Sámi people to evolve their relationship with the environment. By

²⁰⁰ Indigenous Climate Hub, "Traditional Ecological Knowledge". URL: <https://indigenousclimatehub.ca/2024/04/traditional-ecological-knowledge-the-cornerstone-of-indigenous-climate-adaptation-in-canada/> (accessed 21 January 2026).

reinterpreting their traditional ecological knowledge in the context of new climatic realities, they can better navigate the challenges ahead while honouring their deep connection to the land. Yet, traditional knowledge still constitutes their basis for (cultural) survival, and a solid starting point for new or adapted environmental interpretations.

5.3 SÁMI VOICES AND VISIONS IN MÁRET ÁNNE SARA'S *IN BETWEEN WORLDS*: CULTURAL RESILIENCE IN A CHANGING ARCTIC

In Between Worlds is a YA fantasy novel, where the plot and fictional universe are based on Sámi folk beliefs, mythology, reindeer herding, growing up, identity and rights in the face of society at large. The novel's main characters are the siblings Lemme and Sanne, who grow up in the conflict between being modern youth and the children of a Sámi reindeer herder. Big brother Lemme loves dirt biking and is eagerly looking forward to the new dirt bike track now under construction. In town, his sister Sanne meets a delirious man who babbles something incomprehensible about the "devil's child." After their father's outburst at the dinner table about how recklessly the dirt bike community is destroying the grazing lands with the new dirt bike track, Lemme leaves in a huff. Sanne follows and hops onto the dirt bike behind him. Out in the forest, they are attacked by *eahpáraš* – the ghost of a small child who was left to die in the forest many years ago. Lemme and Sanne are sent to *uldda*, the world of the underworld, where they have been transformed into reindeer. Dangers surround the siblings on all sides, and they eventually have to seek help from Bigga, who is a *noaidi* – a Sámi shaman. To get back home to the human world, Lemme and Sanne must choose who to trust and what to believe. Hidden truths and repressed knowledge come to the surface, and to succeed in their mission

to find their way home, Lemme and Sanne must use their intuition and find their way back to something fundamental in their Sámi identity²⁰¹.

Sámi fiction has traditionally played up against the backdrop of ancient Sámi narrative tradition and mythology where the relationship between humans and nature is central. In recent Sámi fictional literature, conflicts concerning place and identity, and ownership to natural resources are brought into question as well (Solheim Karlsen 2019: 95). The novel contributes to an ongoing political discourse, engaging with issues such as the climate crisis and the complex realities faced by the Sámi Indigenous people with a deep, longstanding relationship to nature. The novel takes place in the subarctic border area Sápmi. Located in Northern Europe, Sápmi stretches over four countries: Norway, Sweden, Finland, and Russia. Just as the physical aspect of Sápmi has been changing as a result of time and modernization, prevailing conceptions of the area are reinterpreted and amplified as well – by people and other places, both in myth and literary representation. Every place has a personal and subjective content, at the same time as it carries forms of collective memory. So has the region of Sápmi, and this can also be mirrored in Sámi literature (Solheim Karlsen 2019: 96).

Fantasy as a genre pertaining to the wider universe of speculative fiction allows authors of fantasy fiction to criticize, speculate, or reflect upon contemporary societal issues. In *In Between Worlds*, Sara employs the framework of a parallel world to illuminate challenges on our own. The novel clearly seeks to raise awareness about the climate crisis such as permafrost thaw and ice melting, and the exploitation of both people and nature. In doing so, the novel presents a critical and pragmatic approach to the human–nature relationship, acknowledging its complexity rather than idealizing it. By shifting

²⁰¹ Máret Ánne Sara official website, “In Between Worlds”. URL: <https://maretannesara.com/in-between-worlds/> (accessed 4 July 2025).

between the netherworld and the real world, the novel explores the interconnectedness of past, present, and future by offering a holistic vision of life in which all living beings share a common fate. Its engagement with environmental concerns and the ethics of natural exploitation positions *In Between Worlds* firmly within the eco-fiction genre. Incorporating classic fantasy elements – such as a parallel world, liminal settings, and the transformation of humans into animals – the novel can be classified as an ecofantasy that reflects the Sámi worldview. This perspective emphasizes the coexistence and mutual dependency of nature, humanity, and the environment.

Drawing on both (Arctic) pastoral and apocalyptic modes, recognised by Garrard (2004) as central to eco-fiction, the novel addresses tensions between tradition and modernity. In this novel, the Arctic pastoral is portrayed through life in the netherworld before the arrival of the black fog, a time when nature was used joyfully and sustainably, yielding benefits without depletion. In contrast, apocalyptic vision emerges when economic interests override ecological concerns, and when urban expansion disrupts traditional grazing lands and the Arctic cryosphere, leading to environmental degradation that threatens all life. The motif of the black clouds, or “death fog,” serves as a powerful symbol, not only of threats to Sápmi and Sámi culture, but also of broader global issues of environmental destruction, urbanization, and the reckless exploitation of natural resources.

5.3.1 The Changing Arctic in Fantastic Settings

In her novel, Sara shows a degree of environmental degradation, but also one that threatens a cultural disruption, especially for the Sámi people. As Lill Tove Fredriksen (2020) argues, “Sámi literature has always reflected the developments, challenges and the current situation in Sámi society” (136). Sara’s novel adheres efficiently to this definition: it depicts parallel stories, set

above and below ground, and highlights an imbalance between our world on Earth and that of our neighbours, the 'ulda-people' in the underworld. In the human world, the fight for land is an essential part of the narrative, and contamination and construction work in this world lead to environmental devastation for the ulda-people in the underworld. The protagonists, teenage siblings Sanne and Lemme, end up in the underworld, and their struggle to survive, both in the real and the fantastic world, is one of the main themes of the novel. The two protagonists live with their mother Rijá, their father Juho, and the family dog Čorre in a village in Northern Norway. Their parents are reindeer herders, and this is an important part of teenagers' lives. They take part in the traditional work of reindeer husbandry, such as repairing the fence of the corral which they use to gather the reindeer, and after the slaughter Sanne helps her mother to prepare traditional food (16-26). Lemme's great passion is riding a dirt bike, and Sanne wears Converse sneakers and likes to shop and spend time with her girlfriends. Sanne and Lemme experience a significant shift in their lives when Lemme has a dispute with his father. As a member of the local dirt-biking club, Lemme eagerly anticipates the opening of a new dirt-bike track set to be constructed near their town. However, this proposed site is crucial fallback land for the family's reindeer, which is vital for their survival during severe winters when their usual grazing areas are frozen over.

Juho, Lemme's father, embodies traditional values and aims to safeguard this land. In contrast, the dirt-bike track symbolizes deeper conflicts that encompass loyalty to family heritage, environmental degradation, ignorance, and racism as key elements. Additionally, industrial development is a destructive plan, depicted through Juho's condemnation of project of building a dirt bike track in the wilderness: "“This damned project!”" he snarled, gesturing at mangled earth, his fingers swept large at cut trees and ravaged territory. 'You people are destroying our livelihood with this diabolical hole! And you didn't even

ask for permission. You're doing it illegally!" (42). Denying an Indigenous presence and devaluing the inherent value of nature matches Garrard's framework for the wilderness trope in ecocriticism, which highlights how narratives have the potential to transform industrial spaces into agents of desecration: "Wilderness is the natural, unfallen antithesis of an unnatural civilisation that has lost its soul. It is a place of freedom in which we can recover our true selves we have lost to the corrupting influences of our artificial lives. Most of all, it is the ultimate landscape of authenticity" (Garrard 2004: 77). Garrard's thought highlights a central tension in wilderness discourse: the paradox of human presence in a supposedly pure and untouched landscape. Garrard criticises the romantic notion that human authenticity is achieved by retreating into wilderness, while simultaneously positioning wilderness as separate from humans. The ethical implication is that the measure of environmental responsibility should not be a question of identity ("being more natural or primal", Garrard 2004: 79) but of action, that is, what humans actually do to the land and ecosystems. This resonates with the chosen literary corpus, in which the human characters' ethical responsibility is foregrounded by the tangible impacts of industrial activity and extraction on Arctic landscapes.

However, in a parallel storyline, the reader discovers that, at the location of the new track, Sanne and Lemme suddenly hear an alarming scream, marking the convergence of reality and fantasy. They have unwittingly disturbed an *eahpáraš*, an unbaptized child abandoned long ago in the forest to perish. Sámi folklore suggests that an *eahpáraš* remains silent for seven years post-death but then begins to cry out, instilling fear in others as it seeks to be named (Qvigstad 1929: 510). There are specific rituals prescribed for encounters with an *eahpáraš*; according to Sara's novel, one must recite The Lord's Prayer backwards three times before the *eahpáraš* can circle around them. This encounter does not present Sanne and Lemme with unfamiliarity, since they

understand what an *eahpáraš* is and how to address it, a knowledge derived by Sámi traditions and narratives that have been passed down to them. Despite their awareness, Sanne and Lemme neglect to perform the essential ritual for their protection and are consequently taken to the underworld. In the Sámi oral tradition, *eahpáraš* are not depicted as evil entities, though. While the preface describes the *eahpáraš* in a way that may seem adversarial, its rage stems from sorrow. It expresses its fury through weeping, feeling angered by the lack of a name and recognition as a human being.

Once transported to the realm of the underworld, Sanne and Lemme are transformed into reindeer. Despite this ontological shift, they retain their identities through their internal monologues and interactions; however, as reindeer, they encountered challenges different from those they would have faced as humans. A primary challenge involves evading the ulda-people; the threat of being slaughtered and eaten initiates a struggle for survival, particularly when Sanne and Lemme are trapped within a fence where reindeer are drafted for slaughter. According to Sámi oral tradition, the ulda-people reside within the underworld or the mountains, tending to their own reindeer, cattle, and sheep. Historically, the relationship between the Sámi and these underworld inhabitants has been characterized by mutual respect and harmonious coexistence, with numerous tales recounting how the ulda-people have assisted the Sámi by safeguarding their livestock and providing warnings of impending danger. As a result, in the novel, the ulda-people occupy a paradoxical role, representing a confluence of peril, knowledge, and assistance. Fredriksen (2020) highlights this paradox by commenting on Sara's choice to add one more level of complexity, as she states that "If Sanne and Lemme had entered the underworld as humans, the situation would have looked different, but an additional level of the fantastic has been added as they are transformed into reindeer and are perceived as such by the ulda-people" (141). Finally, they meet

an old ulda-lady with extraordinary powers, who realises that they are human and promises to help them. Representing knowledge and care, she helps the siblings to get away from those of the ulda-people who do not understand that they are not reindeer.

The tension escalates through the alternating narratives occurring both above and below ground: Sanne's and Lemme's attempts to reconnect with humanity, their parents' sorrow, their struggle to move forward, and the ominous presence that endangers the ulda-people. In the underworld, this threatening fog is situated directly beneath the site of the dirt-bike track construction. This fog, referred to in the novel as the "black clouds" or *chapadat*, poses a significant threat to the ulda-people, as it renders the area uninhabitable. Living in close harmony with nature, the ulda-people find their fishing lakes and grazing lands ravaged by this fog. This element reflects the author's profound concern for ecological issues; at a deeper level, it serves as a commentary on environmental degradation stemming from pollution and construction activities in the Arctic. Unpredictable snow and ice events directly threaten subsistence practices, adding another layer of difficulty. Juho asks the project leader of the construction of the dirt bike track,

And what are you planning to do with your reindeer when there are bad winters? Now that the climate is changing so unpredictably, and the snow melts and freezes over and over until layers of ice lock up the grazing grounds? Do you think that the reindeer will go anywhere near such a site? A dirt bike track?! Where people buzz around like drunken flies? (30).

These questions point to an unwavering linkage between ecological instability and human subsistence as a feedback loop that is constantly challenged by the presence of dark and destructive forces. Atmospheric agents are represented

as fearsome and dangerous forces of chaos, portrayed as the *chapadat*²⁰² or the “black clouds”, as they are named in the original Sámi language. *Chapadat* clouds deepen a sense of dread and alienation, as the struggle in defining these clouds concretely makes their symbolic weight much harder for us to bear, generating confusion at the level of understanding. In the very beginning,

None of them knew what the black clouds were or where they came from. The only thing they knew was that whenever the black clouds darkened the land or the air, nothing grew anymore. Never. Everything just died out. With each additional *chapadat*, it got harder to survive. The grazing grounds for the reindeer were becoming scanty and it was getting harder for the people to collect their herds and migrate with them. The black clouds didn't ask where it would be convenient to settle. They just greedily swallowed up the hills with the best reindeer moss, or the cleanest rivers with the best drinking water (63-64).

Overall, human activity – whether industrial, extractive, or carbon-emitting – produces a cascade of ecological consequences, often involving irreversible identitarian and psychological implications. From this point of view, environmental destruction is never only physical, since it also carries moral, cultural, and temporal weight. Arctic environmental change is thus framed both as a product of short-term survival instincts and of systemic industrial expansion. Indeed, *In Between Worlds* heightens anthropogenic destruction through this imagery, positioning *chapadat* clouds as visible and omnipresent disruptive forces: “It was like a big black sea. As far as the eye could see! [...]

²⁰² There are two possible interpretations of the term *chapadat*. At first, one may think of them as black clouds of smoke (“she was staring straight into a black wall of smoke and she knew that she couldn't stop the deadly clouds”, 80) due to wildfires that occurs increasingly often all over the Arctic. Nevertheless, after an attentive reading of the phenomenon, *chapadat* more likely are the result of the interaction of black carbon with low-level Arctic clouds, a pronounced climatic effect on the polar environment (Zieger, P. et al. 2023. “Black carbon scavenging by low-level Arctic clouds”. In *Nature Communications* 14, 1-8. URL: <https://doi.org/10.1038/s41467-023-41221-w>, accessed 30 October 2025).

‘But why? Can it be that the deadly clouds are somehow connected to what we do...’. It seems that in the places where our things are there, in our world, there’s a *chapadat* there” (178-181). A few moments later, the realization comes:

“What if the *chapadat* clouds are our fault? [...] I mean the human beings, in our world. Have torn up and ruined...”. [...] At the place where our house stands, the ground is all dead, and the cloud cover the surface there, but that’s all. Why? The dirt bike track has a cloud too, but it hasn’t been all plowed up yet, but the town is all drowned in a *chapadat*. Why?”

“Because the dirt bike track isn’t finished yet, they’ve only started...”

[...] It was a bitter feeling, admitting their guilt.

All of our places have been taken over by blackness. The *chapadat* clouds are of our own making. And here the *chapadat* caused two things. Suffering and death. [...] Dirt biking wasn’t nearly so important now that he had experienced the life-threatening situation that it was causing here (181-182).

While in this excerpt it is clear that these clouds materialise the consequences of industrial and extractive practices, linking visible environmental destruction to humans’ lust for profit and greed, that “not yet” referring to the dirt bike track being not finished is, once again, the turning point for optimism and hope. In these terms, hope positions itself as the main glue between all the literary works analysed, and a point that cannot be missing within a cryo-critical framework analysing contemporary YA literature. Hope, as a literary trope, tends to focus on the belief that positive change can or will occur. Holding onto hope when confronting seemingly impossible odds is another important theme in many texts. Additionally, hope can be both an emotional state and a perspective on reality; when this is the case, hope is an example of how a worldview can shape one’s actions, often in profound and life-affirming ways. Thus, after understanding that humans are one with the rest of the planet (183), the two

young protagonists stood still and “focused on their entire bodies and minds” (190). In this act of embodiment and awareness, something had been said, “something so important, that it brought everything to a stop and changed the whole situation” (178), with the admission of guilt appearing not only as the first step towards greater environmental ethics, but also for the two teenagers to escape the stalemate in the underworld.

After over a year wandering and facing diverse challenges, the siblings need to escape and return to the human world; the novel thus ends without providing a definitive resolution, leaving the fate of Sanne and Lemme unclear. Juho is out observing his reindeer when he notices an unusual behaviour in his dog and spots two entirely white reindeer. A fleeting thought occurs to him that these might be ulda-people’s reindeer, and he recalls his grandmother’s stories on how one should act in such situations. According to Sámi oral tradition, one must throw a piece of steel over the creatures to claim ownership, and Juho resolves to follow this advice and throw an old knife at the reindeer (214). In the afterword of the novel, Juho’s inner conflict is presented as a conversation between an individual and her *áhkku* (grandmother), exploring whether belief in the underworld and other fantastical elements remains viable. If such belief has waned, what accounts for people’s continued awareness of these rituals? The concluding sentence poses a lingering question: “And why do we still find knives left behind in the wilderness?” (215), leaving readers speculating on a happy possible ending.

5.3.2 Interweaving Traditional Ecological Knowledge, Ancestral Stories, and Science

Storytelling and references to a mythical world are common in Indigenous peoples’ literature. Hirvonen and Anttonen (2008) argue that the majority of Sámi children’s literature lies in the realm of fantasy literature in which the real

world and the fantasy world are interwoven (92). Referring to this overlapping between fantasy and reality, Fredriksen (2020) claims that “in the Sámi oral tradition, it is not difficult to enter the mythical and supernatural world or to return to the ‘real’ world. Traditionally, humans have been seen as part of nature, and the demarcation between humans and other creatures has not been as clear as we consider it nowadays” (135). In Indigenous narratives, the role of science is thus diffused across worldviews rather than embodied by individual scientists. At the same time, knowledge and skills related to the traditional Sámi livelihoods, circular economy practices, and subsistence are potentially at risk of disappearing in the face of societal change and transformation. Deborah McGregor (2004) writes about sources of Indigenous knowledge acquisition, identifying three categories, each of these to be found in the literary corpus chosen for this study:

1. traditional knowledge, which is passed on from generation to generation.
2. empirical knowledge, which is gained through observation.
3. revealed knowledge, which is acquired through spiritual means and regarded as a gift.

In Between Worlds presents all these features at once, and it is the novel that mirrors spiritual involvement the most. One may argue that *In Between Worlds* substitutes the authority of Western science with Indigenous experiential epistemology, yet its language often mirrors the logic of scientific observation. Therefore, when characters describe climate instability or deduce human responsibility, they engage in processes akin to environmental inquiry through hypothesis, observation, and carefully correlating effects and causes. This parallel framework situates the Sámi community as holders of empirical ecological knowledge through tradition, whose insights are rooted in daily interaction with land and herds. This way, the “black clouds” can be read as

metaphors for anthropogenic pollution or industrial emissions; these phenomena belong to environmental science in Western discourse, but here appear as spiritual or moral contaminants. Thus, Sara's narrative fuses spiritual and scientific terminology to articulate climate change in both empirical and perceptual terms:

She [the *noiadi*] was frustrated because she knew that their world and their life was in the hands of those other people, in a place where she couldn't go. None of them could go there. The only thing that she or any of them could do was to wait and hope for the best. That the right people would come to their senses and that things would start to go in a better direction (80).

This excerpt implicitly references institutional and scientific authority (referred to as "those other people") representing governmental or research institutions with decision-making power over environmental management, still through the lens of psychological suffering. The novel also approaches moments of scientific deduction through experience; Indigenous people, being devoid of scientific data and dissemination that justify the increasingly widespread presence of *chapadat* that they cannot explain, establish links between human industrial activity and environmental toxicity. Additionally, local observations ("snow melts and freezes"; "nothing grows anymore") are acts of environmental knowledge, and their accuracy mirrors climate data despite scientific and bureaucratic distance. In this sense, *In Between Worlds* redefines what counts as scientific knowledge: the practice of 'listening to the land' becomes a form of research, and observation through survival replaces laboratory measurement. The metaphorical act of listening implies a view where land can become an educator; the Arctic land holds stories, it shapes cultural practices, nurtures worldviews, and informs literary discourses.

What is called *árbediehtu* in Northern Sámi is a term for the collectively rooted knowledge that is passed down from generation to generation, that is, Sámi traditional knowledge. It is about “how history, values, identity and understanding of the Indigenous people’s special traditions and resources have characterized the societies they have been and are a part of”²⁰³ (Fønnebø et al. 2023: 10). This knowledge has been silenced and hidden through the assimilation and colonization of the Sámi population and the Sápmi territory (Fønnebø et.al. 2023: 10-11). Despite that, much of the knowledge has survived and is still undergoing a revitalization in recent times, “associated with cultural phenomena, proximity to nature, cultural traces and regional affiliation, cosmology, history or storytelling traditions”²⁰⁴ (Fønnebø et al. 2023: 11-12). *In Between Worlds* takes legends of the underworld from Sámi folk beliefs and folk poetry and displays them as ideas about the world that are central to people’s everyday lives, but which can neither be anchored in scientifically established norms nor seen in the context of religious beliefs (Hætta 2002: 74-76). Traditional Sámi cosmology is based on a biocentric understanding of nature and, in such a worldview, there is an understanding that everything in nature is animated by the spiritual, where “rivers, lakes, mountains, rocks and forests are seen and treated as living” (Swart 2023: 186). These places are attributed to a special influence and power, and this is the reason why, in the Sámi tradition, great respect has always been shown for nature and landscape (Ibid.). Consequently, it is not unusual for traditional legends and folk beliefs to be adapted into fantastical stories, and especially in stories that contain eerie elements and ghosts (Wolfe 1986: 42).

²⁰³ “Hvordan historie, verdier, identitet og forståelse av urfolkets særlige tradisjoner og ressurser har preget de samfunnene de har vært og er en del av”.

²⁰⁴ “Tilknyttet kulturelle fenomener, nærhet til naturen, kulturspor og områdetilhørighet, kosmologi, historie eller fortellertradisjoner”.

In their escape from the underground people and their hunting dogs, the two protagonists end up in the middle of one of the black clouds that have begun to spread in various places in the underground world. This twist in the plot immediately strengthens the eerie atmosphere pervading the novel. Slettan (2018) believes that the fantastic in YA literature is rarely left undefined, because “the supernatural becomes visible in figures and events, but even in such a form an effective contrast can arise against the ordinary and automated” (12). *In Between Worlds* is a YA novel that seems to break with this rule, though. This is a more complex novel which leaves quite a lot undefined. In this regard, Thunes Jensen (2020) states that complex YA novels “challenge the reader both in terms of form and content” (86). This concept may also find confirmation in Royle’s theorization of the uncanny, providing ways of “beginning to think in less dogmatic terms about the nature of the world, ourselves and a politics of the future” (2003: 3). In this sense, uncanny experiences are universal. They are about ways of experiencing the world, in the face of something that shakes the reader. As mentioned in connection with Freud’s (1919) considerations in chapter 4 (see Section 4.3.1) on the uncanny occurring mostly in literary works, readers can gain experience of it in the strongest, most extreme way, just through literature and art. For what concerns Sara’s novel, this universal experience is mirrored by the *chapadat* motif, thus positioning itself into a certain political conversation about both the climate crisis in the Arctic and the Sámi people experiencing grim living conditions.²⁰⁵

²⁰⁵ Historically, the eight Arctic nations – Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the US – and Indigenous peoples engaged in cooperation. However, rising tensions, particularly between Russia and the Global West amidst Ukraine’s invasion, coupled with growing interest of US President Trump at Arctic resources, have made geopolitical collaboration increasingly sensitive. Effective international cooperation remains crucial to navigate geopolitical tensions, resolve legal disputes, and ensure the safe and sustainable development of Arctic shipping. The choices made in national policies will significantly shape the future of this unique and vital region (Earth.org, “Governing the Melting Arctic: Geopolitical Tensions and Legal Gaps”,

5.3.3 Paths to Renewal

Through the theme of border crossing in the transition between tradition and modernity, *In Between Worlds* addresses Sámi identity, Indigenous rights and sustainable living. By both geographically and temporarily moving between the underworld and our real world, past, present and future are explored, and a holistic vision of ways of living becomes more evident. As Garrard (2004) claims, through pastoral and apocalyptic modes, which are the major narrative schemes of eco-fiction, the novel form treats and engages with the relationship between tradition and modernity. In Sara's novel, the pastoral idyll is exemplified by life in the underworld before the arrival of the first "black clouds", a period when its inhabitants lived in harmony with nature, harvesting the land sustainably for both sustenance and delight. In contrast, the apocalyptic dystopia emerges when economy takes over ecology, when urbanization and development on traditional pastures prevent an ecologically wise and sustainable use of nature, placing all living things in danger. The motif of the *chapadat* thus serves as a warning not only for the Sápmi territory and the preservation of Sámi culture but also to other parts of the globe, illustrating the consequences of intervening upon nature through urbanization, destruction, and a mindless use of natural resources.

The analysis of *In Between World* indicates and confirms that the interactions and conflicts in the borderless territory of Sápmi are multifaceted. On the one hand, the majority of non-Sámi society is guilty for the allocation of conventional grazing land to corporates and the acceptance of urbanised areas in Sámi regions. At the same time, the novel reveals how the Sámi youth exist in a middle zone of worlds, between the traditional Sámi culture and what ultimately will have to be a contemporary Sámi culture. Different forms of internal colonialism have also barred generations of Sámi from practicing their

URL: <https://earth.org/governing-the-melting-arctic-geopolitical-tensions-and-legal-gaps/>, accessed 26 January 2025).

own culture and knowledge based on their environmental experience. The project of constructing the dirt bike track is central to start reflections about what colonization may mean. Indeed, even the plan of building an amusement site can become a manifestation of Western sovereignty, as expressed in the beginning of the novel by Juho: “Don’t you understand that we’re talking about the most essential piece of land that we have as backup? The one that will rescue us if such winters keep coming? If the winter grazing lands are covered with ice? All...locked...up!” (31). In this sense, the novel claims that traditional knowledge is the answer: by going through the underworld, the young protagonists go through their own formative journey, they can finally see how all things are interconnected on broader levels and that traditional and ecological knowledge is still rooted in Arctic multicultural societies. Eventually, Sanne and Lemme learn that what comes and goes in one place can have consequences somewhere else: “It was painful to admit your own guilt. All our land is devastated. We are to blame for the death fog” (176). Thus, Sanne and Lemme finally realise that to protect the environment they must take responsibility. When they recognise that the present conditions are unsustainable, they take responsibility for their culture and their future, and they start repairing environmental damage right away, so that their agency may be inspirational for the next generations.

Changes in temperature, snow, and ice conditions affect the survival of many species and affect people’s travel and transport options. Sámi traditional knowledge is needed as one of the tools to manage the expected changes, and the Sámi people need to be involved early in the development of strategies in response to climate change. Traditional knowledge consists of knowledge, know-how, customs and beliefs that help humans in their interaction with the surrounding nature. It includes expertise in agriculture, animal husbandry, hunting, fishing, gathering various goods, combating disease and injury, naming

and explaining natural phenomena, and various strategies for surviving and shaping one's environment. That is why Arctic sustainable futures should be considered in accordance with the idea of the Sámi as experts of circular economy and subsistence. The Sámi society and lifestyle have traditionally been based on circular economy: the migratory way of life and the use and reuse of the resources at hand have been the basic pillars of life for the Sámi. The traditional, nature-based Sámi livelihoods are thus based on the principles of sustainability and circular economy.

Capturing a single aspect of traditional knowledge is difficult, though. Traditional knowledge is holistic and cannot be separated from the people: "it cannot be compartmentalized like scientific knowledge [...] which often ignores aspects of life to make a point. However, traditional knowledge parallels scientific knowledge" (Roberts 1996: 115). Surely, as Gregory Cajete (2000) points out, building on prior learning and traditions is never a direct or linear path, and "getting from point A to B is a linear process, and in the Indigenous mind-set, arrival at B occurs through fields of relationships and establishment of a sense of meaning, a sense of territory, a sense of breadth of the context" (81). Consequently, there are many myths revolving around the learning experiences of young people, as well as their roles in bringing new knowledge to other people (Cajete 2000: 102).

To protect and guarantee continuity to culture, traditions are to be reinterpreted and recreated. Change has always been there: in this sense, a tradition is an adaptive and selective process of continuity and transformation. Indigenous adaptation to climate change has been of more concern in recent years (Stepien 2014: 1). As a result of societal changes and ruptures, the Sámi practices have diversified, and "Sáminess has become more manifold and intersectional than ever" (Valkonen et al. 2022: 16). The Sámi are described as adaptive people in a changing world, which does not only include climate

change, but also changes brought along by modernization and industrialization (Valkonen et al. 2022: 1). A very important aspect of their adaptation is their relationship to the environment (Ibid.). Elderly herders' observations of changes in snow and ice conditions by 'reading nature' can aid reinterpretation of meteorological data by introducing researchers to alternative perspectives. In this, the relation to changes of weather and temperature conditions is often integrated in terminology (Magga 2006), and this is to be considered as a linguistic paradigm from which cryo-criticism should draw when analysing Sámi texts. The terminology for snow conditions and layers, for example, consists of terms based on the transportation and pasturage needs of reindeer, as well as nouns describing different kinds of tracks in the snow. Through various linguistic derivations, the total number of nouns, verbs and adjectives denoting snow, ice, freezing, and melting can easily exceed 1,000 lexemes (Magga 2006: 34).

By analysing this kind of terminology, non-Indigenous scholars can learn a lot about snow and ice conditions in the Arctic, in parallel with living conditions for animals and human beings. The general term for ice is *jiekŋa*, while *jiekŋut* is the corresponding verb with the meaning "to get covered with ice" (Magga 2006: 32). Even more interestingly, the opposite term is *suttēsčáhci*, meaning "water which has not frozen" (Ibid.), reinforcing the concept of ice as a substance of multiple status. The term *suddi*, from which the lexeme *sutte* is derived, also means "lane, lead, hole in the ice", derived in turn from *suddat*, "thaw, melt" (Ibid.). The most central terms for different kinds of ice on and in water are listed in the table below (see Fig. 11):

TABLE 9. Terms for ice and snow on water

<i>áhttán</i> ice on salt-water	<i>roavku</i> portion of water (river, lake, marsh) or frozen bank, waterside (near a spring), where the ice has formed in such a way that there is a hollow space under the top layer of ice
<i>aškkas</i> rough sheet of ice	<i>rovda</i> weak ice which does not bear the reindeer (especially on bogs)
<i>baldu</i> large block of ice, ice-floe	<i>norahat</i> pack-ice (on or near a river); stretch of river ice in autumn with uneven surface due to floating bay-ice which has frozen onto it
<i>boara</i> having smooth ice on it in spring, after the snow has melted	<i>rudni</i> ice-hole
<i>bodas</i> brash ice at bottom of (shallow) river in autumn	<i>sáisa</i> mass of packed ice pressed up on or towards the shore
<i>bodus</i> ice-floes floating separately (collectively)	<i>soatma</i> ice-slush or snow-slush on the water of a river or a lake
<i>cahca</i> narrow strip of ice between two lanes	<i>spildi</i> very thin layer of ice on water or milk
<i>cuokca</i> ice-bridge or snow-bridge over a river	<i>šuoħmir</i> particle of ice in the shape of a needle
<i>gavdda</i> thin ice, bay (or young) ice	<i>suossa</i> bay ice (in river and lake)
<i>njuorra-jiekŋa</i> new ice, so weak that it does not bear weight	<i>vuohčči</i> smooth ice with moisture on top
<i>jieŋk-gávli</i> ice along the shore of open water (the sea or rapids)	<i>vuozži</i> wet bare ice
<i>liehpa</i> hole in the ice on a lake	
<i>moalus</i> small fragments of ice which float on the water after the force of the stream has ground up the ice	
<i>moarahat</i> lane, lead, of water where the ice is broken up; place where a layer of ice on top of thicker ice is broken up	

Figure 11: Table showing North Sámi terms for ice and snow on water (Magga 2006: 33).

While this table presents only a fraction of the Sámi lexicon linked to the cryosphere, it highlights a sophisticated system of traditional knowledge refined through generations of observation and first-hand experience. A comprehensive study of these environments must consider the physical evolution of snow and ice from the freezing process to how the melting phenomena transform snow back into water, with linguistics providing one more crucial analytical layer. This linguistic and critical framework would serve as a vital humanistic supplement to the existing scientific reports on Arctic climate change, offering deeper insight into how these environmental shifts are perceived and understood.

REFERENCE LIST

ABC News, "Sir John Franklin's doomed 1846 Northwest Passage expedition ship found in Canadian Arctic", 9 Sep. 2014. URL: <https://www.abc.net.au/news/2014-09-10/canada-locates-british-explorer-ship-lost-in-1846/5732292> (accessed 19 May 2025).

Ahlberg, S., Ericson, S. (2025). "An Emergent Rebellion: Activist Engagement with Ann-Helén Laestadius' Coming-of-Age Novel *Stöld* (*Stolen: A Novel*)". In *Humanities*, 14(3), 60. URL: <https://doi.org/10.3390/h14030060> (accessed 19 January 2026).

AMAP (2024). *Arctic Climate Change Update 2024: Key Trends and Impacts*. Arctic Monitoring and Assessment Programme (AMAP), Tromsø: Norway. URL: <https://www.amap.no/documents/doc/amap-arctic-climate-change-update-2024-key-trends-and-impacts/3851> (accessed 19 January 2026).

Amft, A. (2000). *Sápmi i förändringens tid: en studie i svenska samers levnadsvillkor under 1900-talet ur ett genus- och etnicitetsperspektiv*. Umeå: Sápmiska studier, Umeå University.

Andrews, H., Roberts, L. (2012). *Liminal landscapes: Travel, experience and spaces in-between*. London and New York: Routledge.

Artchive.com, "The Sea of Ice (c. 1823-25) by Caspar David Friedrich". URL: <https://www.artchive.com/artwork/the-sea-of-ice-caspar-david-friedrich-c-1823-25/> (accessed 22 April 2025).

Aspman, O. (2024). *Liminal Space. C'est Bon Anthology*, Vol. 62/63. Malmö, Sweden: C'est Bon Kultur.

Barth, F. (1969). "Introduction". In Fredrik Barth (Ed), *Ethnic Groups and Boundaries. The Social Organization of Culture Difference*, Boston: Little, Brown & Company, 9-38.

Berg-Nordlie, M. (2022). "Sámi in the Heart: Kinship, Culture, and Community as Foundations for Indigenous Sámi Identity in Norway". In *Ethnopolitics*, 21(4), 467-469, <https://doi.org/10.1080/17449057.2021.1932116> (accessed 19 January 2026).

Bille, M., et al. (2010). "Introduction: An Anthropology of Absence". In Bille Mikkel et al. (Eds), *An Anthropology of Absence: Materializations of Transcendence and Loss*. New York: Springer, 3-22.

BiologyInsight.com, "Arctic Mosquito: Characteristics and Adaptations". URL: <https://biologyinsights.com/what-are-arctic-mosquitoes-and-why-are-there-so-many/> (accessed 12 December 2025).

Bordignon, I. (2024). "The Colors of Vanishing Ice: Mapping the Arctic in Contemporary Young Adult Literature". In *ISLE* (Interdisciplinary Studies in Literature and Environment), isae078, 1-22. URL: <https://doi.org/10.1093/isle/isae078> (accessed 5 April 2025).

Bremer, S. (2024). "Is Bergen Unseasonal? On Europe's Shifting Relation to Seasons". In *European Review* 2024, 1-15. URL: <https://doi.org/10.1017/S1062798724000115> (accessed 18 January 2026).

Bremer, S., Wardekker, A. (2024). "When Seasons No Longer Hold". In Scott Bremer and Arjan Wardekker (Eds), *Changing Seasonality: How Communities Are Revising Their Seasons*, Berlin: De Gruyter, 1-26.

Brovold, M. (2023). "Sámi Feminism and Activism in Ann-Helén Laestadius' Novel *Stöld*". In *NORA* (Nordic Journal of Feminist and Gender Research), 31(2), 186-191. URL: <https://doi.org/10.1080/08038740.2023.2214376> (accessed 19 January 2026).

Cajete, G. (2000). *Native Science: Natural Laws of Interdependence*. Santa Fe, New Mexico: Clear Light Publishers.

CNN Science, "It went horribly wrong': DNA analysis sheds light on lost Arctic expedition's grisly end", URL: <https://edition.cnn.com/2024/10/11/science/franklin-lost-expedition-cannibalism/>. Accessed 19 May 2025).

Daumal, R. (1952). *Mount analogue: a novel of symbolically authentic non-euclidean adventures in mountain climbing* (English translation). New York: Penguin, 1974, 81.

Dodds, K. (2021). "Geopolitics and Ice Humanities: Elemental, Metaphorical and Volumetric Reverberations". In *Geopolitics*, 26(4), 1121-1149. URL: <https://doi.org/10.1080/14650045.2019.1697240> (accessed 20 April 2025).

Earth.org, "Governing the Melting Arctic: Geopolitical Tensions and Legal Gaps", URL: <https://earth.org/governing-the-melting-arctic-geopolitical-tensions-and-legal-gaps/> (accessed 26 January 2025).

Encyclopedia Arctica, "Sir William Edward Parry", in *Encyclopedia Arctica 15: Biographies*. URL: <https://collections.dartmouth.edu/arctica-beta/html/EA15-53.html> (accessed 19 May 2025).

Estes, N. (2019). *Our History Is the Future: Standing Rock Versus the Dakota Access Pipeline, and the Long Tradition of Indigenous Resistance*. London: Verso.

Exibart.com, "Caspar David Friedrich's The Sea of Ice", in *Exibart*, 3. URL: <https://www.exibart.com/opera/caspar-david-friedrich-il-mare-di-ghiaccio/> (accessed 19 May 2025).

Fredriksen, L. T. (2020). "Imagination and Reality in Sámi Fantasy". In Heidi Hansson, Maria Lindgren Leavenworth, and Anka Ryall (Eds), *The Arctic in Literature for Children and Young Adults*, New York: Routledge, 135-145.

Freud, S. (1919). "Das Unheimliche". In *Imago. Zeitschrift für Anwendung der Psychoanalyse auf die Geisteswissenschaften*, 297-324. URL: <https://archive.org/details/dasunheimlichesigmundfreudpdf> (accessed 6 January 2026).

Fønnebø, B., et al. (2023). "Introduksjon". In Bente Fønnebø et al. (Eds), *Sámiske stemmer i skolen*, Oslo: Cappelen Damm Akademisk, 10-21.

- Garrard, G. (2004). *Ecocriticism: The New Critical Idiom*. New York: Routledge.
- Gustavsson, K. (2017). "Kunskap ur tomrum. Närläsning som etnologisk metod". In Lars-Eric Jönsson och Fredrik Nilsson (Eds), *Kultur-historia: en etnologisk metodbok*, Lund University (Sweden): Institutionen för kulturvetenskaper, 121-136.
- Haarder Ekman, K. (2018). "Där ingen turist satt sin fot". In Peter Degerman, Anders E. Johansson and Anders Öhman (Eds), *Norrlandslitteratur – ekokritiska perspektiv*, Göteborg and Stockholm: Makadam.
- Helander-Renvall, E., Markkula, I. (2017). "On transfer of Sámi traditional knowledge: Scientification, traditionalization, secrecy, and equality". In Alexandra Xanthaki, Sanna Valkonen and Leena Heinämäki (Eds), *Indigenous Peoples' Cultural Heritage: Rights, Debates, Challenge*, Leiden: Brill Nijhoff, 104-129.
- Hirvonen, V., Anttonen, K. (2008). *Voices from Sápmi: Sámi women's path to authorship*. Guovdageaidnu [Kautokeino]: DAT.
- Hulme, M. (2015). "Climate and Its Changes: A Cultural Appraisal". In *Geo: Geography and Environment*, 2(1), 1-11. URL: <https://doi.org/10.1002/geo2.5> (accessed 18 January 2025).
- Hætta, O. M. (2002). *Samene: Nordkalottens urfolk*. Oslo: Cappelen Damm.
- Indigenous Climate Hub, "Traditional Ecological Knowledge". URL: <https://Indigenousclimatehub.ca/2024/04/traditional-ecological-knowledge-the-cornerstone-of-Indigenous-climate-adaptation-in-canada/> (accessed 21 January 2026).
- Kirunalapland.se, "Our Eight Seasons", URL: <https://kirunalapland.se/en/our-eight-seasons/> (accessed 27 October 2025).
- Laestadius, A.H. (2016). *Ti över ett*. Stockholm: Rabén & Sjögren.
- Laestadius, A.-H. (2021). *Stöld*. Stockholm: Romanus & Selling.
- Laestadius, A.-H. (2023). *Stolen*. Translation by R. Willson-Broyles. London: Bloomsbury Publishing.
- Lundell, E., Marshall, M. (2025). "Non-winter. A new season in a warmer climate?". In *Kultur og Klasse: Köld*, 139, 119-142. URL: <https://tidsskrift.dk/kok/article/view/157724/199915> (accessed 18 January 2025).
- Magga, O. H. (2006). "Diversity in Saami terminology for reindeer, snow, and ice". In *International Social Science Journal*, 58(187), 25-34. URL: <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1468-2451.2006.00594.x> (accessed 21 January 2026).

Máret Anne Sara official website, "In Between Worlds". URL: <https://maretannesara.com/in-between-worlds/> (accessed 4 July 2025).

McGregor, D. (2004). "Coming Full Circle: Indigenous Knowledge, Environment, and Our Future". In *American Indian Quarterly*, 28(3/4), 385-410.

Messina, L. (2002). "Caspar David Friedrich's The Sea of Ice", in *Exibart*, 3. URL: <https://www.exibart.com/opera/caspar-david-friedrich-il-mare-di-ghiaccio/> (accessed 19 January 2025).

Morgan, B. (2016). "After the Arctic Sublime". In *New Literary History*, 47(1), 1-26. URL: <https://www.jstor.org/stable/24772795> (accessed 22 January 2025).

NationalGeographic.com, "Why the Arctic's Mosquito Problem Is Getting Bigger, Badder". URL: <https://www.nationalgeographic.com/animals/article/150915-Arctic-mosquito-warming-caribou-Greenland-climate-CO2> (accessed 12 December 2025).

Nilsson Skåve, Å. (2020). "Plats, natur och tillhörighet i Ann-Helén Laestadius böcker". In Corina Löwe and Åsa Nilsson Skåve (Eds), *Didaktiska perspektiv på hållbarhetsteman i barn- och ungdomslitteratur*, Stockholm: Natur & Kultur.

Orlove, B. (2003). "How people name seasons". In Sarah Stauss and Benjamin S. Orlove (Eds), *Weather, Climate, Culture*, London: Routledge, 121-140.

Qvigstad, J. K. (1929). *Lappiske eventyr og sagn*. 15 (2): Lappiske eventyr og sagn fra Lyngen og fra Nordland. Oslo: Aschehoug. URL: <http://skuvla.info/sambok-n.htm> (accessed 26 January 2026).

Roberts, K. (1996). *Circumpolar Aboriginal People and Co-Management Practice: Current Issues in Co-Management and Environmental Assessment*. Calgary: University of Calgary, 115.

Rovaniemi.fi, "8 seasons". URL: <https://international.rovaniemi.fi/en/8-seasons> (accessed 27 October 2025).

Royle, N. (2003). *The Uncanny*. Manchester: Manchester University Press.

Sachse, S. L. (2025). "Rustad med arv och liv". In *TFL (Tidskrift för Litteraturvetenskap)*, 55(3), 101-120. URL: <https://doi.org/10.54797/tfl.v55i3.57181> (accessed 12 January 2026).

Salomonsson, A. (2018). "Människan och skogen. Makt- och ekokritik i Sara Lidmans Hjortronlandet". In Peter Degerman, Anders E. Johansson and Anders Öhman (eds), *Norrlandslitteratur – ekokritiska perspektiv*, Göteborg and Stockholm: Makadam.

Sara, M. Á. (2013). *Ilmmiid gaskkas*. Kautokeino: DAT.

- Sara, M. Á. (2014). *Doaresbealde doali*. Kautokeino: DAT.
- Sara, M. Á. (2016). *In Between worlds*. Kautokeino: DAT.
- Sara, M. Á. (2025). *Crossing Over*. Kautokeino: DAT.
- Schulz, S. L. (2007). "Att läsa för en hållbar värld". In Sven Lars Schulz (Ed), *Ekokritik. Naturen i litteraturen – en antologi*, Uppsala: Cemus, ix-x.
- Slettan, S. (2018). "Å utvide det moglege: Om fantastisk litteratur for barn og unge". In Svein Slettan (Ed), *Fantastisk litteratur for barn og unge*, Bergen: Fagbokforlaget, 9-22.
- Solheim Karlsen, S. (2019). "Adventures in a Borderless Land: Myth, Modernity and the Environment in Máret Anne Sara's *In Between Worlds*". In *Nordiques*, 37, 95-130. URL: <https://doi.org/10.4000/nordiques.446> (accessed 13 January 2026).
- Stepien, A. (2014). "Arctic Indigenous Peoples, Climate Change Impacts, and Adaptation". In *e-International relations*, URL: <http://www.e-ir.info/2014/04/10/arctic-Indigenous-peoples-climate-change-impacts-and-adaptation/> (accessed 25 January 2026).
- Svenska ILO-kommittén, "Om ILO". URL: <https://svenskailo-kommitten.se/om-ilo/> (accessed 21 December 2025).
- Svenska Kulturlandskap, "Hur Sámsk jojk bevarar muntliga traditioner". URL: <https://svenskakulturlandskap.se/hur-Sámisk-jokk-bevarar-muntliga-traditioner/> (accessed 27 December 2025).
- Sveriges riksdag, "ILO:s konvention nr 169 om ursprungsfolk och stamfolk i självstyrande länder", URL: https://www.riksdagen.se/sv/dokument-och-lagar/dokument/kommittedirektiv/ilos-konvention-nr-169-om-ursprungsfolk-och_glb1103/ (accessed 21 December 2025).
- Swart, A. I. (2023). "Sámsk kosmologi – noaidien og trommenes samtidskraft". In Bente Fønnebo, et al. (Eds), *Sámske stemmer i skolen*. Oslo: Cappelen Damm Akademisk, 186-199.
- Thunes Jensen, M. (2020). "Komplekse ungdomsromaner". In Svein Slettan (Ed), *Ungdomslitteratur – ei innføring*. Oslo: Cappelen Damm Akademisk, 86-100.
- Valkonen, S. (2014). "The embodied boundaries of ethnicity". In *European Journal of Cultural Studies*, 17(2), 210-220. URL: <https://doi.org/10.1177/1367549413508101> (accessed 19 January 2026).
- Valkonen, S., et al. (2022). *The Sámi World*. London: Routledge.
- Wilkie-Collins.info, "The Frozen Deep: a Drama in Three Acts". URL: https://www.wilkie-collins.info/play_frozen_deep.htm (accessed 19 May 2025).

Wolfe, G. K. (1986). *Critical terms for science fiction and fantasy: A glossary and guide to scholarship*. New York: Greenwood Press.

Zieger, P., et al. (2023). "Black carbon scavenging by low-level Arctic clouds". In *Nature Communications* 14, 1-8. URL: <https://doi.org/10.1038/s41467-023-41221-w> (accessed 30 October 2025).

CONCLUSIONS



Reading Icescapes Diffractively

READING ICESCAPES DIFFRACTIVELY

The concept of 'Arcticness' unifies various perspectives on ice and the cryosphere, bridging their scientific characteristics with cultural and environmental significance. By examining the relationships and values embedded in these perspectives, we can better understand the complex processes and consequences behind ice loss. Thus, anthropogenic climate change makes ice change both materially and socioculturally. This fluctuation gives rise to ambiguous future visions, including optimistic hopes for sustainable coexistence, fears of ecological devastation, and uncertain geopolitical dynamics. Although an iceless future is projected to be alarmingly inevitable according to current scientific reports, this study interprets the present reduction in ice coverage as a promising and hopeful starting point for fostering awareness and inspiring remedial action. This position is the central fulcrum around which the multifaceted concept of 'Arcticness' revolves in this study and in my readings.

The reduced presence of Arctic cryosphere, particularly through the endangerment of ice, has profound implications for northern Indigenous populations (with significant consequences for their cultural practices and social structures) and for settlers in Arctic areas, along with fauna and flora. The diminishing ice not only threatens building foundations, (i.e. roads and paths becoming unstable, etc.), but also disrupts broader cultural systems connected to cold environments. As Ruiz et al. (2024) state, ice is "a milieu for the creation of semantic and embodied worldmaking and sensemaking" (9). In this sense, ice-melting is not only related to loss, it also represents a transition of matter due to anthropogenic change. Cryosphere disruption must always be situated in relation to a long chain of ways of understanding, manipulating, and using ice in a broad spectrum of possibilities (and

consequences). Even in the worst-case scenario of a largely iceless Arctic ecosystem, the very absence of ice would create meaning. What is not there would paradoxically evoke a sense of itself: this holds a potential for cognitive awakening, for desires to protect and understand what is left. From this point of view, absence is situated as a “missing, lost, or intangible phenomena” that affect us both emotionally and experientially (Bille et al. 2010: 18). However, absence does not exist in itself; rather, it is created when it is attributed meaning (Meyer 2012: 107). The loss of an object, for example, depends on it being assigned a certain meaning, evoking emotions, or simply on someone remembering ‘the lost thing’. Consequently, a future absence must be understood in terms of social, cultural, and political contexts and meanings, involving negotiations and contradictions about what is present or absent (Bille et al. 2010; Meier et al. 2013).

This study indeed began with an immediate issue: the loss of Arctic ice at an unprecedented rate. The issue has reverberations that go beyond environmental change and into cultural loss, political strife, and ethics. The essential premise upon which my study is developed is that ice is not inert or passive; it is ‘intelligent’ and ‘agentive’ matter interwoven with Indigenous knowledge, ecological processes, and human narratives. My project would not have been possible without breaking through traditional *clichés* to create a multidisciplinary debate that fuses environmental science, Indigenous epistemologies, and the humanities. This study aimed to question how the Arctic cryosphere could be more accurately read and perceived, specifically within contemporary YA literature. To reach this aim, I formulated a cryo-critical framework built on ecocriticism and new materialism to illuminate the many roles ice may serve, such as ecological force, cultural site, and moral compass. The framework allowed for an examination of speculative fiction written by Indigenous and non-Indigenous authors to reveal how ice is

represented. In doing so, I demonstrated how stories convert scientific data into layered embodied experiences that highlight various interconnected realities. This approach highlights the importance of multidisciplinary engagement in understanding and addressing the climate crisis. This holistic view is crucial not just in making sense out of the crisis but to celebrating and preserving the rich and complex lives and knowledges entangled with the Arctic cryosphere.

Furthermore, this study has demonstrated that a cryo-critical approach is an opportunity to broaden the discussion and render visible various forms of ice that are imagined, experienced and (emotionally) handled in relation to climate change, and which are currently *in the process of* being lost. This is the main reason why cryo-criticism deals with the *hic et nunc*, the current present of things. While a future vision rooted in 'what may be' is important, as it illuminates an awareness of the vanishing object of reference, this study has shown that we must resist the notion of total absence in the apocalyptic sense. When discussing iceless scenarios, the implication is that something will soon be "completely gone, erased from all memory, and disappeared without a trace" (Meier et al. 2013: 426). However, as argued in Chapter 2, this is not the case: ice 'melting' does not equate 'disappearing' but serves as the starting point for various cascading effects.

The analyses of chosen YA fictional works, conducted in Chapter 3, 4, and 5, offered concrete opportunities for reading icescapes diffractively, in the sense theorised by Karen Barad (2007). Icy matters do not exist as discrete, pre-given entities, but emerge relationally through entangled material, ecological, and human practices. Following Barad's theorisation, the analyses emphasised that knowing is not a passive reflection of reality but is achieved through a material and discursive engagement with the world. This line of thought implies that knowledge-making is inseparable from the

material processes it seeks to apprehend; it is consistent with the concept of diffraction, understood as a mode of inquiry. Reading these texts diffractively meant tracing how ice, snow, and broader frozen landscapes co-constitute human and non-human life, ecological systems, and cultural knowledge, highlighting the inseparability of (scientific) observation, ethical and ecological concerns, and physical consequences.

In *Beyond the Frozen Horizon*, the embodied experience of the Arctic Ocean makes Rory more acquainted with this combination of empirical observation and moral attention. Through Barad's lens, this alone is already a diffractive phenomenon; ice and glacier dynamics, for instance, are inseparable from the humans observing them, from the species dwelling in them, and from the ethical and ecological reflections they can give rise to. Rory's encounter with the bowhead whale illustrates the entanglement of affect, knowledge, and material reality; she looked into its eyes, describing it as "one of the ancient ones, the slow swimmers of the Arctic Ocean" (Penfold 2022: 291). In this case, the knowledge related to the whale's biology is inseparable from the emotional resonance of the encounter. The sensory immediacy of sound and sight in the narrative, like the "sound of waves on the shore and ice cracking against the rocks" (194), further exemplifies how attention to material detail transforms observation into cognitive engagement, echoing Barad's claim (2007) that phenomena emerge through intra-action.

Similarly, in *Melt*, Yutu's embodied reading of "patterns and textures of ice" (Fountain 2021: 56) demonstrates the interconnectedness of survival and climate knowledge. Through Nancy Tuana's concept of viscous porosity (2008: 189), which intrinsically builds on Barad's theorisation, ice can be understood as a porous and entangled material that mediates the flow between human knowledge and the changing Arctic. In Tuana's terms, ice

proves to be “viscous” due to its transformability, which leads to more insidious conceptual dangers: when it melts, it does not vanish but enters other systems in liquid forms, thereby raising water levels, altering habitats, and contributing to global ecological consequences. Observations of cracking ice and rising seawater under Yutu’s feet translate this icy porosity into both material and symbolic terms, emphasising that ice cannot be considered in isolation from the relationalities in which it participates.

Reading diffractively allows us to better perceive how the instability of frozen landscapes is entangled with human action. Even more importantly, a diffractive reading also attends to the narrative and aesthetic strategies that shape how ice is represented. In both *Beyond the Frozen Horizon* and *Melt*, the texts foreground detailed depictions of ice, like the “flowers of ice” (Penfold 2022: 188), or the ridges shaped by wind into directional formations (Fountain 2021: 150). By revealing textures and patterns of ice, these narratives invite readers to participate in an embodied attentiveness, enacting diffractive reading within the literary form itself. Descriptive precision mirrors scientific observation while simultaneously opening emotional registers, thus enabling the reader to notice disruption and to understand the Arctic as a system of ‘intra-actions’ (Barad 2007) in which even small shifts have potentially huge effects.

Drømmen om et tre, *Stöld*, and *In Between Worlds*, although through different temporalities and settings, extend this diffractive lens to the intersection of human movements and natural rhythms through both Sámi perspectives and critical dystopias. In these contexts, diffraction is closely linked to the recognition of the liveliness of ice and can be employed as the starting point for a cryo-critical reflection allowing us to notice the temporality of landscapes in which ice accumulates, melts, and moves. Consequently, reading icescapes diffractively allows us to move beyond the dichotomies of

presence/absence or frozen/melted. Furthermore, new diffractive insights arise when we consider the interplay between scientific and Indigenous modes of disseminating information. In all five texts of the corpus, observation is also pervaded by affective and hopeful registers. Diffractive reading thus results in the entanglement of multiple layered dimensions, amplifying the modes of literary imagination.

Diffractive reading methods importantly contribute to the emerging framework of cryo-criticism, to which knowledge deriving from other fields needs to be continuously added. Positioning itself as a 'laboratory' for ecocriticism, cryo-criticism needs to be further amplified, applied, experimented with, and improved. One critical lens that seems promising is the involvement of lexicography and linguistics, as proposed in Chapter 5. The physical environment leaves its mark on every culture and, in the case of the Indigenous peoples, culture and language bear evidence of a long, intimate relationship with the Arctic environment, mirrored by a rich terminology for reindeer, snow, and ice (Magga 2006), which is exemplified in *Stöld* and *In Between Worlds*. Lexicography can thus serve as a significant source of further insight into cryo-criticism, acting as a valuable supplement to other types of knowledge from different research fields and specializations.

A cryo-critical framework can integrate a wide array of research fields that bridge disciplines, including cultural studies, political ecology, and plant and animal studies, which bring vital insights into the non-human life forms inhabiting icy environments. Furthermore, incorporating ecofeminism (as informed by thinkers like Barad, Tuana, Alaimo, and Haraway who inspired the theoretical apparatus of this study) enriches the framework by foregrounding issues of embodiment, ethics, and relationality within the cryosphere contexts. Other disciplines might include postcolonial and decolonial studies, including postcolonial ecocriticism; the debates on the

Anthropocene (especially the various ‘variants’ of the concepts and the different interpretations they offer of the climate crisis); (critical/environmental) literacy and ecopedagogy; and critical approaches to resilience. Finally, complementary fields such as anthropology, Indigenous studies, and environmental justice can deepen the analysis of the socio-political dimensions of cryo-environmental change.

No less importantly, as this study approaches its conclusion, a significant point arises regarding the potential application of a diffractive approach to the corpus of cryosphere science literature. While my analysis employs diffraction primarily to expand ecocritical paradigms, applying this lens to scientific literature and cryosphere science could indeed offer productive insights. A diffractive reading might illuminate how various scientific disciplines, epistemologies, and assumptions co-produce knowledge about the cryosphere in ways that are not fully captured through conventional literature reviews. However, such an application also demands careful methodological consideration, given the technical and quantitative nature of much research within cryosphere science. Integrating diffraction here could foreground overlooked entanglements between scientific paradigms and sociopolitical contexts, potentially enriching our understanding. This remains a path worthy of further exploration beyond the scope of the present study.

Consequently, while this study has been dedicated to prioritising a sense of ‘Arcticness’ by examining the Arctic as a privileged research area, cryo-criticism is geographically contextualisable in all regions of the planet (the Antarctic, mountain ranges, etc.) where the cryosphere is similarly impacted. This multidisciplinary synthesis enables a more nuanced and critical understanding of the complex interactions between human and non-human agents in the face of melting ice and global climate transformations,

ultimately strengthening the theoretical and practical impact of cryo-criticism. Amidst the urgency of the ecological crisis, a cryo-critical framework must always embrace hope; a hope that inspires a renewed commitment to care, resilience, and the possibility of regenerative futures within the fragile and shifting landscapes of the cryosphere.

REFERENCE LIST

Barad, K. M. (2007). *Meeting the universe halfway: quantum physics and the entanglement of matter and meaning*. Durham, N.C. London: Duke University Press.

Bille, M., et al. (2010). "Introduction: An Anthropology of Absence." In Mikkel Bille et al. (Eds), *An Anthropology of Absence: Materializations of Transcendence and Loss*, New York: Springer, 3-22.

Fountain, E. (2021). *Melt*. London: Pushkin Press.

Magga, O. H. (2006). "Diversity in Saami terminology for reindeer, snow, and ice". In *International Social Science Journal*, 58(187), 25-34. URL: <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1468-2451.2006.00594.x> (accessed 21 January 2026).

Meier, L., et al. (2013). "The Importance of Absence in the Present: Practices of Remembrance and the Contestation of Absences". In *Cultural Geographies*, 20(4), 423-430. URL: <https://doi.org/10.1177/1474474013493889> (accessed 24 January 2026).

Meyer, M. (2012). "Placing and Tracing Absence: A Material Culture of the Immaterial". In *Journal of Material Culture*, 17(1), 2012, 103-110. URL: <https://doi.org/10.1177/1359183511433259> (accessed 24 January 2026).

Penfold, N. (2022). *Beyond the frozen horizon*. London: Little Tiger Press Group.

Ruiz, R., et al. (2024). "Introduction: a cold humanities after ice". In Rafico Ruiz et al. (Eds), *After Ice: Cold Humanities for a Warming Planet*, Vancouver and Toronto: University of British Columbia Press, 3-25.

Tuana, N. (2008). "Viscous porosity: Witnessing Katrina". In Stacey Alaimo and Susan J. Hekman (Eds), *Material feminisms*. Bloomington: Indiana University Press, 323-333.

