JOURNAL *of* NORTHERN STUDIES

JOURNAL *of* NORTHERN STUDIES

JOURNAL *of* NORTHERN STUDIES

Vol. 16 • No. 2

Cover picture
Scandinavia Satellite and sensor: NOAA, AVHRR
Level above earth: 840 km
Image supplied by METRIA, a division of Lantmäteriet, Sweden.
www.metria.se
NOAAR. cESA/Eurimage 2001. cMetria Satellus 2001

Design and layout
Leena Hortéll, Ord & Co i Umeå AB
Fonts: Minion Pro and Eliza

Contents

Editors

Editor-in-chief:
Associate professor Olle Sundström, Dept. of Historical, Philosophical, and Religious Studies, Umeå University, SE-901 87 Umeå, Sweden Tel. +46-(0)90-786 7627
E-mail: olle.sundstrom@umu.se

Book review editor:
Professor Lars-Erik Edlund, Dept. of Language Studies, Umeå University, SE-901 87 Umeå, Sweden Tel. +46-(0)90-786 7887
E-mail: lars-erik.edlund@umu.se

Professor Else Mundal, University of Bergen, Norway
Professor emeritus Einar Niemi, UiT, The Arctic University of Norway
Professor Jill Oakes, University of Manitoba, Canada
Professor Lars Östlund, Swedish University of Agricultural Sciences, Umeå, Sweden
Professor Anssi Paasi, University of Oulu, Finland
Professor emeritus Andrejs Plakans, Iowa State University, Ames, USA
Professor Neil Price, Uppsala University, Sweden
Professor Håkan Rydving, University of Bergen, Norway
Assistant professor Ebbe Volquardsen, Ilisimatusarfik/University of Greenland
Professor Björn Wittrock, Swedish Collegium for Advanced Study (SCAS), Uppsala, Sweden
Professor emerita Takako Yamada, Kyoto University, Japan

TINTTI KLAPURI

The Landscape of Longing and Belonging
Temporality in the Kola Sami Writer Askold Bazhanov's Poetry

ABSTRACT The article examines Kola Sami literature, focusing on the autobiographical nature poetry written by the Skolt Sami author Askold Bazhanov (1934–2012) in the 1970s–2000s. The focus is on landscape and temporality in the contexts of Sami and Soviet literature, especially the literatures of small northern peoples. What characterises Bazhanov's nature-centred texts in general is the complex way in which temporality and human and non-human existence are manifested in the northern landscape described. As a case study, the article examines nostalgic discourses, which in Bazhanov's texts are associated with longing for the childhood landscape in Sami villages that were submerged in the 1960s. These discourses are often combined with romanticised idyllic depictions of reindeer herder life, which I analyse as arctic pastorals. In Bazhanov's nature poetry, the temporality of the landscape, particularly the Sami history conveyed within the landscape that is described as strongly local, is an important means by which the identity and agency of the poems' speakers are constructed and reinforced.

Introduction[1]

The tension between past and present is often central to Sami literature, typically of indigenous writing. On the one hand, the past may be coloured by a nostalgic yearning for a traditional way of life that is depicted as harmonious and holistic and perceived in empowering terms. Hence, even in contemporary literature Sami identity is often constructed and reinforced through myths and narratives that are based on the oral tradition and associated with precolonial times (Hirvonen 2010; Gaski 2011: 51–52). At the same time, literature functions as a forum for addressing the painful aspects of Sami colonial history in the collective memory. Transformations in Sami ways of life during the twentieth century have frequently been reflected upon in fictional writing in the past few decades (Ahvenjärvi 2015: 20, 21).

The connection between the past and the present is also strongly present in the literature of the Kola Sami,[2] who reside in the Russian Federation. Kola Sami literature has evolved as part of Soviet literature, which has had several consequences for its development as a separate tradition from the Sami literatures written in the Nordic countries. For example, critical examination of complex colonial issues has not been possible in the same sense as in late twentieth-century Nordic Sami literature, even if during and after the Khrushchev Thaw it was possible in Soviet literature—within the village prose movement (Ru. *derevenskaia proza*), for example—to address questions such as tradition and modernisation or the relationship between the centre and the periphery. Furthermore, while in contemporary Sami poetry written in the Nordic countries the yoik tradition is rather prominently present, in Kola Sami poetry, the Eastern Sami chant *luvt* does not seem to have been as influential.[3] In general terms, the lyrical form of contemporary Kola Sami poetry is less experimental than in the Nordic countries. Nevertheless, Kola Sami poetic imagery also draws from the northern landscape, myths and oral tradition, and frequently reflects the experiences of rootlessness and hybridity that have been central for Nordic Sami poetry. In Kola Sami writing, these experiences are associated with the traumatic Soviet and post-Soviet history of the Kola Peninsula and its consequences, including state-initiated displacement and emplacement, assimilation into the majority population, language loss, environmental issues and social problems.[4]

The Kola Sami poet and prose writer Askold Bazhanov (1934–2012) is one of the better-known Sami authors on the Russian side. In his poetry written in Russian, he addresses from a Sami perspective the dramatic historical events in twentieth-century Soviet northern minority history, such as relocations, the Second World War and ecological changes (see also Domokos 2009; Caffee 2013: 38). Bazhanov's predominantly autobiographical and nature-centred poetry is often accompanied by nostalgic yearning: the past and its way of life are portrayed as authentic in relation to the present. In particular, his depictions of reindeer herders' everyday lives as harmonious and organic dwelling in an ancient Sami landscape acquire idyllic dimensions. However, Bazhanov's texts also convey a view of the opportunities brought about by modernisation, such as his own educational path and the decision to become a writer instead of a reindeer herder. The temporality discernible in Bazhanov's poetry is complex and seems to elude the most typical definitions of nostalgia.

The purpose of this article is to explore forms of temporality in relation to land-

scape in Bazhanov's nature poetry. Kola Sami literature has been subject to very limited research, and the existing studies are mostly scientific-popular in nature and are published almost entirely in Russian.[5] Hence, this article also aims to bring Bazhanov's work into the sphere of anglophone literary studies, especially in the field of Sami literature. Theoretically and methodologically, the article contributes to discussions on temporality, modernity and nostalgia within Sami literary studies in particular. In what follows, I will set out by outlining Kola Sami literature as a distinctive Sami literary tradition that has evolved and developed within the Soviet Union. I will then introduce Bazhanov and his work, focusing on its nature-centredness and temporality. As a case study, I will examine forms of nostalgia and pastoral elements in his poetry collections *Solntse nad tundroi* ['The sun above the tundra'] (1983; in what follows also ST) and *Stikhi i poemy o saamskom krae—Verses and Poems on the Saami Land* (2009; in what follows also SP), a bilingual collection published by Humboldt University.

Kola Sami Literature

Kola Sami literature is multilingual in the sense that texts are being published both in Russian and in Kildin Sami, which is the strongest Sami language in Russia.[6] Since the late 1980s, approximately 30–40 separate works have been published in Kildin Sami, although most of them are relatively short in length. Sami-language literature is often aimed at children and adolescents and primarily consists of short narratives and poetry, exploring mythological and folkloric themes (Rießler 2018a: 75; Czerwiński 2020: 255). Adult literature is mainly written in Russian. Traditionally, the main genre has been lyrical, often autobiographical poetry. However, Kola Sami literature today also includes short stories, novellas and novels (Bakula 2022: 35–41), such as Nadezhda Bolshakova's lengthy novel-essay *Alkhalalalai* (2003).

The history of Sami literature written in Russian begins at the turn of the 1970s with texts published by Askold Bazhanov in Soviet multi-ethnic literature anthologies and local newspapers, while the history of Sami-language literature in Russia starts only with the bilingual poetry collection by Oktiabrina Voronova (1934–1990), titled *Jālla – Zhizn* ['Life'] (1990), which she published in her native language, Ter Sami, and in Russian. Bazhanov and Voronova are often considered the founders of Kola Sami literature. Sami writers in Russia have largely assimilated into the mainstream population both linguistically and culturally. A close connection with Russian literature is evident in Bazhanov's work, even though he did not pursue a career as a Russian language and literature teacher, unlike several prominent Sami women writers of his generation: in his poems, he cites from and alludes to Russian early nineteenth-century Romantic poetry and often employs iambic pentameter, a common poetic metre in Russian poetry of this era.

The history and current state of Kola Sami literature are closely related to the development of Eastern Sami written languages and Soviet language policies. In the 1920s and 1930s, the development of literacy among Northern minority peoples was supported by creating standard written languages and publishing literature in their native languages.[7] This process was part of a broader policy of indigenisation (Ru. *korenizatsiia*) aimed at bringing cultures that were "lagging behind" into the sphere of socialist modernisation (Slezkine 1994: 221–226; Grenoble 2003; Siegl & Rießler

2015: 200–201). The Eastern Sami language chosen for standardisation was Kildin Sami, which had the most speakers and was presumed to be most understandable to speakers of other Sami languages in the Soviet Union.[8] At first, Kildin Sami was provided with a Latin alphabet-based orthography, and in the early 1930s, educational materials and translations of ideological texts and Russian literature were published.[9] In 1937, in a changing political climate, Cyrillic alphabet was introduced, which has been considered a manifestation of Stalin's monolingual policy and the beginning of the later linguistic Russification of the Kola Sami. From the late 1930s to the 1960s, no Sami-language literature was published in the Soviet Union, and Sami languages were not taught in Soviet schools until the linguistic and cultural revival of the 1970s and 1980s, during which a Kildin Sami primer (including a few small literary texts and poems) and other educational materials were introduced (Siegl & Rießler 2015: 203–207; Rießler 2018a: 73). An important producer of these materials was Aleksandra Antonova (1932–2014), a true proponent of Kola Sami languages and literature. More broadly, the revitalisation of the Sami language and culture was driven by the emergence of Soviet Sami intelligentsia, a generation born in the 1930s who had received higher education in Leningrad and returned to the north as teachers, writers and linguists.[10] At present, only a small number of Kola Sami are active speakers of their own languages, and all the existing three Sami languages that are spoken in the Russian Federation are highly endangered.[11] Skolt Sami is primarily spoken on the Finnish side in Inari municipality, where most of the Petsamo area Skolt Sami were relocated after the area was ceded to the Soviet Union after the Second World War. In practice, only the Skolt Sami living at Lake Notozero (in Skolt Sami, Njuõ´ttjäu´rr) remained on the Russian side. Askold Bazhanov's family belonged to these communities, whose members became linguistic outsiders in the Soviet Union.[12]

Kola Sami literature has thus evolved as part of Soviet multiethnic literature. In Russian-language discourse, it belongs to the so-called *mladopismennye literatury*, or young literary cultures, a term that refers to Soviet indigenous literatures, whose literary languages were established only in the 1920s and 1930s, and emphasises the lateness of their literary traditions and the relative scarcity of texts. *Mladopismennost* distinguishes the literary traditions of the Russian Arctic area from several other ethnic literatures in the former Soviet Union, such as those in the Caucasus region, which had their own literary traditions before the Soviet era. As northern literatures lacked such traditions, the authors drew from oral tradition, folklore, as well as Russian and Soviet models (Smola 2022: 960). Consequently, the development of northern indigenous literatures can be seen to have been influenced by various phases of Socialist Realism, as demonstrated in the case of Nenets literature by Karina Lukin (2020a: 173, 179–190; Lukin 2021: 22–25). Klavdia Smola (2022: 960, 962–963, 969), in turn, has suggested that the emergence of northern literatures without a history of written language had an impact on their development in the late Soviet period, from the late 1960s on, when they received influences from the more liberal trends within Socialist Realism.[13] Village prose writing appears to have been particularly important in this respect, critical as it was of Soviet reforms such as collectivisation that were important issues also for reindeer herders (Lukin 2021: 21–25).

The problems associated with the Soviet legacy in the North became publicly known and were discussed for the first time during the glasnost period in the late

1980s. In these discussions, environmental issues in the Arctic area and their impact on the livelihoods and well-being of Indigenous peoples attracted much attention. The social engineering of minority cultures as part of building the Soviet state was also strongly criticised. The discussions emphasised the northern Indigenous peoples' right to self-determination and often highlighted the significance of preserving traditional ways of life. Indigenous writers, such as the Nivkh author Vladimir Sangi and the Khanty author Eremei Aipin, actively participated in these debates (Forsyth 1992: 403–416; Slezkine 1994: 371–385). These themes are also reflected in perestroika era fictional writing. A notable example is Aipin's major novel, *Khanty, ili Zvezda Utrennei Zari* ['Khanty, or the Star of the Dawn'] (1990), which explores a conflict between the worldviews of Soviet oil prospectors and the Khanty community. The oil-seekers view the taiga as an empty, meaningless space without any semiotic layers, a tabula rasa that can only turn out to be useful by offering its natural resources to the state and to oil companies. For Demian, the novel's protagonist, the same region is on the contrary full of deep meanings, layered over time and linked to a traditional way of life, traditional ways of travelling, reindeer husbandry, fishing and culture.[14] The past and traditional way of life are thus portrayed in the novel as positive entities, and in this sense, the novel can also be seen to continue and develop village prose tradition in the indigenous context. At the same time, Soviet modernisation, and education in particular, also has positive aspects. The entire novel can be seen as a contradictory outcome of northern colonisation: Soviet modernisation has provided indigenous writers with education, enabling, for example, their criticism of Soviet colonisation and an ethnographic understanding of their own culture that is articulated in the novel (see also Smola 2022: 973–975). While Askold Bazhanov was not politically active to the same extent as Aipin or Sangi, these issues are also crucial for his poetry that developed in the context of late Soviet and post-Soviet literature.

Askold Bazhanov and Temporality in his Nature-Centred Poetry

Bazhanov grew up in a reindeer herder and fisherman family in Notozero, a Sami village by Lake Notozero in the parish of Restikent (in Skolt Sami, Risttǩe´dd),[15] approximately a hundred kilometres southwest of Murmansk. His father was Russian and his mother a Skolt Sami. In his childhood, Bazhanov understood spoken Sami, even though at home the family spoke Russian, but as an adult he could only recall some Sami phrases (Bolshakova 2021: 99; Bakula 2022: 37). He attended boarding schools in Iurkino village and in Kola town. Bazhanov's father died in the Second World War, and his grandfather trained him to become a reindeer herder; Bazhanov worked for some time as an assistant reindeer herder in the "Vosmus"[16] collective farm. In the mid-1950s he enrolled to study mathematics and physics at the Institute of the Peoples of the North (*Institut narodov Severa*) at Herzen Pedagogical University in Leningrad, aiming to become a teacher. This institute was founded in the 1920s in the days of indigenisation and was a key educational pathway for northern Indigenous peoples in the Soviet Union. In Leningrad, Bazhanov became acquainted with other future northern writers representing Fenno-Ugric minorities, such as the Nenets Vasili Ledkov and the Mansi Iuvan Shestalov. He did not, however, complete

13

his studies but returned to the north to take care of his family. Bazhanov made his main career as an electrician at the Revda metallurgical plant in the Lovozero region (Bakula 2012: 88, 91; Ezhova & Kozmenko 2018: 13, 25–27).

Bazhanov is known to have written poems in Russian as a schoolboy (Bakula 2022: 49), and according to Nadezhda Bolshakova (2021: 100), during his studies in Leningrad he was still writing at a beginner's level. His poems were published from 1970 onwards in local Lovozero and Murmansk region newspapers and anthologies that included texts by multiethnic Soviet writers, as well as in local Lovozero and Murmansk region newspapers (Zemskaia & Mikhailova 2005: 121–123).[17] Bazhanov's debut poetry collection *Solntse nad tundroi*, which came out in 1983, was the first literary work by a Sami author to be published in the Soviet Union. The work received relatively little attention in the official Soviet media, but a positive review by the Nenets writer Vasili Ledkov, whom Bazhanov knew personally, did appear in the national press (Ogryzko 2010: 215). The later bilingual collection, *Stikhi i poemy o saamskom krae—Verses and Poems on the Saami Land* (2009), includes both new and previously published texts. A posthumous collection, *Izbrannye stikhi* ['Selected poems'], came out in 2015. In addition to poetry collections, Bazhanov's novella *Belyi olen* ['The white reindeer'] (1996) has been published as a separate work.[18] During the perestroika years, Bazhanov was engaged in founding the Kola Sami Association and took an active part in promoting Sami language and culture revitalisation work. In 1991, he attended an international Uralic literature conference in Finland (Sárá & Afanasjeva 2017: 131; on the conference, see Grünthal 1991).

Bazhanov's career as a writer has to be seen in the context of multicultural Soviet literature, one of the aims of which was to produce Soviet writers from different ethnic backgrounds. In this regard, Bazhanov's background was exemplary. He represented a small minority population that did not yet have its own written literature, at the same time achieving the ideologically desirable development of abandoning the traditional path of a reindeer herder, going to university, and pursuing a career as a factory worker. The attempt to present Bazhanov as a specifically Sami writer is reflected, for example, in *Stupeni* ['Steps'], an anthology of young writers from the Murmansk region published in 1979, in which it is stated that Bazhanov was writing in both Sami and Russian (see Zaitsev 1979: 23). This was not in fact the case, since Bazhanov had not published anything in Sami and apparently no longer even had much knowledge of Skolt Sami. The misleading note was probably due to the aim of building up Bazhanov's identity as an "authentic" Sami writer, not just a Russian writer of Sami origin (Bolshakova 2021: 103). For Bazhanov himself, the loss of language and the fact that it was Oktiabrina Voronova and not him who became "the first Sami poet" was a lifelong trauma.[19]

Bazhanov's poetry suggests that his career choice—to abandon the traditional profession that ran in his family for generations, to pursue education and start working in the metal industry, and, in particular, to become a writer—was for him a difficult subject, to which he constantly returned in his autobiographical texts. Frequently, he places the transformation within his own family as part of a broader shift in the Kola Sami way of life during the twentieth century. This broader historical movement is examined through personal experience, as exemplified in the poem "Oleni—eto zhizn" ['Reindeer are life itself'] that was first published in *Lovozerskaia pravda* in

14

February 1983. The poem is structured as a dialogue between the older and younger Sami generations, represented by the figures of the grandfather and the grandson. It sets out with an autobiographical element, the grandson's decision to become a poet instead of a reindeer herder. The theme of the poem—the transformation of the Sami way of life in the late twentieth century—is then developed through this break in family tradition:

> Suddenly beautiful poems became more dear
> to the grandson than grandfather's reindeer.
> "It seems that the shepherds are now moving
> to the great Sami centre."
>
> "You won't find another job in the tundra,"
> the old man said.
> "Reindeer are life for a Sami,
> whether you want it or not."
>
> All thoughts and paths were connected
> to pastures, campfire sites, and reindeer.
> For every generation before us
> it was impossible to imagine life without them.
>
> But what about us? The twenty-first century demands perspectives,
> What would we respond to that?
> "As long as there are reindeer, there will be people
> who greet the dawn by the campfire!" (Bazhanov 1983a; SP: 26)[20]

In this poem, as well as elsewhere in Bazhanov's texts, the reindeer-herding grandfather is a symbolic figure for whom it is self-evident that being a Sami means being a reindeer herder. In contrast, the subsequent generations—including the grandson—are forced to question the inevitability of the connection between Sami identity and the traditional way of life (see also ST: 37, 50). The confidence of the grandfather's opinions is also reflected in the poem in the sense that they are presented in the form of assertions directed at the grandson that can be seen to establish the traditional view of Sami identity as reindeer herders as the norm. In contrast, the sense of uncertainty experienced by the grandson's generation is underlined in the last stanza of the poem in which the link between Sami identity and reindeer husbandry is literally being questioned in the form of interrogative clauses. The answer to the grandson's questions is again presented by the grandfather as an unambiguous assertion that conveys a view of the traditional livelihood as a constant.[21]

The collection *Solntse nad tundroi* from 1983 conveys a relatively optimistic view of the Kola Sami people's future (see also Bakula 2012: 89–90). Actual problems, such as environmental issues, are not addressed, and changes in the living environment, such as the technologicalisation of reindeer herding, are presented as a natural development without being set in opposition to traditional livelihood activities. In contrast, the later collection, *Stikhi i poemy o saamskom krae*, published in 2009,

15

introduces fairly strong juxtapositions between the traditional Sami living environment and the modernised Kola Peninsula. The grandfather figure is associated with untouched nature and positioned as separate from contemporary reality with its ecological problems: "My grandfather knew that the tundra is pure, / but he did not know about fluorine and heavy fuel oil"[22] (SP: 52). A similar juxtaposition is present in the poem "Aprel" ['April'], which describes two separate realities. On the one hand, a natural environment in which the lyrical subject feels autonomous and free, symbolised by him being able to run any distance with a pure ridge of ice under his feet. On the other, a road "where Kamaz trucks pollute all day long"[23] (SP: 118) that can be seen in the distance, a site to which the poem's speaker feels he is not connected.

Bazhanov's distinctive manner of portraying time is also evident in the poem "Oleni—eto zhizn," cited above. The landscape—in this case also a mental landscape—is presented as pathways and networks shaped by generations of reindeer herding, forming a Sami scenery in which humans are viewed as a part of non-human nature. Indeed, Bazhanov's texts often involve this kind of spatiotemporality: a landscape that conveys a very long temporal perspective, extending far back into a time before the colonisation of the Kola Peninsula. For instance, in the poem "Kamni" ['Stones'], this kind of longevity is represented by stones, symbolising the souls of ancestors. In comparison with the long local history connoted by the stones, their utilisation as natural resources appears ephemeral: "Many centuries and springs / passed / before metals were extracted / from stone"[24] (SP: 78). In addition to stones, a similar long temporal perspective in Bazhanov's texts is closely associated with fells, which are identified as "wise witnesses of centuries"[25] (SP: 116). In the poem "Berezka" ['Mountain birch'], they are also represented as separate from "time"—a concept left open to interpretation but here likely to refer to historical time: "[t]he summits do not remember time / they are proud and unwavering"[26] (SP: 24). In the same poem, the fells also shape the landscape, where the long Sami history is seen as an integral part of the surrounding nature, manifested as hardly discernible paths on the fells: "Ancient paths criss-cross them / barely distinguishable from the rock"[27] (SP: 24). Viktoriia Bakula (2020: 83–84) identifies temporality in Bazhanov's poetry as a form of mythical time, as "temporal finality and, on the other hand, infinity, creating an image of repetition, the cyclical nature of life." Extended temporality is indeed often combined with nature's cycles in his poems. In "Berezka," for example, cyclicality is represented through the title motif: "It [the birch] withstands the Arctic winter / and with the song of mountain streams / triumphantly extends its buds / towards the long-awaited spring"[28] (SP: 24). Hence, nature's temporality is conveyed in Bazhanov's texts as layered. On the one hand, it is the imperceptibly shifting shapes of the natural landscape in long human and non-human nomadic interaction. On the other, it is the recurring rhythms of seasons within this extended temporality.

The layered temporality conveyed by Bazhanov's texts thus seems to reflect a view of the organic connection of the landscape to the people inhabiting it and their activities. In this sense, it comes close to ideas put forward in phenomenological anthropological research, which have also been applied to the Sami understanding of landscape. Tim Ingold (1993: 152–153) stresses the importance of temporality in conceptualising the landscape, suggesting that the landscape is created by the activities of the people who have lived there for generations, and as a result of this long co-exist-

16

ence have left something of themselves on the landscape. Ingold describes the act of examining the landscape as a form of reminiscence, since it is an environment that is heavy with the past.[29] Taarna Valtonen (2020: 38) in turn notes that Ingold's perspective on the landscape aligns well with the views of many Sami communities, where the meanings of the landscape are often conceived through the practices of livelihoods and multi-generational habitation of the same area.

Most of Bazhanov's nature poems depict the seasons and seasonal variation in the tundra, representing the changing landscape and activities associated with different times of the year. These texts, many of which were published in newspapers and anthologies during the 1970s and 1980s, are mostly joyful and innocent praises of northern nature. In temporal terms, the most intriguing among them are some serene portrayals of reindeer herding life in which humans are depicted as an organic and unquestioned part of the non-human environment, typically of the pastoral idyll as a genre (see Bakhtin [1981] 2006: 226). Often the pastoral description focuses on childhood and includes an element of nostalgic longing (Williams 1973: 10–12, 35; Ettin 1984: 141–143). Such longing is in Bazhanov's poetry linked to the irrevocable loss of the author's childhood landscape due to the construction of the Upper Tuloma hydroelectric power plant between 1961 and 1966.[30] Verkhnetulomskoe Reservoir, which was created by the power plant, increased the surface area of Lake Notozero tenfold, submerging the Sami villages in the area. In 1962, the inhabitants were relocated to the Verhnetulomsk urban settlement, primarily established for power plant workers (Allemann 2020: 125). I will next move on to examine in more detail the key temporal features of Bazhanov's poetry that have been introduced above, focusing on pastoral descriptions and the nostalgic longing associated with them.

Nostalgia and Pastoral in Bazhanov's Poetry

The concept of nostalgia refers to a mode of thought or affect in which the past is valorised positively in relation to the present, which is perceived as deficient in some way or another. As Stuart Tannock (1995: 454) formulates it,

> [t]he nostalgic subject turns to the past to find/construct sources of identity, agency, or community, that are felt to be lacking, blocked, subverted, or threatened in the present. Invoking the past, the nostalgic subject may be involved in escaping or evading, in critiquing, or in mobilizing to overcome the present experience of loss of identity, lack of agency, or absence of community.

Nostalgic longing for a connection that is perceived as lost is associated with modernity and characteristically it involves an experience of alienation and fragmentation (Chase & Shaw 1989: 7; Johannisson 2001: 127). It is also connected to the emergence of a modern historical consciousness that makes it possible in the first place to imagine different historical situations (Koselleck 2000: 131–132, 137). Nostalgia is thus a sentiment inherent to the modern era, even if it has often been conceptualised as a conservative way of thought that is quite alien to modernity (Tannock 1995: 454; Johannisson 2001: 139–142). Nostalgia scholars frequently advocate an objective approach to nostalgia as a phenomenon and highlight the way in which it may reflect so-

cietal issues. Rather than categorising the concept as conservative in principle, efforts should be directed towards defining the functions of nostalgia and determining the specific objects of nostalgic longing (Tannock 1995: 456; Ladino 2012: 7–8; Tinsley 2020: 2328). As Meghan Tinsley (2020: 2328) suggests, "nostalgia reveals a society's anxieties, its Others, and its temporal and spatial idea of itself." Svetlana Boym (2001: xvi–xvii) has defined nostalgia and other forms of temporal perception that are specific to modernity but deviate from its most evident future-oriented temporality as "off-modern," meaning conceptions or experiences of time that exist in the shadows of the modern project's linearity. In his analysis of modern nationalist thought, Homi K. Bhabha ([1994] 2000: 148–149, 152–153) in turn addresses alternative temporalities that exist in the margins of modern national narratives, which he views as lesser-acknowledged forms of the modern conception of time. These arise, for example, from shared experiences among ethnic minorities and hybrid communities, such as relocations or migration.

In the postcolonial context, the longing for a past that predates the time of colonisation—whether imagined or real—is a recurring trope (Ashcroft, Griffiths & Tiffin 1989: 195; Huggan & Tiffin 2010: 112). In indigenous literature, nostalgia is often linked to the experience of the empowering significance of the past for the community's present, as proposed by Chadwick Allen (2002: 158, 178–179, 192; see also Huggan & Tiffin 2010: 111–113; Ahvenjärvi 2015: 21). While the present may be characterised by the experience of fragmentation, the past appears as a harmonious temporal dimension. For indigenous literature, it is crucial that nostalgic longing is directed towards space and place: the experience of loss is often concrete and spatial in nature, considering that colonisation has entailed, for example, forced displacements of peoples and transformations of the landscape. Attachment to the land and the landscape is, in turn, a trope characteristic of indigenous literature, which can also be seen as a response to globalisation in the sense that it implies a focus on the local (Heith 2022: 35–37). In Sami literature, nostalgia is specifically associated with the imagery of the marginalisation of traditional ways of life and the desolation of home regions, a recurring theme in literature written across different decades. Within Nordic Sami studies, the nostalgic longing for the past that characterises even contemporary Northern Sami poetry has been attributed in particular to the influence of Nils-Aslak Valkeapää's nature-centred poetry and its depictions of traditional ways of life (Ahvenjärvi 2015: 21; Heith 2022: 79).

A longing for childhood is one of the most typical forms of nostalgia. Karin Johannisson (2001: 8) identifies a historical semantic shift from place to time as an essential aspect of nostalgia: initially, this yearning was directed towards the childhood home, whereas later on the focus shifted to childhood itself. The childhood home as a paradisiac place and childhood as a golden age are indeed the ideal topoi of nostalgic longing, linked with an experience of a connection with nature and community that is typical of modern longing (Kukkonen 2007: 24, 29). In Bazhanov's poetry, childhood is associated with Lake Notozero, Tuloma River, and Restikent Sami villages, as well as with moments shared with peers or his grandfather by the fire and in the fells (ST: 7, 16–17, 24–25, 30, 35, 45; SP: 72, 76, 80, 146, 152, 156). A typical example is the poem "Istok zhizni" ['The wellspring of life'], which describes the lyrical subject's return to his childhood landscape at Lake Notozero:

18

Ahead of me, behind the sloping forested hill,
bright blue water awaits me.
And I gallop over the cunning swamp
leaving no trace!
And there's the cottage, with hundred-year-old walls,
windows gazing attentively at the sunrise.
It's childhood, here nothing has changed
it's the sacred wellspring of life! (SP: 80)[31]

The cottage with its attentively gazing windows and hundred-year-old walls forms the very core of the landscape and seems to reflect the lyrical subject's mind, as the house often does in literature and culture more broadly (see van Baak 2009: 12; Bachelard 1957: 19, 24). It is noteworthy that the poem presents the landscape of childhood as an unchanging and empowering timespace to which the poem's speaker can always return, despite the fact that in the referential reality the entire area has been drowned by the Verkhnetulomsk Reservoir.

The descriptions of childhood are mainly idyllic, but occasionally they are marked by an awareness of the brevity of the golden age—especially the end of childhood when the war breaks out (SP: 152, 156)[32] or the apocalyptic fate that threatens his childhood landscape. The latter is evident in the poem "Gde saamski pogost Restikent" ['Where is the Sami parish of Restikent']. Also in this poem the submerged and thus irreversibly lost childhood landscape is portrayed as constantly present for the lyrical subject:

But it hasn't been extinguished in me,
not by the autumn rain, nor by the years.
Yet I can never visit there,
not even as a guest.

To stand on the family kentish[33]
where my father and mother used to stroll.
My kentish has become an impenetrable depth,
what could that depth tell me. (Bazhanov 1983b; SP: 130)[34]

The poem originally appeared in February 1983 under the title "Restikent" in the journal *Rybnyi Murman*, along with a few other poems by Bazhanov and Oktiabrina Voronova. It is hence quite an early publication. In comparison with texts published in the collection *Solntse nad tundroi*, which came out in the same year, the poem reflects quite openly on the submersion of the Sami village. It is difficult to discern an implicit reader for the poem, let alone a potential dual audience, but one could speculate that for a Sami reader, "Restikent" may have conveyed different meanings than for the average reader of a Murmansk fishery industry journal. In this respect, it is also worth noting that the word *pogost* has two meanings in the Russian language: in a historical sense and in the contemporary regional Sami context, it denotes a 'parish,' while in the general usage it refers to a 'graveyard.'

As Johanna Domokos (2009: 189) observes in her essay on liminality in Bazhanov, Bazhanov's poems often convey a view in which "the past is not a foreign country,"[35]

19

as Domokos formulates it, but is accessible through memory and the imagination. As has already been pointed out above, in Bazhanov's poems that focus on the Sami landscape, the temporality embodied by the object of longing often appears as unchanging or permanent in nature; this applies both to the long-term human and non-human activity visible in the landscape and to the flooded childhood landscape. In this sense, it seems that the concept of nostalgia—as a term denoting primarily a feeling of loss—does not quite suffice to describe the temporality embodied in Bazhanov's texts.

Indeed, particularly interesting in terms of their temporality are poems in which the submerged landscape is presented not only as a dimension that continues to exist but is also shown to be an alternative temporality. Such is the case with the poem "Ia, konechno, ne sletaiu v kosmos" ['I will of course not fly into space']: "I will of course not fly into space / I will not stroll in a spacesuit on the surface of the moon / but my beloved Restikent and Vosmus / are important milestones for me"[36] (SP: 134). In the poem, the conquest of space—that is, the central symbol of Soviet scientific and technological modernisation—is viewed, perhaps ironically, as taking a walk in a spacesuit, while the real milestones from the point of view of the poem's speaker are the Skolt Sami villages drowned by the same modernisation. A temporal juxtaposition is thus created by contrasting the future-oriented conception of time characteristic of Soviet modernity with a seemingly lost form of culture that appears intensely personal as well as private in relation to the conquest of space. In the Russian original, the ironic juxtaposition is made even more nuanced by employing the words *kosmos* and *Vosmus* as rhyme words in the first and third lines. Space itself is separated from its conquest in the poem and presented as a mediator of personal memories of childhood landscape: "Even the dreams I saw in colour / I understood as the continuation of the day! / It was the space that sent its greetings / that were of all people addressed to me"[37] (SP: 134). In these memories, the past is not past but exists on the side of other temporalities, such as the era of space flights, since for the poem's speaker the submerged Restikent and Vosmus will "[n]ever crumble / never burn on the fire / never disappear,"[38] as the repetition in the last lines of the poem assures (SP: 134). These landmarks in the traumatic twentieth-century Kola Sami history are described rhetorically by using the prepositional form "vekhi vazhnye *vo mne*" [literally, 'milestones important *in me*']), which emphasises their constant presence in the poem's speaker's mind. "Ia, konechno, ne sletaiu v kosmos" hence discusses themes that are closely connected to Bazhanov's personal and family history. However, through the act of remembering and reminiscing a broader cultural and socio-historical context of Kola Sami culture unfolds that extends beyond individual history.

Bazhanov's idyllic descriptions concern in particular descriptions of reindeer herders' lives, which can often be viewed as pastorals, as they glorify the organic connection between the herder, his reindeer, and the tundra, and highlight nature-centred harmony; often the poems also emphasise cyclical temporality associated with a nature-centred way of life. As Mikhail Bakhtin observes, time has a special relationship to space and place in the idyll. The idyllic time centres on the local landscape, a concrete "spatial corner of the world where the fathers and grandfathers lived and where one's children and their children will live," and from which the idyllic life and its event are inseparable. The unity of place that characterises the pastoral idyll as a genre blurs the boundaries between different generations and, as a consequence, also contributes to

the creation of its cyclical rhythmicalness (Bakhtin [1981] 2006: 225). The pastoral as a phenomenon might seem surprising in the context of Arctic indigenous writing, as it is traditionally associated with the topos of *locus amoenus* in classical literature, with shepherds leisurely strolling in a tamed southern landscape.[39] Because the classical pastoral idyll is often specifically linked to a visit to the periphery that is described from the viewpoint of the empire's centre, it has been considered a form of imperialism or colonisation.[40] In recent decades, it has been argued that the topos has critical potential and has been employed in indigenous literature to re-energise the present and to maintain a connection with the past (Huggan & Tiffin 2010: 98–135). Henning Howlid Wærp, in turn, has used the term "Arctic pastoral" to examine Norwegian polar explorers' travel accounts, in which they sometimes provide lyrical descriptions of their experiences as being a part of northern nature. According to him, "[i]n these moments, it is not only the traditional heroic discourse that is challenged, but also the ideology of progress embedded in modernity" (Wærp 2017: 112). In Bazhanov's case, the situation is slightly different: while Wærp describes the explorers' visits to northern nature and their momentary experiences of organic connection, Bazhanov romanticises and aestheticizes the traditional way of life of his own culture.

The majority of Bazhanov's pastoral descriptions are directed towards the past, to the lyrical subject's childhood and youth. They often involve experiences shared with his grandfather, depicting the joys of northern nomadic life: having supper in the warmth of a campfire or fireplace and listening to stories and songs (see, for example, SP: 76, 146). The poem "Vesenniaia strada" ['Spring harvest'] reads as a celebration of labour that represents reindeer husbandry in romantic terms. The poem portrays the annual birth of reindeer calves, underlining the reindeer herder's identity as harmonious and organic:

> And each day of spring will be lived
> with strength and intensity like a campfire.
> The reindeer herder tends to the trusting calves,
> priceless northern creatures,
> with skill and honour,
> selflessly giving them life.
> In the daily routine of mundane work,
> there is profound meaning, the shepherd's calling,
> his sacred actions
> have persisted through the centuries! (SP: 28)[41]

In terms of temporality, what is interesting in the poem is that the organic relationship is presented as a continuum that still continues to exist. In other words, the poem does not primarily discuss a longing for a lost world, but the nomadic way of life and the organic relationship with surrounding nature that it embodies is presented as being continuously present. In rhetorical terms, the poem emphasises the permanence and continuity of the human–non-human relationship in different ways: on the one hand, the relationship between reindeer and human is represented as a constant that reaches from the past to the future, and on the other, the poem reflects recurrent, day-to-day and year-to-year cyclical activity. The text is also interesting in the sense

21

that it conveys a view of temporality that would perhaps be most accurately described as both cyclical and task-oriented: a reindeer herder's day is also described as hectic immersion in work that must be carried out during a specific period of time. In this regard, one can discern in the poem features that align with views of the Sami conception of time that emphasise the connection between the perception of time, the landscape, and the activities carried out within the landscape (see Ingold 1993; Mazzullo & Ingold 2008; Mazzullo 2012).

Pastoral descriptions may also convey implicitly critical views of modernisation, such as in the poem "Ia zhelal by dvukh olenei" ['I would have wished for two reindeer'] from the post-Soviet collection *Stikhi i poemy o saamskom krae*, which deals with its speaker's unrealised future on the shores of Lake Notozero herding reindeer, fishing and picking mushroom and berries:

> I would have wished for two reindeer
> to fend for myself.
> And to herd them on Lake Notozero
> diligently, as in my youth.
> I could build a new house
> with windows facing the river
> and a boat made of fir planks. And go everywhere
> where my ancestors went
> to pull in a line of fish
> and go where at dawn a precise shot
> caught a goose in flight.
> And gather winter stores:
> dry pike, pick mushroom
> make bilberry jam
> not forgetting the cloudberries
> preserve lovely lingonberries in barrels
> make crowberry juice
> and live unhurriedly! (SP: 108)[42]

The poem seems to embody the same kind of temporality as the space flight poem in the sense that also here an alternative timespace is being created. The awareness of Lake Notozero's destiny, and the poem's first stanzas written in the conditional form—in particular, the modest wish for two reindeer—guide one to read the poem as an unrealised idyll engulfed by modernisation. Moreover, the cyclical temporality present in the poem, combined with the pastoral description of traditional livelihoods, invites us to read it in the context of village prose. The village prose writers' way of embracing nostalgic elements of a mythologised traditional Russian peasant life (Razuvalova 2015: 290, 317) and of incorporating temporal features such as cyclicality into narration presented an alternative to the future-oriented approach that was often characteristic of earlier Socialist Realism (Parthé 1992: 48–63). In this respect, the fact that the poem depicts a submerged village is also important. The construction of a hydroelectric power plant and the consequent submersion of a Siberian village is a central apocalyptic motif in, for example, Valentin Rasputin's seminal village prose

novel *Farewell to Matyora* (*Proshchanie s Materoi*, 1976), which, as Anna Razuvalova (2015: 329–330) points out, builds on apocalyptic pathos in its critique of modernisation. In Rasputin's novel, the village women, who represent traditional Russian peasant culture, refuse to leave the village and are hence drowned by the reservoir, together with the values they stand for.[43] In this regard, Bazhanov's poems "Ia, konecho, ne sletaiu v kosmos" and "Ia zhelal by dvukh olenei" can be read in the specific context of Kola Sami twentieth-century traumatic experiences of Soviet minority history as forms of pastoral nostalgia that represent "off-modern" temporality sprouting in the shadows of the modern project and the national narrative (Boym 2001: xvi–xvii; Bhabha [1994] 2000: 148–149, 152–153). It is important, however, to pay attention to the playfulness of both poems and to underline that while in the referential post-Soviet world, the childhood landscape is completely and utterly lost, for the lyrical subject this scenery is constantly present and unchanging; memory preserves the submerged landscape and protects it from change. Hence alternative temporality also gains here dimensions of permanence, rather than solely representing a dimension of the past.

To summarise, Bazhanov creates in his autobiographical nature poetry timespaces that are characterised by the centrality of the lived local landscape, often with a reference to lost childhood and a sense of organic belonging that is associated with traditional livelihoods and ways of life. An important aspect of the temporality of the landscape is created through recurring place names that reflect the continuously meaningful past. Restikent, Vosmus, Lake Notozero and the harnessed River Tuloma are toponyms that position the landscape as strongly local and help to build into the texts timespaces that appear as alternative realities to the linear way of conceiving time that is associated with modernity. The objects of longing—the childhood landscape and the arctic pastoral—are represented in Bazhanov's texts as idylls, which as a genre is characterised by cyclicality and a harmonic, organic sense of belonging.

Conclusion

In this article, I have discussed temporality and landscape in Askold Bazhanov's nature-centred poetry collections *Solntse nad tundroi* and *Stikhi i poemy o saamskom krae—Verses and Poems on the Saami Land*, both of which often involve autobiographical elements.

In the introduction it was preliminarily noted that while the tension between the past and the present, or between tradition and modernity, is a theme that is prominently present in Sami literature and research, Bazhanov's texts seem to escape the most typical notions of nostalgia. The analysis of nostalgic and pastoral discourses shows that temporality in Bazhanov's autobiographical poetry indeed conveys not only longing for the past and its meaningful places, but that the poems also attempt to mediate a view according to which the traditional way of life and the organic connection it entails are continuously present for the lyrical subject. In this sense, the romanticised reindeer herder idyll they represent is eternal in nature, in the same way that the Sami reindeer herder identity, symbolised by the grandfather figure who plays a central role in many poems, is a constant against which contemporary societal changes are mirrored. In this way, Bazhanov's poetry can be seen to convey a view of the continuing intrinsic significance of the traditional way of life in the present mo-

ment—the question is not merely about the tension between the past and the present that lies at the heart of nostalgia.

Thematically, Bazhanov's nostalgic discourse resembles the ways of reflecting the past in literature by the same generation of Nordic Sami writers: a longing for and an identification with the nature-centred traditional way of life in which reindeer husbandry plays an important role. Furthermore, Bazhanov's nostalgic discourse, with place and the landscape at its core, also reflects the experiences of displacement and hybridity that have traditionally been viewed as typical of the colonial era (see Ashcroft, Griffiths & Tiffin 1989: 8–11). Nevertheless, it seems important to underline that in comparison with late twentieth-century Nordic Sami post- and anticolonial literary discourse, Bazhanov's criticism is conditional and partly implicit, and this concerns also his post-Soviet writing. However, in Bazhanov's often humorous nostalgic tone one can see links with Nordic Sami literature in recent decades. For example, Hanna Mattila proposes in her readings of Nils-Aslak Valkeapää's poetry collection *Ruoktu váimmus* ['Home in the heart'] (1985) that Valkeapää's depiction of longing for a traditional way of life also employs an ironic and jocular approach, which distinguishes his work from earlier nostalgic discourse in Sami literature (Mattila 2011: 46–52; Mattila 2015: 100–108).

It has been noted that Bazhanov's background and literary career reflects the late Soviet literary-historical context of multiethnic literature in many ways. His writing can be read in the context of the village prose movement in the sense that village prose writers also constructed a peripheral idyll in which a longing for the traditional Russian nature-centred peasant way of life with its agricultural cycles and connection with nature is represented as an alternative to the Soviet belief in progress based on scientific and technological modernisation (see Parthé 1992: 48–49; Razuvalova 2015: 288–295). It should be pointed out, however, that the village prose movement was a pronouncedly Russian-centred phenomenon, and the values it represented were specifically linked to Russian peasant life. Moreover, the pathos that frequently characterises longing for the past in village prose writing is seldom present in Bazhanov's often playful tone. Nevertheless, it would be interesting to compare Bazhanov's and other late Soviet northern indigenous writers' poetry with contemporaneous Soviet Russian poets who romanticised northern nature, such as Nikolai Rubtsov.

However, what is most distinctive about Bazhanov's nature-centred poetry are the complex ways in which temporality and human existence are manifested in the northern landscape he depicts. His poetry, as traced in this article, highlights the significance of landscape and the traditional way of life as meaningful aspects of the identity and agency of the poems' speakers. It has been set forth that temporal discourses in his writing are closely related to the conception of landscape outlined in phenomenological anthropology, which, in turn, has been suggested to be characteristic of the Sami way of experiencing landscape and time (Mazzullo & Ingold 2008; Mazzullo 2012; Valtonen 2020: 38). The layered time of the Sami living environment, or alternative temporalities manifested in forms of nostalgia and pastoralism, are in Bazhanov's texts rooted in the local landscape and shaped by agency carried out by its inhabitants. The folklorist Karina Lukin (2011: 92) proposes in her reading of Nenets memoir narratives that the landscape is constructed not only in the activities that connect people and place, but also in narratives concerning these places. According

to her, landscapes are made of "multi-layered and overlapping networks" that emerge when people and communities act in places and tell stories about them. Such notions of landscape characterise quite accurately the temporally multi-layered spatiality that emerges in Bazhanov's autobiographical poetry as an eternal local landscape that is represented in idyllic terms and constitutes a constantly meaningful mindscape for the lyrical subject.

NOTES

1   I am grateful to two anonymous reviewers for their generous comments, which were very helpful in improving the article manuscript. I also wish to thank my colleagues at the Russian literature research seminar, University of Helsinki, where I presented my research in spring 2024 and received invaluable insights concerning this article.

2   Kola Sami are an indigenous ethnic minority of less than 2,000 people. Most of them live in the Murmansk region (Murmanskaia oblast) in the Kola Peninsula in the European Far North of the Russian Federation close to the Finnish and Norwegian borders. As a result of large-scale labour migration during the Soviet era, the Murmansk region is now home to almost one million people, representing more than one hundred different ethnic groups, of which the Sami are one of the smallest (0.2%). They are also a small minority within the overall Sami population, with between 50,000 and 100,000 people living in Norway, Sweden, Finland and Russia. Originally, the Kola Sami inhabited the entire area that today forms the Murmansk region, but as a consequence of the Soviet relocations that took place in the 1950s and 1960s, most of them live today in population centres such as Lovozero (Lujavv´r in Kildin Sami), the largest Sami settlement in Russia (Scheller 2013: 393; Siegl & Rießler 2015: 192–196).

3   The *luvt* is the general term for Kola Sami traditional song, focusing on the life stories of Sami individuals that may also intersect with historical events. It is typical for the chant to be presented in first-person narration. *Leu´dd* is the specific Skolt Sami variety of the Eastern Sami chant. It has been an important medium for personal reflection and collective remembrance of the past as well as for commenting on events taking place around the performers (Jouste 2022: 53 et passim).

4   Both ecological and ethnographic developments in the Kola Peninsula during the twentieth century have in many ways been extreme, even when seen in the context of the entire Soviet Arctic area. For a comprehensive overview of the environmental history of the Kola Peninsula, see Bruno 2016; for the social transformation, including displacements and relocations, as well as the consequences of these developments, see Allemann 2020: 115–118, 141–155 et passim.

5   Viktoriia Bakula's monograph *Literatura kolskikh saamov* (2022) is a comprehensive overview of Kola Sami literature in general, and her textbook *Mifo-folklornye istoki literatury rossiiskikh saamov* (2020) explores the ways in which Kola Sami literature draws from myths, archetypes and folklore. In English, to my knowledge, one essay (Domokos 2009), two reviews (Rießler 2018a and 2018b), and one scholarly article (Klapuri forthcoming) have been published. The present article has been written as part of the research project "Northern Neighbours: Environment and Modernisation in the Literatures of the Russian Arctic Area" (funded by the Kone Foundation). In addition to Kola Sami literature, the project has conducted research into the literatures of the Nenets, Chukchi, and ethnically Russian Pomors, as well as the Russian literature of the northern regions.

6   Traditionally, four languages belonging to the Eastern Sami language group have been spoken on the Kola Peninsula: Kildin Sami, Skolt Sami, Ter Sami, and the already extinct Akkala Sami.

7   According to the statistics from 1926, only 216 of about 2,000 Kola Sami individuals were literate (Luks 1930: 43).

8   The writing system created for Kildin Sami has played a significant role in the development of Kola Sami literature. When Oktiabrina Voronova published her bilingual collection in Ter Sami

25

and Russian, she utilised the Kildin Sami alphabet as there was no separate writing system for her dialect.

9 In other words, the texts produced cannot hence be considered Sami literature as such. This is also the case with the late nineteenth-century translations of religious texts into Sami languages in Tsarist Russia. For early texts published in Sami languages, see Rießler 2018a and 2018b; Bakula 2022: 12–21.

10 Among other things, Antonova taught Sami in school, produced a significant amount of educational material, contributed to research on the Eastern Sami languages, made broadcasts for Sami radio, translated Russian and Nordic literature into Kildin Sami and published poetry in Sami herself. For more on Antonova's activities, see, for example, Bakula 2022: 21–23, 29, 33, 38–39.

11 According to a survey conducted by Elisabeth Scheller (2010: 18–19) in the 2000s, approximately 800 individuals in Russia at that time had some degree of proficiency in one of the Eastern Sami languages (in practice in Kildin Sami). However, there were only about 100 active speakers, meaning those who consistently used the language in various contexts. In 2020, altogether 120 Kildin Sami speakers remained, 84 per cent of who were elderly people over 60 (Bakula, Koreneva & Rychkova 2022: 109, 110). For the language situation among the Kola Sami, see also Scheller 2013.

12 Wars and state borders have had a profound impact on the Kola Sami, whose traditional habitats have been in the area that today covers the very northeastern parts of Finland and Norway and the northwestern side of the Kola Peninsula in Russia. The traditional Kola Sami way of life was based on a seasonal migration system, meaning that in wintertime, families lived together in winter villages, engaging in big game hunting and fishing, while in spring, each family would move to their ancestral territory to fish and hunt. The official establishment of borders between Norway and Russia in 1826 and between Finland and Russia in 1920 complicated the practice of annual migration. The geopolitical landscape after the Second World War further isolated the Skolt Sami living in Finland and those in the Soviet Union from each other.

13 While the literary traditions of non-Russian ethnicities in the southern regions of the former Soviet Union have been extensively studied from a postcolonial perspective, research into the literatures of northern Indigenous peoples as part of the Soviet Empire and in the context of Soviet literature is still in its early stages. See, however, Frank 2016; Smola 2016; Smola 2017; Smola 2022; Lukin 2020a; Lukin 2020b; Lukin 2021; Kuikka & Lukin 2020.

14 For a detailed analysis of Aipin's novel in a postcolonial context, see Kuikka 2022.

15 Originally, Restikent had a Finnish name (Ristikenttä), because the main village was a Finnish settlement.

16 "Vosmus" was the first Sami kolkhoz; its name is the Russified spelling of the Skolt Sami word for 'first, the first one.'

17 Determining the original publication dates of Bazhanov's poems is challenging. Many of the texts were first published in the local newspapers *Lovozerskaia Pravda* and *Polarnaia Pravda*. These newspapers are only accessible in Russian archives, to which I did not have access due to the war in Ukraine. However, it has been possible to determine the original publication dates for the majority of early texts through *Saamskaia bibliografiia* (2005), which compiles all literature related to the Sami published in Russia and the Soviet Union until 1996. The bibliography also mentions the titles of Bazhanov's early poems that were published in newspapers. Nevertheless, the information provided by the bibliography is not exhaustive, since Bazhanov wrote numerous texts with identical titles and used various titles for the same poems. Determining the original dates is important for the periodisation of Bazhanov's texts. For example, several of the poems published in the post-Soviet bilingual collection *Stikhi i poemy o saamskom krae—Verses and Poems on the Saami Land* can in fact be found in the earlier collection *Solntse nad tundroi* or in the Sami bibliography, meaning that they do not represent post-Soviet but late Soviet writing. This article cites versions published in the collections; an earlier publication date is mentioned if it could be determined. Translations from Russian are by the author (T.K.), unless otherwise mentioned.

26

[18] Besides English, several of Bazhanov's texts have been translated into Northern Sami and Kildin Sami. Some texts have also been translated into Swedish, Norwegian and Finnish.

[19] For details concerning Bazhanov's attitude towards Voronova, see Bolshakova 2021.

[20] Для внука вдруг красивые стихи
дороже стали дедовских оленей.
«Переведутся, видно, пастухи
в большом, исконно саамском поселенье.»

«Другой работы в тундре не ищи»
говаривал стареющий родитель,
«Олени для саама—это жизнь,
хотите ль вы того иль не хотите.»

Все думы и пути переплелись
с кочевьями, кострами и оленем.
Немыслимой без них казалась жизнь
для всех до нас прошедших поколений.

А как же мы? Ведь двадцать первый век
с нас строго спросит, что ему ответить?
«Коль есть олень, найдется человек,
чтоб у костра восход морозный встретить!»

[21] In this connection it is also important to note that Bazhanov's poems seem to convey a view according to which reindeer herders are ethnically Sami people, while in reality reindeer herding in the Soviet Union became a true profession that was detached from the ethnic component (see, for example, Konstantinov 2005: 171). Soviet reindeer herding was carried out in collective farms, kolkhozes and sovkhozes, and was already in 1950s and 1960s mechanised, centralised and reached out to the whole circumpolar area. The way in which reindeer herding is represented in Bazhanov's poems does not hence reflect reality but more likely the mental landscape, in which the Sami component was kept. Moreover, as Yulian Konstantinov (2005: 170–171 et passim) has argued, Sami reindeer herding at the Kola Peninsula had already experienced considerable changes before, particularly from the latter half of the nineteenth century, when the Izhma Komi with their more extensive reindeer herding practices moved to the area. These practices were later used as an example to follow in the early Soviet Union (Konstantinov 2000: 59–62). Hence the historical process that has taken place does not speak for "the existence of a stable 'traditional' Sami husbandry state until collectivization," as Konstantinov (2005: 171) writes, but rather for a long process of adaptation to changing herding systems.

[22] Знал мой предок, что тундра чиста
и не знал, что есть фтор и мазут.

[23] где весь день чадит Камаз

[24] А веков, как весен,
пронеслось немало,
прежде, чем из камня
извлекли металлы.

[25] мудры свидетели Веков

[26] Вершины не помнят времени,
горды и невозмутимы.

[27] Плутают в них тропы древние,
на камне едва различимы.

27

[28] Полярную зиму выстоит,
и с песнею горных речек
победно листочки выставит
желанной весне навстречу.

[29] From the perspective of literary studies, Ingold's way of seeing time in space inevitably evokes the concept of chronotope, to which he also refers when analysing how such details as a tree or a church may encapsulate the temporality of the landscape (Ingold 1993: 169).

[30] This, the largest water power plant in northwest Russia, was constructed with Finnish involvement, Imatran Voima acting as the project developer.

[31] Впереди за пологою сопкой
ждет меня голубая вода.
И болотом, предательски топким,
проскочу, не оставив следа!
Вот и домик—столетние стены,
окна зорко глядят на восход.
Это детство, здесь все неизменно,
это жизни священный исток!

[32] On the other hand, Bazhanov's childhood depictions set during wartime may also contain idyllic elements. For instance, in the poem "Siroty" ['Orphans'], the children gather around a campfire to roast kolkhoz potatoes, which serves as a momentary escape from reality (SP: 140).

[33] An abandoned village or living site.

[34] Но во мне его не погасить
ни дождям осенним, ни годам.
Только вот приехать погостить
не смогу, поверьте, никогда.
Постоять на кентише родном,
где отец мой хаживал и мать.
Стал мой кентиш непроглядным дном,
что оно мне может рассказать.
(Transl. by Naomi Caffee, modified by T.K.)

[35] The allusion is to L.P. Hartley's novel *The Go-Between* (1953) ("The past is a foreign country: they do things differently there"). I wish to thank Mark Shackleton for pointing this out to me.

[36] Я, конечно, не слетаю в космос,
не пройдусь в скафандре по луне,
но родные Рестикент и Восмус—
это вехи важные во мне.

[37] Даже сны, увиденные в цвете,
принимал, как продолженье дня!
Это космос посылал приветы,
выделяя именно меня.

[38] Никогда не предадутся тленью,
их не сжечь в костре, не потерять

[39] For different notions of the pastoral, see Gifford [1999] 2020: 1–3.

[40] For reasons why the pastoral should be unamenable to postcolonialism, see Huggan and Tiffin 2010: 99–100.

[41] И каждый день весенний будет прожит
рачительно и ярко, как костер.
Для пастуха привычно и почетно
держать в руках доверчивых ягнят,
незаменимых северных животных,
дарить и жизнь, не требуя наград.

28

В ежедневной будничной работе
глубокий смысл, призванье пастуха,
его благословенные заботы,
прошедшие нетленно сквозь века!
[42] Я желал бы двух оленей
непременно завести.
И как в юности без лени
у Нотозера пасти.
Вот бы дом построить новый,
взглядом—окнами к реке,
лодку из досок еловых.
И ходить на ней везде,
где ходили наши предки,
рыбу неводом ловя,
где на зорьке выстрел меткий
на подлете брал гуся.
Ладить на зиму припасы:
вялить щуку, рвать грибы,
да черничного варенья,
да морошки не забыть,
да ядреную бруснику
по боченкам уместить,
выжать сок из вороники.

[43] For discussion on the river in Rasputin's oeuvre, see Perkiömäki 2018.

REFERENCES

Primary sources

Bazhanov, A. (1983a). "Oleni—eto zhizn," *Lovozerskaia pravda* 26 Feb.

Bazhanov, A. (1983b). "Restikent," *Rybnyi Murman* 11 Feb.

Bazhanov, A. (1983). [= ST] *Solntse nad tundroi. Stikhi* ['The sun above the tundra. Poems'], Murmansk: Murmanskoe knizhnoe izdatelstvo.

Bazhanov, A. (2009). [= SP] *Stikhi i poemy o saamskom krae—Verses and Poems on the Saami Land* (Kleine saamische Schriften 2), English translation by Naomi Caffee, Berlin: Nordeuropa-Institut.

Literature

Ahvenjärvi, K. (2015). "Mustan auringon paketti. Myytti ja melankolia Irene Larsenin kokoelmassa *Sortsolsafari*" ['The package of the black sun. Myth and melancholia in Irene Larsen's collection *Safari of the Black Sun*'], *Kirjallisuudentutkimuksen aikakauslehti AVAIN*, 3, pp. 19–33.

Allemann, L. (2020). *The Experience of Displacement and Social Engineering in Kola Saami Oral Histories* (Acta Electronica Universitatis Lappoensis 288), Rovaniemi: University of Lapland.

Allen, C. (2002). *Blood Narrative. Indigenous Identity in American Indian and Maori Literary and Activist Texts*, Durham & London: Duke University Press.

Ashcroft, B., Griffiths, G. & Tiffin, H. (1989). *The Empire Writes Back. Theory and Practice in Post-Colonial Literatures*, London & New York: Routledge.

Baak, J. van (2009). *The House in Russian Literature. A Mythopoetic Exploration*, Leiden: Brill.

Bachelard, G. (1957). *La poétique de l'espace*, Paris: Presses Universitaires de France.

Bakhtin, M. [1981] (2006). "Forms of time and of the chronotope in the novel," in *Dialogic Imagination. Four Essays*, ed. M. Holquist, transl. C. Emerson & M. Holquist, Austin: University of Texas Press, pp. 84–258.

Bakula, V.B. (2012). "Ne predavaia zabveniiu zavety predkov" ['Preserving the ancestral teachings from oblivion'], in *Antologiia saamskoi literatury*, eds. N.P. Bolshakova & V.B. Bakula, Opimakh: Murmansk, pp. 86–95.

Bakula, V.B. (2020). *Mifo-folklornye istoki literatury rossiiskikh saamov* ['The mythical-folkloric roots of Russian Sámi literature'], Murmansk: Murmanskii arkticheskii gosudarstvennyi universitet.

Bakula, V.B. (2022). *Literatura kolskikh saamov* ['The literature of the Kola Sami'], Murmansk: Murmanskii arkticheskii gosudarstvennyi universitet.

Bakula, V.B., Koreneva, A.V. & Rychkova, T.A. (2022). "Otnoshenie rossiiskikh saami k izucheniu rodnogo iazyka" ['The attitude of the Sami in Russian Federation to studying native language'], *Sovremennye naukoemkie tekhnologii*, 8, pp. 109–114.

Bolshakova, N.P. (2021). "K neizvestnym faktam istorii saamskoi literatury. Pisal li Bazhanov na rodnom iazyke?" ['Towards unknown facts in Sami literature. Did Bazhanov write in his mother tongue?'], in *XIX Maslovskie chteniia. Sbornik nauchnykh statei*, eds. N.A. Shevchenko & V.B. Bakula, Murmansk: Murmanskii arkticheskii gosudarstvennyi universitet, pp. 99–103.

Bhabha, H.K. [1994] (2000). *The Location of Culture*, London & New York: Routledge.

Boym, S. (2001). *The Future of Nostalgia*, New York: Basic Books.

Bruno, A. (2016). *The Nature of Soviet Power. An Environmental History*, Cambridge: Cambridge University Press.

Caffee, N. (2013). "Russophonia. Towards a Transnational Conception of Russian-Language Literature," diss., University of California.

Chase, M. & Shaw, C. (1989). "The dimensions of nostalgia," in *The Imagined Past. History and Nostalgia*, eds. C. Shaw & M. Chase, Manchester: Manchester University Press, pp. 1–18.

Czerwiński, G. (2020). "Rosyjskojęzyczna poezja kolskich Saamów. Strategie badawcze" ['Russian-language poetry of the Kola Sami. Research strategies'], in *Między metafikcją a non-fiction. Podmiotowość w literaturze rosyjskiej końca XX – początku XXI wieku*, eds. G. Czerwiński & E. Pańkowska, Białystok: Wydawnictwo Uniwersytetu w Białymstoku, pp. 247–260.

Domokos, J. (2009). "The past is not a foreign country. Liminality in Askold Bazhanov's poetry," in *Stikhi i poemy o saamskom krae—Verses and Poems on the Saami Land*, pp. 185–196.

Ettin, A.V. (1984). *Literature and the Pastoral*, New Haven & London: Yale University Press.

Ezhova, N.Ia. & Kozmenko, A.V. (2018). *"… Ostavit sled na zemle zhelannoi …" (vospominaniia ob Askolde Bazhanove)* ['"… To leave a trace on the desired land … (reminiscences of Askold Bazhanov)'], Print: Izhevsk.

Forsyth, J. (1992). *A History of the Peoples of Siberia. Russia's North Asian Colony 1581–1990*, Cambridge: Cambridge University Press.

Frank, S.K. (2016). "'Multinational Soviet literature.' The project and its post-Soviet legacy in Iurii Rytkheu and Gennadii Aigi," in *Postcolonial Slavic Literatures After Communism*, eds. K. Smola & D. Uffelmann, New York: Peter Lang, pp. 191–217.

Gaski, H. (2011). "Song, poetry, and images in writing. Sami literature," in *From Oral Tradition to Rap. Literatures of the Polar North*, eds. K. Langgård & K. Thisted, Nuuk: Ilisimatusarkif/Forlaget Atuagkat, pp. 15–38.

Gifford, T. [1999] (2020). *Pastoral*, 2nd ed., London & New York: Routledge.

Grenoble, L. (2003). *Language Policy in the Soviet Union,* Dordrecht: Kluwer Academic Publishers.

Grünthal, R. (1991). "Uralilainen kirjallisuuskonferenssi" ['Uralic literature conference'], *Virittäjä*, 95:4, pp. 442–448.

Heith, A. (2022). *Indigeneity, Ecocriticism, and Critical Literacy* (Northern Studies Monographs 7), Umeå: Umeå University & the Royal Skyttean Society.

Hirvonen, V. (2010). "Saamelainen kirjallisuus ja pohjoinen ulottuvuus" ['Sami literature and the northern dimension'], in *Vähemmistöt ja monikulttuurisuus kirjallisuudessa*, ed. E. Rantonen, Tampere: Tampere University Press, pp. 71–105.

Huggan, G. & Tiffin, H. (2010). *Postcolonial Ecocriticism. Literature, Animals, Environment*, London & New York: Routledge.

Ingold, T. (1993). "The temporality of the landscape," *World Archaeology*, 25:2, pp. 152–174; DOI:10.1080/00438243.1993.9980235

Johannisson, K. (2001). *Nostalgia. En känslas historia* ['Nostalgia. The history of a feeling'], Stockholm: Bonnier essä.

Jouste, M. (2022). "Skolt Saami leu´dd. Tradition as a medium of individual and collective remembrance," in *The Sámi World*, eds. S. Valkonen, Á. Aikio, S. Alakorva & S.-M. Magga, London & New York: Routledge, pp. 53–71.

Klapuri, T. (forthcoming). "Squirrels as traffic lights. Human–non-human tropes in the Kola Sámi writer Oktiabrina Voronova's poetry," *Acta Slavica Iaponica*, 45.

Konstantinov, Yu. (2000). "Pre-Soviet pasts of reindeer-herding collectives. Ethnographies of transition in Murmansk Region," *Acta Borealia*, 17:2, pp. 49–64; DOI:10.1080/08003830008580511.

Konstantinov, Yu. (2005). "From 'traditional' to collectivized reindeer herding on the Kola Peninsula. Continuity or disruption?" *Acta Borealia*, 22:2, pp. 170–188; DOI:10.1080/08003830500370168.

Koselleck, R. (2000). *Zeitschichten. Studien zur Historik*, Frankfurt am Main: Suhrkamp Verlag.

Kuikka, E. (2022). "Water, oil, and spirits. Liquid maps of the taiga in Eremei Aipin's novel *Khanty, or the Star of the Dawn*," in *Cold Waters. Tangible and Symbolic Seascapes of the North*, eds. M. Lehtimäki, A. Rosenholm, E. Trubina & N. Tynkkynen, Cham: Springer, pp. 165–182.

Kuikka, E. & Lukin, K. (2020). "Eksoottista mutta modernia. Kieli, tieto ja identiteetti nenetsi- ja tšuktšikirjallisuudessa" ['Exotic but modern. Language, knowledge, and identity in Nenets and Chukchi literatures'], *Kulttuurintutkimus*, 37:1–2, pp. 102–115.

Kukkonen, P. (2007). "Nostalgian semiosis. Keveyden ja painon dialogia" ['Nostalgia's semiosis. A dialogue between lightness and weight'], in *Nostalgia. Kirjoituksia kaipuusta, ikävästä ja muistista*, eds. R. Rossi & K. Seutu, Helsinki: SKS, pp. 13–50.

Ladino, J. K. (2012). *Reclaiming Nostalgia. Longing for Nature in American Literature*, Charlottesville: University of Virginia Press.

Lukin, K. (2011). *Elämän ja entisyyden maisemat. Kolgujev nenetsien arjessa, muistelussa ja kerronnassa* ['The landscapes of life and times past. Kolguev in the Nenets everyday life, reminiscing, and narration'], Helsinki: SKS.

Lukin, K. (2020a). "Soviet voices in Nenets literature," in *Ways of Being in the World. Studies on Minority Literatures* (Central European Uralic Studies 1), ed. J. Laakso, Wien: Praesens Verlag, pp. 168–193.

Lukin, K. (2020b). "Voice and frames in the Soviet Nenets' auto/biographies," *The European Journal of Life Writing*, 9, pp. 70–92.

Lukin, K. (2021). "Kolonialistiset välitilat *Pienen pimeyden kuukaudessa*" ['Colonialistic in-between spaces in *The Month of Small Darkness*'], *Idäntutkimus*, 28:1, pp. 20–35; DOI:10.33345/idantutkimus.107839.

Luks, K.Ya. (1930). "Problema pismennosti u tuzemnykh narodnostei Severa" ['The problem of literacy among the northern Indigenous peoples'], *Sovetskii Sever*, 1, pp. 38–47.

Mattila, H. (2011). "Aika, nostalgia ja etninen identiteetti Nils-Aslak Valkeapään runokokoelmassa *Ruoktu váimmus*" ['Time, nostalgia, and ethnic identity in the poetry collection *Home in the Heart* by Nils-Aslak Valkeapää'], MA thesis, University of Tampere.

Mattila, H. (2015). "Áillohačča *Ruoktu Váimmus* ja nostalgiija" ['*Home in the Heart* by Áilloha š and nostalgia'], in *Symposia ávvučála. Nostalgiija, naga ja eará gielalaš ja kultuvrralaš fenomenat* (DIEĐUT 2), eds. V. Hirvonen, J. Johansen Ijäs, M. Jomppanen & K. Vuolab-Lohi, Karasjok: Sámi University of Applied Sciences, pp. 95–109.

Mazzullo, N. (2012). "The sense of time in the North. A Sámi perspective," *Polar Record,* 48:246, pp. 214–222.

Mazzullo, N. & Ingold, T. (2008). "Being alone. Place, time and movement among Sámi people," in *Mobility and Place. Enacting Northern European Peripheries*, eds. J.O. Bærenholdt & B. Granås, Aldershot: Ashgate, pp. 27–38.

Ogryzko, V. (2010). "Pisateli, literatory i skaziteli kolskikh saamov" ['Kola Sami authors, writers and storytellers'], in *Saamskaia literatura*, ed. V. Ogryzko, Moscow: Literaturnaia Moskva, pp. 208–238.

Parthé, K. (1992). *Village Prose. The Radiant Past*, Princeton: Princeton University Press.

Perkiömäki, M. (2018). "Matka hukutetulla joella. Ympäristöoikeudenmukaisuus Valentin Rasputinin 1970-luvun jokiproosassa" ['Journey on a drowned river. Environmental justice in Valentin Rasputin's river prose'], in *Veteen kirjoitettu. Veden merkitykset kirjallisuudessa* ['Written in the water. The meanings of water in literature'], ed. M. Lehtimäki, H. Meretoja & A. Rosenholm, Helsinki: Suomalaisen Kirjallisuuden Seura, pp. 305–332.

Razuvalova, A. (2015). *Pisateli-"derevenshchiki." Literatura i konservativnaia ideologiia 1970-kh godov* ['Village prose writers. Literature and the conservative ideology of the 1970s'], Moscow: Novoe literaturnoe obozrenie.

Rießler, M. (2018a). "Kola Sámi literature (Kildin Sámi, Ter Sámi, Akkala Sámi)," in *A Writing Hand Reaches Further = "Čálli giehta ollá guhkás." Recommendations for the Improvement of the Sámi Literary Field*, ed. J. Domokos, Helsinki: Kulttuuria kaikille, pp. 73–78.

Rießler, M. (2018b). "Skolt Sámi Literature," in *A Writing Hand Reaches Further = "Čálli giehta ollá guhkás." Recommendations for the Improvement of the Sámi literary Field*, ed. J. Domokos, Helsinki: Kulttuuria kaikille, pp. 67–71.

Sárá, M. & Afanasjeva, N. (2017). Samer i Russland 1917–2017 = Sámit Ruoššas 1917–2017 ['The Sami in Russia'], transl. Jevgeni Jushkov, Kárášjohka: Čálliid Lágádus.

Scheller, E. (2010). "Situatsiia saamskikh iazykov v Rossii" ['The situation of the Sami languages in Russia'], *Nauka i biznes na Murmane*, 69:2, pp. 15–27.

Scheller, E. (2013). "Kola Sami language revitalization—opportunities and challenges," in *L'Image du Sápmi II. Études comparées* (Humanistica Oerebroensia. Artes et linguae 16), Örebro: Örebro University, pp. 392–421.

Siegl, F. & Rießler, M. (2015). "Uneven steps to literacy. The history of the Dolgan, Forest Enets and Kola Sámi literary languages," in *Cultural and Linguistic Minorities in the Russian Federation and the European Union*, eds. H.F. Marten, M. Rießler, J. Saarikivi & R. Toivanen, Cham: Springer, pp. 189–230.

Slezkine, Yu. (1994). *Arctic Mirrors. Russia and the Small Peoples of the North*, Ithaca, NY: Cornell University Press.

Smola, K. (2016). "Ethnic postcolonial literatures in the post-Soviet era. Assyrian and Siberian traumatic narratives," in *Postcolonial Slavic Literatures after Communism*, eds. K. Smola & D. Uffelmann, Bern: Peter Lang, pp. 219–243.

Smola, K. (2017). "Postkolonialnye literatury Severa. Avtoetnografiia i etnopoetika" ['Northern postcolonial literatures. Autoethnography and ethnopoetics'], *Novoe literaturnoe obozrenie*, 144:2; https://www.nlobooks.ru/magazines/novoe_literaturnoe_obozrenie/144_nlo_2_2017/article/12452/; accessed on 12 Jan. 2024.

Smola, K. (2022). "(Re)shaping literary canon in the Soviet indigenous North," *Slavic Review*, 81:4, pp. 955–975; DOI:10.1017/slr.2023.3

Tannock, S. (1995). "Nostalgia critique," *Cultural Studies*, 9:3, pp. 453–464.

Tinsley, M. (2020). "Revisiting nostalgia. Imperialism, anticolonialism, and imagining home," *Ethnic and Racial Studies*, 43:13, pp. 2327–2355; DOI:10.1080/01419870.2020.1727935.

Valtonen, T. (2020). "Ylä-Tenon saamelaisten maiseman kielellinen ulottuvuus. Paikannimet, paikat ja perinne" ['The linguistic dimension of the landscape of the Upper Teno Sami. Toponyms, places, and tradition'], *Elore*, 27:2, pp. 30–61; DOI:010.30666/elore.97259.

Wærp, H.H. (2017). "The Arctic pastoral," in *Arctic Modernities*, eds. H. Hansson & A. Ryall, Newcastle upon Tyne: Cambridge Scholars, pp. 112–127.

Williams, R. (1973). *The Country and the City*, Oxford: Oxford University Press.

Zaitsev, V. (ed.) (1979). *Stupeni. Stikhi i rasskazy molodykh literatorov Murmana* ['Steps. Poems and stories by young Murman writers'], Murmansk: Knizhnoe izdatelstvo.

Zemskaia, Iu.G. & Mikhailova, E.P. (eds.) (2005). *Saamskaia bibliografiia. Literatura na russkom i saamskom iazykakh (1776–1996)* ['Sami bibliography. Literature in Russian and Sami languages'], Murmansk: Murmanskaia gosudarstvennaia oblastnaia universalnaia nauchnaia biblioteka.

AUTHOR

Docent *Tintti Klapuri* is a University Lecturer in Russian Literature at the Department of Modern Languages, University of Helsinki, Finland. Her areas of expertise include Anton Chekhov, fictional time and space, Finnish-Russian literary relations, and Kola Sami literature.

tintti.klapuri@helsinki.fi

MARTTI SAARELA, PAULIINA BJÖRK, OSSI KOTAVAARA,
MATTI MUHOS & MERVI HEIKKINEN

Gender Gap in Entrepreneurial Potential in Finland and Reflecting Its Underlying Causes

ABSTRACT The gender gap in entrepreneurship is a widely recognized phenomenon meaning that women are less likely to start a business than men. However, increased gender equality is believed to remove barriers to female entrepreneurship. We used secondary data collected for Global Entrepreneurship Monitor from 2003, 2009, 2015, and 2021 to get closer to this phenomenon in Finland, one of the most equal countries in the world. The aim of the study was to clarify the gender gap in entrepreneurship potential in Finland during recent decades, taking into account different age groups. We found that the gender gap exists in business start-up intentions and has not narrowed in the twenty-first century in any age group. A clear gender gap was also found in fear of failure in starting a business and perceived skills in entrepreneurship. Finally, the underlying causes of the gender gap in the Finnish context are discussed.

KEYWORDS gender gap, female entrepreneurship, gender segregation, entrepreneurial intentions, entrepreneurial potential, fear of failure, GEM

Introduction

The role of gender in entrepreneurship has been widely explored over the years, revealing that worldwide, women are less likely to start a business or to be self-employed than men (Caliendo et al. 2015; Gicheva & Link 2015; Reynolds 1997; Vossenberg 2013). This widely recognized phenomenon, called the gender gap in entrepreneurship, can be defined as dif-

33

ferences in entrepreneurial activity between women and men living in the same country, for any given level of economic development (Allen & Langowitz 2013; Elam et al. 2021; Lindgren & Packendorff 2010; Rietveld & Patel 2022; Vossenberg 2013). Although women have been encouraged increasingly to create new businesses through policy measures (Berglund et al. 2018; Serrano-Pascual & Carretero-García 2022), researchers have pointed out that the gender gap has reduced only slowly (Henry et al. 2022; Vracheva & Stoyneva 2020). The underrepresentation of women in entrepreneurship points to a potential to boost economic growth and welfare, as a higher level of entrepreneurial activity among women has a positive impact on economies (Lindgren & Packendorff 2010; Welsh, Kaciak & Thongpapanl 2016; Vossenberg 2013).

To understand the nature and implications of issues related to gender and entrepreneurship, researchers have developed theoretical approaches (Fischer, Reuber & Dyke 1993). Liberal feminist theory, among the most common approaches on female entrepreneurship in leading entrepreneurship journals (Ahl & Marlow 2012; Dean et al. 2017: 27; Fischer, Reuber & Dyke 1993; McAdam 2013), considers women and men essentially similar whereby women will act in the same way as men when they have access to the same opportunities (Dean et al. 2017; McAdam 2013). Liberal feminist theory assumes that the more egalitarian a society is, the smaller the gender gap in entrepreneurship (McAdam 2013; Vracheva & Stoyneva 2020). However, empirical research evidence for the validity of this assumption is controversial (Brush et al. 2019; Baughn, Chua & Neupert 2006; Cheraghi, Adsbøll Wickstrøm & Klyver 2019; Klyver, Nielsen & Evald 2013; Sarfaraz, Faghih & Asadi Majd 2014; Vracheva & Stoyneva 2020).

Based on various global gender equality rankings, Finland and other Nordic countries can be portrayed as the model countries for gender equality. Finland was the first country in the world to grant women full political rights as early as 1906. In 2022, almost 50% of members of parliament were women, as were 12 of the 19 ministers in government. The perception of Finland as a forerunner in gender equality has received support in numerous evaluations. Recently, the Global Gender Gap Report 2022 ranked Finland second-best worldwide (World Economic Forum 2022). In 2021, the United Nation's Gender Inequality Index ranked Finland sixth (of 170 countries) for gender equality (United Nations Development Programme 2021). In the Female Opportunity Index 2021, Finland was ranked second in female opportunities among 100 countries, and in the Mothers' Index, the wellbeing of mothers and children in Finland is rated second highest in the world, among 179 countries (Save the Children 2015). When evaluating girls' opportunities to control their own lives and fulfill their potential, Finland is the second-best country in the world in which to be a girl (Save the Children 2016). In recent years, Finland has ranked among the top European countries in the European Gender Equality Index, indicating that societies that have universal social services and public care have enabled nearly equal participation of women and men in both the public and the private sphere (European Institute for Gender Equality 2022; European Institute for Gender Equality 2023).

It seems, then, that Finland is a fairly equal society in global comparisons. Finland offers a supportive environment for entrepreneurship including low levels of administrative burden for start-ups and easy access to debt financing for new and small firms (OECD/European Commission 2021). It has also a relatively long history of including

female entrepreneurship in national-level strategies and entrepreneurship programs (Heinonen & Hytti 2016). To improve female entrepreneurship, it has experimented with many kinds of gender-specific efforts on business services and education (Kyrö & Hyrsky 2008). In Finland, women start a significantly fewer necessity-based businesses compared to the EU average, while men launch their businesses due to a lack of other opportunities in the labour market more often than men do in the EU average (OECD/European Commission 2021).

However, when looking at the gender balance in entrepreneurship, there seems to be room for development (Lindgren & Packendorff 2010; OECD/European Commission 2021). Statistics show that in Finland most entrepreneurs are men, with only a third of entrepreneurs being female. It is notable that only 20% of employer entrepreneurs are women, while about 40% of sole proprietors are women. Among workers aged 20–64 years, the gender proportion is relatively equal: the workforce comprises 48% of women and 52% of men; the whole population of this age consists of 49% of women and 51% of men (Statistics Finland 2022). According to the Women in Entrepreneurship score, which evaluates the share of women in entrepreneurial positions, as well as how supportive and accessible the country's entrepreneurial environment is for women, Finland lags the top countries in the world, ranking 16 out of 100 countries (Female Opportunity Index 2021).

While prior research and data from various statistical sources are relevant to the question of the gender gap in entrepreneurial activity, large gaps remain in our knowledge, and a more detailed examination of the situation is needed (Sánchez-Escobedo et al. 2016). In this study, we focused on the gender gap in entrepreneurial potential, that is, differences between men and women concerning the likelihood or "potential" of becoming an entrepreneur (Mueller 2004). Scholars have reported a variety of factors for the formation of business intentions (Dawson & Henley 2015). In the entrepreneurship literature, fear of failure is typically considered a barrier, a feeling about the outcomes of a new business that affects an individual's decision of the value and probability of starting a business (Arafat & Saleem 2017; Cacciotti & Hayton 2014; Li 2011; Wagner 2007). Moreover, people's behaviour is substantially influenced by their confidence in their skills and abilities (Ajzen 1991). Therefore, the decision to start a business depends on perceived confidence about one's skills, knowledge, and ability to succeed in entrepreneurial behaviour (Arafat & Saleem 2017; Shapero & Sokol 1982; Liao et al. 2023). However, more research is needed on the extent to which perceived entrepreneurial abilities are gender-equal and how this relates to start-up business (Brush et al. 2017).

The link between gender equality and the entrepreneurship gender gap is still unclear (Rietveld & Patel 2022; Vracheva & Stoyneva 2020). As female entrepreneurship in each country has its characteristics, it needs to be studied in its socio-economic context (Sarfaraz, Faghih & Asadi Majd 2014). Moreover, Cheraghi, Adsbøll Wickstrøm and Klyver (2019) stated that there is a lack of understanding of the interplay between age and gender in entrepreneurship, and prior studies have neglected to take into account that women's and men's opportunities and constraints vary by age.

In response to recent calls for research (Brush et al. 2017; Cheraghi, Adsbøll Wickstrøm & Klyver 2019; Sánchez-Escobedo et al. 2016), we used secondary data collected for Global Entrepreneurship Monitor (GEM) from the years 2003, 2009,

2015, and 2021 in order to get closer to this phenomenon in Finland. The study aimed to clarify the gender gap in entrepreneurship potential in Finland during recent decades, taking into account different age groups. Based on the described research gap, the study addresses the following research questions:

> RQ1: *Are gender differences present in the expectation of starting a business within the next three years?*
> RQ2: *Are there gender differences in not starting a business for fear it might fail?*
> RQ3: *Are there gender differences in the perception of having the knowledge, skill, and experience required to start a new business?*

Theoretical Background

Entrepreneurial activity is widely recognized as a key factor in the success of our society, resulting in economic growth, wealth, higher income, social stability, job creation, innovative and technological development, and new market dynamics (Decker et al. 2014; Gupta et al. 2020, Le et al. 2023, White & Reynolds 1996). Entrepreneurship can be a pathway for women to gain economic independence followed by strengthened social status and a source of inspiration to other women to trust their own abilities (Chhabra & Karmarkar 2016). However, an individual's intention to start a business is influenced by perceptions of the advantages and disadvantages regarding it (Douglas & Shepherd 2000). At the individual level, entrepreneurship is a trade-off, but as this study is focused on the population level, we have taken entrepreneurship as a positive phenomenon for society and societal well-being (see e.g. Brush et al. 2017).

Liberal Feminist Assumption. Equality Increases Women's Entrepreneurship
Liberal feminist theory assumes that the more egalitarian a society is, the smaller the gender gap in entrepreneurship (Ahl 2006; Fischer, Reuber & Dyke 1993; Dean et al. 2017; Vracheva & Stoyneva 2020). This perspective suggests that women are disadvantaged relative to men due to discrimination and systemic factors that exclude them from necessary resources such as business education and access to finance and networks (Ahl 2006; Fischer, Reuber & Dyke 1993; Dean et al. 2017). Liberal feminist theory is inspired by liberal political theory, which believes that people can think rationally (Ahl 2006). Liberal feminist approach is also criticized by scholars, as it treats men and women equally, but differently (Calas & Smircich 1996). It has been mainly criticized for accepting current male-created structures (Foss et al. 2019; McAdam 2013). Even though structural barriers are removed, women need to adapt to male norms to achieve on the same terms (Ahl & Marlow 2012). Moreover, the critique concerns overemphasizing equality at the expense of diversity (Enslin 2003).

Some studies have indicated that gender equality is expected to increase the support for female entrepreneurship (Brush et al. 2017; Meunier, Krylova & Ramalho 2017; Vracheva & Stoyneva 2020). According to Brush et al. (2017), in economies where equality exists in wages and top manager positions in technical fields, women are as likely to start businesses as men. Cheraghi, Adsbøll Wickstrøm and Klyver (2019) found higher levels of entrepreneurship participation for both women and men in higher gender equality countries, and Baughn, Chua & Neupert (2006) point-

ed out that gender equality enhances female entrepreneurship. Rietveld and Patel (2022) found that gender equality is associated with both opportunity-driven and necessity-based entrepreneurship and that the gender gap in entrepreneurship becomes smaller when gender equality in a country increases. On the other hand, there is evidence that gender equality itself does not predict the proportion of female entrepreneurs (Baughn, Chua & Neupert 2006), and other studies suggest that female entrepreneurial activity declines with increasing gender equality (Sarfaraz, Faghih & Asadi Majd 2014) and that greater gender equality at a national level is associated with a larger gender gap in self-employment (Klyver, Nielsen & Evald 2013). Kyrö and Hyrsky (2008) see that even though the number of female self-employed in Finland is reasonably high, the problem is that women, as self-employed entrepreneurs, are the group with the lowest level of protection because of the many exceptions and derogations in social welfare legislation that affect the working lives of women entrepreneurs and make their situation unequal. Most of these derogations concern the reconciliation of work and family life (Kyrö & Hyrsky 2008).

Knowledge of how high gender equality is associated with female entrepreneurship is still incoherent, as the phenomenon is complex and tends to depend for example on the socioeconomic level of the country (Cheraghi, Adsbøll Wickstrøm & Klyver 2019; Klyver, Nielsen & Evald 2013; Sarfaraz, Faghih & Asadi Majd 2014; Vracheva & Stoyneva 2020), industry sector (Halabisky 2018), and motive of entrepreneurship (Vossenberg 2013), that is, opportunity-driven versus necessity-based entrepreneurship (Rietveld & Patel 2022). For example, Lotti (2006) observed that the ratio of female to male entrepreneurs tends to be higher in the case of necessity-based entrepreneurship, which constitutes a high proportion of entrepreneurial activity in low-income countries. However, in the high-income country of Finland, necessity-driven motivation is equally common between genders, while opportunity-based motivation "building great wealth" is more common for men (Björk et al. 2022).

Entrepreneurial Intentions, Fear of Failure and Perceived Knowledge, Skill, and Experience

Entrepreneurial intentions are related to attitudes and personal perceptions about the supportiveness of a particular society, business environment, and personal abilities (Entrialgo & Iglesias 2018). Maes, Leroy and Sels (2014) found that gender differences in entrepreneurial intentions are explained by the appreciation of becoming an entrepreneur (attitude) and perceived ease or difficulty in performing entrepreneurial behavior (control beliefs). The gender gap in entrepreneurial intentions is mediated by perceived behavioral control and partially mediated by perceived subjective norms and attitudes toward entrepreneurship. In addition, Yordanova and Tarrazon (2010) have found that gender differences in entrepreneurial intentions are mediated by the perceived social acceptability of entrepreneurship to a normative reference group (subjective norms). According to Nikou et al. (2019), there may be systemic and contextual factors that may inhibit resources, such as education and networks, leading to women having different sets of variables affecting intentions.

Prior research suggests that attitude toward risk differs significantly between genders (Croson & Gneezy 2009; Eckel & Grossman 2003; Koellinger, Minniti & Schade 2013; Wagner 2007). Women are more risk-averse in their choice behaviour (Croson

& Gneezy 2009; Eckel & Grossman 2003) and more reluctant to compete than are men (Croson & Gneezy 2009). Wagner (2007) and Dawson and Henley (2015) found that a large proportion of the gender gap is associated with attitude to risk and fear of failure. Men's more positive attitude towards risk explains why intentions to start a business are significantly higher among men than among women (Dawson & Henley 2015).

Cognitive perceptions of one's skills and abilities influence the decision to become an entrepreneur (Brush et al. 2017). The more a person believes that she/he is capable of successfully running a business, the more likely she/he is to consider entrepreneurship as a relevant career path (Brush et al. 2017; Chen, Greene & Crick 1998). Thébaud (2010) found, using GEM data from the U.S., that women perceived themselves as less able entrepreneurs compared to men, and their competence standards were stricter. Also, Maes, Leroy and Sels (2014) found that women attribute more importance to having adequate knowledge and capabilities compared to men. There is research evidence that the low rate of women entrepreneurs is associated with little confidence in their skills (Dawson & Henley 2015). Thébaud (2010) even concluded that the gender gap in perceived skills accounts for a significant portion of entrepreneurship's gender gap.

One of the key contributions of this study is the examination of different age groups of women and men concerning entrepreneurial intentions, fear of failure as a barrier to starting a business, and perceived skills and abilities. Yordanova and Tarrazon (2010) found the gender gap in entrepreneurial intentions in a sample of university students. Data from Global University Entrepreneurial Spirit Students' Survey (GUESSS) on university student entrepreneurship shows that there is a gender gap in active entrepreneurs globally, in Finland 3.5% more men than women (N in Finland 1,094 responses and globally over 260,000) (Sieger et al. 2021). However, previous research on the entrepreneurial intentions of young adults is inconclusive. On the one hand, there are arguments that young people do not yet have sufficient work experience or entrepreneurial ability, while on the other hand, it is argued that young people have more innovative and technological skills and flexibility, which positively influences their entrepreneurial intentions (Ferri et al. 2018). In prior research, the impact of growing age has been found to have a negative impact on a person's entrepreneurial intentions (Aydin et al. 2024; Hatak, Harms & Fink 2015). Especially, Wagner (2007) showed that age impacts more women's than men's behavior. They found that increasing age up to 40 years increased women's self-employment start and decreased after that. Hatak, Harms and Fink (2015) explained the lower entrepreneurial intention with higher job identity, which may also grow with age. In general, with the aging population, it is becoming more important to study and understand the impact of age on entrepreneurship (Aydin et al. 2024; Kautonen, Luoto & Tornikoski 2010; Kyrö & Hyrsky 2008).

Data and Method

The research strategy of this study was a survey. It is a popular strategy as it allows the collection of a large amount of data from a sizeable population in an economical way (Saunders, Lewis & Thornhill 2009). Surveys are often conducted using a questionnaire administered to a sample; the data are standardized, enabling easy comparison (Saunders, Lewis & Thornhill 2009).

As Welsh, Kaciak & Thongpapanl (2016) pointed out, country-level literature regard-

ing female entrepreneurship often uses GEM data. GEM defines entrepreneurship as: "Any attempt at new business or new venture creation, such as self-employment, a new business organization, or the expansion of an existing business, by an individual, a team of individuals, or an established business" (GEM Consortium 2024). Utilizing GEM data to study the gender gap in entrepreneurship, we followed the example of studies by Vracheva and Stoyneva (2020), Sarfaraz, Faghih and Asadi Majd (2014), Baughn, Chua and Neupert (2006), Cheraghi, Adsbøll Wickstrøm and Klyver (2019), Klyver, Nielsen and Evald (2013), and Rietveld and Patel (2022). We used the latest available individual-level Finnish GEM Adult Population Survey data from the year 2021. We also studied earlier years to find out if there were changes in the men's and women's entrepreneurship potential, which has been an understudied theme in Finnish entrepreneurship research. Finland previously participated in GEM six years earlier, in 2015. We also added two earlier years to the analysis, 2009 and 2003, with the same six-year interval, using the existing Finnish GEM survey data wall-to-wall. The data are available for research use from the GEM Consortium and the GEM Finland team. The sample sizes in the Finnish GEM Adult Population Survey are 1,983 (2021), 2,007 (2015), 2,004 (2009), and 1,460 (2003).[1]

From these GEM surveys, we were able to gather valuable data which allow powerful insight into changes in the gender gap in entrepreneurial potential over a period of wide-ranging change. The most important strength of longitudinal research is the ability to study change and development (Saunders, Lewis & Thornhill 2009). The GEM population surveys embrace individuals aged 18–64 years for demographically representative portions of the population, who are asked a variety of questions regarding their engagement with and attitude towards entrepreneurship. We chose the above three research questions (RQs) to measure entrepreneurship potential.

The answers to the three questions were split by gender (male/female) and by the five age groups provided by GEM (18–24, 25–34, 35–44, 45–54, and 55–64 years). We compared for each year men's and women's answers in the total sample and in each age group. Answers were analysed using a yes/no scale.[2] Missing answers were removed before the comparison; thus, for each year we report a different number of answers for each question. The chi-squared test of homogeneity was used to find out if there was difference between the genders. The null hypothesis (H0) was that there was no difference between the genders, but if there was less than a 5% probability of H0 (a p-value smaller than .05), H0 was rejected, and we concluded there was a statistically significant difference between genders. We also present a contingency table in percentages for each year overall and for each age group to visualize the differences. The yearly change is investigated visually.

Finally, we subsetted the responders and studied only those who answered yes to RQ1 (i.e. expecting to start a business within three years). We compared the genders in the two other RQs. Age groups were not used in order to keep the count of responses at an adequate level for statistical analysis. This analysis was conducted only for the latest available year, 2021.

Findings

Gender and Age Differences in Expecting to Start a Business Within Three Years

The first RQ studied start-up intention. Men had more start-up intentions than wom-

en in each year included in the analysis when the whole population was analysed (Table 1 and Fig. 1). There was large yearly variation, with 2009 having the lowest and 2015 the highest total percentages of start-up intention. When analysing start-up intention by age group, it was notable that in a majority of the cases, with only two exceptions (2021, age group 35–44 and 2009, 45–54), men reported more start-up intentions than women. However, the difference was not statistically significant in every case.

In each year in the youngest age group, men reported having more start-up intentions than women, the difference was significant each year with sufficient group size (2009, 2015 and 2021). In the second age group, 25 to 34 years, there is statistically significant difference in the first three years (2003, 2009 and 2015) but not in 2021. The middle age group, 35 to 44 years, has statistically significant gender difference in only one year, 2015. The age group 45 to 54 years had significant difference in the two latest years, 2015 and 2021. In each year, the oldest age group had the lowest start-up intention in both men and women.

Expecting to Start a Business Within Three Years

Fig. 1. Expecting to start up a business within three years according to gender (total and by age group). The graphs show positive answer percentages of men and women in total and in each age group for four years: 2003, 2009, 2015, and 2021 in Finland according to GEM surveys.

Table 1. Expecting to start up a business within three years. Each year's sample size and p-values in chi-squared test of gender difference in the whole sample and in each age group are presented. H0 hypothesis: no gender difference; H1 hypothesis: gender difference exists. H0 is rejected when p-value is smaller than .05; in these cells, the difference between men and women is significant. Rejected H0 hypothesis is marked with one asterisk (*) when p-value is less than .05, two asterisks (**) when p-value is less than .01, and three asterisks (***) when p-value is less than .005. Missing values are due to too small a group size for testing (less than five positive answers) and are marked with a hyphen (-).

Year	N	p-value total	p-value group 18–24	p-value group 25–34	p-value group 35–44	p-value group 45–54	p-value group 55–64
2003	1,401	<.001***	-	<.001***	.056	.056	-
2009	1,843	<.001***	.009**	.0192*	.123	.992	-
2015	1,834	<.001***	.030*	.002***	.016*	.011*	.041*
2021	1,629	.002***	.044*	.119	.433	.019*	.079

The analysis was also executed in timeline form (Fig. 2). In the first decade of the millennium, expectations to start a company were lower in both total women (5% and 4%) and total men (11% and 9%), but expectations rose considerably in 2015 among both men (18%) and women (9%). In 2015, the youngest age group reached the highest percentages in men (24%) and women (14%). The year 2021, however, exhibited a declining trend overall and in the youngest age groups, in both men and women. However, the oldest age groups' start-up intentions increased slightly in 2021 compared to 2015.

Expecting to Start a Business Within Three Years
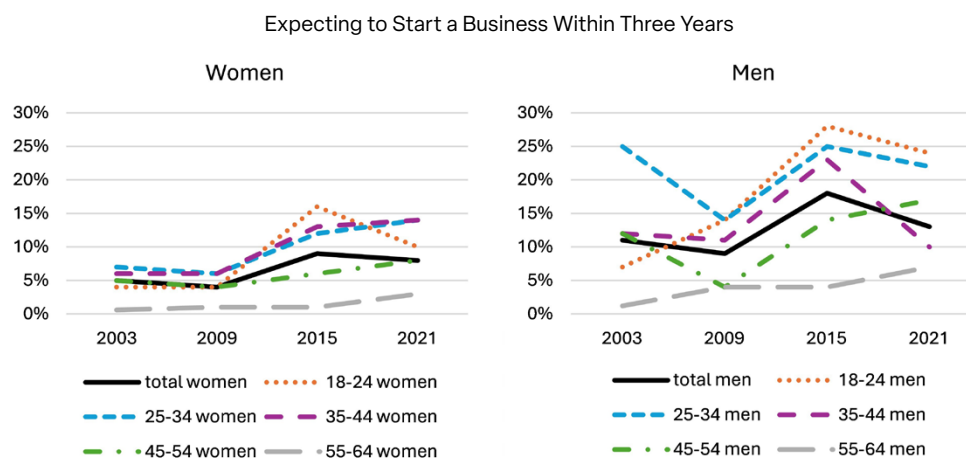
Fig. 2. Temporal change in women's and men's expectations to start up a business within three years overall and by age.

Gender and Age Differences in Not Starting a Business for Fear It Might Fail
RQ2 studied the fear of failure in starting a business. In each studied year, women had a higher percentage of reported fear (37–57%) compared to men (24–38%) in analysis covering the whole population (Table 2 and Fig. 2). In the first three years studied, the difference between genders was statistically significant in two groups in 2003 (25–34 and 45–54 years), two groups in 2009 (18–24 and 55–64 years), and three groups in 2015 (18–24, 35–44 and 55–64 years). In 2021, the gender gap was measured with

41

high statistical significance in each age group. In 2021, fear of failure was the highest among women in the four youngest age groups, while men's fear differed less based on age.

Not Starting a Business for Fear It Might Fail

Fig. 3. Not starting a business for fear it might fail by gender (total and divided by age group). The graphs show the positive answer percentages of men and women in total and in each age group in four years: 2003, 2009, 2015, and 2021 in Finland according to GEM surveys.

Table 2. Not starting a business for fear it might fail. Each year's sample size and the p-values of chi-squared test of gender difference in the whole sample and in each age group are presented. H0 hypothesis: no gender difference; H1 hypothesis: gender difference exists. H0 is rejected when p-value is smaller than .05; in these cells, the difference between men and women is significant. Rejected H0 hypotheses are marked with one asterisk (*) when p-value is less than .05, two asterisks (**) when p-value is less than .01, and three asterisks (***) when p-value is less than .005.

Year	N	p-value total	p-value group 18–24	p-value group 25–34	p-value group 35–44	p-value group 45–54	p-value group 55–64
2003	852	.003***	.560	.017*	.682	.027*	.193
2009	975	<.001***	.002***	.081	.629	.086	.001***
2015	2,007	<.001***	.007**	.085	.002***	.062	.014*
2021	1,983	<.001***	.001***	<.001***	<.001***	.012*	.001***

42

Fear of failure preventing business start-ups grew in the study period in both women and men. Overall, the fear of failure was lowest in 2009. It then increased, peaking in 2021. The first two years displayed lower percentages for men and women (2003: men 29%, women 39%; 2009: men 24%, women 37%), while 2015, and especially 2021, showed higher percentages (2015: men 34%, women 46%; 2021: men 38%, women 57%) (Fig. 4).
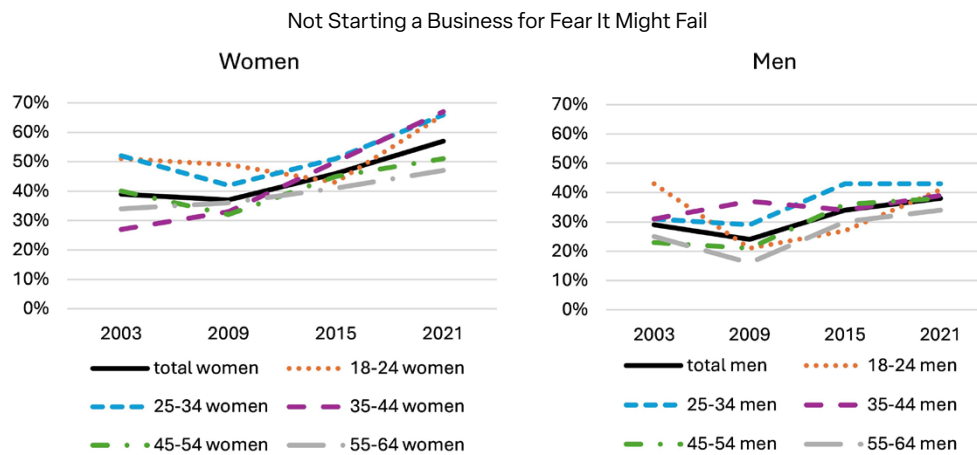
Fig. 4. Temporal change in women's and men's fear of failure preventing a business start-up, overall and by age.

We also created a subset of the 2021 sample including only those respondents who intended to start a business within three years. From this subset of 197 respondents, 63 women and 116 men, 41% of women and 25% of men reported having a fear of failure. Even though the sample is relatively small, the gender gap had high statistical significance (p = .037). From the other part of the sample (n = 1,450), respondents without start-up intentions, 57% of women and 40% of men reported being afraid of failure, and the gender gap was again significant (p < .001). Those with start-up intentions reported less fear of failure, but the percentage of fear was still notably high, especially among women. Also, if a person answered positively to both questions expecting to start a business within three years and at the same time reporting fear of failure preventing a business start-up, they seem to be in an uncertain situation.

Gender and Age Differences in the Perception of Having the Knowledge, Skill, and Experience Required to Start a New Business

The perceived knowledge, skill, and experience to start a new business was greater among men than women every year in this study, and the difference was significant in every year. In each year, close to 30% of women thought they had the required know-how, while men's percentages were always higher and varied more, between 43% (in 2009) and 69% (in 2003). Gender difference within age groups was not always significant, but in most of the cases men expressed more positive perceptions of their own knowledge, skill, and experience. Generally, the know-how trend grew with age in both men and women (Table 3 and Fig. 3).

Respondent's Perception of Having the Knowledge, Skill and Experience Required to Start a New Business

Fig. 5. Respondent's perception of having the knowledge, skill and experience required to start a new business by gender (total and by age group). The graphs show the positive answer percentages of men and women overall and by age in four years: 2003, 2009, 2015, and 2021 in Finland according to GEM surveys.

Table 3. Respondent views of having the knowledge, skill and experience required to start a new business. Each year's sample size and p-values of chi-squared test of the gender difference in the whole sample and in each age group are presented. H0 hypothesis: no gender difference; H1 hypothesis: gender difference exists. H0 is rejected when p-value is smaller than .05; in these cells, the difference between men and women is significant. Rejected H0 hypotheses are marked with one asterisk (*) when p-value is smaller than .05, two asterisks (**) when p-value is less than .01, and three asterisks (***) when p-value is less than .005.

Year	N	p-value total	p-value group 18–24	p-value group 25–34	p-value group 35–44	p-value group 45–54	p-value group 55–64
2003	873	<.001***	.631	<.001***	<.001***	<.001***	<.001***
2009	985	<.001***	1	.520	.428	.213	<.001***
2015	1,973	<.001***	.006**	.006**	.003***	.088	<.001***
2021	1,833	<.001***	.090	<.001***	.002***	<.001***	<.001***

Respondent's Own View of Having the Knowledge, Skill and Experience Required
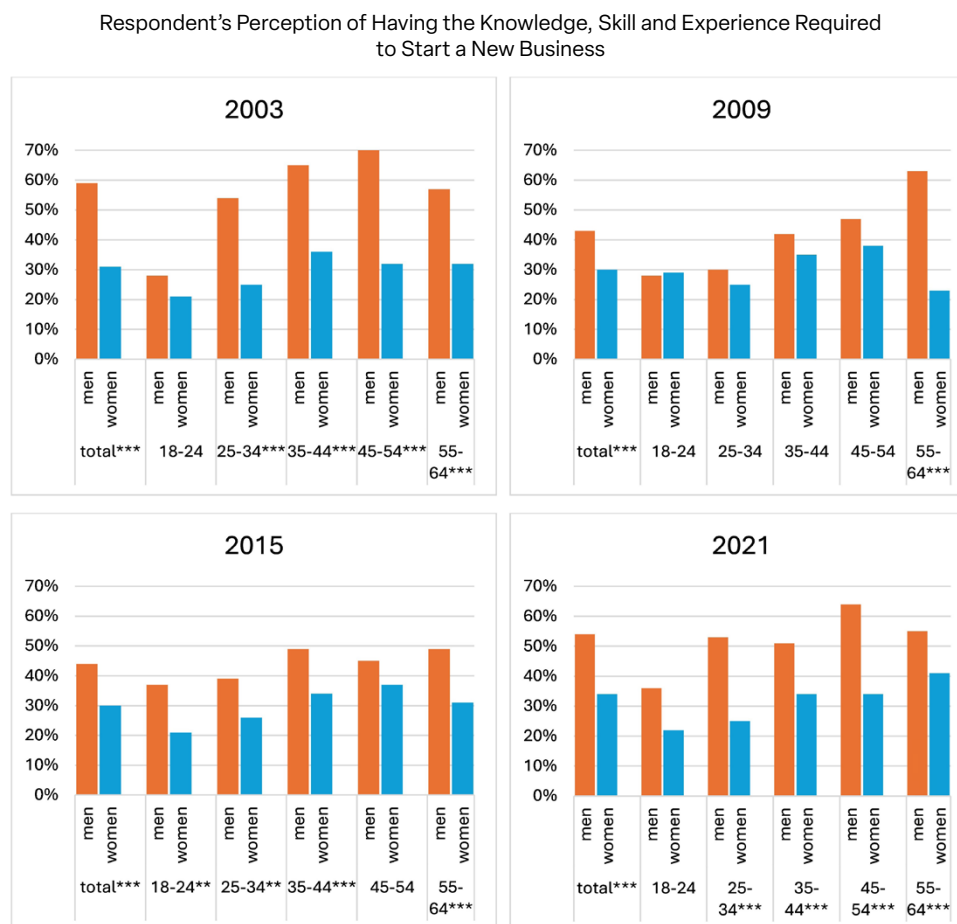to Start a New Business
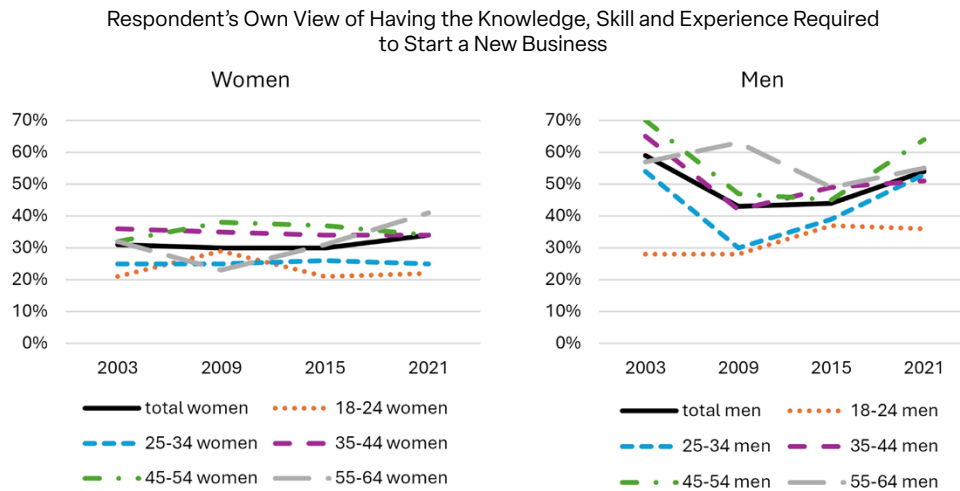
Fig. 6. Respondents' own view of having the knowledge, skill and experience required to start a new business by gender (overall and by age group). The graphs show the positive answer percentages of men and women overall and in each age group in four years: 2003, 2009, 2015, and 2021 in Finland according to GEM surveys.

Temporal patterns for women and men exhibited many differences. Women's perceived knowledge, skill and experience required to start a new business remained generally at the same level. At the same time, the men's total was lowest in 2009 and 2015, but different age groups' answers did not follow the same pattern.

The subset in 2021 who reported having the intention to start a business shows a significant gender gap (p = .008); 75% of men and 54% of women thought they had the required knowledge, skill, and experience. The total number of responses was 167 (106 men and 61 women). Responders who did not have start-up intentions (n = 1,344) quite often thought they lacked knowledge, skill, and experience (49% of men and 30% of women); again, the gap was significant (p < .001). According to this result, almost half of women with start-up intentions did not think they had the needed skill, knowledge, and experience.

Discussion

In this study, we aimed to clarify the gender gap in entrepreneurship potential in Finland during recent decades, taking into account different age groups. In this pursuit, we addressed three research questions that focused on respondents' views about their intention to start a business, fear of failure as a reason for not starting a business, and their own perceptions of having the knowledge, skill and experience required to start a business.

Gender and Age Differences in Start-Up Intentions

Intentions are the best predictor of any planned behaviour, including entrepreneurship (Krueger Jr, Reilly & Carsrud 2000: 412). RQ1 investigated business start-up intentions within three years. In each investigated year, the difference between men and women in the total sample was significant: men had more start-up intentions than women. However, in the latest year (2021), in one age group (34–45-year-olds), a

45

higher percentage of women than men reported start-up intention, but the difference was not significant. Overall, the trend lines of women and men share the same form: start-up intentions bottomed in 2009, peaked in 2015, and went slightly downward in 2021. There is a temporal connection to the cyclical fluctuations of the global economy: the financial crisis in 2007–2009 (see Acharya et al. 2009), a growing economy after the crisis, and a new economic decline caused by the COVID-19 pandemic starting in late 2019. The pandemic lockdown hit the women-dominated service sector hardest; also, the increased home-care responsibilities impacted women more than men (Kabeer, Razavi & van der Meulen Rodgers 2021). The increase in start-up intentions among the youngest age group is positive news for the future, but the pandemic year 2021 also seems to have hit the youngest groups' optimism the hardest. In general, the results reinforce the findings of Cheraghi, Adsbøll Wickstrøm and Klyver (2019), who observed that the gender gap in entrepreneurship participation is stronger among young adults than in older age groups.

Possible Explanations for Differences in Start-Up Intentions. Differences in Fear of Failure and Perceived Skills

Based on the results for RQ2, fear of failure preventing a business start-up exhibited a significant gender gap in every studied year in the whole population. Fear of failure was lowest in 2009 but subsequently increased, peaking in 2021, with all age groups following the same pattern. This might be an impact of the question's negative formation: "I would not start a business because of the fear it would fail." Also, within the population with start-up intentions, the gender gap between women and men regarding fear of failure was significant. These findings are in line with the studies by Dawson and Henley (2015), Koellinger, Minniti and Schade (2013), and Wagner (2007), who found that women exhibit higher fear of failure than men towards entrepreneurship.

As the results for RQ3 revealed, the perceived knowledge, skill, and experience to start a new business showed a significant gender gap in each year. In most age groups, men had a more positive perception of their own capabilities than women. In both men and women, the know-how mostly grew with age. Women's perceived knowledge, skill, and experience mostly remained at the same level throughout the study period. At the same time, men's overall perceptions were lowest in 2009 and 2015. However, especially the men's age groups followed different patterns; the confidence in own know-how did not grow in the youngest age group as it did in the older groups. The group having start-up intentions again displayed a significant gender gap in perceived know-how. Almost half the women with start-up intentions did not think they had the needed skills, knowledge, and experience. Part of the contradiction of having start-up intentions but not having skills may be because the item on start-up intention had a three-year window, which allows time to learn.

Our findings are in line with previous studies according to which females are more concerned and less self-confident about entrepreneurship (Dabic et al. 2012; Halabisky 2018) and their entrepreneurial skills (Koellinger, Minniti & Schade 2013). Women are less likely than their male counterparts to believe they have the skills and abilities to start a business (Thébaud 2015). They are more risk-averse (Piacentini 2013) and, at the European Union level, women (52%) are more likely than men

(42%) to report that fear of failure prevents them from starting a business (Halabisky 2018). Koellinger, Minniti and Schade (2013) revealed that females are less confident in their entrepreneurial skills and have a higher fear of failure, in addition to different social networks, which explains a substantial part of the gender gap in entrepreneurial activity. Maes, Leroy and Sels (2014) found that women display lower internal feelings of control than men, and the perceived lack of internal control may be due to the idea that entrepreneurial skills are male-stereotyped, which makes women feel less confident.

Why Do Gender Equality and the Gender Gap in Entrepreneurship Potential Exist Together?

As the aim of this study was to clarify the gender gap in entrepreneurship potential in Finland during recent decades taking into account different age groups, we can say that a gender gap exists. The findings indicate that liberal feminist theory's underlying assumption about the connection between an equal society and balanced gender entrepreneurial activity does not hold in the studied Finnish context. However, it must be taken into account that although Finland is one of the most equal countries in the world by international comparisons, it is not completely equal and may have gendered structural barriers (Muntean & Ozkazanc-Pan 2015) and systemic factors (Nikou et al. 2019) that maintain the gender gap. A possible explanation is offered by Klyver, Nielsen and Evald (2013), who stated that in highly egalitarian countries, policy focus is on women's employment rights in the labour market, leading unintentionally to a preferential situation whereby women's employment options may be favoured over entrepreneurship. Then, women enjoy equal opportunities with men, such as benefits from good quality employment, and have more access to social services that may discourage them from taking the risk of starting their own business given the associated lack of welfare and holidays, market uncertainty, and lower incomes (Marlow & Martinez Dy 2018; Sarfaraz, Faghih & Asadi Majd 2014). According to Thébaud (2011), generous public funding for childcare is associated with larger gender gaps in the odds of being an entrepreneur. Moreover, larger companies and public employers typically offer healthcare and support for working mothers, which may reduce women's incentives for starting a business. However, it must be noted that the low rate of female entrepreneurship does not imply a low rate of female contribution to the economy (Sarfaraz, Faghih & Asadi Majd 2014). Furthermore, Halabisky (2018: 5) pointed out that it is central to look beyond simple gender ratios of entrepreneurs to the motivations and quality of the businesses, as greater gender equality may improve the quality of businesses and business creation based on opportunity while reducing poorer quality business creation based on lack of choice.

Moreover, a closer look reveals that Nordic welfare societies—despite their extensive gender equality—have a deep gender-based division that appears both in education and in the labour market, both horizontally and vertically. The phenomenon is known as the gender paradox (Griffin & Vehviläinen 2021). When girls and women are given opportunities to choose differently, they still tend to choose traditionally female occupations. Simultaneously, paid and unpaid care work in public services and at home is for the most part taken care of by women. Deep gender segregation—both horizontal and vertical—is the most prevailing and persisting challenge for full

47

equality and seems to be surprisingly difficult to overcome due to existing structures and stiff cultural gender binaries efficiently maintained in our everyday lives as well as through the media (e.g. Rossi 2003; Rossi 2011).

Ahl (2006) stated that research on women entrepreneurs has suffered from numerous deficiencies, such as a lack of theoretical bases, a one-sided empirical focus, the discounting of structural, historical, and cultural factors (see Chell & Baines 1998), the use of male-gendered measuring instruments, and the absence of a power perspective and explicit feminist analysis. In addition, Calas, Smircich and Bourne (2009) questioned the economic premises of entrepreneurship research and called for new and alternative frameworks. Calas, Smircich and Bourne (2009) and Vossenberg (2013) argued that the gender gap in entrepreneurship will remain if the male-dominant forces and patriarchal society that shape the context of entrepreneurship are left unquestioned. Feminists argue that research should take into account the power structures that set structural barriers to women's entrepreneurship, or else it will ignore possible solutions, results, and efforts to close the gender gap (Vossenberg 2013: 11). Change will only happen when entrepreneurship is reframed through feminist analytical lenses enabling the potential of entrepreneurship for positive social change (Calas, Smircich & Bourne 2009).

The question is how to change the business environment and social institutions to support and encourage women with start-up intentions in Finland and other egalitarian countries that have this challenge? Entrepreneurship is not an isolated island; it is the process between people and context (Aaltio-Marjosola, Kyrö & Sundin 2008), encountering gender imbalance but seeking a balance and an overall gender-equal settlement. Understanding the gender gap in entrepreneurship requires a focus on institutional (Klyver, Nielsen & Evald 2013) and structural barriers women entrepreneurs face (Muntean & Ozkazanc-Pan 2015). According to Piacentini (2013), stereotypes (e.g. the belief that being an entrepreneur is a man's job) and lower exposure of women to female role models explain women's lower entrepreneurial activity and why women often believe they are not capable of becoming successful entrepreneurs. Women tend to perceive themselves and the entrepreneurial environment in a less favorable light than men (Langowitz & Minniti 2007). Ahl (2006) posited that "entrepreneur" is a masculine concept. Thébaud (2015) argued that gendered perceptions, driven by individual dispositions and shared cultural beliefs that link entrepreneurship to men and stereotypically masculine traits, lead to this gender gap. Moreover, Hechavarría et al. (2018) pointed out that gendered linguistic structures reinforce gender stereotypes and discourage women's entry into entrepreneurship.

Entrepreneurship education is identified as having a great effect on women's self-efficacy and overcoming fear of failure, and, through this, on entrepreneurial intention (Guelich 2022; Wilson, Kickul & Marlino 2007). In Finland, various interventions have already been developed to bring more visibility to entrepreneurship at different levels of education—starting from compulsory education, when all 12-year-olds do an excursion to Yrityskylä,[3] up to tertiary-level minor studies on entrepreneurship that are available to all students at the university. Dabic et al. (2012) found that among academic female students, establishing entrepreneurial mentoring and an appropriate tutoring structure are the most needed entrepreneurial educational activities. However, larger, macro-level gendered structures and socio-cultural prac-

tices should be addressed in entrepreneur education and to take into account policies shaping entrepreneurship. Considering the growth in female participation in entrepreneurship in the United States, despite its significant gender gap (Piacentini 2013), identified change factors have included a lessening of sex stereotypes, more women studying business, engineering and science, and more opportunities for women to gain experience in varied occupational areas (Baughn, Chua & Neupert 2006: 692). If carried out successfully, gender mainstreaming in entrepreneurial activities could result in increased diversity among entrepreneurs as well as in businesses, and consequently, their available services.

Limitations of Research and Possible Future Directions

Randomized GEM Adult Population Survey data with time series provide temporally comparable variables for analysing entrepreneurship-related activities by gender and also monitoring temporal change with high statistical significance. The data contain randomized selections of respondents for each moment of time, which enables trend analysis in the population, but not long-term analysis of each individual's perception change, as in a cohort type of follow-up data. Even though the data and specific questions are from relatively large samples (minimum n = 852 for 2003 and maximum n = 2,007 for 2015), the data do not allow measuring entrepreneurship dynamics by using multiple background variables in clustering groups (e.g. by gender, age, and regional grouping) simultaneously.

To deepen this analysis in the future, national register data of entrepreneurs, education, family status, place of residence, migration history, and previous employment could be applied together with gender data including larger samples of the population as a whole. These types of large register studies would enable more thorough scrutiny of the dynamics of entrepreneurial activities; the findings related to the gender gap in entrepreneurship in the current research indicate a need for more in-depth analyses. Moreover, studying the existence and impact of networks (Brush et al. 2017; Ozkazanc-Pan & Muntean 2018) and role models (Piacentini 2013) could help explain the entrepreneurial gender gap in Finland.

NOTES

[1]   2003 had more age groups than the other studied years; 1,460 is the sample size of respondents between 19 and 64 years of age.

[2]   RQ1 was a yes/no question every year, and RQ2 and RQ3 were asked using a five-level Likert-like scale in 2021 but were yes/no in the previous years. Likert answers are coded to binary as 4 and 5 -> yes, 1 and 2 -> no and 3 -> removed.

[3]   https://nuortennyt.fi/en/yrityskyla/ (accessed 14 March 2024).

REFERENCES

Aaltio-Marjosola, I., Kyrö, P. & Sundin, E. (2008). "Introduction. Women entrepreneurs. Creators and creation of social capital," in *Women Entrepreneurship and Social Capital. A Dialogue and Construction*, eds. I. Aaltio-Marjosola, P. Kyrö & E. Sundin, Copenhagen: Copenhagen Business School Press, pp. 13–22.

Acharya, V., Philippon, T., Richardson, M. & Roubini, N. (2009). "The financial crisis of 2007–2009. Causes and remedies," in *Restoring Financial Stability*, eds. V. Acharya & M. Richardson, New York: John Wiley & Sons, pp. 1–56.

49

Ahl, H. (2006). "Why research on women entrepreneurs needs new directions," *Entrepreneurship Theory and Practice*, 30:5, pp. 595–621.

Ahl, H. & Marlow, S. (2012). "Exploring the dynamics of gender, feminism and entrepreneurship. Advancing debate to escape a dead end?" *Organization*, 19:5, pp. 543–562.

Ajzen, I. (1991). "The theory of planned behavior," *Organizational Behavior and Human Decision Processes*, 50:2, pp. 179–211.

Allen, I.E. & Langowitz, N.S. (2013). "Understanding the gender gap in entrepreneurship. A multicountry examination," in *The Dynamics of Entrepreneurship. Evidence from Global Entrepreneurship Monitor Data*, ed. M. Minniti, Oxford: Oxford University Press, pp. 31–56.

Arafat, M.Y. & Saleem, I. (2017). "Examining start-up intention of Indians through cognitive approach. A study using GEM data," *Journal of Global Entrepreneurship Research*, 7:13, pp. 1–11; doi.org/10.1186/s40497-017-0073-3.

Aydin, Š., Knezović, E., Bičo, A. & Smajić, H. (2024). "Age entrepreneurial and intrapreneurial intentions. The mediating role of individual entrepreneurial orientation," *Journal of Enterprising Communities. People and Places in the Global Economy*, 18:1, pp. 94–113.

Baughn, C.C., Chua, B.-L. & Neupert, K.E. (2006). "The normative context for women's participation in entrepreneurship. A multicountry study," *Entrepreneurship Theory and Practice*, 30:5, pp. 687–708; doi.org/10.1111/j.1540-6520.2006.00142.x.

Berglund, K., Ahl, H., Pettersson, K. & Tillmar, M. (2018). "Women's entrepreneurship, neoliberalism and economic justice in the postfeminist era. A discourse analysis of policy change in Sweden," *Gender, Work & Organization*, 25:5, pp. 531–556; doi.org/10.1111/gwao.12269.

Björk, P., Saarela, M., Kotavaara, O. & Muhos, M. (2022). "Global entrepreneurship monitor 2021/2022 Finnish report," *Publications of Kerttu Saalasti Institute* 3/2022, University of Oulu; www.gemconsortium.org/file/open?fileId=51137; accessed on 11 Sept. 2024.

Brush, C., Kelley, D., Ali, A. & Greene, P. (2017). "The influence of human capital factors and context on women's entrepreneurship. Which matters more?" *Journal of Business Venturing Insights*, 8:1, pp. 105–113.

Brush, C., Edelman, L.F., Manolova, T. & Welter, F. (2019). "A gendered look at entrepreneurship ecosystems," *Small Business Economics*, 53, pp. 393–408.

Cacciotti, G. & Hayton, J.C. (2014). "Fear of failure and entrepreneurship. A review and direction for future research," *Enterprise Research Centre*, 24:1, pp. 1–62.

Calas, M.B. & Smircich, L. (1996). "From 'the woman's' point of view. Feminist approaches to organization studies," in *Handbook of Organization Studies*, eds. S.R. Clegg, C. Hardy & W.R. Nord, London: Sage, pp. 218–257.

Calas, M.B., Smircich, L. & Bourne, K.A. (2009). "Extending the boundaries. Reframing entrepreneurship as social change through feminist perspectives," *Academy of Management Review*, 34:3, pp. 552–569.

Caliendo, M., Fossen, F.M., Kritikos, A. & Wetter, M. (2015). "The gender gap in entrepreneurship. Not just a matter of personality," *CESifo Economic Studies*, 61:1, pp. 202–238; doi.org/10.1093/cesifo/ifu023.

Chell, E. & Baines, S. (1998). "Does gender affect business performance? A study of micro businesses in business services in the UK," *Entrepreneurship and Regional Development*, 10:2, pp. 117–135; https://doi.org/10.1080/08985629800000007.

Chen, C.C., Greene, P.G. & Crick, A. (1998). "Does entrepreneurial self-efficacy distinguish entrepreneurs from managers?" *Journal of Business Venturing*, 13:4, pp. 295–316.

Cheraghi, M., Adsbøll Wickstrøm, K.A. & Klyver, K. (2019). "Life-course and entry to entrepreneurship. Embedded in gender and gender-egalitarianism," *Entrepreneurship & Regional Development*, 31:3–4, pp. 242–258.

Chhabra, M. & Karmarkar, Y. (2016). "Gender gap in entrepreneurship. A study of small and micro enterprises," *ZENITH International Journal of Multidisciplinary Research*, 6:8, pp. 82–99.

Croson, R. & Gneezy, U. (2009). "Gender differences in preferences," *Journal of Economic Literature*, 47:2, pp. 448–474.

Dabic, M., Daim, T., Bayraktaroglu, E., Novak, I. & Basic, M. (2012). "Exploring gender differences in attitudes of university students towards entrepreneurship. An international survey," *International Journal of Gender and Entrepreneurship*, 4:3, pp. 316–336.

Dawson, C. & Henley, A. (2015). "Gender, risk, and venture creation intentions," *Journal of Small Business Management*, 53:2, pp. 501–515.

Dean, H., Larsen, G., Ford, J. & Akram, M. (2017). "Female entrepreneurship and the metanarrative of economic growth. A critical review of underlying assumptions," *International Journal of Management Reviews*, 21:1, pp. 24–49; doi.org/10.1111/ijmr.12173.

Decker, R., Haltiwanger, J., Jarmin, R. & Miranda, J. (2014). "The role of entrepreneurship in US job creation and economic dynamism," *Journal of Economic Perspectives*, 28:3, pp. 3–24.

Douglas, E.J. & Shepherd, D.A. (2000). "Entrepreneurship as a utility maximizing response," *Journal of Business Venturing*, 15:3, pp. 231–251.

Eckel, C.C. & Grossman, P.J. (2003). "Forecasting risk attitudes. An experimental study of actual and forecast risk attitudes of women and men," *Virginia Tech and St. Cloud State University Department of Economics Working Paper*, October.

Elam, A.B. et al. (2021). *Women's Entrepreneurship 2020/2021. Thriving Through Crisis*, London: The Global Entrepreneurship Research Association, London Business School; www.gemconsortium.org/report/gem-202021-womens-entrepreneurship-report-thriving-through-crisis; accessed on 11 Sept. 2024.

Enslin, P. (2003). "Liberal feminism, diversity and education," *Theory and Research in Education*, 1:1, pp. 73–87.

Entrialgo, M. & Iglesias, V. (2018). "Are the intentions to entrepreneurship of men and women shaped differently? The impact of entrepreneurial role-model exposure and entrepreneurship education," *Entrepreneurship Research Journal*, 8:1, 20170013; doi.org/10.1515/erj-2017-0013.

European Institute for Gender Equality (2022). "Gender Equality Index;" https://eige.europa.eu/gender-equality-index/2022; accessed on 19 January 2023.

European Institute for Gender Equality (2023) "Gender Equality Index;" https://eige.europa.eu/gender-equality-index/2023/FI; accessed on 14 March 2024.

Female Opportunity Index 2021 (2021). N26; https://n26.com/en-eu/female-opportunity-index; accessed on 19 January 2023.

Ferri, L., Ginesti, G., Spanò, R. & Zampella, A. (2018). "Exploring the entrepreneurial intention of female students in Italy," *Journal of Open Innovation. Technology, Market, and Complexity*, 4:3, article 27; doi.org/10.3390/joitmc4030027.

Fischer, E.M., Reuber, A.R. & Dyke, L.S. (1993). "A theoretical overview and extension of research on sex, gender, and entrepreneurship," *Journal of Business Venturing*, 8:2, pp. 151–168; doi.org/10.1016/0883-9026(93)90017-Y.

Foss, L., Henry, C., Ahl, H. & Mikalsen, G.H. (2019). "Women's entrepreneurship policy research. A 30-year review of the evidence," *Small Business Economics*, 53, pp. 409–429; doi.org/10.1007/s11187-018-9993-8.

GEM Consortium (2024). www.gemconsortium.org/wiki/1149; accessed on 16 February 2024.

Gicheva, D. & Link, A.N. (2015). "The gender gap in federal and private support for entrepreneurship," *Small Business Economics*, 45, pp. 729–733; doi.org/10.1007/s11187-015-9664-y.

Griffin, G. & Vehviläinen, M. (2021). "The persistence of gender struggles in Nordic research and innovation," *Feminist Encounters. A Journal of Critical Studies in Culture and Politics*, 5:2, article 28; doi.org/10.20897/femenc/11165.

Guelich, U. (2022). "Gendered entrepreneurship education and the fear of failure," *International Journal of Instruction*, 15:3, pp. 719–732.

Gupta, P., Chauhan, S., Paul, J. & Jaiswal, M.P. (2020). "Social entrepreneurship research. A review and future research agenda," *Journal of Business Research*, 113, pp. 209–229; doi.org/10.1016/j.jbusres.2020.03.032.

Halabisky, D. (2018). *Policy Brief on Women's Entrepreneurship* (OECD SME and Entrepreneurship Papers 8), Paris: OECD Publishing; doi.org/10.1787/dd2d79e7-en.

Hatak, I., Harms, R. & Fink, M. (2015). "Age, job identification, and entrepreneurial intention," *Journal of Managerial Psychology*, 30:1, pp. 38–53; doi.org/10.1108/JMP-07-2014-0213.

Hechavarría, D.M., Terjesen, S.A., Stenholm, P., Brännback, M. & Lång, S. (2018). "More than words. Do gendered linguistic structures widen the gender gap in entrepreneurial activity?" *Entrepreneurship Theory and Practice*, 42:5, pp. 797–817; doi.org/10.1177/1042258718795350.

Heinonen, J. & Hytti, U. (2016). "Entrepreneurship mission and content in Finnish policy programmes," *Journal of Small Business and Enterprise Development*, 23:1, pp. 149–162; doi.org/10.1108/JSBED-10-2014-0170.

Henry, C., Orser, B., Coleman, S., Potter, J. & Halabisky, D. (2022). "Women's entrepreneurship policy," in *ICSB 2022 Annual Global Micro-, Small and Medium-Sized Enterprises Report*, eds. A. El Tarabishy & A. Pastran, International Council for Small Business, pp. 46–51; www.un.org/sites/un2.un.org/files/icsb-globalmsmesreport2022.pdf; accessed on 10 January 2023.

Kabeer, N., Razavi, S. & van der Meulen Rodgers, Y. (2021). "Feminist economic perspectives on the COVID-19 pandemic," *Feminist Economics*, 27:1–2, pp. 1–29; doi.org/10.1080/13545701.2021.1876906.

Kautonen, T., Luoto, S. & Tornikoski, E.T. (2010). "Influence of work history on entrepreneurial intentions in 'prime age' and 'third age.' A preliminary study," *International Small Business Journal*, 28:6, pp. 583–601.

Klyver, K., Nielsen, S.L. & Evald, M.R. (2013). "Women's self-employment. An act of institutional (dis)integration? A multilevel, cross-country study," *Journal of Business Venturing*, 28:4, pp. 474–488.

Koellinger, P., Minniti, M. & Schade, C. (2013). "Gender differences in entrepreneurial propensity," *Oxford Bulletin of Economics and Statistics*, 75:2, pp. 213–234; doi.org/10.1111/j.1468-0084.2011.00689.x.

Krueger Jr, N.F., Reilly, M.D. & Carsrud, A.L. (2000). "Competing models of entrepreneurial intentions," *Journal of Business Venturing*, 15:6, pp. 411–432; doi.org/10.1016/S0883-9026(98)00033-0.

Kyrö, P. & Hyrsky, K. (2008). "From marginality to centre women's entrepreneurship policy challenges government's gender neutrality in Finland," in *Women Entrepreneurship and Social Capital. A Dialogue and Construction*, eds. I. Aaltio-Marjosola, P. Kyrö & E. Sundin, Copenhagen: Copenhagen Business School Press, pp. 67–94.

Langowitz, N. & Minniti, M. (2007). "The entrepreneurial propensity of women," *Entrepreneurship Theory and Practice*, 31:3, pp. 341–364; doi.org/10.1111/j.1540-6520.2007.00177.x.

Le, T.T., Nguyen, T.H., Ha, S.T., Nguyen, Q.K., Tran, N.M. & Duong, C.D. (2023). "The effect of entrepreneurial education on entrepreneurial intention among master students. Prior self-employment experience as a moderator," *Central European Management Journal*, 31:1, pp. 30–47.

Li, Y. (2011). "Emotions and new venture judgment in China," *Asia Pacific Journal of Management*, 28:2, pp. 277–298; doi.org/10.1007/s10490-009-9145-4.

Liao, Y.-K., Nguyen, V.H.A., Yeong, H.Y., Hong Vu, V.T. & Trinh, H.T. (2023). "Unraveling the effects of entrepreneurial passion and entrepreneurship education on entrepreneurial intention. The moderating role of demographic characteristics," *Global Business and Organizational Excellence*, 42:6, pp. 34–58.

Lindgren, M. & Packendorff, J. (2010). *The Gender and Entrepreneurship Gap in Estonia, Finland and Sweden* (Quadruple Helix Reports 2010:5), Norrtälje: Quadruple Helix Central Baltic.

Lotti, F. (2006). "Entrepreneurship. Is there a gender gap?;" www.researchgate.net/publication/228725164_Entrepreneurship_is_there_a_Gender_Gap; accessed on 11 Sept. 2024.

Maes, J., Leroy, H. & Sels, L. (2014). "Gender differences in entrepreneurial intentions. A TPB multi-group analysis at factor and indicator level," *European Management Journal*, 32:5, pp. 784–794; doi.org/10.1016/j.emj.2014.01.001.

Marlow, S. & Martinez Dy, A. (2018). "Annual review article. Is it time to rethink the gender agenda in entrepreneurship research?" *International Small Business Journal*, 36:1, pp. 3–22.

McAdam, M. (2013). *Female Entrepreneurship*, London: Routledge.

Meunier, F., Krylova, Y. & Ramalho, R. (2017). *Women's Entrepreneurship. How to Measure the Gap Between New Female and Male Entrepreneurs?* (Policy Research Working Paper 8242), World Bank Group; https://documents1.worldbank.org/curated/en/704231510669093889/pdf/WPS8242.pdf; accessed on 11 Sept. 2024.

Mueller, S.L. (2004). "Gender gaps in potential for entrepreneurship across countries and cultures," *Journal of Developmental Entrepreneurship*, 9:3, pp. 199–220.

Muntean, S.C. & Ozkazanc-Pan, B. (2015). "A gender integrative conceptualization of entrepreneurship," *New England Journal of Entrepreneurship*, 18:1, pp. 27–40.

Nikou, S., Brännback, M., Carsrud, A.L. & Brush, C.G. (2019). "Entrepreneurial intentions and gender. Pathways to start-up," *International Journal of Gender and Entrepreneurship*, 11:3, pp. 348–372; doi.org/10.1108/IJGE-04-2019-0088.

OECD/European Commission (2021). *The Missing Entrepreneurs 2021. Policies for Inclusive Entrepreneurship and Self-Employment*, Paris: OECD Publishing; doi.org/10.1787/71b7a9bb-en.

Ozkazanc-Pan, B. & Muntean, S.C. (2018). "Networking towards (in)equality. Women entrepreneurs in technology," *Gender, Work & Organization*, 25:4, pp. 379–400; doi.org/10.1111/gwao.12225.

Piacentini, M. (2013). Women Entrepreneurs in the OECD. Key Evidence and Policy Challenges" (OECD Social, Employment and Migration Working Papers 147), Paris: OECD Publishing; https://doi.org/10.1787/1815199X.

Reynolds, P.D. (1997). "Who starts new firms? Preliminary explorations of firms-in-gestation," *Small Business Economics*, 9, pp. 449–462; https://doi.org/10.1023/A:1007935726528.

Rietveld, C.A. & Patel, P.C. (2022). "Gender inequality and the entrepreneurial gender gap. Evidence from 97 countries (2006–2017)," *Journal of Evolutionary Economics*, 32, pp. 1205–1229; doi.org/10.1007/s00191-022-00780-9.

Rossi, L.-M. (2003). *Heterotehdas. Televisiomaininta sukupuolituotantona* ['Hetero factory. Television advertising as a gender production'], Helsinki: Gaudeamus.

Rossi, L.-M. (2011). "'Happy' and 'unhappy' performatives," *Australian Feminist Studies*, 26:67, pp. 9–23; doi.org/10.1080/08164649.2011.546325.

52

Sánchez-Escobedo, M.C., Fernández-Portillo, A., Díaz-Casero, J.C. & Hernández-Mogollón, R. (2016). "Research in entrepreneurship using GEM data. Approach to the state of affairs in gender studies," *European Journal of Management and Business Economics*, 25:3, pp. 150–160.

Sarfaraz, L., Faghih, N. & Asadi Majd, A. (2014). "The relationship between women entrepreneurship and gender equality," *Journal of Global Entrepreneurship Research*, 4:6, pp. 1–11; doi.org/10.1186/2251-7316-2-6.

Saunders, M., Lewis, P. & Thornhill, A. (2009). *Research Methods for Business Students*, 5th ed., Harlow, UK: Pearson Education.

Save the Children (2015). *The Urban Disadvantage. State of The World's Mothers 2015*; www.savethechildren.org/content/dam/usa/reports/advocacy/sowm/sowm-2015.pdf; accessed on 16 April 2023.

Save the Children (2016). *Every Last Girl. Free to Live, Free to Learn, Free from Harm*; www.savethechildren.org/content/dam/global/reports/advocacy/every-last-girl.pdf; accessed on 16 April 2023.

Serrano-Pascual, A. & Carretero-García, C. (2022). "Women's entrepreneurial subjectivity under scrutiny. Expert knowledge on gender and entrepreneurship," *Gender, Work & Organization*, 29:2, pp. 666–686; doi.org/10.1111/gwao.12806.

Shapero, A. & Sokol, L. (1982). "The social dimensions of entrepreneurship," in *Encyclopedia of Entrepreneurship*, eds. C.A. Kent, D.L. Sexton & K.H. Vesper, Englewood Cliffs, N.J.: Prentice-Hall, pp. 72–90.

Sieger, P., Raemy, L., Zellweger, T., Fueglistaller, U. & Hatak, I. (2021). *Global Student Entrepreneurship 2021. Insights From 58 Countries* (Global GUESSS Report 2021), St. Gallen/Bern: KMU-HSG/IMU-U; www.guesssurvey.org/resources/PDF_InterReports/GUESSS_2021_Global_Report.pdf; accessed on 16 February 2024.

Statistics Finland (2022). "Labour force survey;" https://pxdata.stat.fi/PxWeb/pxweb/en/StatFin/StatFin__tyti/; accessed on 15 January 2023.

Thébaud, S. (2010). "Gender and entrepreneurship as a career choice. Do self-assessments of ability matter?" *Social Psychology Quarterly*, 73:3; doi.org/10.1177/0190272510377882.

Thébaud, S. (2011). "Social policies and entrepreneurship. Institutional foundations of gender gaps across 24 countries," *Academy of Management Proceedings*, 2011:1, pp. 1–6; doi.org/10.5465/ambpp.2011.65869493.

Thébaud, S. (2015). "Business as plan B. Institutional foundations of gender inequality in entrepreneurship across 24 industrialized countries," *Administrative Science Quarterly*, 60:4, pp. 671–711; doi.org/10.1177/0001839215591627.

United Nations Development Programme (2021). *Gender Inequality Index, 2021*; https://hdr.undp.org/data-center/thematic-composite-indices/gender-inequality-index; accessed on 16 April 2023.

Vossenberg, S. (2013). "Women entrepreneurship promotion in developing countries. What explains the gender gap in entrepreneurship and how to close it," Working Papers 2013:8, Maastricht School of Management, pp. 1–27.

Vracheva, V. & Stoyneva, I. (2020). "Does gender equality bridge or buffer the entrepreneurship gender gap? A cross-country investigation," *International Journal of Entrepreneurial Behavior & Research*, 26:8, pp. 1827–1844; doi.org/10.1108/IJEBR-03-2020-0144.

Wagner, J. (2007). "What a difference a y makes. Female and male nascent entrepreneurs in Germany," *Small Business Economics*, 28, pp. 1–21; doi.org/10.1007/s11187-005-0259-x.

Welsh, D.H.B., Kaciak, E. & Thongpapanl, N. (2016). "Influence of stages of economic development on women entrepreneurs' startups," *Journal of Business Research*, 69:11, pp. 4933–4940; doi.org/10.1016/j.jbusres.2016.04.055.

White, S. & Reynolds, P. (1996). "Government programs and high growth new firms," in *Frontiers of Entrepreneurship Research*, Wellesley: Babson College, pp. 621–635.

Wilson, F., Kickul, J. & Marlino, D. (2007). "Gender, entrepreneurial self-efficacy, and entrepreneurial career intentions. Implications for entrepreneurship education," *Entrepreneurship. Theory and Practice*, 31:3, pp. 387–406; doi.org/10.1111/j.1540-6520.2007.00179.x.

World Economic Forum (2022). *Global Gender Gap Report 2022*, Cologny/Geneva: World Economic Forum; https://www3.weforum.org/docs/WEF_GGGR_2022.pdf; accessed on 11 Sept. 2024.

Yordanova, D.I. & Tarrazon, M.-A. (2010). "Gender differences in entrepreneurial intentions. Evidence from Bulgaria," *Journal of Developmental Entrepreneurship*, 15:03, pp. 245–261: doi.org/10.1142/S1084946710001543.

AUTHORS

Dr. *Martti Saarela* (corresponding author) works as Research Director at the Micro-Entrepreneurship Centre of Excellence (MicroENTRE) at the Kerttu Saalasti Institute of the University of Oulu, Finland. His primary research interests include the development of micro-enterprises, growth management, start-ups, eHealth businesses, public business services, public procurement, and regional development.

martti.saarela@oulu.fi

Pauliina Björk, M.Sc. in Computer Science and Geography, works as project researcher in the Regional Excellence Research Team at the University of Oulu Kerttu Saalasti Institute. Her research interest focuses on quantitative analysis of enterprises and their impact to society and environment.

pauliina.bjork@oulu.fi

Dr.Sc. *Ossi Kotavaara* is the Research Director of the Regional Excellence Research Team at the University of Oulu Kerttu Saalasti Institute. His primary research field is in geographic information science (GIS) and spatial-statistical analysis applied to societal questions within regional science, applied geographic and economic geographic contexts. He holds the title of docent, i.e. associate professor, in accessibility and geospatial analytics at the Faculty of Social Sciences and Business Studies, University of Eastern Finland.

ossi.kotavaara@oulu.fi

Dr.Sc. (Tech.) *Matti Muhos* is Professor of Growth Management, Renewing Business, and Digitalization and Director of the University of Oulu Kerttu Saalasti Institute. Muhos holds the title of docent in Technology Business, with a special focus on innovative starting and growing business in the IT industry, at the University of Jyväskylä. His research is focused on, e.g., growth management, industrial engineering and management, technology and service business, international business, and entrepreneurship.

matti.muhos@oulu.fi

Dr. and docent *Mervi Heikkinen* works as a university lecturer in university pedagogy and researcher in Gender Studies. Her research focuses on intersectional gender equality in higher education institutions, gender impact assessment of research contents and gender responsible knowledge production in academia. She is Arctic Five Chair in Feminist Science and Technology Studies.

mervi.heikkinen@oulu.fi

MIKA-PETRI LAAKKONEN, VILLE KIVIVIRTA,
ANTONIO CALÒ & EVA PONGRÁCZ

Smart Grid in the Arctic City
Historical, Technological, and Social Aspects of Evolution

ABSTRACT This article presents the evolution of a smart grid in an artic city, and we analyze its development using the Smart Grid Reference Architecture (SGAM) and from historical, technological, and social points of view in an Arctic context. We illustrate the emergence of smart grid application and its relation to energy consumption habits and sustainability. The study includes observations from empirical research conducted using a mixed methods approach. This included two months of organizational ethnographies consisting of interviews with specialists at an electricity utility, shadowing the workers, participant observation in the control center, and a questionnaire survey among local residents. Three stages of transformation in the electricity network were observed: 1) the conversion from analog to digital in network operations, with residents as passive receivers of electricity; 2) introducing digital communications and a digital local area network that allowed residents to report consumption; 3) the electrical network as an evolving smart grid with a digital platform enabling two-ways communication among network actors. People became more active when smart grid applications were introduced in the electricity network and middle-aged men can now better manage their energy consumption, even though their motivation is financial, rather than environmental. At the same time, unplugging from the smart grid becomes increasingly difficult.

Introduction

Electricity grids form the biggest structure ever made by man (Thompson 2016; Elovaara & Haarla 2011a; Elovaara & Haarla 2011b) and are subject to economic and political interests (Bakke 2017). Human societies and the built environment need this mostly hidden infrastructure to function. In this interdisciplinary article, we study

the electrical network in the Arctic City of Rovaniemi in Finland. We analyze the development stages of smart grids and map the actors' relations in the Smart Grid Reference Architecture (SGAM) in an Arctic context. The "Arctic context" means a low average temperature with high extremes; summers are light and warm, up to +30°C, while winters are dark and harsh, with temperatures often dropping below −30°C. The amount of precipitation is high; over a winter, the depth of accumulated snow is between 60–80 cm. The harsh climate results in high heating needs for the dwellings, up to 30% of final energy consumption (Treasury of Finland 2022). The population density is relatively low, 18/km^2, going as low as less than 2/km^2 in Lapland, which means that infrastructure building is challenging and expensive. Many Finnish cities have district heating networks; however, these are mostly limited to the more densely populated urban centers. Overall, in Finland, heating uses 27% of the primary energy demand and about half of the dwellings are detached or semi-detached houses, with on electrical heating in over one third of them (Motiva 2024). SGAM is the European reference architecture to achieve European policy goals. It was developed under the Smart Grid Coordination Group, supported by the European Committee for Standardization (CEN), the European Committee for Electrotechnical Standardization (CENELEC) and the European Telecommunication Standards Institute (ETSI) with the original goal of uncovering gaps in the smart grid standardization (CEN-CENELEC-ETSI 2014). It describes the European Smart Grid standard with interoperability layers, domains and zones, but it has not been conceptualized into the Artic context. In our study, the Arctic is the practical environment of smart grid applications used by the energy and water utility studied and by the residents of Rovaniemi. The SGAM architecture provides a contextual definition of smart grid in our paper, where the energy provider and application are embedded. We illustrate the changing relations in the Arctic city and how the emergence of a smart grid application relates to energy consumption habits and sustainability.

The "information revolution" was once supposed to create a city of bits in the cyberspace without considering the material infrastructure that supports it (Mitchell 1995), viewing the built environment and information as separate (Hayles 1999). However, digital technologies were also used to solve urban challenges, which transformed traditional infrastructures into what Tomitsch and Haeusler (2015) label as infostructures. Sociologists like Castells (2009) also pointed out how the shift in the ownership of information and the power that is exercised through the access and control over it changes social relations (O'Dwyer & Doyle 2012). The changing role of digital infrastructures require redefining and reconfiguring the social relations of people, their community, government, and the urban environment (Ho 2016; Rose 2020).

In Europe, digitalization of electricity networks has taken place in phases, when new digital layers have been added into the mechanical infrastructure in an effort to harmonize the climate objectives and sustainable growth. The vision is that the smart grid will deliver low-carbon electricity more efficiently and reliably, while enabling consumers to manage and reduce their energy use and minimize costs to the benefit of all (Palm, Ellegård nd Hellgren 2018). The smart grid is an obvious cornerstone for an integrated system. In the current state of urban technologies, smart grids provide the digital platforms for new services to customers. Ernst (2016) summarizes that

56

smart grid technology now allows controllable logistical distribution in space and time. The basis of the responses is now, as Ernst reminds us, the "immediate knowledge of the network itself." Much of the work that has been going into electric grid modernization, especially substation and distribution automation, is now included in the general concept of the smart grid, where smartness means ICT technologies (Tuballa & Abundo 2016). This technological change has allowed new ways to price electricity and provided new tools for maintenance (Zhou & Brown 2017). In addition, in many countries, ICT tools are used to inform residents and guide them how to monitor and control their electricity consumption (Leiva, Palacios & Aguado 2017).

In Finland, digital platforms have emerged with applications to evaluate and inform electricity prices and energy consumption profiles; however, this development is not homogeneous within the European Union (EU). One of the main objectives of smart grid implementation in the EU is integration of renewable energy and harmonization of the European power market. In the United States, the benefits of smart grid technologies have been said to be operational safety, security and efficiency and in Japan, to help manage the risks of earthquakes while cutting greenhouse emissions (Zhang, Chen & Gao 2017). Although there are differences in objectives, what is emphasized is the "integration" of new technologies and socioeconomical aspects, as smart grid technology changes human behavior (van der Werff, Perlaviciute & Steg 2016; Bigerna, Bollino & Micheli 2016).

In this paper, we present the evolution of a Smart Grid Architecture in the Arctic city of Rovaniemi in Finland. Next, we further exemplify why this specific city is relevant for study. Rovaniemi is one of the largest cities in Europe by area and has a cold climate. As a result, it has only been possible to build a district heating network in the city center, and the electricity network is relatively expensive to maintain due to the long distances involved. The city center constitutes a mere 0.1% of the Rovaniemi municipality area, but is home to 26% of the population. Over 73% of the municipality is classified as sparsely populated area. More than half of the population of Rovaniemi lives in detached or semi-detached houses (City of Rovaniemi 2014). In Rovaniemi, the liberalization of the electricity market requires consumers to play a new role. We show that smart grid development, information and communication technology (ICT) enhanced energy systems, which are inherently multidimensional. The interaction of humans with technology, or rather the physical manipulation of technology, indeed happens on the plane of reality; however, there are other realities and interaction planes on top of that. For example, the communication layer which is about radio systems and network protocols, the information layer where humans as well are reduced to series of 1s and 0s, and, in the business layer, the human user, or more precisely the marketable information about the human, becomes the product. On these parallel layers, humans are seen either as nodes, data points, or business opportunities. We can also argue that most humans are not aware of these layers, and unable to make informed consent.

Ever since the "Clean Energy for All Europeans package" was presented in 2016 (European Commission 2016a), consumers have been placed at the center of the energy transition in the EU. While energy efficiency and decarbonization are the main goals of this transition, they go hand in hand with providing a "fair deal" for consumers (European Commission 2016b). Consumers are envisioned as active and central

57

players on the energy market of the future. With the new regulations in force, consumers across the EU have a better choice of supply, access to reliable energy price comparison tools and the possibility to produce and sell self-generated electricity. These changes are intended to open up more opportunities for civil society to become more involved in the energy system and respond to price signals. To this end, one of the key roles of smart grids is empowering users to become more actively involved in the energy system and making informed decisions (van Mierlo 2019). With a better understanding of their own consumption habits and clear information about prices, using certified price comparison tools, consumers can judiciously change their energy consumption and/or expenditures. This is aided by smart metering, with functionalities given in the EU Electricity Directive (European Parliament and Council 2019). Access to reliable information in real-time is one of the cornerstones of smart grids, and it will enable a shift in energy consumership from passive, but somewhat predictable, recipients to active, and less predictable participants, in the energy market (Schweiger et al. 2020). As a result, the value of information increases; data on consumer preferences will be of higher value, requiring stronger rules on consumer data protection (Martinez et al. 2020).

This will also raise questions regarding the sustainability of smart grids (Calò, Louis & Pongrácz 2014), which so far has been analyzed mainly considering what smart grids can do, e.g., contribute to sustainable energy (Hu et al. 2014), or help sustainable energy consumption (Schappert & von Hauff 2020). However, the overall sustainability of smart grids has not yet received sufficient attention.

The goal of this article is to study smart grids infrastructure in Rovaniemi, an Arctic smart city in northern Finland and the evolution of the grid from historical, technological and social points of view. The research questions of the study are:

- *How did the smart grid infrastructure evolve in Rovaniemi Finland, from historical, technological, and social points of view?*
- *What was the role of the smart grid app in changing the energy consumption habits of residents in Rovaniemi?*
- *What are the sustainability impacts of the smart grid at its current level of evolution?*
- *How did the Arctic conditions shape smart grid development in Rovaniemi?*

Smart Grid Architecture

In the EU, the Smart Grids Task Force (SGTF) was set up by the European Commission (EC) at the end of 2009, to help harmonizing European standards, support the development of a pan-European energy system, support energy markets and protect customer rights. The task force is focusing, among other things, on standards for smart grids and providing regulatory recommendation on data protection, privacy and cyber security, as well as recommendations on smart grid infrastructure development. The EU SGTF defined Smart Grids as

> electricity networks that can efficiently integrate the behavior and actions of all users connected to it—generators, consumers and those that do both—in order to ensure an economically efficient, sustainable power system with low

58

losses and high quality and security of supply and safety. (Smart Grids Task Force 2011: 31)

Eurelectric has recognized ten key steps toward smart grid development in three stages (Eurelectric 2011):

Facilitation on EU and national levels—through (1) regulation, (2) standardization, (3) testing and (4) demonstration models;
Deployment in Member States—from (5) rolling out smart meters and informed customers, through (6) monitoring and control of distributed generation, to (7) aggregating distributed energy sources and (8) integrating local and central balancing;
Commercialization in the Member States—(9) integrating large-scale e-mobility, heating, cooling and storage, to (10) moving to a real customer participation in the power market.

The facilitation stage on EU level has been accomplished thanks to the work of the SGTF. The deployment stage is slightly delayed, although smart meter roll-out has been accomplished in Finland, but local balancing of generation is not yet fully achieved. The final stage, moving to real customer participation, is still an ongoing process. One step toward this is communication instruments aimed at consumer empowerment. The main objective is to build citizens' expertise utilizing smart grid platforms services to engage the citizens of European Union member countries to monitor their energy consumption and change their behavioral models.

Smart Grid Architecture
The smart grid development is built upon the smart grid architecture model (SGAM). Built under the EU mandate M/490 for the development of a framework for a European smart grid deployment by the CEN-CENELEC-ETSI Smart Grid Coordination Group, the SGAM is a three-dimensional framework used to model the interactions among the different entities within a smart energy grid system (CEN-CENELEC-ETSI 2014: 15). It consists of five layers (Fig. 1) representing business objectives and processes, functions, information exchange and models, communication protocols and components. Each layer covers the smart grid plane, which is spanned by electrical domains and information management zones. The most vital layers for smart grids are the information layer, which transfers information objects and data models, and the communication layer, which is responsible for protocols and mechanisms for the information exchange. The SGAM framework now introduces interoperability aspects and how they are taken into account via a domain, zone and layer-based approach in the EU. This model is intended to represent in which zones of information management interactions between domains take place. It allows presentation of the current state of implementations in the electrical grid and, furthermore, to depict the evolution towards future smart grid scenarios by supporting the principles of universality, localization, consistency, flexibility and interoperability. In general, power system management distinguishes between electrical process and information management viewpoints. These viewpoints can be partitioned into the physical domains

59
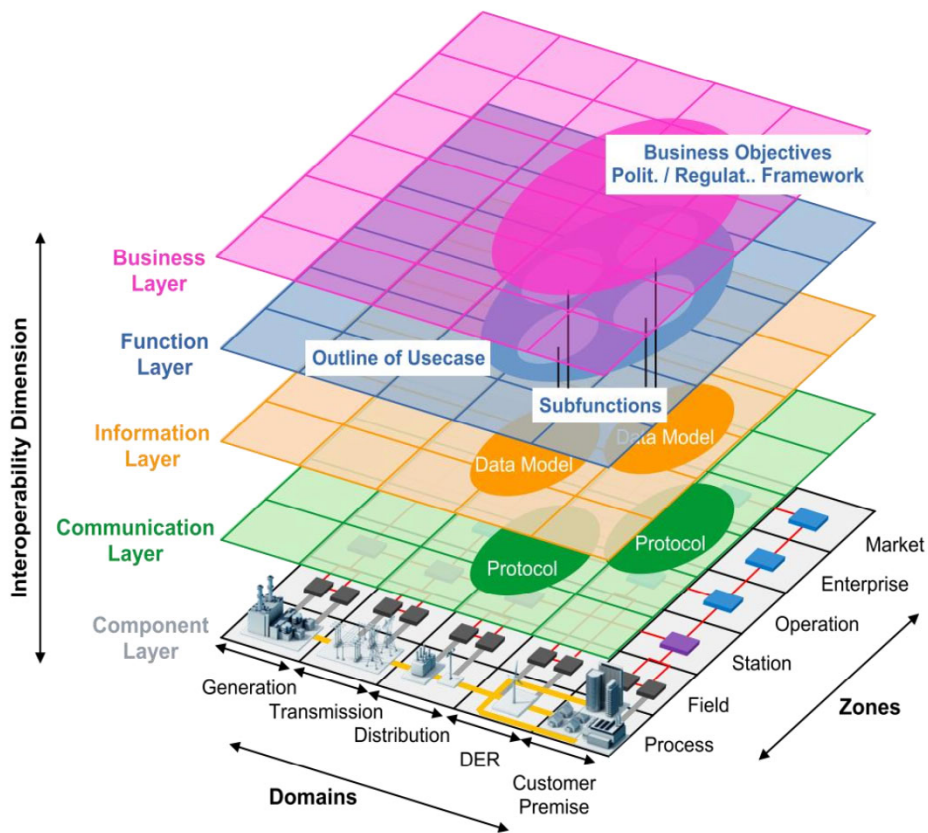
of the electrical energy conversion chain and the hierarchical zones (or levels) for the management of the electrical process.

Fig. 1. The SGAM framework (CEN-CENELEC-ETSI 2014: 15).

While the SGAM framework allows for the visualization and mapping of the—mostly information-based—interactions among different actors within a smart energy system, it is nonetheless cities' history, geography, climate, economy and population that influence their energy transformation (Talandier 2018). Often, the research on smart grids focuses on how to implement new technologies and on the potential changes in the energy utilities business and operating environment (Parviainen et al. 2017). The literature mentions the social acceptability of smart grid technology from the perspective of residents (Elabban & Abu-Rug 2016; Masera et al. 2018). It is often assumed that residents, as consumers, will make active rational choices regarding their electricity consumption with the help of ICT (Stengers 2013; Goulden et al. 2014). This narrative presupposes that the energy information is visible (Bertoldi, Ricci & de Almeida 2001), which can encourage the consumers to either decrease or delay their energy consumption (Delmas, Fischlein & Asensio 2013). However, the introduction of smart grid technology now allows to profile residents to modify their behavior (Elabban & Abu-Rug 2016), which might cause resistance and ethical problems (Vallés et al. 2016). In addition, some studies argue that smart grid technology and its digital platform can support a more democratic energy system (Skopik 2013) by increasing

the autonomy of the local residents (Wolsink 2012). In addition, smart grids have enabled the spread of digital platforms into built environments and people's homes. These digital platforms can be seen as sociotechnical systems, as they comprise both the technical processes, elements and associated organizational processes integrating our homes devices. Therefore, it is important to study how digital platforms affect everyday life (Reuver, Sørensen & Basole 2017) and contribute to sustainability.

Smart Grid Sustainability

Sustainability is often viewed as the triple bottom line, where environmental protection, economic growth and social progress happen concurrently. In terms of smart grids, the three dimensions of sustainability are illustrated in Fig. 2.

Social dimension
- Data security
- Democratic participation
- Consent and transparency

Environmental dimension
- Energy efficiency
- Decarbonization

Economic dimension
- Service economy
- Commodification of information
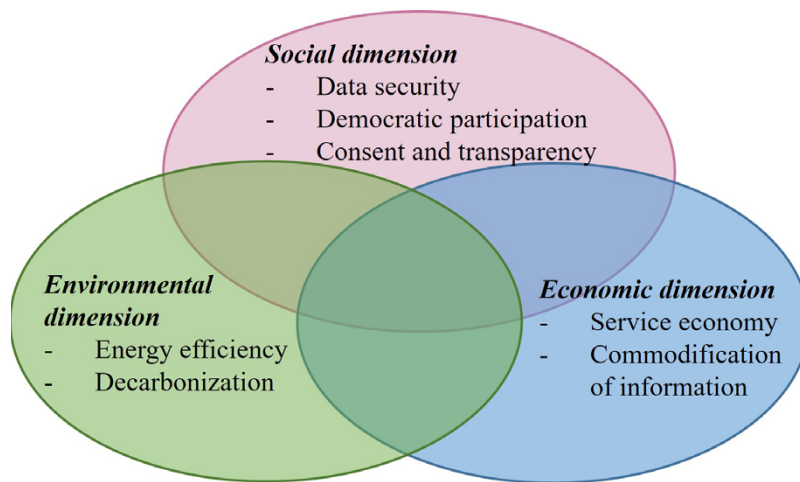
Fig. 2. Smart grid sustainability, key issues.

In the *social dimension*, privacy and security issues are often addressed with "end-of-pipe" solutions such as data protection, encryption, etc., while the efficient and effective system operation often relies on virtually unrestricted possibilities of access and control. A number of solutions concerning these issues have been presented, and they generally rely on the concentrated accumulation of data (Calò, Louis & Pongrácz 2014). Another critical element of social sustainability is the expectation of democratic participation that conceptualizes energy transition from a lens of democratic engagement (Szulecki & Overland 2020). Questions, however, arise in terms of digital intelligence, and whether citizens are truly able to provide informed consent. The European Union sees smart grids as a structure allowing the democratic participation of end-users and fostering a two-ways communication between users and utilities (European Commission 2011; Giordano & Bossart 2012). The "two-ways communication" embodies the more active role of the consumer. In the traditional system, the user was a passive recipient of energy, and the electricity provider monitored the customer's consumption as a one-way information flow. The smart grid system allows for the interaction between customer and producer; the consumer can receive information from the provider that may prompt them to change their consumption habit, as a response to, for example, peak demand or high electricity prices (Abrahamsen, Ai

61

& Cheffena 2021). The role of the end user is crucial in bringing new technologies into everyday use and thus gaining the maximum benefit of future smart energy networks. Therefore, producing knowledge about the end user's preferences related to smart energy networks will be highly valued. Smart homes and smart buildings are examples of systems equipped with a multitude of embedded digital devices as well as connected sensors (Albino, Berardi & Dangelico 2015). However, development of these smart grid infrastructures is usually studied in a different context than the dispersed Arctic context. In the dispersed Arctic context, energy consumption is high because of the cold climate. In addition, building the electricity transmission infrastructure is expensive because of the long distances and the dispersed population.

From an *environmental* point of view, the main objective is a quantitative reduction of energy use, referred to as energy efficiency, and a qualitative improvement of replacing fossil energy sources with renewables, thus achieving decarbonization. The new European Climate Law sets a legally binding target of net zero greenhouse gas (GHG) emissions by 2050. Decarbonization and digitalization are supposed to work together in a transition towards a more sustainable energy system, in which households play a bigger role in managing electricity demand (Smale, Spaargaren & van Vliet 2019). Smart grids can match fluctuating electricity generation and demand while ensuring an economically efficient power system with low losses and high quality and safety (ERGEG 2010). From an *economic* perspective, the key challenge of smart systems for utilities is to make profit concurrently with the energy efficiency objective. This leads to a transformation where the main objective is no longer to maximize the MWhs sold, but rather to better distribute the available MW capacity and maximize the utilization of (variable and non-dispatchable) renewables. This points toward non-material services and the commodification of information, which becomes a valuable asset that can generate income. Consequently, the *social* dimension of smart grid development is often related, on one hand, to user response and interaction with a smarter power network, and, on the other hand, to concerns related to privacy and security with respect to a technology which is potentially very intrusive.

Overall, smart grid sustainability is at the intersection of contributing to climate change mitigation, providing the means of an energy market revolution that is primarily based on the value of information, and empowering consumers to make informed decisions.

Methodology

The objective of this study was to investigate the evolution of the smart grid infrastructure in Rovaniemi from historical, technological, and social points of view, and evaluate its impact on the daily lives of residents. This also gave an insight into the current sustainability impact of said smart grid. The research was conducted by a multidisciplinary research group, comprising researchers with different disciplinary backgrounds.

Empirical research was conducted by studying the electric network of Rovaniemi, Lapland. The city covers an area of approximately 8,016 km² (three times the size of Luxembourg) and has an average annual temperature of 0.9 °C. This means that building and maintaining infrastructure is expensive and energy consumption is high, especially during the sub-zero winter months. Buildings also need to be energy

62

efficient. From the perspective of the residents, when the key digital technologies were microprocessors and relays, they were passive users of electricity. Only after the introduction of digital local area networks (LAN), did residents become active participants of the energy system by choosing the electricity provider they wanted and reporting electricity consumption. This is consistent with the EU expectation of energy democracy, which is also a significant element of smart grid social sustainability. Finally, when computerized data network arrived, residents were able to select electricity providers, and information technology monitored energy consumption automatically.

A publicly owned private entity called NEVE Ltd. is the distribution system operation (DSO). As DSO, NEVE maintains the electricity grid and provides digital services to its customers. We conducted empirical research in the NEVE Ltd. in 2018 and 2019. Our research was restricted by a non-disclosure agreement (NDA), which affected our research position. The NDA was drafted by lawyers to protect intellectual properties, business secrets and cybersecurity. Therefore, we did not have free access to the archive of the electricity company. Furthermore, it was time-consuming to find the right contact persons and the leading experts. To get funding and gain access in the first place, the electricity company wanted some form of control of the research process. Essentially, we could observe, interview, and conduct small surveys of residents. This allowed us to utilize a mixed-methods approach.

Table 1. Mixed-methods approach and triangulation.

	Historical aspects	Technological aspects	Social aspects
Interviews (for more details, see Table 2)	Interviews with experienced experts	Interviews with managers and experts	–
Observation	Field observation of infrastructure	Observation of the development of ASSARI software	Observation of testing of ASSARI application
Quantitative questionnaire	–	–	Questionnaire to customers
Additional materials	Document analysis of technical documents	Document analysis of technical documents	Analysis of organizational documents like policies, reports, and internal communication materials

Our case study included 1) two months' observation, 2) deep interviews, and 3) statistical analysis of a quantitative questionnaire (N=131) with open questions. Our goal was to our study the NEVE's smart grid infrastructure from technological, historical and social points of view. To fulfil this goal, a two-month participant observation was conducted in NEVE Ltd. Observations were done by the principal investigator and one post-graduate researchers. Detailed notes were taken to be able to obtain a holistic picture of the arctic smart grid infrastructure from technological, historical, and social points of view. The observations were conducted overtly and by permission, and an NDA was signed before entering the premises for reasons of cybersecurity and to protect the sensitive information and vital infrastructure of the electricity provider NEVE Ltd. The case study was part of a research project financed by Business Finland.

Our observations focused on NEVE's interoperability layers: business, functions, information, communication and components. In addition, we observed NEVE's main smart grid domains: generation, transmission, distribution, distributed energy resources and especially customer premises. We could also follow the different opera-

tional zones in NEVE Ltd., which included the electricity production process, several substations in the field, operational efficiency, enterprise and market change in the context of the smart grid. We observed the daily work of senior experts and operating officers responsible for electrical substations and electrical network in NEVE's main building.

Our interviews focused on new digital business services and provided data for analysis of the introduction of smart grid technology to the Arctic residents. The interviews aimed at investigating smart grid technologies from the point of view of the daily lives of the residents. In this, a vital role is played by ASSARI, a web-based smart grid application introduced by the electrical grid operator to replace and supplement paper documents and manual labor. We were also actively taking part in the user interface and usability design of ASSARI. ASSARI's user interface and usability test was created together with the ICT and customer experts at NEVE. Thus, we were able to a form a deep understanding of the functionality of the ASSARI smart grid application.

We conducted deep interviews with specialists in smart grid operators in the management, smart grid and digitalization units (Table 2). Interviewees were selected based on their expertise. We particularly interviewed people with digital services research, development and innovation (RDI) expertise and experts with long work experience, to form a holistic picture of the system's architecture and its implications. The digitalization experts were interviewed regarding customer architecture and benefits of smart grid application from the customer's point of view. The digitalization unit experts were women (2) and the technological experts in the management unit and smart grid unit were men (5). The experts were interviewed, with open questions, to clarify the electrical infrastructure and its operational and technological functionalities in the Arctic. Interviews lasted 1.5 hours per participant. The interviews were transcribed and a content analysis was conducted. We conducted data analysis using themes that focused on phases of digitalization. This data content was analyzed using sorting to summarize the main subcategories of social, technological and historical elements of the digitalization process.

We used a mixed-method approach, where different questions are addressed using different data and methodologies (Neuendorf 2017; Patton 2015), which allowed us to get access to historical, technological and social elements, and also to acknowledge potential discrepancies and using them to enrich our understanding and identify areas for further investigation. The historical aspects rely mainly on interview and observation data and the consumer perceptions rely on quantitative data from the questionnaire. Observation data helped to add the Arctic context in SGAM architecture and provided details of the digitalization. The observation was carried out at NEVE's headquarters (HQ) in Rovaniemi. We made observations in the control center in the HQ which was located in the unit that controls the electricity networks of the city of Rovaniemi (Information Management and Digital Solutions unit). During the observations, notes were taken on the historical, social and technical development of the digitalization.

Table 2. Conducted deep interviews.

Organizational level	Interviews	Interviewees (N=7)
Management unit	Technological manager and digitalization manager	2
Smart grid unit	Technical and technological experts of smart grids	3
Digitalization unit	Digitalization development experts	2

Further, data of the residents' experiences of the smart grid application were gathered using a web-based questionnaire (N=131) that focused on how residents perceived the smart grid as a digital platform in their daily lives. Participants were selected by random sampling from NEVE's customer database and contacted by email. The questionnaire was developed together with an expert team consisting of resident interface, service design, statistical mathematical and system architecture experts (see Appendix 1). A small pilot study (N=12) was conducted before the questionnaire was submitted to residents and minor stylizations were made to the questionnaire. The data were cleaned and imported into the IBM SPPS Statistics Version 24 program for calculations and analyses. The first frequencies of variables and descriptive statistics, such as minimum, maximum, mean and standard deviation, were calculated from the data. Also, Chi-Square test and Person correlations Sig (2-tailed) were calculated between variables.

We followed the rules of the Finnish National Board on Research Integrity TENK, appointed by the Ministry of Education and Culture, which promotes the responsible conduct of research, prevents research misconduct, promotes discussion and spreads information on research integrity in Finland. We also followed the General Data Protection Regulation (EU) (GDPR), which is a regulation in EU law on data protection and privacy in the European Union (EU) and the European Economic Area (EEA).

The Historical Aspect. Changes in the Electrical Network Relations

Next, we will present three changes in network relations in the electrical network and their relations with the residents in the Arctic. We could identify three phases of electrical networks 1) the conversion from analog to digital calculations, introduction of microprocessors and relays, with residents as passive receivers of electricity. 2) The introduction of digital communication technology, whereby a digital local area network allows the residents to report consumption 3) electrical network as a digital platform with the smart grid part of the habitat.

Conversion from Analog to Digital

As background information, on 21 October, 1901, the Imperial Senate ordered that the municipality of Rovaniemi should create new land use and building decrees for its densely populated areas, which formed the legal basis for the building of an electric grid.[1] In 1944, near the end of the Second World War, the electricity infrastructure of the city was demolished. Rebuilding of the electricity grid took place after the war and living standards began to rise. In 1950, electricity volume increased fivefold. New

65

high-voltage transmission power lines were constructed to carry power from the new hydroelectric power plants of Lapland to the demand centers in other parts of the country. After the war, regional networks administered by the regional network operators were all connected to the national transmission grid and distributed electricity regionally, usually on 110 kV lines. The municipality shared the responsibility for the maintenance of the basic infrastructure and constructed other infrastructure for built environments, for example the district heating network. The district heating network is only available in the urban areas. In most Finnish cities, the electricity companies also provide hot water for the district heating systems, which is produced in power plants in the cities that produce both electricity and heat. This means that DSOs maintain a natural monopoly by controlling the physical infrastructure delivering heat and power to their customers. Citizens were mostly passive residents of these services and the public utility employed a large number of personnel to enable bureaucratic processing of information.

As the standard of living increased, the energy consumption per capita in Finland grew to be the highest in Europe. This can be explained by energy-intensive industry (metal and paper), a high standard of living, the cold climate and long distances. Digitalization began when electronic relays were introduced in the 1970s. Digital relay technology with microprocessors were commonplace in the 1980s and more efficient analog-to-digital converters were introduced. The processing power of the microprocessors in the 1980s allowed the replacement of remote terminal units and other old electromechanical equipment with digital technology. In the 1980s, modems and the telephone network were first used as a separate control network. In the 1990s, modems using the telephone network were replaced by digital technology. A fully computerized data network was finally operational in 2012. This freed up personnel from the operator duties and allowed the downsizing of the old public utility. In addition to microprocessors taking over the work of humans, residents were now asked to report their electricity use.

With the digitalization of the power system came a parallel and coordinated technological development of its monitoring, control and management via digital interfaces. When the system was digitalized, the same information could be seen in a digital interface to control, manage and monitor the electricity network. For Arctic residents, though, the digitalization meant they were now themselves responsible for monitoring their electricity consumption.

Locally centralized operations started to accumulate data and the companies began to analyze them with a view to optimizing maintenance operations and increasing efficiency. This further changed and emphasized the role of the ICT in the company (NEVE Ltd). According to the digitalization service director, during the 1990s, ICT services were purely a support unit for the main business of the electrical company.

> The Electrical substation was operating in physical form in manual technology. The same electrical substation started operating in digital form in the centralized information architecture. This enabled the launch of digital business and the installation of remote metering. (Interview with technical expert)

In 1990, the electricity grid operator introduced an automatic data management de-

partment which was given responsibility for harmonizing system mass and system architecture design. The goal was to create services to residents through one process. This has created difficulties with data management, where the most important component is viewed to be in resident relationship management.

As shown above, it takes considerable time and resources to build and develop smart grids and fully adopt new urban technologies. Research into infrastructures of modernity like the electricity grid shows that once the momentum for digitalization has reached a tipping point, the reshaping of social infrastructures follows (Hughes 1987). However, based on our literature review, the limitations of current research historical phases of development of urban technologies are not fully understood in the Arctic context.

Toward Digital Communication Technology

Research points out that infrastructural change promotes new effects across all levels of analysis and destabilizes academic boundaries (Tilson, Lyytinen & Sørensen 2010). The introduction of ICT in the smart grids first allowed the de-bureaucratization of labor-intensive work. In addition, the privatization of the public utility sparked three transformations: improvement of infrastructure (for example ground cables), the addition of the digital layer, and a business process transformation that was considered necessary to capitalize on the investments in new digital technology in smart grids. According to the interviewed experts, this has been a technological turning point in the old electrical and infrastructure companies.

> Upgrading Microscada's Rovaniemi network enabled the launch of digital business and the installation of remote metering. Microscada is a microcomputer-based, distributed and programmable supervisory control and data acquisition system. It provides integration of pipeline data, pipeline control and substation control. This basic infrastructure enabled the launch of a digital business and the establishment of a dedicated ICT unit. Initially, only a few people worked in the unit. (Interview of manager)

The key technology enabling the smart grid in the built environment were the smart meters that can be tracked remotely, with the data used to maximize the efficiency (Fettermann et al. 2020; Finnish Energy Authority 2018). In the EU, Finland has been particularly active in the roll-out of smart meters and in using hourly data in balance settlement, and smart meters have been installed in over 99% of consumption places (EU Regulation 2009/72/EC has 80% by 2020 goal). This means that digital processing of applications and information management take place via digital interfaces in built environments to control data flow, network security and information.

The local smart grid is part of the common Nordic electricity market (Nord Pool), where the electricity price is provided in real-time. The pricing depends on the electricity production method and consumption levels and relies on cross-border electricity flows between neighboring power systems (Talandier 2018). Residents can choose where to buy their electricity and can buy spot price electricity that consists of a basic charge, the energy price in the Nord Pool and the seller's margin. Until the introduction of smart grid technology, there were few incentives for residents to

67

play an active role (Sioshansi 2011). This changed when the smart grid technology allowed data (and later power) to flow in both directions and required utility companies relying on centralized unidirectionally distributed electricity to develop new services (Rifkin 2011). This also enabled network operators to considerably reduce their core workforce. Using decentralized ICTs, the network operator has a new role: it provides the infrastructure for interactive communication. European Commission reports have pointed out the organizational and management issues related to smart grids (Giordano et al. 2013), but little is yet known about how the residents will act as active co-players in future electricity systems (Geleen, Reinders & Keyson 2013), and there are considerable gaps in the literature regarding who the users of smart technologies are and how they use these technologies in their homes (Gram-Hanssen & Darby 2019).

Current Level of Smart Grid Evolution

The web-based smart grid application ASSARI was introduced by the electrical grid operator to improve the paper-based and manual labor-intensive process of electrical meter inspection. We studied ASSARI and focused on analyzing the residents survey. ASSARI is a digital platform, and its interfaces are built in such a way that the application program requests data every time from the database. The ASSARI environment runs on Asure, in Microsoft's cloud service. However, Microsoft's cloud platform is not the statistical system, as Kolibri and Generis hold the customer data. The test and service platforms are located on separate servers. The database contains the log of the integration environment. A database is an organized collection of data, generally stored and accessed electronically via a computer system. The ASSARI system contains System Logs, Resident Information and Blob Storage, Resident Management and Resident Information. Blob storage is a feature in Microsoft Azure that lets developers store unstructured data on Microsoft's cloud platform. It has a centralized information system with two virtual servers, test and production servers and logging bases. In addition, the centralized information system has two different Dockers-frame containers. A container is a standard unit of software that bundles code together with all its dependencies, so that the application runs quickly and reliably from one computing.

Through ASSARI, residents can see their readings that come from automatically readable devices, and they can thus monitor their own consumption, while energy efficiency is encouraged. Targeting household-level energy consumption also requires an understanding of energy consumption in relation to individual household members' activity patterns (Palm, Ellegård & Hellgren 2018). However, these individual activity patterns cannot be followed with the ASSARI application.

As we mentioned earlier, the SGAM is utilized as a framework for interoperability analysis by merging the bi-dimensional smart grid plane (including the power system management and the energy conversion chain) with the interoperability layers dimension including functionality and technical implementation. In this context, it is useful to map the area where different actors and applications operate, allowing for a more practical understanding of their roles, interdependence, and their position with respect to the end users. As shown in Fig. 3, NEVE can be located primarily at the business and the component level. NEVE's roles on the business layer relate to its in-
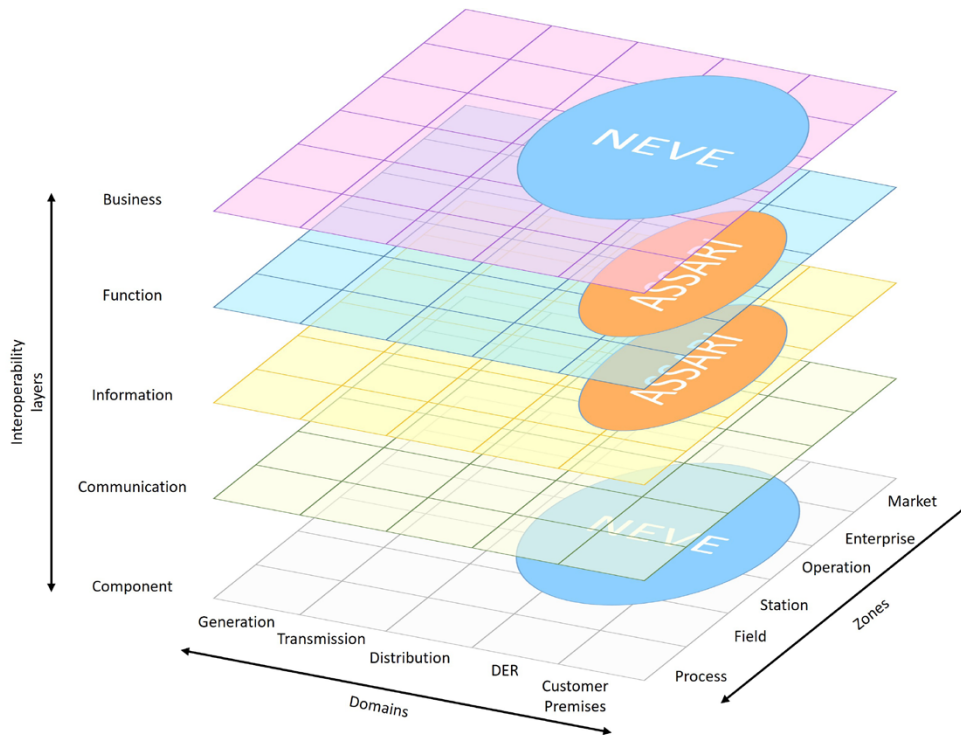
68

Fig. 3. NEVE and ASSARI in the SGAM architecture.

formation exchange and smart grid-based business capacity: on the domain axis it can be considered to cover the area between the consumer and the distribution system, while on the power management side, it covers the area from monitoring of the power system up to the energy trading operation. At the same time, considering its role as DSO, NEVE operations on the "Component"—the smart grid—level, can be mapped along similar reference lines. From a broader perspective, the role of such a smart grid application can play a more strategic role within the Arctic context. As mentioned earlier, Arctic settings (such as our case study) are often characterized by a remarkable heterogeneity in population density and its distribution. This, in turn, is more likely to stretch the capacity and logistic constraints of an infrastructure originally designed to support a limited population spread over a large area. The smartening of the power infrastructure is therefore strategic in adding the necessary resilience in such a potentially exposed system, creating the conditions for further efficient and effective modernization of the distribution level infrastructure. Coherently, this is further represented by the localization of the primary of NEVE and ASSARI within the SGAM architecture (Fig. 3): as the described conditions are likely to affect the infrastructure at the lower domain levels (Distribution-Customer level), the required flexibility can be developed through the smartening of the system and, therefore, through an intervention across the zone levels.

Continuing this analysis, the ASSARI digital platform can be represented as an application on the information plane: managing (documenting, organizing and storing) energy data, effectively functioning as a bridge between the component and the business layers of NEVE. Buildings in the Arctic environment rely on diverse en-

69

ergy sources, mainly because of harsh environmental conditions and heating being required practically 10–12 months a year. Therefore, digital platforms make the smart grid a part of the habitat of Arctic residents (Table 3).

Table 3. Digitalization of the electricity network and its implications for residents.

Digitalization of the electricity network	Conversion from analog to digital calculations, with microprocessors and digital relay technology	Introduction of digital communication technology, with local area network (LAN)	Emergence of the digital platform, with the smart grids' applications and technologies, with a fully digitalized computerized data network.
Implications for residents	Citizens as passive recipients of electricity	Residents select electricity provider and report electricity consumption	Residents use the smart grid technologies as active digital citizens

Consumer Perceptions and Changing Energy Consumption Habits

This section summarizes the results of the survey conducted among the residents of Rovaniemi, regarding their perception and use of the ASSARI smart grid application. The questionnaire questions can be found in Appendix 1.

In this study, there were 85 males and 41 females with the following age distribution: 20–29 (13.3%), 30–39 (20.3%), 40–49 (23.4%), 50–59 (14.8%), 60–69 (21.1%) and 70– (7%). When looking more closely at who the actual residents were, we found that the typical respondent to the survey was a male, aged between 30 and 69. Although there were female respondents, they were in the minority and younger than the male residents. As all the experts we interviewed during our research were also men, we can conclude that smart grid technologies are being developed by middle-aged, higher middle-class men with a technological education for middle-aged higher middle-class men who own property, and who actually use and benefit from the smart grid technology. As seen in Table 4, residents use the application monthly (28.2%) or more seldom (62.6%).

Table 4. Frequency of usage (log ins) of the smart grid application.

	Frequency	Per cent	Valid per cent	Cumulative per cent
Daily	3	2.3	2.3	2.3
Weekly	9	6.9	6.9	9.2
Monthly	37	28.2	28.2	37.4
More seldom	82	62.6	62.6	100
Total	131	100	100	

Recent studies have considered many factors, such as the usefulness of smart energy applications (Fettermann et al. 2020). In our study, despite ASSARI being used infrequently (Table 4), we found that the residents thought that the smart grid application was useful (Table 5). It was not perceived to be something the company simply forced its residents to use. Our results show that if residents are satisfied, they will recommend the smart grid application to other people. To analyze perceived benefits in practice, we measured correlations between variables of residents' benefits from the

Table 5. Customer satisfaction.

		Customer satisfaction with the application's service content	Would you recommend your friends to use the application?
Customer satisfaction with the application's service content	Pearson Correlation	1	.484[**]
	Sig. (2-tailed)		0.000
	N	131	131
Would you recommend your friends to use the application?	Pearson Correlation	.484[**]	1
	Sig. (2-tailed)	0.000	
	N	131	131

**Correlation is significant at 0.01 level (2-tailed)

Table 6. Correlations between resident's perceived benefits of the smart grid application.

		Use of application saves resident's time	Use of application saves a lot of trouble for residents	Use of application reduces the need to contact customer service
Use of application saves residents' time	Pearson Correlation	1	.704[**]	.573[**]
	Sig. (2-tailed)		0.000	0.000
	N	131	131	131
Use of application saves a lot of trouble for residents	Pearson Correlation	.704[**]	1	.625[**]
	Sig. (2-tailed)	0.000		0.000
	N	131	131	131
Use of application reduces the need to contact customer service	Pearson Correlation	.573[**]	.625[**]	1
	Sig. (2-tailed)	0.000	0.000	
	N	131	131	131
**. Correlation is significant at the 0.01 level (2-tailed).				

smart grid application. We found significant statistical correlations, which indicates that the smart grid application as a digital platform is beneficial for the residents (Table 6).

According to smart grid literature, there is an added danger that residents who will not achieve the expected savings, notwithstanding the behavioral change in electricity consumption habits, might consider the whole experience disappointing and frustrating (Hargreaves, Nye & Burgess 2010; Hughes 1987). This might not be the case here, and we are in full accordance with Stern (2011), who proposes that in order to increase resident's acceptance of smart grids, there should be information provision regarding the clear benefits provided through smart grid deployment, including long-term financial benefits, in addition to the ease and simplicity of smart grid technology use.

71

Table 7. Views whether the smart grid application makes daily life easier.

	Frequency	Per cent	Valid per cent	Cumulative per cent
No reply	2	1,5	1.5	1.5
Strongly disagree	4	3,1	3.1	4.6
Disagree	8	6,1	6.1	10.7
Undecided	39	29,8	29.8	40.5
Agree	57	43.5	43.5	84
Strongly Agree	21	16.0	16.0	100
Total	131	100	100	

The reason why the smart grid application was considered useful was that the residents considered it provided considerable benefits as it saves time and effort and reduces the need to contact customer service. The statistical correlations regarding these benefits were significant. In addition, most of them agreed (43.5%) or strongly agreed (16%) that the application makes their daily lives easier (Table 7). Smart grid technology has also made the development of the system architecture more resident-oriented with the introduction of universal design approaches commonly used for intelligence infrastructure development (Erlandson & Psenka 2014). There are problems in turning the large amount of data from built environments into meaningful services, as this requires combining data streams, such as various resident data and measurement data.

Table 8. How the smart grid application helps to change consumers' habits.

	Frequency	Per cent	Valid per cent	Cumulative per cent
No reply	2	1.5	1.5	1.5
My electricity consumption figures motivate me to change my consumption habits	78	59.5	59.5	61.1
My electricity consumption figures inform my consumption, but I have not changed my consumption habits	27	20.6	20.6	81.7
My electricity consumption figures do not have any effect on my consumption	24	18.3	18.3	100
Total	131	100	100	

According to our results presented in Table 8, only a minority of the respondents (18.3%) stated that the smart grid application has no effect on their electricity consumption, while 59.5% agreed that the smart grid technology has changed their consumption habits. As some authors argue (Hargreaves, Nye & Burgess 2010), electricity is "doubly invisible" for the residents because it is an invisible and abstract force entering the household via hidden infrastructure. In addition, most energy residents' behavior is part of their daily habits, making it difficult to connect behavior to the energy they consume. Based on our results, the smart grid technology seems to change this.

The social acceptability of the smart grid technology also seems to be directly connected to the financial interests of the residents; if the smart grid technology helps to save money, most consumers are willing to accept it, but more research is needed on the nature and distribution of costs and benefits (Darby 2020). The downside is that digitalization can be utilized to develop the instruments of technocratic control (Cooper & Jacobs 2018). It also requires that the residents provide their data for free to the electricity companies and do work previously done by others. In the organization of work, the roles of the electrical network operator and the residents now

72

Table 9. Reasons for changing electricity consumption habits.

	Frequency	Per cent	Valid per cent	Cumulative per cent
No reply	1	0.8	0.8	0.8
Reducing costs	115	87.8	87.8	88.5
Reducing my carbon footprint	13	9.9	9.9	98.5
Something else	2	1.5	1.5	100
Total	131	100	100	

overlap, which is not possible without mutual trust and transparency in the use of the smart grid application.

We also studied the motivations of users (Table 9). Overwhelmingly, the residents' most important motivation for using the smart grid application was financial (87.8% of the respondents). Pricing also motives the residents to use appliances in a specific timespan; the price of energy is lower between 22.00 and 7.00 o'clock and the spot price of energy varieties (Palm, Ellegård & Hellgren 2018; Hughes 1987). Our finding does not resonate with research suggesting that environmental considerations are important when residents buy electricity (ERGEG 2010; Mah et al. 2012), and maybe even the most important factor in a household's intention to generate its own power (Leenheer, de Nooij & Sheikh 2011). This means that the change towards a sustainable energy system in the Arctic cannot be achieved by using environmental arguments to influence the consumers, unless sustainable energy use is connected to energy tariffs. This is in line with research arguing that environmental concerns must be used in combination with reduction of, or of control over, electricity bills (Gangale, Mengolini & Onyeji 2013).

The residents shared this view, as shown by answers to the open survey questions, such as: "Invoices should also be displayed in the same way as the consumption data for all tariffs in order to make it easy to calculate tariff swaps." The residents also hoped that information would become more real-time, with financial metrics included: "But isn't it possible to present the consumption data in real time?" It would also be interesting to see the euro amounts in real time. This in turn could provide a stronger motivation for residents to change their electricity consumption habits.

The difference between real time pricing and spot prices (sometimes mistakenly perceived or described as real-time prices) should be underlined here. A spot price, defined by matching demand and supply at any given time, is generally described as the specific price of a commodity to be bought or sold for immediate settlement. Although spot prices might vary in time and geographic location, spot prices are relatively homogeneous across the markets, significantly limiting arbitrage speculative opportunities, and allowing for future planning by locking the price ahead of time. In the Nordic power market context, for example, the day-ahead (spot) power market is a textbook example of such a system: power prices are known one day ahead, with relatively limited (and homogeneous) variation in time and across market regions.

Spot prices, though, are representative of energy prices at the utility level. End users' real-time energy prices depend on the subscribed contract type that might only marginally reflect the spot price mechanisms previously described. For example, some contracts have fixed tariffs, others are directly related to the spot price market, while

contracts including supply from specific low-carbon sources might vary without necessarily reflecting the spot market behavior. In this context, what the residents referred to was real-time energy consumption data coupled with the energy prices for the corresponding time-window. The availability of such a system would indeed allow for end users to look back on their energy consumption profile and compare the financial performance of different tariffs by coupling them with their recorded energy consumption behavior. People working in NEVE Ltd. indicated that they as a company have started to utilize all the available data to make this potentially happen, but system harmonization takes time. It does not only require resources and expertise, but also new ways of sharing the workload to govern the overall architecture; hidden data of the system architecture should also be captured and made visible to the residents.

Conclusions

A critical element of smart grid development is its architecture with multiple interoperability layers. Users are provided accurate consumption information, which is expected to help consumers to better control their energy expenditure on electricity. Arctic residents view that the digital platforms of the smart grids improve their quality of life, although unplugging from the smart grid becomes difficult (Calzada & Cobo 2015). In the Arctic dispersed built environment, residents are forced to use digital platforms to optimize their energy consumption and behavior. Existing building and energy research highlight the importance of a transition towards renewable energy (Arruda & Arruda 2018; Aandahl, Eriksen & Alfsen 2003; Hertin et al. 2003). However, we found that Arctic residents are not using the smart grid intelligence for environmental reasons, as in Estonia (Vihalemm & Keller 2016). It seems that energy efficient building standards and energy policy are viewed differently in sparsely populated colder areas (Hossain, Loring & Marsik 2016). Smart grid solutions in the Arctic are decentralized, allowing electricity consumption to be optimized so that energy can be produced in carbon-neutral forms. People are the best regulators of electricity which can be harnessed through the smart grid.

Furthermore, current literature points out that digital platforms provide infrastructure for opening up to collective intelligence building (Smith & Prieto 2020). Customers being informed participants of the smart grid is the ideal; however, as our research indicates, the most invested users of smart grid services are middle-aged, educated men. Moreover, their role is mainly to monitor and control their electricity consumption on the basis of information provided by the electricity company. An important concern is the willingness and capacity of older people to change energy consumption habits and adopt smart technologies (Barnicoat & Danson 2015). However, we found that smart grids are best accessible to men with a technological education. Cities enable a variety of ownership regimes for their diverse material components (Sassen 2018), but technical infrastructure seems to empower only those who control it (Innis 2008). Ultimately, smart grids bring stability to the electricity grid, which is especially essential in cold climates, and they also improve access to services in sparsely populated areas. Smart grid technology can provide active citizens with tools to increase their resilience, but achieving this goal in an Arctic environment will require that the consumers are offered financial incentives.

NOTES

1   When describing the early years of the electricity grid, we rely mostly on city history by Ahvenainen (1970) and company history by Jylhä & Torkko (2014). To describe the developments after the 1960s, we rely on the memory of the experts with long work experience we interviewed. We do not intend to provide an official history based on historical documents, but merely to interpret the key trends in the history of the electrical grid.

75

APPENDIX 1. WEB-BASED QUESTIONNAIRE

User Experience survey

Gender:
Male
Female
Other / don't want to say

Year of birth:

Type of housing:
1. Detached house
2. Semi-detached house
3. Terraced house
4. Block of flats
5. Cottage / villa

I learned about Assari first from:
1. Website
2. Neve customer service
3. Neve's event
4. Water reading card
5. Heard from a friend
6. Other source. What?

I use Assari:
1. Daily
2. Weekly
3. Monthly
4. More seldom

Registering and logging in to Assari went smoothly and did not take me too much time:
1. Strongly disagree
2. Disagree
3. I don't know
4. Agree
5. Strongly agree

I need help / guidance to use Assari:
1. Yes
2. No
If yes, what kind of help / guidance

For what purpose do you use Assari for?
I report my water meter readings
I want to monitor my water consumption
I want to monitor electricity consumption
I want to monitor district heat consumption

I am satisfied with the content of the service provided by Assari:
1. Strongly disagree
2. Disagree
3. I don't know
4. Agree
5. Strongly agree
I am particularly satisfied/dissatisfied with the following:

Customer value survey

The following are statements related to customer value of Assari. Answer them according to your own experience.

Using the application saves my time:
1. Strongly disagree
2. Disagree
3. I don't know
4. Agree
5. Strongly agree

Using the application saves trouble:
1. Strongly disagree
2. Disagree
3. I don't know
4. Agree
5. Strongly agree

Using the application reduces the need to contact Neve customer service:
Strongly disagree
Disagree
I don't know
Agree
Strongly agree

Using the application makes it easier and faster to access Neve services:
Strongly disagree
Disagree
I don't know
Agree
Strongly agree

Using the application makes it simpler to report meter reading:
Strongly disagree
Disagree
I don't know
Agree
Strongly agree

Using the application makes my daily life easier:
Strongly disagree
Disagree
I don't know
Agree
Strongly agree

Using the application informs me about my consumption habits:
Strongly disagree
Disagree
I don't know
Agree
Strongly agree

Monitoring consumption is interesting:
Strongly disagree
Disagree
I don't know
Agree
Strongly agree

Monitoring consumption is a fun pastime:
1. Strongly disagree
2. Disagree
3. I don't know
4. Agree
5. Strongly agree

What motivates me most to change my consumption habits?
1. Reducing costs
2. The impact of my consumption habits on my carbon footprint
3. Something else, what?_____

How can Assari help me change my consumption habits?
1. Consumption data motivates me to pay attention to my behavior and change my actions in relation to my consumption habits to reduce consumption
2. I become aware of my consumption, but I don't care if my consumption decreases or increases
3. Not at all, I continue to use / consume according to my habits

How likely would you recommend the application to your friends? (On a scale of 0–10)_____

Development ideas and suggestions for new features:

_____
_____
_____
_____
_____
_____

77

REFERENCES

Aandahl, G. & Eriksen, S. & Alfsen, K. (2003). "Preparing for climate change impacts in Norway's built environment," *Building Research and Information*, 31, pp. 200–209.

Abrahamsen, F.E., Ai, Y. & Cheffena, M. (2021). "Communication technologies for smart grids. A comprehensive survey," *Sensors*, 21; doi.org/10.3390/s21238087.

Ahvenainen, J. (1970). *Rovaniemen historia 2, 1632–1960* ['History of Rovaniemi 2, 1632–1960'], Rovaniemi: Rovaniemen kaupunki & Rovaniemen maalaiskunta & Rovaniemen seurakunta.

Albino, V., Berardi, U. & Dangelico, R.M. (2015). "Smart cities. Definitions, dimensions, performance, and initiatives," *Journal of Urban Technology*, 22:1, pp. 3–21.

Arruda, G.M. & Arruda, F.M. (2018). "Towards sustainable energy systems through smart grids in the Arctic," in *Renewable Energy for the Arctic. New Perspectives*, ed. G.M. Arruda, Abingdon: Routledge.

Bakke, B. (2017). *The Grid. The Fraying Wires Between Americans and Our Energy Future*, New York: Bloomsbury.

Barnicoat, G. & Danson, M. (2015). "The ageing population and smart metering. A field study of householders' attitudes and behaviours towards energy use in Scotland," *Energy Research & Social Science,* 9, pp. 107–115.

Bertoldi, P., Ricci, A. & de Almeida, A. (eds.) (2001). *Energy Efficiency in Household Appliances and Lighting*, Berlin: Springer.

Bigerna, S., Bollino, C.A. & Micheli, S. (2016). "Socio-economic acceptability for F grid development. A comprehensive review," *Journal of Cleaner Production*, 131, pp. 399–409.

Calò, A., Louis, J.N. & Pongrácz, E. (2014). "Concerning the sustainability of smart grids. A critical analysis of the sustainability of current smart grid models and on indicators of smart grid sustainability assessment," in *ENERGY 2014. The Fourth International Conference on Smart Grids, Green Communications and IT Energy-aware Technologies* (conference proceedings), pp. 81–85.

Calzada, I. & Cobo, C. (2015). "Unplugging. Deconstructing the smart city," J*ournal of Urban Technology*, 22:1, pp. 23–43.

Castells, M. (2009). *Communication Power*, Oxford: Oxford University Press.

CEN-CENELEC-ETSI (2014). "SGAM user manual. Applying, testing & refining the Smart Grid Architecture Model (SGAM) Version 3.0," Smart Grid Coordination Group; https://www.cencenelec.eu/media/CEN-CENELEC/AreasOfWork/CEN-CENELEC_Topics/Smart%20Grids%20and%20Meters/Smart%20Grids/2_sgcg_methodology_overview.pdf; accessed on 11 Sept. 2024.

City of Rovaniemi (2014). Toimintaympäristön tilastot ['Operational environment statistics']; www.rovaniemi.fi/loader.aspx?id=c42cb6e8-67d0-4ec9-bbaa-a813b7832f1f; accessed on 12 Sept. 2024.

Cooper, R. & Jacobs, N. (2018). *Living in Digital Worlds. Designing the Digital Public Space*, Abingdon: Routledge.

Darby, S.J. (2020). "Demand response and smart technology in theory and practice. Customer experiences and system actors," *Energy Policy,* 143, August; doi.org/10.1016/j.enpol.2020.111573.

Delmas, M., Fischlein, M. & Asensio, O. (2013). "Information strategies and energy conservation behavior. A meta-analysis of experimental studies from 1975 to 2012, *Energy Policy*, 61, pp. 729–739.

Ellabban, O. & Abu-Rub, H. (2016). "Smart grid customers' acceptance and engagement. An overview," *Renewable and Sustainable Energy Reviews*, 65, pp. 1285–1298.

Elovaara, J. & Haarla, L. (2011a). *Sähköverkot 1. Järjestelmätekniikka ja sähköverkon laskenta* ['Power networks 1. System technology and power network calculation'], Helsinki: Otatieto Helsinki University Press.

Elovaara J. & Haarla, L. (2011b). *Sähköverkot 2. Verkon suunnittelu, järjestelmät ja laitteet* ['Power networks 2. Network design, systems and equipment'], Helsinki: Otatieto Helsinki University Press.

ERGEG (2010). "Position paper on smart grids. An ERGEG Conclusions Paper;" https://www.ceer.eu/wp-content/uploads/2024/04/E10-EQS-38-05_SmartGrids_Conclusions_10-Jun-2010_Corrigendum.pdf; accessed on 11 Sept. 2024.

Erlandson, R. & Psenka C. (2014). "Building knowledge into the environment of urban public space. Universal design for intelligent infrastructure," *Journal of Urban Technology*, 21, pp. 21–38.

Ernst, W. (2016). *Chronopoetics. The Temporal Being and Operativity of Technological Media*, London: Rowman & Littlefield International.

Eurelectric (2011). "10 steps to smart grids;" https://www3.eurelectric.org/10stepstosmartgrids/; accessed on 24 May 2024.

European Commission (2011). "Smart grids. From innovation to deployment," Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions; https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2011:0202:-FIN; accessed on 11 Sept. 2024.

European Commission (2016a). "Clean energy for all europeans—unlocking Europe's growth potential;" https://ec.europa.eu/commission/presscorner/detail/en/IP_16_4009; accessed on 24 May 2024.

European Commission (2016b). "Providing a fair deal for consumers;" https://ec.europa.eu/commission/press-corner/detail/en/MEMO_16_3961; accessed on 24 May 2024.

European Parliament and Council (2019). "Directive (EU) 2019/944 on common rules for the internal market for electricity," 5 June 2019; http://data.europa.eu/eli/dir/2019/944/oj; accessed on 24 May 2024.

Finnish Energy Authority (2018). *National Report 2018 to the Agency for the Cooperation of Energy Regulators and to the European Commission*. Ref: 1411/480/2018.

Fettermann, D.C., Borriello, A., Pellegrini, A., Calvacante, C.G., Rose, J.M. & Burke, P.F. (2020). "Getting smarter about household energy. The who and what of demand for smart meters," *Building Research & Information*, 49:1, pp. 100–112; doi.org/10.1080/09613218.2020.1807896.

Gangale, F., Mengolini, A. & Onyeji, I. (2013). "Consumer engagement. An insight from smart grid projects in Europe," *Energy Policy*, 60, pp. 621–628.

Geleen, D., Reinders, A. & Keyson, D. (2013). "Empowering the end-resident in smart grids. Recommendations for the design of products and services," *Energy Policy*, 61, pp. 151–161.

Giordano, V. & Bossart, S. (2012). *Assessing Smart Grid Benefits and Impacts. EU and U.S. Initiatives*, Luxembourg: Publications Office of the European Union; https://publications.jrc.ec.europa.eu/repository/handle/JRC73070; accessed on 11 Sept. 2024.

Giordano, V., Meletiou A., Covrig, C.F., Mengolini, A., Ardelean M., Fulli, G., Sanchez-Jimenez, M. & Filiou, C. (2013). *Smart Grid Projects in Europe. Lessons Learned and Current Development*, Luxembourg: Publications Office of the European Union; https://publications.jrc.ec.europa.eu/repository/handle/JRC65215; accessed on 11 Sept. 2024.

Goulden, M., Bedwell, B., Rennick-Egglestone, S., Rodden, T. & Spence, A. (2014). "Smart grids, smart residents? The role of the user in demand side management," *Energy Research & Social Science*, 2, pp. 21–29.

Gram-Hanssen, K. & Darby, S.J. (2019). "'Home is where the smart is?' Evaluating smart home research and approaches against the concept of home," *Energy Research & Social Science*, 37, pp. 94–101.

Hargreaves, T., Nye, M. & Burgess, J. (2010). "Making energy visible. A qualitative field study of how householders interact with feedback from smart energy monitors," *Energy Policy*, 38, pp. 6111–6119.

Hayles, K. (1999). *How We Became Posthuman. Virtual Bodies in Cybernetics, Literature, and Informatics*, Chicago: University of Chicago Press.

Hertin, J., Berkhout, F., Gann, D. & Barlow, J. (2003). "Climate change and the UK house building sector. Perceptions, impacts and adaptive capacity," *Building Research and Information*, 31, pp. 278–290.

Ho, E. (2016). "Smart subjects for a smart nation? Governing (smart) mentalities in Singapore," *Urban Studies*, 54:13, pp. 3101–3118.

Hossain, Y., Loring, P.A. & Marsik, T. (2016). "Defining energy security in the rural North. Historical and contemporary perspective from Alaska," *Energy Research & Social Science*, 16, pp. 89–97.

Hu, Z., Li, C., Cao, Y., Fang, B., He, L. & Zhang, M. (2014). "How smart grid contributes to energy sustainability," *Energy Procedia*, 51, pp. 858–861.

Hughes, T. (1987). "The evolution of large technological systems," in *The Social Construction of Technological Systems*, eds. W.E. Bijker, T.P. Hughes & T.J. Pinch, Cambridge, MA.: MIT Press, pp. 51–82.

Innis, H. (2008). *The Bias of Communication*, Toronto: University of Toronto Press.

Jylhä, M. & Torkko, M. (2014). *Sata vuotta Rovaniemen energiaa 1913–2013* ['One hundred years of energy'], Rovaniemi: Rovaniemen Energia.

Leenheer, J., de Nooij, M. & Sheikh, O. (2011). "Own power. Motives of having electricity without the energy company," *Energy Policy*, 39, pp. 5621–5629.

Leiva, J., Palacios, A. & Aguado, J. (2016). "Smart metering trends, implications and necessities. A policy review," *Renewable and Sustainable Energy Reviews*, 55, pp. 227–233.

Mah, D.N., Van der Vleuten, J.M., Hills, P. & Tao, J. (2012). "Consumer perceptions of smart grid development. Results of a Hong Kong survey and policy implications," *Energy Policy*, 49, pp. 204–216.

Martinez, J., Ruiz. A., Puelles, J., Arechalde, I. & Miadzvetskaya, Y. (2020). "Smart grid challenges through the lens of the European general data protection regulation," in *Advances in Information Systems Development. Information Systems Beyond 2020* (Lecture Notes in Information Systems and Organisations 39), Cham: Springer, pp. 113–130.

Masera, M., Bompard, E.F., Profumo F. & Hadjsaid, N. (2018). "Smart (electricity) grids for smart cities. Assessing roles and societal impacts," *Proceedings of the IEEE*, 106:4, pp. 613–625.

van Mierlo, B. (2019). "Users empowered in smart grid development? Assumptions and up-to-date knowledge," *Applied Sciences*, 9:815; https://doi.org/10.3390/app9050815.

Mitchell, W. (1995). *City of Bits. Space, Place, and the Infobahn*, Cambridge, Mass.: MIT Press.

Motiva (2024). Final Consumption of Energy; https://www.motiva.fi/en/solutions/energy_use_in_finland/final_consumption_of_energy; accessed on 24 May 2024.

Neuendorf, K.A. (2017). *The Content Analysis. Guidebook*, London: Sage Publications; doi.org/10.4135/9781071802878.

O'Dwyer, R. & Doyle, L. (2012). "FCJ-138 this is not a bit-pipe. A political economy of the substrate network," *The Fibreculture Journal*, 20, pp. 10–34.

Palm, J., Ellegård, K. & Hellgren, M. (2018). "A cluster analysis of energy-consuming activities in everyday life," *Building Research and Information*, 46:1, pp. 99–113.

Parviainen, P., Tihinen, M., Kääriäinen, J. & Teppola, S. (2017). "Tackling the digitalization challenge. How to benefit from digitalization in practice," *International Journal of Information Systems and Project Management*, 5:1, pp. 63–77.

Patton, M.Q. (2015). *Qualitative Research and Evaluation Methods*, Thousand Oaks: Sage Publications.

de Reuver, M., Sørensen, C. & Basole, R. (2017). "The digital platform. A research agenda," *Journal of Information Technology*, 33, 124–135.

Rifkin, J. (2011). *The Third Industrial Revolution. How Lateral Power Is Transforming Energy, the Economy, and the World*, New York: Palgrave MacMillan.

Rose, R. (2020). "Actually-existing sociality in a smart city. The social as sociological, neoliberal and cybernetic," *City*, 24:3–4, pp. 513–529.

Sassen, S. (2018). "The city. A collective good?" *Brown Journal of World Affairs*, 23:2, pp. 119–126.

Schappert, M. & von Hauff, M. (2020). "Sustainable consumption in the smart grid. From key points to eco-routine," *Journal of Cleaner Production*, 267, pp. 1–15.

Schweiger, G., Eckerstorfer L.V., Hafner, I., Fleischhacker, A., Eadl. J., Glock, B., Wastian, M., Rößler, M., Lettner, G., Popper, N. & Corcoran, K. (2020). "Active consumer participation in smart energy systems," *Energy and Buildings*, 227:15, pp. 1–18.

Sioshansi, F. (2011). *Smart Grid. Integrating Renewable, Distributed & Efficient Energy*, Waltham, MA: Academic Press.

Skopik, F. (2013). "The social smart grid. Dealing with constrained energy resources through social coordination," *The Journal of Systems and Software*, 89:1, pp. 3–18.

Smale, R., Spaargaren, G. & van Vliet, B. (2019). "Householders co-managing energy systems. Space for collaboration?" *Building Research and Information*, 47:5, pp. 585–597.

Smart Grids Task Force (2011). Task Force Smart Grids Expert Group 2. Regulatory Recommendations for Data Safety, Data Handling and Data Protection. Report; https://www.smartgrid.gov/files/documents/Task_Force_Smart_Grid_Expert_Group_2_Regulatory_Recommendati_201106.pdf; accessed on 24 May 2024.

Smith, A. & Pedro Prieto, M. (2020). "Going beyond the smart city? implementing technopolitical platforms for urban democracy in Madrid and Barcelona," *Journal of Urban Technology*, 28:1–2, pp. 311 – 330; doi.org/10.1080/10630732.2020.1786337.

Stengers, Y. (2013). *Smart Energy Technologies in Everyday Life. Smart Utopia?* New York: Palgrave Macmillan.

Stern, S. (2011). "Smart-grid. Technology and the psychology of environmental behavior change," *Chicago-Kent Law Review*, 86:1, pp. 139–160.

Szulecki, K. & Overland, I. (2020). "Energy democracy as a process, an outcome and a goal. A conceptual review," *Energy Research & Social Science*, 69, pp. 1–14; doi.org/10.1016/j.erss.2020.101768.

Talandier, M. (2018). "Are there urban contexts that are favourable to decentralised energy management?" *Cities*, 82, pp. 45–57.

80

Thompson, W.J. (2016). *Living on the Grid. The Fundamentals of the North American Electric Grids in Simple Language*, Bloomington: iUniverse.

Tilson, D., Lyytinen, K. & Sørensen, C. (2010). "Digital infrastructures. The missing IS research agenda," *Information Systems Research*, 21:4, pp. 748–759.

Tomitsch, M. & Haeusler, H. (2015). "Infostructures. Towards a complementary approach for solving urban challenges through digital technologies," *Journal of Urban Technology*, 22:3, p. 37–53.

Treasury of Finland. (2022). Energy Consumption Statistics. Dept Management Annual Review 2022; www.treasuryfinland.fi/annualreview2022/energy-consumption-statistics/; accessed on 24 May 2024.

Tuballa, M. & Abundo, M. (2016). "A review of the development of smart grid technologies," *Renewable and Sustainable Energy Reviews*, 59, pp. 710–725.

Vallés, M., Reneses, J., Cossent, R. & Frias, P. (2016). "Regulatory and market barriers to the realization of demand response in electricity distribution networks. A European perspective," *Electric Power Systems Research*, 140, pp. 689–698.

Vihalemm, T. & Keller, M. (2016). "Consumers, citizens or citizen-consumers? Domestic users in the process of Estonian electricity market liberalization," *Energy Research & Social Science*, 13, pp. 38–48.

van der Werff, E., Perlaviciute, G. & Steg, L. (2016). "Transition to smart grids. A psychological perspective," in *Smart Grids from a Global Perspective Bridging Old and New Energy Systems*, eds. A. Beaulieu, J. de Wilde & J.M.A. Scherpen, Cham: Springer, pp. 43–62.

Wolsink, M. (2012). "The research agenda on social acceptance of distributed generation in smart grids. Renewable as common resources," *Renewable and Sustainable Energy Review*, 16, pp. 822–835.

Zhang, Y., Chen, W. & Gao, W. (2017). "A survey on the development status and challenges of smart grids in main driver countries," *Renewable and Sustainable Energy Reviews*, 79, pp. 137–147.

Zhou, S. & Brown, M. (2017). "Smart meter deployment in Europe. A comparative case study on the impacts of national policy schemes," *Journal of Cleaner Production*, 144, pp. 22–32.

AUTHORS

Prof. *Eva Pongrácz* (corresponding author) is professor of energy systems and environmental engineering at the University of Oulu. She is leading a research group focusing on research in smart energy systems, energy transition and sustainability. A special focus of her research is in the Arctic aspects of energy transition and resources management.

eva.pongracz@oulu.fi

Dr. *Antonio Calò* is a University Lecturer at the University of Oulu, Faculty of Technology. He is a physicist by training with a doctorate in Atomic and Molecular Physics. Currently, his research focuses on smart and distributed energy systems, especially within the context of northern environmental and climatic conditions.

antonio.calo@oulu.fi

Dr. *Ville Kivivirta* is a university lecturer at the University of Eastern Finland, Faculty of Social Sciences and Business Studies. His research focuses on information and organizing in societies and service ecosystems. In addition to conducting policy analysis, his research explores process-oriented thinking to offer alternative configurations for mainstream tropes.

ville.kivivirta@uef.fi

Dr. *Mika-Petri Laakkonen* is Principal Research Scientist at the Oulu University of Applied Sciences. He has post-graduate degrees in information technology and in cognitive science. He has also worked as an independent expert in the European Commission Directorate General for Communications Networks, Content & Technology. His core competences are predictive artificial intelligence, cognitive technologies and intelligent information systems.

mika-petri.laakkonen@outlook.com

Miscellanea: Notes

Syn-Arctic Comprehension
Envisaging a Holistic Understanding of the Contemporary and Future Arctic Ocean

ABSTRACT The relatively small, but extremely resource-rich Arctic Ocean is under considerable pressure from a resource-hungry world. Our scientific approach is often characterized by national, sectorial approaches. However, the Arctic Ocean cannot be understood, let alone managed, without an all-encompassing, pan-Arctic perspective. In natural science, first steps have been taken to achieve such a holistic understanding of the contemporary Arctic Ocean, but to support a sustainable and wisely managed Arctic Ocean in the future, the integrative work has to be carefully and wholeheartedly expanded. Suggestions, such as the integration of national investigations and the education of a future generation of scientists can improve the indispensable understanding of the entire Arctic, resulting in adequate comprehension and management.

Introduction

The Arctic Ocean is small and comprises only 1% of the world ocean volume, 3% of the world ocean area and 0.05% of the human population lives in the Arctic (as defined by AMAP, the Arctic Monitoring & Assessment Program). Why should the world pay attention to such a small fraction of the world ocean and so few people? One reason is that nowhere else is global warming and its effects greater than in the Arctic, with consequences for the world, as we will see. Since 1850 global warming worldwide has been about 0.06°C per decade, i.e. about 1.1°C up until today. Arctic amplification accelerates global warming, in particular north of 60°N (the latitude of Stockholm) and increases towards the North Pole. Here we find more than 4 °C warming, i.e. three times more than the world average. Global warming has significantly changed the environment of the Arctic. To point out some of the processes we can mention sea-ice loss, melting glaciers and permafrost, increasing melt of the Greenland ice cap, invasion of boreal species and changes in fisheries. These processes (and more to be mentioned below) have not only local impacts, but also a significant influence on the entire world, in particular the two thirds of humanity that live in the Northern Hemisphere. The gigantic landmass of the Arctic, the Arctic Ocean and changes taking place in the entire Arctic region (Fig. 1A) are therefore of substantial importance for humanity. This is easily demonstrated if we focus upon sea level rise caused by the melt of the Greenland ice cap, which increases the global sea level by 0.5 millimeters per year. Throughout the world, communities have to face the challenges for their population and infrastructure, even in Scandinavia. By the year 2100, sea level rise alone may turn 240–400 million people into climate refugees. Equally distributed over the world population, this implies about 40 million *additional* refugees in Europe (or roughly 0.5 million new arrivals per year). What takes place in the remote Arctic, "where nobody lives," is thus of eminent significance for humanity as

a whole and thus needs particular attention. In recent decades, research, economic and political interest in the region has increased, but the efforts (as compared to the challenges) are still limited and they came late.
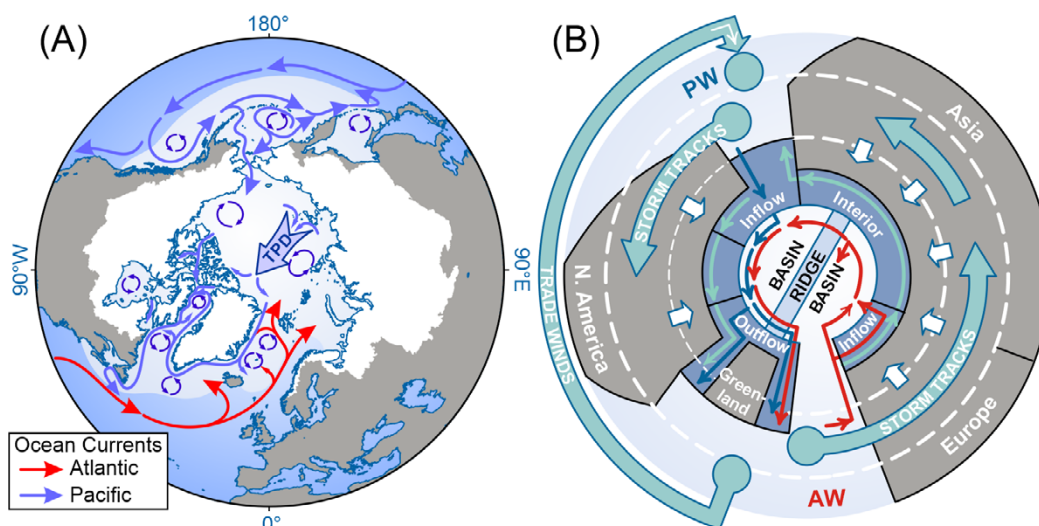

Fig. 1. A. The northern ocean circulation: major ocean currents (long arrows), subarctic fronts that separate the thermally stratified subarctic oceans (darker blue) from the salt-stratified Northern Ocean (lighter blue) in both the Atlantic and Pacific Oceans, the four Arctic Ocean gateways in Fram Strait, the Barents Sea Opening, Davis Strait, and Bering Strait (thick bars with red denoting inflow and blue denoting outflow), the gyral circulation patterns (circular arrows). The salt-stratified ocean domains are shown in light blue, and the terrestrial drainage areas in white.

Fig. 1. B. Regional components of the high-latitude system. Moisture is transported from the sub-tropical and tropical Atlantic Ocean to the Pacific Ocean via the trade winds over Central America. It is then transported from the Pacific and Atlantic Oceans to the Arctic catchment basins by the midlatitude (westerly winds) storm tracks, which subsequently drain into the Arctic Ocean (thick white arrows) where the moisture spreads initially within the Riverine Coastal Domain (dashed green arrows). Warm, salty Atlantic origin waters (thin red arrows) enter the Arctic Ocean through Fram Strait and through the Barents Sea Opening and circulate within the Arctic Basins as subsurface, counterclockwise, topographically steered boundary currents. Internally modified Atlantic waters exit the Arctic Ocean southward through Fram Strait along eastern Greenland. Cooler and fresher Pacific origin waters (thin blue arrows) enter the Arctic Ocean through the Bering Strait and exit through the Canadian Arctic Archipelago and Fram Strait along eastern Greenland. Within the Arctic Ocean a topological distinction is made between inflow, interior, and outflow shelves. (From chapter 2 by Carmack, Rudels, Polyakov and Itoh in Wassmann 2024.)

Does Research in the Arctic Receive Adequate Attention?

The Arctic was for lengthy periods of time an inaccessible and hostile region, somewhere far north and remote from human civilization. From the late sixteenth century and onwards it became the place for expeditions trying to find a shorter sea route to the lucrative east Asian markets. However, the midnight sun did not melt the sea ice, as assumed. A navigable path was not detected until recent global warming provided new opportunities. Instead, after a short, but intensive whaling frenzy, Arctic explorers dominated the scene with their attempts to sail through the Northeast (Adolf Erik Nordenskiöld, 1880–1882) and Northwest passages (Roald Amundsen, 1903–1906)

83

and to get to the legendary North Pole (who came first is still debated). After the Second World War and the Cold War, the Arctic region became a domain for military confrontation (e.g. submarines, atomic weapons and the DEW line—the Distant Early Warning Line, a series of radar stations in the Arctic operated during the Cold War by the USA, Canada, Greenland and Iceland). As a consequence, limited attempts were made to carry out scientific investigations. The few attempts prior to the 1980s were, for the most part, carried out by Arctic nations that focused upon their national waters (but also other countries participated, in particular Germany and Sweden).

The Arctic Ocean remained a *mare incognita.* The main focus of polar research was directed towards Antarctica. This situation continues. Even today, when the Arctic is exposed to the wide-ranging consequences of global warming (extreme summer heat, burning peat, melt of permafrost, atmospheric rivers hitting the Arctic more often, increased ice melt) the number of oceanographic and marine biological publications on Antarctica is almost twice that of publications on the Arctic Ocean (Brandt, Wassmann & Piepenburg 2023). Also, the numerical difference in publications increase: oceanographic and marine biological publications on Antarctica is increasing far more than those on the Arctic Ocean. We may ask if we are giving adequate priority to understanding the region that is by far the most challenged by global warming, the Arctic Ocean?

Because the Arctic Ocean is the most climate change-impacted region, we might expect this to be reflected in research. National and international authorities continually challenge scientists that research should address the most prominent questions in support of human wellbeing, economic prosperity and political stability. In research applications, scientists continually argue for the connection between society's needs and the anticipated science. This is truly also the case for polar research. One might expect prosperous countries in the Northern Hemisphere to pay particular attention to the challenges in the Artic because of the increasing regional impacts on human wellbeing and economic prosperity. Astonishingly, this seems not to be the case. Relative to Antarctica, Arctic research obtains decreasing scientific attention as reflected in absolute and relative numbers of scientific publications (Wassmann et al. 2011; Brandt, Wassmann & Piepenburg 2023). Is science subjected to political demands that result in greater interest in the international waters of Antarctica (and a forthcoming negotiation of the Antarctic Treaty), as compared to the Arctic with its legitimate, territorial claims of Arctic coastal states (regulated by the Law of the Sea)?

There are serious knowledge gaps in the Arctic Ocean region. The political consequences of Russia's invasion of Ukraine makes a large sector of the Arctic inaccessible for non-Russian research, and the publishing of Russian scientific data internationally is in rapid decline. Also, we are facing a lack in pan-Arctic understanding and thus a solid base for indispensable pan-Arctic management. In conclusion, marine science in the most impacted ocean of the world is not given the priority that it deserves.

Socioeconomic Relevance of the Arctic

The Arctic Ocean plays an important role for global climate regulation. It accounts for about 10% of the global atmospheric annual marine CO_2 uptake. It is also important for the global freshwater balance. 20% of the world's 100 largest rivers flow into the Arctic Ocean, comprising 11% of global river runoff. It has wide shelves: 25%

84

of world continental shelf area is found in the Arctic Ocean and comprises 35% of world coastline. The world's longest coastline is often missing when littoral ecology overviews are presented. While only 0.05% of human population live in the Arctic, it has 15% of global petroleum production (mainly on the Yamal Peninsula), and we expect that large amounts of oil and gas reserves, and 20% or more of many metal and non-metal resources (for the green transition) will be found in the region. Some of the most important fisheries take place in the Arctic (e.g. in the Barents and Bering Seas). In summary, the socioeconomic role of the Arctic is enormous. How much emphasis will be given to ecological and environmental concerns when so few people live in such a rich region? When humanity needs essential supplies and sees rich resources, how much consideration will the world pay to the pristine ecosystems and the people that live in the Arctic? The future Arctic is thus increasingly of immense interest for the remaining 99.95% of humanity.

To illustrate how the future Arctic matters for the world, we can add a few examples. Most of us are concerned by the increasing variability in weather. Torrential rain, flooding, heat waves, snowstorms, icing etc., give rise to significant economic implications and loss of human life (drowning, hypothermia due to heat waves, increasing insurance costs or ineligibility to obtain property insurance). Many of these demanding phenomena are caused by the decreased ice-cover in the Arctic Ocean. More open water impacts storm tracks and increases the north–south range of the Jet Stream (Lindsey 2021). Warmer air from the south is drawn further northward, while cold Arctic air is drawn further southwards. Increasingly, this results in climate anomalies. Before, we had a more stable and uninterrupted Polar Vortex (a persistent, large-scale cyclone found near the poles of the middle and upper troposphere and in the stratosphere) and a closed ice cap. Now the Polar Vortex is disrupted, the ice cap is reduced and we face more open water (Lindsey 2021). This is the main cause for the increasing frequencies of records of "too hot, too cold, too dry, too wet." The undulation of the Jet Stream results in extreme warmth and intense winter weather, resulting in record deviations that can be felt as far south as the Mediterranean region. Thus, these regions, too, should engage in intense Arctic research.

In the hitherto ice covered central Artic Ocean, the harvestable marine production of the future will increase because of increased radiation entering the water column, but decrease by 20–40% in regions where fishery today is significant (Slagstad, Wassmann & Ellingsen 2015). This may have implications for fisheries and human food provision. Increased freshwater discharge from the melting Greenland ice cap will impact the vertical stability of the northeastern North Atlantic and increase stratification. This in turn may reduce the Atlantic Meridional Overturning Circulation (AMOC), currents that are carried in the "global conveyor belt" which circulates water from north to south and back in a long cycle within the Atlantic Ocean. A slowing AMOC will reduce the global CO_2 uptake of the Arctic Ocean and thus promote the accumulation of climate gasses in the atmosphere (stimulating global warming). Changes in primary production, increased spread of boreal species and a decrease in the "cool pool" in the Bering Strait (Kinney et al. 2022) will result in unforeseen changes in one of the world's most important fisheries.

The environmental strain on the Arctic Ocean is thus increasing. Significant interests in marine oil and gas production, transport of cargo, oil and gas to and from

85

Asia (and soon across the North Pole), new industries (such as petrochemical plants), mining, fisheries (cod, halibut and shrimps, king and snow crab) and ever-increasing tourism ("Experience pristine nature, polar bears and the Arctic, before it is 'too late'") expose the Arctic increasingly to pollution. It is unknown how to deal with oil pollution events in ice-covered waters and at low temperatures.

In summary, global warming makes the Arctic Ocean accessible, and a resource-hungry world population takes advantage to increase their economic interests in the Arctic. The cool Arctic is indeed a hot issue! How can we use the rich resources and possibilities in the Arctic in a sustainable manner, both for the people living in the Arctic (four million) and the peoples of the Arctic (the indigenous population comprises about 10% of the total population)? To contribute to wise solutions, we obviously need far more research, caution and improved multidisciplinary and multiethnic understanding of the Arctic, for which we are not well prepared, despite increased research.

Basin-Wide Management and Geographic Perspectives

In order to understand the impact the Arctic has upon the northern hemisphere we have to understand the entire Arctic, not only sections of it. The Arctic Ocean does not consist of separate meteorological systems or ecosystems. It is one circular system with minor subsystems (Fig. 1B). We must focus upon how the interests of the five Arctic Ocean states (often along sectorial south–north directed research strategies) support not only their sectorial interest, but the entire, circular space of the Arctic Ocean. The geographic and political settings of the Arctic Ocean result in serious challenges for a holistic understanding. Like any mediterranean type ocean (engirdled by land masses, see Fig. 1A), the circular Arctic Ocean has to be understood and managed as one ecosystem.

The Arctic Ocean is divided by national interest and often characterized by several internationally non-recognized borders. Each of the five Arctic states that share coastlines along the Arctic Ocean (from the zero meridian to the west: Greenland/Denmark, Canada, USA, Russia and Norway) looks at the Arctic Ocean from a local, south–north perspective. Each country has its own geographic center of gravity. The Arctic perspective of Greenland/Denmark focusses on the largest island of the world, the deep Fram Strait with its out-flowing Arctic water to the east, the deep Arctic Ocean basins to the north, and its enormous ice cap (Fig. 2A). Canada's focus is on its extensive archipelago and its narrow shelf towards the Beaufort Sea (Fig. 2B). The USA focusses on the Alaska Peninsula, the Bering Strait, the inflowing Pacific water and the oligotrophic Beaufort Sea (Fig. 2C). Russia focusses upon the extensive and wide shelf regions north of Siberia, the Kara and Barents seas and its many islands (including Novaya Zemlya and Franz Josef Land), and Norway upon the Svalbard archipelago, the highly productive waters of the Barents Sea, the inflow of Atlantic water, the deep Fram Strait and the adjacent Nansen and Amundsen basins (Fig. 2D). The scientists and politicians of these five Arctic nations thus have completely different perspectives of the Arctic Ocean. They take the local peculiarities as a sign of the whole ("The Arctic Ocean"), resulting in misconceptions. The four perspectives in Fig. 2 need to be geographically and oceanographically combined. For the comprehension and sustainable management of the Arctic Ocean, a pan-Arctic or meta-
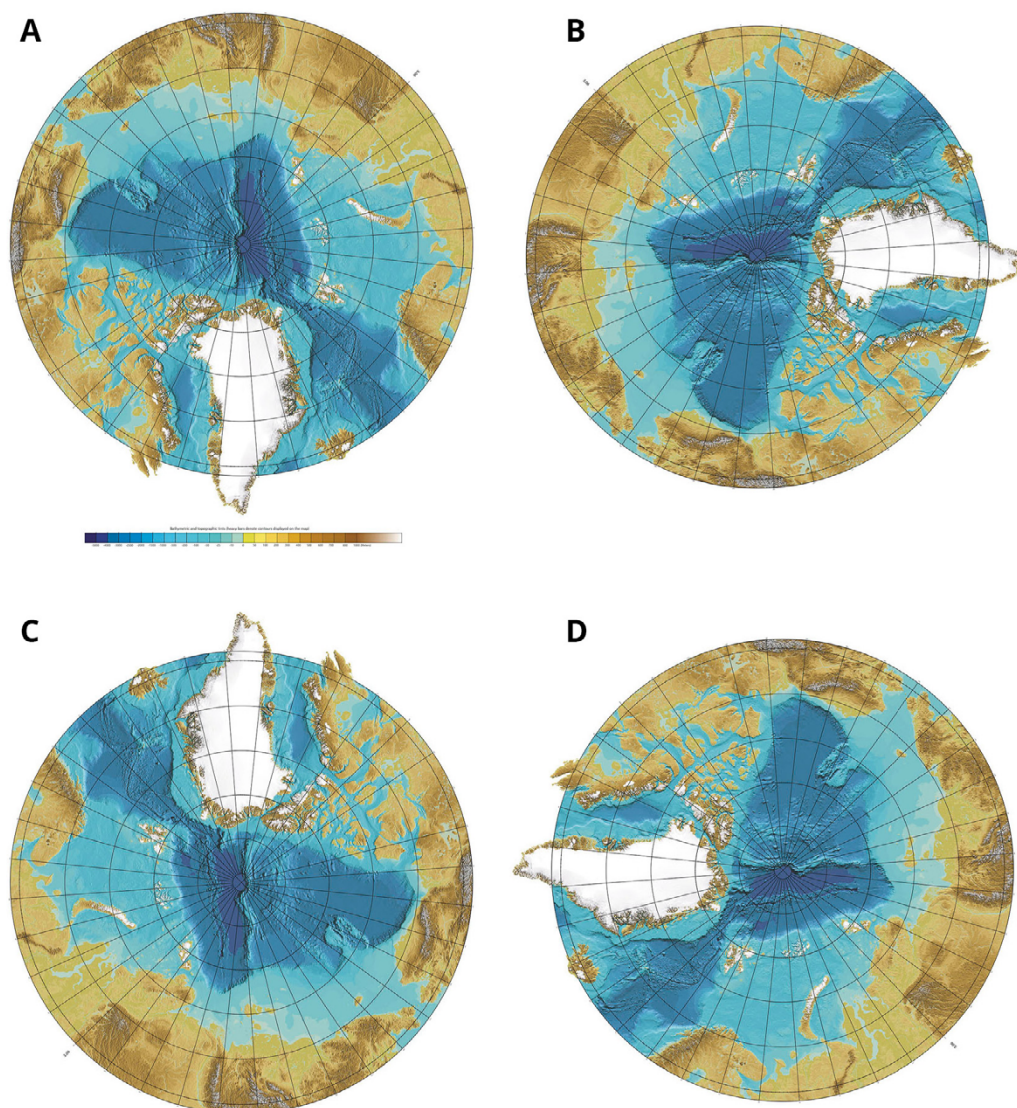
86

Fig. 2. A pan-Arctic map composite, illustrating four perspectives: from Greenland (A), Cananda/USA (B), Russia (C) and Europe (D). Take note that the impression of the Arctic Ocean and its adjacent seas and shelves is widely different, easily supporting skewed generalisations of "how the Arctic Ocean" is functioning. (From chapter 1 in Wassmann 2024.)

perspective is imperative. Only a united perspective can create a base for sustainable ecosystem management.

Like the Baltic Sea, another mediterranean type ocean, the impact of all states engirdling the sea need to present their "point of view," their environmental impact and contribution. This is reflected by The Baltic Marine Environment Protection Commission—also known as the Helsinki Commission (HELCOM)—which is a successful and well-working intergovernmental organization and a regional sea convention in the Baltic Sea area. Politically, work is carried out by the Council of the Baltic Sea States (CBSS) founded in 1992 with the participation of the nine Baltic Sea States.

87

Nothing similar is in place in the Arctic, but for wise and sustainable management, the development of similar organizations is crucial. In concert, such organizations could support an indispensable, multidisciplinary understanding of the Arctic. The question can be raised how a sustainable management of the Arctic Ocean could be achieved. Without comprehensive participation by Russia, such an endeavor is hardly possible. What can be done? One may ask if the political firmness following the unlawful attack upon the Ukraine is so important that a sustainable management of the Arctic Ocean is out of reach. Are there possibilities to combine both our political and environmental goals?

The Pan-Arctic Perspective Is Indispensable

Why is the author preoccupied with pan-Arctic approaches? He lives so far north that he can almost "see" the pan-Arctic region as a curved, two-dimensional region, the "calotte" that covers the entire top of the Northern Hemisphere.[1] Northerners do not observe the Arctic from outside. They live in it. Tromsø is situated less than 36 ship hours away from the ice edge in spring and it takes only two days to reach Greenland. It would only take eight hours by plane to travel to Fairbanks, Alaska. Also, the population of the northern Fenno-Scandic Peninsula consists of a highly diverse, multiethnic conglomerate that is characteristic of the entire Arctic: mountain and coastal Sami, Kven (people of Finnish origin), local ethnic Fenno-Scandians (who had lived in the north for hundreds of years) and non-local Fenno-Scandians, foreigners and refugees. Today the people of the Arctic do not need to include indigenous perspectives: they all live together in their daily life (increasingly so after decades of discrimination of minorities). In concert, it is easier to envision the obvious, which is so often forgotten "in the south": that the Arctic is *one system*, including all the people presently living in the Arctic. To enjoy sociologically, politically and environmentally adequate perspectives, our perspective needs to be pan-Arctic. The Arctic exhibits essential traits that are more difficult to detect with traditional intradisciplinary strategies. The pan-Arctic meta-perspective tells us that the Arctic Ocean is *one system*, a fully functional "nucleus" on top of the world that influences the entire Northern Hemisphere. By combining the spatial dimensions of our knowledge and by paving the ground for "more than there is in isolation", we can create opportunities for a new, systemic dimension. A system is *not* merely the sum of the parts, but something more. Unless we approach the Arctic in a systemic manner, our current strategy may be inadequate to grasp the essentials of the Arctic Ocean. We need to look for the patterns of the pan-Arctic "calotte," not just the parts. However, even among geographically, politically and sociologically close nations, such as Finland, Norway and Sweden, "calotte" cooperation in the High North is challenging (although improving). The reason for that may be the fact that the capitals of the Nordic countries are all situated in the south.

As an example of how looking for parts, reflects our inadequate attitudes with regard to the Artic Ocean, I use the frequently applied term "Western Arctic," a term often applied by researchers from the USA and Canada investigating the Bering Sea, Bering Strait and the Chukchi Sea. "Western" implies west from the perspective of the North American continent, and suggests that the scientists consider their continent as the cultural center of gravity in the north. Similarly, a Russian may talk about the Barents Sea as the "Western Arctic" while what the Canadian and US scientists call

the "Western Arctic" would be the Russian "Eastern Arctic." The ambivalent term "Western Arctic" is so entrenched that it cannot be omitted in the literature, but it is hopelessly geographically and culturally inaccurate. Thus, only specific geographic terms should be applied to the Arctic Ocean. By giving up the term "Western Arctic," Canadian and US scientists would indicate that they do not consider themselves as the cultural center of gravity, but offer their contribution to the whole.

In a two-dimensional, circular system on the "top of the world," the terms east and west only have a navigational meaning: the coordinates. Cultural centers of gravity only surface when we omit to consider the Arctic Ocean as one, circular system. If we, in the future, address the pan-Arctic region through our local, south–north transects or our political endeavors,[2] we are faced with the question of how to visualize the Arctic Ocean. Which part of the Northern Hemisphere should be at the bottom of our maps (Fig. 2)? A general standard based upon a compromise must be acquired. It is suggested that the lower center of all two-dimensional presentations of the entire Arctic Ocean is Greenland or the zero meridian (similar to Fig. 1A). In this manner, the large-scale impact of the Greenland ice cap and the inflow and outflow of Atlantic and Arctic water, respectively, upon the Arctic Ocean and the North Atlantic will become the focus. The political east and west will be clearly separated, clearly separated, without claims by the big Arctic nations such as Canada, USA and Russia to be centers of gravity.

Towards a Meta-Perspective of the Arctic Ocean

Having in mind these challenges and knowledge gaps, we may ask how far we have come to understand the Arctic Ocean as one system, or if we have already obtained some holistic understanding of the contemporary and future Arctic Ocean? In recent decades, significant work in natural science has been carried out internationally. Knowledge has been exchanged across the pan-Arctic region since 2002 when a set of pan-Arctic integration symposia were initiated by UiT – The Arctic University of Norway. Over the years these endeavors have resulted in four volumes with dedicated publications (Wassmann 2006; Wassmann 2011; Wassmann 2015; Wassmann et al. 2021). On this basis, an invitation by the Interagency Arctic Research Policy Committee (IARPC) and Bureau of Ocean Energy Management (BOEM), Office of Naval Research, USA (ONR), US Arctic Research Commission (USARC) was directed to UiT – the Arctic University of Norway to lead efforts to formulate a unifying perspective of the ecological function of the entire Arctic Ocean. In 2016 this invitation was picked up by the research groups Seasonal Ice Zone Ecology (ArcticSIZE) and Arctic Marine Ecosystem Research Network (ARCTOS) who initiated the workshop "Towards a Unifying Pan-Arctic Perspective: Concepts and Theories," led by P. Wassmann, C.M. Duarte and E. Carmack. In turn, this workshop resulted in a comprehensive publication (Wassmann et al. 2020) where the basic features, functions and biological players of the Arctic Ocean were adequately summarized. Also, the work of AMAP and Conservation of Arctic Flora and Fauna (CAFF) must be considered, paving the road for recent integrating programs such as the Multidisciplinary Drifting Observatory for the Study of Arctic Climate Change (MOSAiC) expedition, Pan-Arctic Observing System of Systems (Arctic PASSION) and the Nansen and Amundsen Basins Observational Systems (NABOS).

The oceanography and basic biological and ecological players, and how the Arctic Ocean is embedded into the Northern Hemisphere, are already reasonably well known (Fig. 1). This implies that the most important ice flora and fauna, phyto- and zooplankton and many benthic species are known. In particular, the fish fauna is well known and overviews and distribution maps for most species exist. Less known is the gelatinous zooplankton and the deep sea fauna. We have also started to become familiar with basic biological processes such as primary production, ice edge blooms, succession of key organisms, vertical migration of zooplankton, vertical flux regulation of biogenic matter and sea ice related organisms and their succession. The traditional phenology of phytoplankton blooms as a function of ice and snow cover and nutrient limitation, and the effects of the Polar night on multiannual life cycles of several organisms are also known. Estimates of the harvestable production have been launched. We also understand the one-to-multiyear life cycle strategies of major zooplankton species in permanently and seasonally ice-covered as well as ice-free regions (for a comprehensive overview, see Wassmann 2024). Even the footprints of climate change in the Arctic have been extensively investigated (Wassmann et al. 2011) and revised for the effects of climate change during the last decade (Brandt, Wassmann & Piepenburg 2023).

In summary, although pan-Arctic integration is not a highly prioritized aspect of scientific investigations in the Arctic, organizations such as AMAP, CAFF, a multitude of expeditions by the Swedish Polar Research Secretariat, Arctic Net, the Tukavik Laboratory, the pan-Arctic Distributed Biological Observing network, regular Russian expeditions by the Institute of Oceanology, a wide range of Danish projects, MOSAiC, The Nansen Legacy, Arctic PASSION and others have paved the ground for today's rudimentary comprehension (Fig. 1). Recently, the coordination activities by UiT – the Arctic University of Norway have resulted in the first pan-Arctic textbook in marine ecology (Wassmann 2024), creating the foundation for educating new generations of scientist in a fully pan-Arctic perspective. In decades to come, these will not start from four sectorial perspectives (Fig. 2), but will start immediately from the only adequate one: that of the pan-Arctic.

Future Endorsement of the Indispensable Pan-Arctic Challenge

It is more than timely that scientists working in the Arctic discuss the demand for further and realistic investigations that support the indispensable need to understand and, last but not least, manage the expanse of the Arctic Ocean, since these inter- and multidisciplinary studies, beyond the procedures, elements and proportions that have dominated so far are imperative. In many respects, natural science has already applied "interdisciplinary" investigations in the Arctic Ocean. Meteorology, physical, chemical and biological oceanography, paleontology, fishery science and modeling can be seen as disciplines. However, the combination of these science fields, often promoted by the isolation and confinement during icebreaker expeditions, have provided us with an understanding of the elements and basic function of the nature of the pan-Arctic Ocean (e.g., Wassmann 2024).

In the author's opinion, some of the multidisciplinary work in the Arctic, carried out with noble and timely intentions, lack adequate and balanced scientific knowledge. We need more knowledge on the complex social-ecological dynamics, the implica-

90

tions for resilience of coastal communities (tourism, transport, mineral exploration, or biological resource exploitation) and how climate change challenges ecosystems that have significance for indigenous populations (cf. Arctic Council 2016). Scientific research in the Arctic Ocean started relatively late, during a period when the ecosystems were already exposed to climate change. Natural science research is so strongly impacted by climate change and Arctic amplification that the basic function of the Arctic Ocean, prior to global warming, is difficult to establish. Considering complex social-ecological dynamics can thus not be based on a sound natural science base, and climate change will increasingly challenge the living conditions of the people living in the Arctic, in particular, the indigenous peoples. The advice, predictions and projections made by natural scientists are not as detailed as desired.

Natural scientists have been accused of trying to force their vision of future climate change upon indigenous populations, without involving the knowledge of the elders (e.g., Karetak et al. 2017). It is highly critique-worthy that it took so long for natural scientists to listen to indigenous knowledge, and for governments to respect indigenous rights (Gaski 2013). Climate is talked about and represented as having the power to influence our lives in ways we have never before experienced or imagined, suggesting something transformative, and disruptive. In doing so, the complexity of human future is explained in terms of scientific models that suggest a return to climatic and environmental determinism that oversimplifies our understanding of human–environment relations (e.g., Nuttal 2012). However, climate change predictions do not primarily reflect a lack of respect by natural scientists for the choices humans make. Nor do they try to represent a form of "benevolent dictatorship." They address the challenge for all people of the Arctic to respond to the rapidity and harshness of climate change that exceeds by far hitherto accumulated knowledge by science as well as traditional knowledge. The advice of natural scientists may address environmental and climatic challenges that have never been experienced before, such as the loss of sea-ice during the hunting season, loss of housing and parts of the taiga due to permafrost melt, or ice layers under the snow that prevent reindeer from reaching fodder. Knowledge of the Arctic of yesterday is thus not a safe pathway into a sustainable future; essential tipping points are notoriously difficult to predict (Wassmann & Lenton 2012). For sociologists, anthropologists, economists and natural scientists alike, more modesty, openness and intense dialogues between researchers and with Arctic locals are mandatory.

The limited availability of adequate education for future experts points at a lack of dedication to achieve balanced, joint solutions. Institutions of higher education appear to struggle with educating researchers who can deal with integrated and multidisciplinary solutions and thus they fail to meet society's expectations for the ever-increasing need for these solutions. Being afraid that they have to make scientific sacrifices that will weaken their specific research fields, faculties are often reluctant to contribute wholeheartedly to such education. The multidisciplinary students need to convene on a regular basis, they must get exposed to a wide range of different research fields and they have to include specialists of the respective faculties. By doing so, they will not contribute exclusively to the particular research goals of their faculties. Overarching integrated and multidisciplinary approaches have to become a dedicated research goal of institutions of higher education.

Also, there are excellent graduate school courses in the pan-Arctic region that offer international short-term participation (e.g. on icebreakers). Due to the traditional dedication to support national research, it is notoriously difficult to obtain national funding for course participation abroad, as well as acceptance of study credits from other countries. In this manner, nations refrain from doing what is needed to comprehend the challenges facing the Arctic: multidisciplinary and pan-Arctic research and understanding. We clearly need to improve two issues: 1) universities need to live up to expectations and educate experts that can solve complex climate change challenges; 2) we need international, recognized umbrellas that promote and partly fund international courses for doctoral students in the pan-Arctic region. The Arctic Ocean requires a new generation of researchers who, from the start, adopt pan-Arctic and multidisciplinary, rather than sectorial and single faculty, perspectives. We also need patience to achieve adequate solutions; there is a tendency towards counting our chickens before they are hatched.

Arctic Science Meetings and the International Polar Year

Under the pressure and interests of national policies, an increasing number of Arctic science meetings that originally were based upon science have turned into politically and economically dominated venues where any type of basic science plays an increasingly peripheral role. That leaves less time to increase the basic knowledge foundation of the future Arctic. However, there are venues that can contribute to increased pan-Arctic understanding in all relevant science fields. The annual Arctic Science Summit Week (ASSW) is one of these fora that indeed promote pan-Arctic integration. However, ASSW tends to promote a maximum number of talks and posters. To accommodate as many sessions as possible, less coherent sessions are fused, with the result that presentations fit badly together. More than several hundred short talks in a three-day period ensure a rich numerical accumulation of knowledge, but prevent integration or comprehensive understanding of the Arctic system. Systems are *not* merely the sum of the parts, and the lack of discussions prevent deeper comprehension. To promote a holistic understanding we need fewer, longer and more integrated presentations, and fora for longer discussions that focus upon integration, process understanding, multidisciplinary approaches and planning of future research.

An important event for pan-Arctic and interdisciplinary comprehension was the 4th International Polar Year (IPY 2007–2008). An enormous, unprecedented, synchronized endeavor of simultaneous investigations took place over the entire Arctic. But almost no money was set aside to work up and compare data in an international, pan-Arctic perspective. Thus, the 4th IPY failed to become more than a suite of national endeavors, inside an international framework. Despite its great success, IPY failed to obtain its ultimate goal: an international meta-analysis across polar regions for holistic comprehension. A real pan-Arctic integration milestone was in reach, but the option was regrettably missed; preference was given to traditional national endeavors, rather than all-compassing international ones.

The 5th International Polar Year (2032–2033) is already in the planning. In order to use this new IPY in the best possible way for promoting pan-Arctic integration and endorse interdisciplinarity, we should plan to organize the next IPY out of a truly pan-Arctic spirit. To achieve inter- and multidisciplinary, as well as pan-Arctic, inte-

gration after the two-year field campaign, an indispensable ten-year meta-data campaign should follow. Also, an internationally accessible archive or portal for IPY data must be in place. A new generation of researchers needs to be recruited by working on pan-Arctic IPY data. Therefore, pan-Arctic and pan-Antarctic integration needs to be placed at the top of future IPY agendas right from the start. The scientific community needs to be committed to fostering interdisciplinary progress, across the natural and social sciences and humanities. The mutual dependence of inter- and multidisciplinary progress is a precondition for making sufficient progress. This can be compared to the second floor of a building. The social-ecological dynamics that lead to sustainable ecosystem management represent the third floor. Both these floors depend on the first floor, which is pan-Arctic integration, and a solid basement made up of a multitude of sciences. Focussing on the second and third floor of a house before planning a substantial basement and a solid first floor results in a fragile building. Without such endeavors our good intentions turn into pipe dreams.

Concluding Outlook

In Norse mythology the ravens Hugin (thought) and Munin (memory), couriers for Odin's thirst for knowledge, represent symbols of our generic endeavors to learn both from and about the past and the future. They symbolize our indispensable desire for knowledge upon which wise decision-making and a sustainable development need to be based. They have a particular mission for UiT – The Arctic University of Norway, the alma mater of the author, as they constitute the university's symbol. The past and future knowledge of the northern realms, including the Arctic Ocean, is continuously brought back to UiT and any Nordic stronghold of learning where knowledge for wise assessments accumulates. The Arctic Ocean is a crucial region for our existence in the Northern Hemisphere and needs adequate attention. The research institutions in the North have a particular mission which should be far more highlighted. By focusing upon the Arctic, Nordic research institutions will make a significant contribution to the living conditions in the Northern Hemisphere, preferably out of a pan-Arctic and multidisciplinary perspective. Above all, we must achieve a solid base for sustainable and wise ecosystem management that includes all people living in the Arctic region and those who are impacted by climate change and rely on resources from the region. We have to make sure that the ravens Hugin and Munin fly every day, now and in the future. And Odin—or we—must listen carefully to be able to comprehend how to act in the future.

In addition to good information, humanity needs terms, concepts and models that inspire, unify and excite contributors. We believe that pan-Arctic integration can serve this purpose. A poem by Joseph von Eichendorff (translated by Walter A. Aue) illuminates the attraction of the term *pan-Arctic integration*.

Magic Wand

Sleeps a song in things abounding
that keep dreaming to be heard:
Earth's tunes will start resounding
if you find the magic word.

93

Inspired by Dobzhansky's famous dictum, we conclude that nothing in the High North makes sense except in the light of a pan-Arctic vision and a shared history. The magic wand to find this appropriate perspective is the term *pan-Arctic*. It resounds the tunes of the earth on the "calotte" of the High North. If we finally achieve the pan-Arctic vision throughout, we will enter a new, highly desired and ultimate phase in the High North: syn-Arctic comprehension (*syn* = 'acting or considered together; united'). Syn-Arctic comprehension translates into a full, wide-ranging and encompassing strategy, the ultimate base for pan-Arctic Ocean decision making. Getting there is a long process, but we are on our way.

NOTES

[1]   The Norwegian and Swedish term *Nordkalotten* and the Finnish *Pohjoiskalotti* ['Cap/Calotte of the North'] is the region of Norway, Sweden, and Finland located north of the Arctic Circle.

[2]   Already under Stalin, the Soviet Union/Russia claimed that the country is an Arctic nation and that the sectors from the North Pole and between the Franz Josef Land, the date line through the Bering Strait, were Russian territorial waters. In 2007 this view found support when a Russian expedition, financed privately by a Swede, descended in a pair of submersible vessels more than two miles under the ice cap to "claim" the North Pole by depositing a Russian flag on the seabed. From an international point of view, this was only a demonstration as it is the Law of the Sea, coordinated by the United Nations, that defines borders outside the 200 nautical mile zones.

REFERENCES

Arctic Council (2016). *Arctic Resilience Report*, eds. M. Carson & G. Peterson, Stockholm: Stockholm Environment Institute and Stockholm Resilience Centre; https://oaarchive.arctic-council.org/items/894931be-6903-4e89-a333-512851b64bc3; accessed on 16 Sept. 2024.

Brandt, S., Wassmann, P. & Piepenburg, D. (2023). "Revisiting the footprints of climate change in Arctic marine food webs. An assessment of knowledge gained since 2010," *Frontiers of Marine Science. Global Change and the Future Ocean*, 10; https://doi.org/10.3389/fmars.2023.1096222.

Gaski, H. (2013). "Indigenism and cosmopolitism. A pan-Sami view of the Indigenous perspective in Sami culture and research," *AlterNative. An International Journal of Indigenous Peoples*, 9:2, pp. 113–124; doi.org/10.1177/117718011300900201.

Karetak, J., Tester, F. & Tagalik, S. (eds.) (2017). *Inuit Qaujimajatuqangit. What Inuit Have Always Known to Be True*, Halifax & Winnipeg: Fernwood Publishing.

Kinney, J.C., Maslowski, W., Osinski, R., Lee, Y.J., Goethel, C., Frey, K. & Craig, A. (2022). "On the variability of the Bering Sea Cold Pool and implications for the biophysical environment," *PLOS ONE*, 17:4; doi.org/10.1371/journal.pone.0266180.

Lindsey, R. (2021). "Understanding the Arctic polar vortex," NOAA; www.climate.gov/news-features/understanding-climate/understanding-arctic-polar-vortex; accessed on 13 Sept. 2024.

Nuttall, M. (2012). "Tipping points and the human world. Living with change and thinking about the future," *AMBIO. A Journal of the Human Environment*, 41, pp. 96–105; doi.org/10.1007/s13280-011-0228-3.

Slagstad, D., Wassmann, P. & Ellingsen, I. (2015). "Physical constrains and productivity in the future Arctic Ocean," *Frontiers Marine Science*, 2:85; doi.org/10.3389/fmars.2015.00085.

Wassmann, P. (ed.) (2006). "Structure and function of contemporary food webs on Arctic shelves. A pan-Arctic comparison," special issue of *Progress in Oceanography*, 71:2–4, pp. 123–477.

Wassmann, P. (ed.) (2011). "Arctic marine ecosystems in an era of rapid climate change," special issue of *Progress in Oceanography*, 90:1–4, pp. 1–131.

Wassmann, P. (ed.) (2015). "Overarching perspectives of contemporary and future ecosystems in the Arctic Ocean," special of *Progress in Oceanography*, 139, pp. 1–272.

Wassmann, P. (ed.) (2024). *Elements of a Pan-Arctic Marine Ecology*, Stamsund: Orkana forlag.

Wassmann, P., Duarte, C.M, Agusti, S. & Sejr, M. (2011). "Footprints of climate change in the Arctic marine ecosystem," *Biological Global Change*, 17:2, pp. 1235–1429; doi.org/10.1111/j.1365-2486.2010.02311.x.

Wassmann, P., Carmack, E.C., Bluhm, B.A., Duarte, C.M., Berge, J., Brown, K., Grebmeier, J.M., Holding, J., Kosobokova, K., Kwok, R., Matrai, P., Agusti, S.R., Babin, M., Bhatt, U., Eicken, H., Polyakov, I., Rysgaard, S. & Huntington, H.P. (2020). "Towards a unifying pan-Arctic perspective. A conceptual modelling toolkit," *Progress Oceanography*, 189; doi.org/10.1016/j.pocean.2020.102455.

Wassmann, P., Krause-Jensen, D., Bluhm, B. & Janout, M. (eds.) (2021). "Towards a Unifying Pan-Arctic Perspective of the Contemporary and Future Arctic Ocean," Frontiers in Marine Science; https://www.frontiersin.org/research-topics/7353/towards-a-unifying-pan-arctic-perspective-of-the-contemporary-and-future-arctic-ocean; accessed on 13 Sept. 2024.

Wassmann, P. & Lenton, T. (eds.) (2012). "Arctic tipping points in the Earth System perspective," *AMBIO. A Journal of the Human Environment*, 41:1, pp 1–9; http://dx.doi.org/10.1007/s13280-011-0230-9.

Paul Wassmann
Institute of Arctic and Marine Biology
UiT – The Arctic University of Norway
paul.wassmann@uit.no

95

Reviews

Book review editor: Lars-Erik Edlund, Dept. of Language Studies, Umeå University, SE-901 87 Umeå, Sweden
Tel. +46-(0)90-786 7887
E-mail: lars-erik.edlund@umu.se

Chris Callow, *Landscape, Tradition and Power in Medieval Iceland. Dalir and Eyjafjörður Region c. 870–1265* (The Northern World, 80), Leiden; Brill 2020, ISBN 9789004278875, 386 pp.

This book compares systems of geopolitical power including the formation of alliances through marriages in two regions of Iceland, Dalir and Eyjafjörður, as found in the Sagas of Icelanders (*Íslendingasögur*), The Book of Settlements (*Landnámabók*), Contemporary sagas (*Sturlunga saga*) and other publications.

The author, Chris Callow, has done admirable work in this carefully written and interesting book which spans 300 pages, and is complimented by a 34-page bibliography, 11 maps, and 18 photographs. The book is well written, and the text accessible to the general reader. The book should be welcomed by all who have an interest in the subject and will be especially beneficial to scholars in the field. Tho book covers a wide time range, from colonization to the end of the Icelandic Commonwealth in the middle of the thirteenth century, and the collection of sources is all documented. It is a fresh approach to focus the content of the book on geopolitics at the local level in Dalir and Eyjafjörður.

After reading *Íslendingasögur* as a testimony of the geopolitical power system at local level in the Middle Ages, the author claims it was characterized by stability and consistency, which in my view is the most important conclusion of the book. The *goðorð*, the legal authority owned by chieftains (*goði/höfðingi*) was geographically delimited, and although the form of the *goðorð* was not stable as the medieval Icelandic laws suggest—their number may not have been fixed and their names changed from time to time—the decision-making process the author describes, although he does not use that term, seems to have been stable and consistent. Every *goði* had around him a group of farmers, self-declared followers who lived near him. In each province, there could only be a limited number of *goðar* (the plural of *goði*). Their decisions on the use of force or making agreement, were driven by their own interests and the overarching goal of preventing society from descending into total warfare. I understand the results to mean that the power of a specific *goði* was as great as his last political or military victory. To win such victories, power was needed, and it was not obtained by legal order, but by use of force and making alliances with other powerful chieftains. The power was therefore not constitutional but came from control over land. The *goðar* were, says Callow, a constant threat to each other and to a peaceful society.

Callow says the time of the origin of the *Íslendingasögur* is older than has been suggested, before or in the second half of the twelfth century rather than in the sec-

ond half of the thirteenth century or later. His conclusion on this is persuasive, and it is important to an understanding of the stories, if not only for the obvious fact that they cannot be told from the political interests of the thirteenth century. More importantly, Callow doubts that the descriptions of the geopolitical power system were shaped by the interests of specific rulers, clans or interests as result of their role in the compilation of the sagas. Written texts that have both oral and written origins were created at different times, by different writers, either familiar with local matters or from other regions, but who describe the geopolitical power systems in regions in the same way. I believe this supports the perspective that we should consider whether these stories serve not only as records of the time in which they were written, but also as narratives of the events they depict. The only systematic bias the author finds is that the stories don't deal with the lives of the public but have focus on the *goðar*. It appears that *Íslendingasögur* can be thought of as a legitimate sample of sources about the Commonwealth. It is tempting to wonder if those who compiled the stories and wrote them down had something to rely on other than the stories of the events they describe, such as the story of an ancestor of Norwegian chieftains Helgi magri (the thin), who colonized Eyjafjörður, and who was born in Ireland as son of an Irish princess, Rafarta. Callow specifically states that he does not assume so and doubts this story of the settlement of Eyjafjörður (p. 311). Callow, however, accepts this description in the sagas of the geopolitical power system of leadership of one powerful *goði* in the region. Although the sagas leave a gap in who exactly controlled one specific part of the region, which Callow explains as being due to the influence exerted by the Norwegian monarchy in Eyjafjörður, but not in Dalir.

The authors' description of the origins of the geopolitical systems in Dalir and Eyjafjörður is clear and convincing and pushes back against efforts to paint a completely different picture of the nation's history than that found in medieval texts. Despite decades of searching for archaeological remains, nothing has been found that indicates settlement before the time indicated by the medieval texts, nor of the existence of a nation and culture whose stories have been drawn from the national memory. Callow enhances the credibility of these medieval texts. One source that Callow omitted are the existing names of farms which are likely named after the original settlers on farms for example Örlygur, Skeggi, Hróar, Harri on Skagaströnd.

Callow assumes that the Norwegian "takeover" of the Icelandic Commonwealth was not the result of economic or social development in the country but rather was due to the Norwegian military strength. This is contrary to one of the main assumptions of the independence struggle in the nineteenth century, which was the decision of the Icelanders to side with the King of Norway, rather than being forced to do so. He sees nothing but stagnation in society and the consolidation of the power of the chiefs who received a quarter of the property tax. However, if they controlled three quarters of it (the tithe of the church, priests and the poor), it would amount to the equivalent of the total value of all land in the country within a century. The question the book proposes is whether a marginal change in the balance of power could, over a long period of time, lead to a fundamental change in society.

The economic history of Iceland in the Middle Ages is under-researched and one question that arises is whether the impact of the increase in demand for fish in Europe started to impact politics in Iceland in the thirteenth century as the church sought

97

to exert its independence from chieftains and the Norwegian monarchy sought for control of the country. Could the idea of bureaucracy as described by Weber clarify the picture? If we can interpret political history with the level of accuracy that is described in this book, then we should also be capable of discerning economic history from these same texts. I think Callows writing challenges scholars to further explore the economic history of Middle Ages and the end of the Commonwealth from the perspective of the interests of the ruling class who were protecting their status through agreement with the Norwegian King.

The author firmly avoids letting the stories take hold of the analysis of sources and does so quite well. After passing up one opportunity after another to use one of the brilliant responses found in the sagas and writing long academic texts where Guðrún Ósvífursdóttir is on every page, he finally falls for Hallgerður langbrók and Hrútur Herjólfsson comments on her beauty end eyes (pp. 260–261). I leave it to feminist post-structuralist discourse analysts to judge whether and what to conclude from this. I recommend taking the time to read relevant Icelandic sagas, along with Callow's theoretical analysis of the geopolitical power system they describe. It's a fulfilling activity that provides the opportunity to interpret the stories in a new light.

Þorlákur Axel Jónsson
School of Humanities and Social Sciences
University of Akureyri
Iceland
thorlakur@unak.is

Gunnar Harðarson & Karl G. Johansson (eds.), *Dominican Resonances in Medieval Iceland. The Legacy of Bishop Jón Halldórsson of Skálholt* (The Northern World, 91), Leiden: Brill 2021, ISBN 9004448799, IX+337 pp.

Until recently, many scholars were eager to ascribe Old Norse narratives to a handful of evocative names from the Icelandic Middle Ages that we happen to know today, be it Sæmundr the Learned, Ari the Learned or the allegedly greatest of them all, Snorri Sturluson, who, in more recent times, has even been accompanied by his nephew Sturla Þorðarson—a narrative of presumed importance had to be connected to a man of presumed importance, entailing mutual confirmation. While this tendency can still be found in Old Norse scholarship, the last decade or so has seen increasing attempts to overcome the limitations of this selective appreciation. This has broadened the view towards formerly neglected texts, individuals and ideas from formerly unappealing time periods of the Nordic Middle Ages.

The present conference volume is the result of such a re-perspectivation. It focuses on the Iceland bishop Jón Halldórsson in the first half of the fourteenth century, and explores his possible connections to a variety of cultural currents at the time: clerical education, liturgy, saga literature, and manuscript production, for example. Eleven papers, written by scholars at different career stages, seek to place Jón and his legacy within these subfields, and these contributions have in common that they are stated to be tentative and speculative. With that said, Jón's significance for the argument of a specific paper is varying. In some contributions he takes centre stage, others mention his name in passing and then set out to explore a more general phenomenon. As the editors state in their brief preface, the published essays are only partly building on presentations at the related conference in 2016, with some lectures having been published elsewhere or nor at all, and other contributions having been added later.

The result is a potpourri of scholarly reflections that are all somehow connected to Jón Halldórsson, but which deal with separate topics, often connected to ongoing research foci or earlier publications by the respective authors. This is, of course, typical of a conference volume, and by no means a bad thing: the variety of approaches offers aspects for further debate in various subfields, and it is refreshing to see how far the discussion of a formerly rather neglected fourteenth-century individual can go. As mentioned above, most authors are careful to present any possible connection of their subjects of interest with Jón as a hypothesis which requires further inquiry. Still, the overall tone is clear: Jón was a man of uttermost erudition in his time (and was lucky enough to be remembered as such), and his years-long stay abroad for educational reasons makes him an ideal candidate to ponder on the introduction of continental ideology to the North. Whether this really only happened as of the fourteenth century, and how both the twelfth and the thirteenth century may be related to this development, is open to further discussion, as is the question of which other learnings, politics, and mentalities in Central Europe might have had an impact on Old Norse literature and culture during these centuries. From this point of view, a particular merit of the volume at hand is that it questions scholarship's traditional limitation on the so-called *Sturlungaöld* in the late twelfth and early thirteenth centuries.

The book provides a solid index and a few interesting appendices, but no joined bibliography, although many papers mention the same publications. Given such overlap, it would have been interesting to try to connect the argument of the individual contributions. However, for the most part, the individual authors take no notice of what their co-authors are writing, and the editors do not try to merge the range of approaches into a meaningful whole other than through very broad rubrics that are open to different readings.

Still, the present volume is a rich source for colorful details, not only on Jón Halldórsson but on (late) medieval Iceland in general. The book is appealing through the varied range of its contributors and their latitude in approaching Jón's legacy from their individual points of view. It is to be hoped that more publications of this type will see the light of day in the near future, with more attention being paid to the complex and revolutionary developments that marked medieval Europe beyond its present borders.

Jan Alexander van Nahl
School of Humanities
University of Iceland
Reykjavík
jvannahl@hi.is

Tore Iversen, John Ragnar Myking & Stefan Sonderegger (eds.), *Peasants, Lords, and State. Comparing Peasant Conditions in Scandinavia and the Eastern Alpine Region, 1000–1750* (The Northern world 89), Leiden: Brill 2020, ISBN 9789004429703, 375 pp.

The present book is the final report of a major research project entitled "Peasants' control over land and resources from the High Middle Ages to the end of the early modern period—Norway, Scandinavia, and the eastern Alpine region 1000–1750" which was completed several years ago. The project received funding from the Research Council of Norway in 2004–2007 which financed three major and three smaller seminars.

As the editors themselves acknowledge, this closing volume of the project is long overdue. Admittedly, the publication of the findings of such a major research project will always take a few years after funding has ended. Nor is history a subject where research findings expire in the sense that may be the case in the natural sciences. Nevertheless, the book's value would probably have been even greater, and its content more professionally fruitful, if it had been published a few years earlier. Some of the project's participants have died, and several others have retired. Even though retired historians participate to a large extent in research debates, the potential academic discussion based on the project's conclusions might nevertheless turn out to be somewhat less fruitful than it could have been if the results had been presented to the academic community earlier. In the extensive bibliography, I count nine titles younger than 2014. Of course, this may primarily reflect the research situation, but it probably also shows that the book is not completely updated on the "Stand der Forschung." However, what has been said above must not overshadow the project's and thus the book's, valuable aspects. There is reason to congratulate the editors on finally having published this final report.

The project's overall aim was comparison, partly to counteract the tendency to study agrarian societies only within national or regional frameworks, and partly to challenge and assess the widespread perception of a Scandinavian "Sonderweg" regarding farmers' independence and self-determination compared to their European counterparts. According to the editors, the latter applies in particular to Norwegian historical research. I agree with this, but I would say that Swedish historical research also often emphasises such a specific peasant independence in Sweden. The project aimed to assess the degree of peasant control over land and resources in Scandinavia and in the eastern Alpine region from around 1000 up to 1750. The researchers wanted to understand better the development of peasant control and influence in institutions dealing with social and agrarian issues in rural society and conflicts within peasant society in these two regions. The original inspiration for choosing to compare the eastern Alpine region with Scandinavia came from an unfinished project in the interwar period related to the Norwegian Institute for Comparative Cultural Research initiated by the renowned Norwegian historian Edvard Bull Sr. (1881–1932). Bull wanted to find "valid laws" and "objective correlations" in the development of peasant societies in Scandinavia and the Alpine regions. The project was never completed due

to the international situation that developed toward the Second World War.

Any attempts to find objective historical laws today seem futile. However, the project's initiators, Tore Iversen and Jan Ragnar Myking, were still inspired by the concrete studies carried out in the framework of the institute in their attempt to compare peasant control over land and resources in the two regions. The reason for choosing to compare the eastern Alpine region with Scandinavia is the marked topographical resemblance between the two areas. In the mountainous areas of Norway, northern Scandinavia, and the eastern Alpine regions, not much land is suited for cultivation, while ample space is available for grazing and foresting. On the other hand, in Bavaria, Denmark, and southern Sweden, we find wide, fertile valleys and large, continuous plains with moraine soil. According to Iversen and Myking, this variation in topography offers an opportunity to analyse the effect of topographical factors on peasant control over land and resources without neglecting the impact of hierarchical power structures involving ecclesiastical and aristocratic landlords, territorial lords and emerging territorial states. The research was concentrated on Norway and Denmark in Scandinavia, and Bavaria and Tyrol in the eastern Alpine region, as these territories turned out to be the most rewarding ones for contrasting topography and territorial and manorial dominion. Contrasting is central in comparisons of this kind. Other territories, like Sweden and Switzerland, are commented on only in so far as they shed light on similarities and differences between the eastern Alpine region and Scandinavia.

The research project was focused on "slavery and unfreedom," "leasehold and freehold," and "peasant participation in thing and local assemblies." The volume presents these three topics in three main chapters in Part 2. Part 1 is an introduction presenting historiographical and methodological reflections, and Part 3 is historiographical, dealing with how peasants have been portrayed in Norwegian, Austrian, German, and Swiss historiography. The last part of the volume, titled "Appendix," consists of two articles, one discussing the sub-peasant strata in the late Medieval and early Modern eastern Alpine region, the other presenting new Swiss and German research concerning active manorial lords and peasant farmers in the economic life of the late Middle Ages. While not explicitly stated, it is reasonable to conclude that these last two articles were written specifically for the present book, i.e., after the original project had ended.

Social groups are difficult to delimit as there are always gradations within such groups and, not least, grey areas *between* groups. This holds especially true of the Middle Ages, where a large proportion of the population did not belong to the ruling elite but constituted the "producers," habitually called "peasants." Tore Iversen and Jan Ragnar Myking are fully aware of this, and one of the great merits of this book is that it reveals how the social, economic, and political position of people below the aristocracy is graded in time and space. Operating with a distinction between "free" and "unfree" for large parts of the Middle Ages is too crude. The three main topics of the project correlate with three different types of dominion over peasants in ancient European societies. In German, Austrian, and Swiss historiography, these types of dominion are labelled *Leibherrschaft* (dominion over body and person), *Grundherrschaft* (dominion over land) and *Gerichtsherrschaft* (legal dominion). These three forms of dominion were not clearly separated from each other. In brief, they indicate

that peasant control over land and resources was circumscribed by hierarchical structures, although depending to a varying degree on the historical development of the different regions and countries.

However, the social differentiation and analysis sometimes appear somewhat unclear and unsatisfactory. Iversen and Myking point out that from the High Middle Ages and into the early modern period, a social group was established below, but linked to, the peasant class. In the Alpine region, they are called *unterbäuerliche Schichten*; in Scandinavia, they are called *husmenn*. Here, the authors use the term "class" to refer to the peasants. Later, they talk about "estates," where they distinguish a peasant estate from other estates of the clergy, the aristocracy, and a town-dwelling class of merchants and craftsmen. In reality, the contemporary medieval ideology of estates divided the population into the clergy, the aristocracy and "the rest" (i.e. peasants and townsmen). Only after the distinction between "free" and "unfree" had disappeared, does it become meaningful, according to the authors, to operate with a uniform concept of "farmers" in the sense of farmers who worked the land. However, such a definition is, in my opinion, too crude to understand medieval society in the High and Late Middle Ages. Iversen and Myking should have been as aware of the social grey areas *upward* in society, between the aristocracy and the rest of the population, as they have been regarding the grey ones downward in society. As far as I can see, they do not define "aristocracy," which is unfortunate considering the project's issues and analyses.

For Iversen and Myking, the relationship between the aristocracy and the prince (whether a king or a duke) is essential for understanding the position of the peasants in society. The balance of power between the prince and the aristocracy influences the relationship between aristocracy and peasants and between the prince and the peasants. In such a context, it is important to remember that "aristocracy" is an analytical term with several criteria to delimit aristocrats in medieval Europe. Using these criteria, the European aristocracy in the Middle Ages appears to have had different layers based on position, power, and wealth. However, a key point is that the aristocracy was built on horizontal and vertical networks. This point is not least important for assessing the analysis of Iversen and Myking. Some of the authors' statements and assessments of political conditions can be criticised or elaborated. The claim that Norway and Denmark had the same king *and government* after 1380 is wrong. Only the first is correct, until 1537 when Norway was subjugated to Danish rule. Nor should it come as a surprise that the central authorities of this Oldenburg conglomerate state after 1537 were aware of the differences between Danish and Norwegian conditions. As long as control was maintained, such a differentiated system of governance was typical of the European conglomerate states of the early modern era.

The project's main findings are that some characteristics relating to exclusive "peasant freedom" may be found in all four investigated territories, not just in Norway. The dividing line does not seem to run between Norway and the other areas of investigation, but rather between Norway and Tyrol on the one hand, and Denmark and Bavaria on the other: topography and territorial and manorial power constructed based on topography led to a comparable development. Norway and Tyrol display an early and permanent dissolution of unfreedom, a significant and increasing number of freeholders, increasingly better tenures and control over succession on tenant hold-

ings, and a high degree of peasant control over resources. On the other hand, peasants in Bavaria and Denmark enjoyed more insecure tenures and were to a greater extent subjected to some form of limitation of their personal freedom. However, the differences between the regions were insignificant as regards self-administration and self-determination in agrarian and social affairs.

Iversen and Myking conclude that no such exclusive Norwegian or Scandinavian "peasant freedom" existed in the Middle Ages or the early modern period. Scandinavian characteristics are recognisable in Tyrol and Bavaria. In this sense, the project can be said to have once again demonstrated the value of comparison, namely to place a country or region's historical development in a larger context to understand better how and why history has developed the way it has. Therefore, Tore Iversen and Jan Ragnar Myking should be thanked and honoured for initiating, leading, and concluding the project.

Erik Opsahl
Centre for Medieval Studies
Dept. of Historical and Classical Studies
Norwegian University of Science and Technology
Trondheim, Norway
erik.opsahl@ntnu.no

Jeffrey Scott Love, *The Reception of "Hervarar saga ok Heiðreks" from the Middle Ages to the Seventeenth Century* (Münchener Nordistische Studien 14), Munich: Utz 2013, ISBN 9783831642250, 338 pp.

When I was an undergraduate, one of my lecturers noted the success of a colleague's recent book before wondering, uncharitably, "will anyone still be reading it in ten years' time?" The silver lining of this review appearing so eye-wateringly late is that I can at least say with confidence that people will still be reading *The Reception of "Hervarar saga ok Heiðreks"* in 2024, and beyond.

The Reception of "Hervarar saga ok Heiðreks" concerns one of the most distinctive of the *fornaldarsögur* (Old Icelandic stories set in pre-Conversion Continental Europe), which is of particular interest *inter alia* for its overlaps with other medieval heroic literature, its renowned anti-heroine Hervör Angantýsdóttir, its exceptional repository of Old Norse riddles, and its influence on Romantic writers from Thomas Percy through to J.R.R. Tolkien. By examining how the saga was transmitted through the Middle Ages to 1700, that is through the peak period of Nordic humanist saga-scholarship, Love provides us with a range of valuable insights into the early reception of this important work. Chapters one and two survey and examine the manuscripts of the saga from Love's chosen period; chapter 3 maps manuscript variation concerning numerous episodes in the saga; chapter 4 offers a focused investigation of variation concerning the riddles; chapter 5 examines the saga's seventeenth-century reception; and chapter 6 offers some brief conclusions.

One reason why it took me so long to produce this review was that one does not want to say negative things about research as obviously painstaking as Love's, yet I did not find this book very clear as to its overall argumentative trajectory and contribution to the wider field. In this respect it perhaps reflects its origin as a PhD thesis (University of Cambridge, 2012), from which, as the preface explains, the book is little changed. It is common enough for PhD students to struggle to articulate the significance of their work; one suspects that firmer editorial direction as Love adapted the study for book publication would have been valuable. Thus I have come to the point where I feel I can offer a useful evaluation of this book because I have found myself in recent years using *The Reception of "Hervarar saga ok Heiðreks"* as a repository of information rather than as an articulation of a thesis, with the attention to detail that this process demands. My further comments on the work accordingly focus on the two areas of Love's research into which my research has given me the greatest insights, as proxies for its value elsewhere: riddles and stemmatics.

The thoroughness of Love's secondary reading on the *Hervarar saga* riddles is particularly apparent in his citation (p. 194) of an edition of eight Old Norse verse riddles published by Ólafur Halldórsson in 1970: almost no scholar of the *Hervarar saga* riddles seems to have noticed this publication (the exception of which I am aware being Sverrir Tómasson 1984). That Love did notice it is very much to his credit, though he did not himself develop comparisons between the riddles edited by Ólafur and those of *Hervarar saga*, which feels characteristic of the lack of an overarching argument as to what was going on in the transmission of the riddles that Love traces.

But there is no question that on points of detail, Love offers a rich array of stimulating material: anyone working on a particular riddle will want to check what he has to say, and this is without doubt true of every other part of the book.

Love's general outline of the pre-1700 manuscript contexts and relationships is a useful guide to the material. Love also provides the first stemma of over forty manuscripts dating from before 1700, which is a considerable service not only to people researching the transmission of *Hervarar saga* specifically, but also to scholars interested in intellectual-historical questions about who was copying whose manuscripts in early modern Scandinavia (pp. 324–327). We are just about at the point where enough extensive or comprehensive stemmas have been constructed for enough *fornaldarsögur* and romance-sagas that we can start to draw interesting conclusions about how scribes went about anthologising texts, and Love's research constitutes an important brick in this wall. On the other hand, even in 2013 the open-data movement was gaining enough momentum that we could have hoped to see researchers publishing the data on which their stemmas were based, and Love asks us to take his stemma almost entirely on trust. The care of Love's research is obvious throughout his study, and that in itself vouches for the usefulness of his stemma as being good enough for scholars to be going on with—but his work will eventually need to be replicated and possibly corrected.

Love's precise scope—tightly restricted to manuscripts of *Hervarar saga* dating down to 1700—is altogether understandable from the point of view of a PhD project: as he demonstrates, these manuscripts alone give plenty of material for analysis. And yet, as again is often the way with doctoral research, the scope set by a research project is not necessarily conducive to facilitating the argument of a subsequent book. For example, there is no doubt that *Hervarar saga* influenced the lost saga on which the fifteenth-century *Ormars rímur* is based. There is some very worthwhile cultural analysis awaiting the scholar who probes the rewriting of *Hervarar saga*'s Hervör as the altogether more conventional male hero Ormar (a task admittedly now made easier by Haukur Þorgeirsson 2013: 279–343 and Kapitan & Lavender 2022). One can quite understand that Love felt that he had enough to do without opening that particular can of worms, but some reference to how *Ormars rímur* fits in to the early modern reception of *Hervarar saga*—of which it is an important pre-1700 example—would have been useful. Likewise, pages 206–207 seem to miss the fact that one of the three medieval recensions of *Hervarar saga*—H, found in the earliest manuscript, Hauksbók, but clearly a conflation of two earlier recensions—reorders the riddles by the formulae used in their opening lines. This reordering seems typical of the encyclopaedic mindset of Haukur Erlendsson, redactor of the Hauksbók version of the saga, and an example of the kinds of details which Love might have spun into a stronger narrative about intellectual trends in the transmission of *Hervarar saga*. Love's omission of this detail seems to reflect a reluctance to take a view on the stemmatic relationship of our witnesses to the earliest stages of *Hervarar saga*'s development, R (Reykjavík, Stofnun Árna Magnússonar, MS 2845), U (Uppsala, University Library, R 715) and H (Hauksbók: Reykjavík, Stofnun Árna Magnússonar, AM 544).

In retrospect, *The Reception of "Hervarar saga ok Heiðreks"* stands in the vanguard of a wave of new-philological work on the scholarly culture of later medieval and early modern Iceland and continental Scandinavia, characterised by a corpus of

PhD theses and derived books from the same decade as Love's (Lansing 2011; Huf-nagel 2012; Love 2013; McDonald Werronen 2016; Kapitan 2018; Lavender 2020), and by the Stories for All Time project (at https://fasnl.net/), which produced the first comprehensive bibliography of *fornaldarsögur* and their manuscripts (in which Love was also involved). *The Reception of "Hervarar saga ok Heiðreks"* is an enormously careful and, within its chosen scope and especially for the seventeenth century, thor-ough exploration, providing a truly rich repository of information for future research-ers needing to plumb the depths of different aspects of the saga itself or late medieval and early modern Scandinavian humanism.

REFERENCES

Haukur Þorgeirsson (2013). "Hljóðkerfi og bragkerfi. Stoðhljóð, tónkvæði og önnur úrlausnarefni í íslenskri bragsögu ásamt útgáfu á Rímum af Ormari Fraðmarssyn," diss., University of Iceland.

Hufnagel, S.V. (2012). "*Sörla saga sterka*. Studies in the Transmission of a *Fornaldarsaga*," diss., University of Copenhagen.

Kapitan, K.A. (2018). "Studies in the Transmission History of *Hrómundar saga Greipssonar*," diss., University of Copenhagen.

Kapitan, K.A. & Lavender, P. (2022). "The prose summary as antiquarian tool and literary springboard. An edition and translation of *Ormars þáttur Framarsonar*," *Opuscula*, 20, pp. 101–160.

Lansing, T. (2011). "Post-medieval Production, Dissemination and Reception of *Hrólfs saga kraka*," diss., University of Copenhagen.

Lavender, P. (2020). *Long Lives of Short Sagas. The Irrepressibility of Narrative and the Case of Illuga saga Gríðarfóstra* (The Viking Collection: Studies in Northern Civilisation 25), [Odense]: University Press of Southern Denmark.

McDonald Werronen, S. (2016). *Popular Romance in Iceland. The Women, Worldviews, and Manuscript Witness-es of "Nítída saga"* (Crossing Boundaries: Turku Medieval and Early Modern Studies 5), Amsterdam: Amsterdam University Press.

Ólafur Halldórsson (1970). "Því flýgur krákan víða," *Fróðskaparrit*, 18, pp. 236–258. [Repr. (1990)—with some corrections and additions—in *Grettisfærsla. Safn ritgerða eftir Ólaf Halldórsson gefið út á sjötugsafmæli hans 18. Apríl 1990*, Reykjavík: Stofnun Árna Magnússonar, pp. 111–134.]

Alaric Hall
School of English
University of Leeds
United Kingdom
a.t.p.hall@leeds.ac.uk

Arthur Mason (ed.), *Arctic Abstractive Industry. Assembling the Valuable and Vulnerable North* (Studies in the Circumpolar North 5), New York: Berghahn 2022, ISBN 9781800734685, xiv + 210 pp.

The anthology *Arctic Abstractive Industry. Assembling the Valuable and Vulnerable North,* deals in a series of chapters with the multidimensional challenges following the climate crisis and is edited by political anthropologist Arthur Mason, who has specialised in energy security, extractive industries, ecological vulnerability, and futurity. The volume offers renewing perspectives on important sets of questions, such as "How is the Arctic abstracted and constructed and by which forces?" But let us first delve into what abstraction in the sense forwarded in this volume really entails.

As described on the back of the book, abstraction "refers to the creation of new material substances and cultural values by detaching parts from existing substances and values." This is of course a process that has been known for a long time, but technology and capital help to conceal and differentiate the abstractive process from the extractive as it focuses on "conceptual resources" and the relations and implications they have with and for hard-core/hardware extractivism. Looking back in history, from my own backyard, the Swedish parts of Sápmi, the concept of abstractive industry seems to be functional for studying the colonial operations of the Swedish state from at least the seventeenth-century mining ventures in the northerns areas and the authorities and nobilities talking of these areas as resource frontiers and colonies, and later, during the late nineteenth century, as "the Land of the Future." Like a perpetuum mobile, the resource curse clings to well-established colonies: once they have been declared a resource frontier, they will always be either a resource dump or once again a colony in the making. And of course, this also applies to all other places that are yet to be designated as resource frontiers. Solving this curse for local populations and Indigenous peoples must begin with historical justice, self-determination and fair distributions.

In his introduction, Arthur Mason sketches the relations and timelines in the use of the concept of abstractive industries in the Arctic area as a movement from the material to the symbolic and then back to the material again. In the face of the vulnerable reality of Arctic ecosystems and once frozen places, it seems that capital, but also life, always finds a way, the possibility to extract value from growing knowledge and experience of that specific vulnerability is itself a promising industry. Mason uses the classifications *Arctic decay, Arctic imagery* and *Arctic inflection* to describe what characterises the late industrial form of a value-shaping phenomenon he calls the *Arctic abstractive.*

In chapter one, anthropologist Cymene Howe describes how the signs of climatological catastrophes are part of Arctic peoples' everyday life. From the killed polar bear that had drifted to Iceland, the lost sounds of sea ice, to the rising of the entire island of Iceland resulting from the melting of the ice cap—these processes are happening on different scales that can be seen as extreme asymmetries. Howe calls for a kind of *response-ability*, originally proposed by Donna Haraway, to engage in new ways with the cryosphere as it is retreating and dissolving.

As much as the first chapter gives rise to a sense of hope, chapter two by anthropologist Danielle Dinovelli-Lang and geographer Karen Hébert sends shivers down one's spine. This is partly due to the brilliant depiction of the coming of creatures like the tick plagued "ghost moose," but also of how not-so-old colonial agreements over fish and game as well as other natural resources have present and future repercussions for communities and ecosystems in the Arctic. A more prominent task for rural local and Indigenous expertise is what the authors propose regarding measures to manage or hinder the ecological catastrophe that comes with the capitalist idea to protect life and resources in order to exploit it.

Chapter three deals with environmental monitoring and the transition of this operation into real-time data production with a special focus on Norway's oil and gas industries. Social anthropologist Vidar Hepsø and information technologist Elena Parmiggiani show how the instantaneity of our time—the "realtimeness"—structures the way in which corporations choose to assess the environmental effects of their businesses. Realtime measurements offer greater confirmation capacity than the infrastructures used to depict longer timelines. The authors point at the risks of letting only one so-called timescape be in control, and losing sight of the deep time consequences of extractive industries.

At the centre of chapter four, written by anthropologist Mark Nuttal, is Greenland's resource zones. In a precise way, Nuttall describes how the very plans for an extractive project and the techno-fantasies surrounding them become abstraction, involving anticipation, speculation, hope and imagination. This is one of the many paradoxes and loops of resource zones and frontiers; the remoteness of a place is lost due to accessibility, which in turn reveals its vulnerability, but access is necessary for extraction that is argued (often wrongly) to sustain the livelihoods of local peoples. But as Nuttall points out, remote and unpopulated areas and possible resource zones are constructed when archaeological assessments marginalise human settlements in favour of an extractive project.

In chapter five, geographer Mia M. Bennett delves into the trade and import of iron ore of steelmaking China, which, once again, is the world's largest national economy. Using perspectives and ideas from the film *Bladerunner* and the concept "Off-Worlds," this chapter is both informative, analytical and upsetting. It sketches the slow journey of China towards becoming the leading nation in the iron ore and steel commodity chain, how the country has specialised in production of "long products" used in construction and how environmental initiatives create ecological burdens on off-world places or, as we could also call them, sacrifice zones. Intriguingly, Bennett describes how China's unique position is based on state subsidies that enable the construction of gigantic vessels to transport the enormous amounts of iron ore that require the country to expand to new resource frontiers such as the Arctic. However, when the author immerses into the uniqueness of China, I miss the perspective that China is in fact a capitalist yet Communist autocracy. The way in which Bennett ties together China's commodity chains, environmental initiatives (Blue skies for Chinese towns through clean Arctic iron ore from the so-called *off-worlds*), techno-fantasies and futurism that expands from the Arctic through the cryosphere to outer space and prospects for mining other planets makes this chapter very readable.

109

Social anthropologist Carly Dokis is the author of chapter six, in which she analyses how Indigenous communities have contested the Mackenzie Gas Project in the Northwest territories in Canada. While the opposite temporalities of companies and local Indigenous communities are well known, they are sharply analysed here, e.g. the refusal of authorities to recognise that colonial injustices continue to be perpetuated in the present, and corporate negligence to take history and present into account. Dokis points to the fact that the social and environmental assessments are abstractions which describe, but also inscribe, the future. In the colonial, capitalist and neoliberal construction of negotiationism or consultationism, Indigenous peoples' rights are recognized only if they agree to be partners, which results in the resurgence of capitalist and neoliberal ideas. All the while, Indigenous resistance still stands tall in what seems to be the perpetual machinery of colonialism. After regulatory delays, the Mackenzie Gas Project was eventually approved but never implemented, and finally abandoned due to a decline in profits and growing costs.

Chapter seven is a short but beautifully written text by philosopher Oxana Timofeeva on human understanding of nature as a storehouse or table of resources that might be unlimited or scanty, exemplified by parables of the parasite and by energy and combustion restoring life to dead matter by sacrificial fire—the Phoenix. This is also the very definition of abstraction as a process where something is taken (life) and resurrected (by purifying fire). Today's ultimate capitalization and abstraction is no longer gold, but oil, extracted from the depths of time and the depths of place. Timofeeva revisits the paths of her childhood in Siberia, Greek philosophers, modern thinkers, and literature with a special focus on the Indigenous Surgut Khanty of Siberia and their invisible war against extraction.

In the last chapter, Arthur Mason reflects upon the graph as a tool for abstraction and visualizing the future, and a vessel enabling certain stakeholders to act in energy policy decision-making, resulting in an abstractness that circumscribes political deliberation. It is interesting to follow his lived experience (a non-alienated and non-abstractionist act or method according to Marx, see the afterword p. 192) of deliberative as well as political processes and the evolvement and choreographies of visualisations such as PowerPoints, booklets and graphs. Also, tellingly, how abstractions have the potential to change notions of time, from circular to linear thinking.

Michael J. Watts frames the anthology's keyword nicely in his afterword: abstraction as something that involves direction, includes movement and separation. It's a separation from something, a counterpoint, which in this volume is extraction. Initially, Watts mention an important keyword dependency, but foremost as a marker of individual failure. In vain I find myself waiting for him to return to this keyword, to expand on its meanings in relation to the content of the book. Dependency as a critical concept that can be stretched to something positive, to interdependency and reciprocity, to human and non-human, and the consciousness of a certain interdependency, the hope, care and connectedness of actors, who appears in several of the contributions to this volume. It also seems to me that the constant interplay and relationship, or shall we say dependency, between the symbolic (abstraction) and the material (extraction) that Watts emphasizes is another reason not to define dependency

110

as a failure, but rather as an irreplaceable part of independence and a humble wish as well as a struggle for a better day.

Åsa Össbo
Várdduo—Centre for Sámi Research
Umeå University
Sweden
asa.ossbo@umu.se

The Saga of St Jón of Hólar, translated by Margaret Cormack with an introduction by Peter Foote, Tempe, Arizona: Arizona Center for Medieval and Renaissance Studies 2021, ISBN 9780866986373, 218 pp.

Translations of Icelandic saints' lives into English have lagged far behind translations of the sagas of Icelanders. So, it is extremely good news that we now have up-to-date complete translations of the lives of both St Þorlákr and St Jón, whose relics were translated in the hagiographic sense within a couple of years of one another: Þorlákr in 1198 and Jón in 1200. St Þorlákr was bishop of Skálholt in 1178–1193, while Jón was appointed as the first bishop of the new Northern diocese in Hólar from 1106 to his death in 1121. Yet, as both Cormack and Foote point out, there is quite a difference in their popularity: while Þorlákr's cult flourished very soon after his death, the cult of Jón remained stubbornly localised around the cathedral in Hólar and the Northern diocese (pp. 6–9). Just one half-church is consecrated to him at Akrar, alongside a chapel in the cathedral. While Þorlákr's sanctity was confirmed by the Roman Catholic Church in 1984, Jón remains obscure.

Despite this, there are several versions of Jón's life, which Peter Foote's edition in Íslenzk fornrit labels as S (for Skálholt), H (for Hólar) and L (for Latinate). Cormack has previously translated S (without the posthumous miracles), and parts of L have been translated by Jacqueline Simpson, but this is the first translation of H. It survives in just two manuscripts from the seventeenth century, based on an exemplar from c. 1500, but contains material and proper names not found elsewhere, and has the largest collection of posthumous miracles. A couple of lacunae are filled with material from S (in italics), and the appendices provide the reader with some of the lengthier interpolations in L.

Jón is best known for some of his severer innovations: forbidding the practice of *mansöngr* (or erotic verse), banning the reading of Ovid among his clerics, and renaming the Icelandic days of the week to remove the presence of pagan gods. Yet, overall, his life suggests a much more attractive character. A number of stories revolve around the eloquence of Jón's speaking and the beauty of his voice, while others emphasise his enormous compassion for others: "he was so kind-hearted […] that he could hardly bear to see anything that caused pain to others" (p. 43). The relative paucity of miraculous events during his life is balanced against his administrative efficiency: "it was no less noteworthy how well he maintained the estate and the clergy who were with him" (p. 50). The slight embarrassment of the fact that Jón had married twice (which should have barred him from episcopal office) does not prevent the writer from admiring his wife's management of the estate or approving the punishment of those who maligned her after his death, "adding sorrow on top of sorrow for this good woman" (p. 53). The description of the cathedral school set up by Jón in Hólar is nothing short of an academic idyll:

> Here industry and activity could be seen in every building of the cathedral estate. Some read Holy Scripture, some wrote, some sang, some learned, some taught. There was no envy of discord among them, no aggression or arguing. (p. 96)

This is certainly a model that we could all emulate.

Perhaps most interesting is the focus on women in this version of Jón's life, which might suggest a prospective female readership, perhaps the nuns of Kirkjubær or Reynistaðr. Cormack describes Hildr as "the nearest figure to a female saint in medieval Iceland" (p. 11) and the account of her life certainly shows hagiographic shaping of its own: she is described as "the shield-maid of the Lord, armed with prayers and prepared for battle against the devil and his hosts" (p. 54), just as an anchorite should be. The story of how she runs away to fulfil her vocation against the wishes of her parents, is not so far from that of her contemporary Christina of Markyate (d. c. 1155); the plague of mice in Hildr's cell, from which Jón saves her, is reminiscent of Christina's own bad experience with toads. Most compelling, though, is the story of how the *kirkjukerling* or 'church crone,' Guðrún, is attacked by *draugar* (translated here as 'corpses') in Hólar Cathedral, while Hildr watches through the window of her cell unable to move or even close her eyes. The details of this story are authenticated through a female chain of transmission: Hildr told Oddný Knútsdóttir, who told Gunnlaugr Leifsson, the probable author of Jón's first (lost) Latin life.

The miracle section of Jón's life adds yet more vignettes to these colourful pictures of female lives. The mother of seven-year-old Svanhildr promises that her daughter will sing as many Pater Nosters as she is years old, if only Jón will cure her (p. 61). Two servant women, Arndís and Sigríðr, are at the hot spring washing the clothes of Gýríðr, wife of an eminent chieftain, when a raven flies away with and then returns Arndís' shoes (pp. 71–72). The writer clearly enjoys the comedy of this and provides tart snippets of dialogue between the two women. In one of the most elaborate miracle stories, Þorfinna, a single mother of many children, is too unwell to beg for food over Epiphany, and falls into an uneasy dose in which several saints including St Þorlákr appear to her. The writer draws a vivid image of her mental state: "heavy-hearted," "bitter," and "distressed in mind" (p. 73). Another woman, Þórdís, begs Jón to save the sick cow which is her only means of subsistence. Jón makes her a generous offer: "we shall make an agreement, that I shall take care of your cow, and you shall commemorate me daily in some way that is convenient for you" (pp. 75–76).

The translation itself is excellent—vivid, accurate and readable—with useful textual notes that point out differences of wording between the different recensions of the saga and define Icelandic terms that can't easily be translated. In addition, the volume provides readers with two introductions as well as an index and bibliography. Part I consists of a general introduction by Cormack followed by the translation of the saga. Part II contains an English translation of the late Peter Foote's modern Icelandic introduction to the Íslenzk fornrit volume of *Jóns saga helga*, with some additional material that was deleted in the published edition. These two introductions have different emphases: while Foote's introduction focuses on the relationship between the recensions, and their sources, style, authorship and date, Cormack usefully summarises some of the more technical aspects of Foote's introduction, while also providing an important overview of the saga's literary qualities and its relationship to vernacular saga tradition. Together they cater both for the general reader and

for the scholar of philology and palaeography. The volume as a whole is a valuable contribution to ongoing research on the cults of saints in Iceland.

Siân Grønlie
St Anne's College
Oxford
United Kingdom
sian.gronlie@st-annes.ox.ac.uk

114