Jumping scales and producing peripheries: Farmers’ adaptation strategies in crises

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ARTICLE INFO

Keywords:
Adaptation
Individuals
Peripheralization
Resilience
Social reproduction
Scales

ABSTRACT

Resilience has gathered significant attention from economic geographers, yet their focus has primarily centered on economic outcomes at the regional level. This approach often overlooks the intricate micro-processes and lived experiences during crises, assuming that individual resilience can be understood solely through macro-level economic observations. We argue that comprehending the questions of resilience ‘to what means’ and ‘to what ends’ requires that we acknowledge the importance of social reproduction and daily practices. Through semi-structured interviews with mink farmers in Denmark and by using the concepts of spaces of dependence and spaces of engagement, we first highlight the everyday practices and broader social structures that individuals aim to preserve and reproduce. Second, we draw attention to the application of a relational spatial ontology in resilience studies by discussing cross-scalar networks of individuals as an adaptation strategy. In so doing, we contribute to the resilience literature in economic geography by highlighting that resilience for individuals entails the reproduction of everyday practices. We also draw attention to the consequences of network detachment for individual livelihoods. Thus unveiling how peripherality is shaped and reproduced, rather than given, through the evolving networks of ‘left behind’ people in ‘left behind’ places.

1. Introduction

Over the last 20 years, resilience has drawn the attention of many economic geographers and related scholars as a conceptual lens to study the formative effect of economic crises in shaping regional development trajectories (Simmie and Martin, 2009; Martin, 2012; Bristow and Healy, 2014; Boschma, 2015; Martin and Sunley, 2015; Evenhuis, 2017; David, 2018; Kurikka and Grillitsch, 2020). To a large extent, this literature is informed by quantitative assessments that focus on the national or regional effects of macro-economic crises, particularly the financial crisis of 2008 (Giannakis and Bruggeman, 2017), comparing GDP or employment levels between the pre-crisis and post-crisis periods (Eriksson and Hane-Weijman, 2017).

While these studies indeed have laid a foundation for understanding how regional features might support or hinder regional resilience, they tend to primarily focus on the economic outcomes at the firm or regional level (Lemke et al., 2023). Such approaches often fail to account for the underlying processes leading up to the outcome, missing the responses, strategies, and mechanisms played out by the regional actors when faced with these adversities. In addition, the lived experiences of the actors might not align with the implications of regional growth trajectories. It is therefore crucial to acknowledge that resilience inherently is a political concept, and its normative application will vary based on the specific research object or subject at hand (MacKinnon and Derickson, 2013; Lemke et al., 2023). While a few studies discuss the role of agency in relation to post-crisis regional development trajectories (David, 2018; Kurikka and Grillitsch, 2020), these are essentially focusing on the role of agency for the structural outcomes observed at a regional scale. Thereby still by large following the narrative set by macro-studies that place (change leading to) regional growth as the objective of resilience. However, as argued by MacKinnon (2017) there’s a significant gap in understanding the social structures individuals seek to preserve and reproduce during crises and how they accomplish this. Additionally, it’s important to avoid confining the individual adaptation objectives and strategies within administrative regional borders. Instead, we should acknowledge that individuals are part of broader spatial relations. Hence, following MacKinnon’s (2010) perspective that scales are non-hierarchical, socially constructed networks, this paper focuses on cross-scalar networks. In this context, the scale itself isn’t the primary focus. Instead, we study the networks which individuals engage with to...
overcome adversities and crises.

The aim of this paper is therefore to analyze the cross-scalar networks of individuals as part of their adaptation strategies in relation to both incremental adversities and a major crisis. To accomplish this, we focus on adaptation in rural areas due to the spatial power asymmetry between core-periphery areas (Massey, 2005) and the lack of mass and diversity that typically tend to make peripheral areas more vulnerable to crises (Eriksson and Hane-Weijman, 2017). More specifically, we interview 13 Danish mink breeders since this is a sector in which farmers have been exposed to multiple adversities threatening their work (e.g., animal diseases, supply and demand imbalance, and a societal dislike of fur farming), culminating in November 2020 when the Danish government issued an order to cull off the whole farmed mink population in the country and put a temporal ban on mink breeding due to fears of COVID-19 mutations in mink farms. As most breeders are concentrated in peripheral locations by the West coast of Denmark, areas often referred to as “the rotten banana” (Winther and Svendsen, 2013), the Danish mink breeding case, thus, provides a good context to study the importance of cross-scalar networks in “left behind” places.

In line with the social resilience literature (Adger, 2000; Obrist et al., 2010; Keck and Sakdapolrak, 2013), we focus on the individuals and communities affected by crisis. We do so by engaging with social reproduction – conceptualized as everyday practices - which acknowledges the often-overlooked political dimensions of resilience (i.e., resilience to what end?) within the debates on regional economic resilience. Scales as socially formed networks (Marston, 2000; Moore, 2008; Mackinnon, 2010) resonate more cohesively with prior research showing how individuals and communities utilize cross-scalar associations and networks to advocate for their needs, transcending the geographical limitations imposed by regional administrative boundaries (Boelens, 2008; Hoogsteger, 2013; Hoogsteger and Verzijl, 2015). To account for people’s cross-scalar practices, we adopt Cox’s (1998) concepts of spaces of dependence and spaces of engagement to first study the everyday practices and broader social structures that individuals aim to preserve and reproduce. Second, to draw attention to the application of a relational spatial ontology in resilience studies by discussing cross-scalar networks of individuals as an adaptation strategy.

The analysis thereby moves beyond previous accounts typically rationalizing individual narratives to broader regional development agendas, and rather focus on understanding the individual goals and objectives in securing their livelihood through engagement with cross-scalar networks. By embracing a relational spatial ontology, we can redirect attention from the impacts of a crisis confined to bounded regional spaces to considering how a crisis influences actors’ cross-scalar networks. In that sense, we also address Chu and Hassink’s (2023) concerns about (evolutionary) economic geography’s lack of emphasis on relational spatial ontology and scale-sensitive approaches in understanding regional economic processes. Our findings thereby unveil a relational peripheralization experienced by individuals whose position in broader networks is challenged, underlining peripheralization as a process rather than given (Glückler et al., 2023). In so doing, we contribute to the resilience literature in economic geography by, first, highlighting that resilience for individuals entails reproduction of, and is informed by, everyday practices. Second, we draw attention to the consequences of network detachment for individual livelihoods. Thus unveiling how peripheral is shaped and re-produced, rather than given, through the evolving networks of ‘left behind’ people in ‘left behind’ places.

After this introduction, the next section outlines the conceptual framework for a more relational understanding of resilience and adaptation. Then the case is described followed by the outline of methods. Section 5 presents our findings, and in the final section, we will discuss these findings and conclude.

2. Conceptual background

From an evolutionary perspective, resilience is typically conceptualized as a process of adaptation (Simmie and Martin, 2009; Boschma, 2015; Martin and Sunley, 2015; Evenhuis, 2017). As such, evolutionary resilience thinking shifts the research focus from the equilibrium-oriented approach (Martin, 2012; Sensier et al., 2016) to a perspective that problematizes the continuous processes of reorientation and reorganization within regional economies (Simmie and Martin, 2009). Most studies concern the macro-level and adopt a firm-oriented perspective to theorize post-crisis regional economic development trajectories (Bristow and Healy, 2014). The result is an outcome-oriented understanding of what resilience is and can be, where the underlying processes and agencies are either ignored or assumed. Hence, a growing number of scholars stress the need also to incorporate the vast diversity of regional actors operating on a micro-scale, such as individuals or grass root organizations that have been overlooked within this body of literature (Bristow and Healy, 2014; Evenhuis, 2017; Lemke et al., 2023).

This research gap has been partly addressed by Kurikka and Grillitsch (2021), who study the role of agency for regional resilience by engaging with the concept of change agency, actions taken to achieve some kind of regional change (Grillitsch and Sotarauta, 2020). The authors bring attention to the importance of collaborative practices in shaping new regional growth paths. However, their work primarily focuses on how actors contribute to resilience at the regional scale - within an administratively bounded space. Such studies subscribe to the assumption that regional economic growth aligns with resilience, which is more applicable when considering the region (or some collectives therein) as the actor. However, approaches like these become problematic when transferred to the adaptation processes of individuals, as they ignore the complexities and necessities of daily life. In addition, we then assume that individual resilience can be assimilated and accounted for through the macro-level observations of economic growth or downturns (Walsh-Dilley and Wolford, 2015). An individual embody multiple identities – parent, partner, community member, worker, employer – which, as shown by e.g. Gardiner et al. (2009), all impact an individual’s coping strategy when faced with a critical life event (Coe and Jordhus-Lier, 2011). This entails that their strategies and goals for securing their livelihoods cannot be reduced to the reasoning of homo-economicus (Adger, 2000; Keck and Sakdapolrak, 2013). This, in turn, suggests a possible tension between the individual adaptation to economic challenges and regional development agendas, as the former becomes intertwined with the realm of social reproduction.

To better understand how individuals navigate through crisis and uncertainty, we therefore argue that two theoretical interventions should be considered and implemented. First, it becomes essential to reopen the central and taken-for-granted inquiry in the field of resilience studies (Davoudi et al., 2012): “Resilience to what end?”. Thereby breaking free from prior assumptions associated with regional economic resilience perspectives and instead emanating from the essential needs and day-to-day experiences of individuals navigating adversities and crisis. Theories of social reproduction highlight the significance of these everyday practices in supporting economic activities (Katz, 2004; Strauss, 2020). They draw attention to the structures, routines, and relations that individuals or communities (mink farmers in this case) aim to preserve and reproduce, something that aligns with the notion of resilience to what end. In addition, the literature on social reproduction underscores that everyday actions, norms, and social relations are also essential for sustaining production and can act as a source of economic resilience. Social structures and relations are crucial to understand the underlying processes and agencies of the (re)production of the economy. This has implications for the related question of ‘resilience by what means?’, which brings us to our second point as we are arguing that individuals’ situated experiences are crucial. To understand their agency we need to recognize that actors are embedded in intra- and inter-regional contexts and networks affecting their adaptation strategies.
(Pelling and High, 2005; Hoogesteger and Verziij, 2015). If we consider resilience as a micro-scale adaptation process, a more relational approach to theorizing about space (Amin, 2002; Massey, 2005; Thrift, 2006; Malpas, 2012) and scales (Cox, 1998; Marston, 2000; Brown and Purcell, 2005; Moore, 2008) is required. Herod and Wright (2002), for example, argue that the conceptualization of geographical scales serves as a lens through which the material world can be interpreted and understood. The relational approach to scale provides a fresh perspective on resilience and adaptation in economic geography, departing from the typical view of regions as neutral spaces (Chu and Hassink, 2023). We, therefore, conceive scales as socially constructed and non-hierarchical networks created by actors to meet their needs and have their interests represented (Leitner and Miller, 2007; Moore, 2008). Similarly, discussing scalar politics and how actors navigate and problematize scales, MacKinnon (2010) stresses that scale in itself is not the focus on research inquiry, but rather it is ‘specific processes and institutionalized practices that are themselves differently scaled’ (p.21). Therefore, instead of establishing hierarchal notions of scale, the focus here is on the networks through which individual actors aim to safeguard social structures important to them.

Previous research has emphasized how individuals navigate scales to have their voices heard. Herod (1997), for example, illustrates how longshore industry workers unionized and negotiated working conditions at the national level to accommodate regional employment needs. However, this study adopts a perspective that envisions geographical scales as nested, wherein the highest concentration of power resides outside the local sphere. Hoogesteger and Verziij (2015) introduce the concept of grassroots scalar politics to exemplify how peasant and indigenous communities in the Andes establish cross-scalar alliances to advocate for and represent their water management-related needs. Their study takes a non-hierarchical view of scales and draws attention to the politically institutionalized nature of water management and highlight the significance of multi-scalar networks for communities as a means of political agency. In addition, from a relational perspective, places and their socio-economic position within a larger geographical context are constructed through networks (Massey, 2005). This implies that peripherality can be both experienced and re-produced through detachment from the social networks of individuals, thus calling for a dynamic and socially constructed theorization of peripherality rather than as something ontologically given (Eriksson, 2017).

To this, Cox’s (1998) theorization on the social production of space and scale provides a foundation to analyze cross-scalar networks among individuals amid uncertainty and crisis. Cox (1998) distinguishes between spaces of dependence and spaces of engagement. Spaces of dependence represent the immediate material and localized social relations that are place-specific, upon which actors depend for the realization of their essential material and social needs and interests. The underlying condition of spaces of dependence is that actors that are directly embedded in those spaces can exercise power and hence produce geographies (Cox, 1998; Herod, 2001). Spaces of dependence also highlight the emergence of networks within immediate geographical contexts, highlighting the everyday practices and relations that hold significance for individuals or communities. As such, spaces of dependence become sites for both social reproduction and economic production, the spaces which people are engaged in preserving. Spaces of dependence are vulnerable to mobility as they represent localized social and material conditions and attributes for their actors that cannot be substituted elsewhere. The spaces of dependence are nested within the broader networks of relations, and to ensure their existence, actors (individuals, firms, or state agencies) must connect to this wider set of relations – the spaces of engagement. These spaces of engagement are needed to secure the space of dependence and might be at another scale, which would imply “jumping scales” to more distant or global geographies. As such, spaces of engagement are produced when actors “experiencing a problematic relation to a space of dependence, construct through a network of associations a space of engagement through which to achieve some mitigation” (Cox, 1998: 3–4).

We use these spaces of dependence and engagement through the lens of social reproduction, defined in terms of everyday practices (Katz, 2004). As first, such every-day practices represent the social and material structures that individuals seek to protect and reproduce, in relation to economic production and lives in these rural areas (resilience to what end) – spaces of dependence. Second, everyday practices draw attention to habitual networks through which individuals engage to protect their spaces of dependence (resilience by what means) – spaces of engagement.

3. Setting the scene

In the year 2019, Denmark was home to 788 mink farms, most of which were situated along the west coast of Jylland, spanning the regions of Nordjylland (248 farms), Midtjylland (283 farms), and Syddanmark (203 farms). The participants of this study are situated in the regions of Nordjylland and Midtjylland, both of which hosted most mink farms in the country (Hohnen, 2020). Two of the major cities in Denmark can be found on the eastern coast of the regions – Aalborg and Aarhus. However, influenced by the core-periphery discourse, the western parts of these regions – where most mink farms are situated - are sometimes termed ‘the rotten banana’ areas due to depopulation and limited economic activity (Winther and Svendsen, 2012). In 2018, the region of Jylland accounted for 1 182 self-employed individuals, 1 924 employees, and 424 employed spouses on mink farms (Hohnen, 2020). From November to December additional 1 200 seasonal workers were hired for the pelt preparation process, 75% of which are foreigners (Kjær, 2020). The industry was also recognized as one of the specialized and successful competence clusters in Denmark by the Ministry of Commerce (Hansen, 2016). Furthermore, many Danish mink farms have been in the family for several generations, making it an economic activity characterized by formal employment as well coupled with strong place-attached social ties across generations.

Denmark has for long been one of the biggest exporters of mink skin pelts in the world, and known to have very high quality, accounting for 36% of globally produced pelts (Hansen, 2016). This was explained by, first, decades of breeding and accumulating specialized knowledge to develop the minks’ genetic pool for high-quality fur (Gethmann et al., 2003). Second, according to the respondents, high-quality fur relies on fresh and nutritious mink feed. Many mink farms and feed production facilities were placed along the western coast, benefiting from the nearby fishing industry, which provides a key ingredient for mink feed and ensures a fresh daily supply. Most of the feed production centers are farmer-owned, placing feed quality above profits. Finally, the Danish mink industry functioned as a cooperative entity, fostering information exchange, collaborative efforts, and robust institutional frameworks nationwide, thereby interconnecting and representing farmers across various geographical levels. The mink breeding industry in Denmark was supported by local, regional, and national associations. Local fur breeder’s associations consisted of one or a couple of nearby municipalities, and the regional fur breeders’ associations corresponded to the four administrative regional divisions in Denmark. The national Danish Fur Breeders’ Association (DFBA) acted as an umbrella organization for the regional and local associations. The DFBA represented political interests of Danish mink breeders at the national and the EU level and owned Copenhagen Fur, which administered both domestic and international fur sales. Mink breeder associations across different scales regularly organized skin pelt exhibitions to identify the top breeders, enhancing their livestock sales opportunities. Furthermore, local breeder associations formed specialized knowledge groups e.g., pelt preparation, financial management, or mink selection to share their

1 Mink farmers often use Copenhagen Fur to refer to both the auction house and the national Danish Fur Breeders’ Association.
experience and seek advice. This community were connected through both spatially wide associations and online tools like Facebook, allowing farmers nationwide to directly engage with each other.

Mink farms follow a one-year production cycle consisting of three key phases: breeding, rearing, and pelt preparation. During the breeding phase, farmers select mink based on health, fur quality, and behavior. Rearing time is recognized as the most challenging period, as farmers must constantly oversee kits for nutrition, temperature, and diseases outbreaks. The cycle ends in November-December when farmers enter the pelt preparation phase and ready them for sale at Copenhagen Fur.

Despite its strong history, identity, and infrastructure, the industry has been exposed to multiple socio-economic adversities. According to Hohnen (2020) the highest production value in the last ten years can be observed in 2012 at 1.3 billion USD (9.5 billion DKK), compared to 328 million USD (2.5 billion DKK) in 2019. Similarly, the total number of mink farms was decreasing. In 2019, there were 788 mink farms in Denmark compared to 1,224 farms in 2012 (Hohnen, 2020). There are several reasons for this. First, it is a strongly contested industry. National and international animal welfare groups have long advocated for the ban of fur farming in Europe (Fur Free Alliance, 2020) which has put pressure on farmers to adopt their activities. Second, the Danish government did not establish a minimum price for mink skin pelts, unlike other agricultural products, and the fur industry does not receive financial subsidies from the EU (Hansen, 2016). This resulted in periodic price fluctuations Fig. 1, which in turn made it difficult for mink farmers to plan their investments and made it a less attractive industry to join.

Third, the diseases particular to fur farming have had a negative economic consequence for the affected farmers. Contamination incidents, e.g., stomach diseases among mink kits, could result in substantial livestock losses, while more severe plasmacytosis contamination instances required the complete culling of livestock. Aside from these incremental challenges and pressures, following the discovery of mutation of COVID-19 in some of the Danish mink farms and its subsequent spread, the Danish government issued an order to cull off all the minks in the country, both healthy and infected (Mortensen and Moesgard, 2020). Furthermore, in addition to the culling of minks, the government implemented a one-year ban on mink breeding, initially set until 2022 and later extended to 2023.

In January 2021, the Danish government issued a compensation package that provided mink farmers with two options (Danish Ministry of Finance, 2021). First, to enter an economic hibernation mode where the state bears the maintenance costs and reassume mink breeding once the ban is lifted. Second, to give up the production capacity and assets to the state and receive compensation for it yet lose the possibility to restart mink farming after the ban is lifted (Danish Ministry of Finance, 2021). Most farmers decided to exit the industry, while merely thirteen breeders chose to reassume the business (Byskov Svendsen and Dam, 2022).

There are multiple interrelated reasons behind farmers’ decision to leave. According to the respondents, the culling of the entire mink livestock in the country caused a chain reaction that discontinued and disrupted the cooperative-based infrastructure of the mink breeding industry in Denmark. The breeding females holding the distinctive genetic code – which made Danish mink skin pelts unique and globally competitive – was destroyed. While there are Danish-bred mink available outside Denmark, their numbers are not sufficient to provide all former Danish mink breeders with the opportunity to restart. Fewer and potentially geographically dispersed breeders pose economic and practical burdens to sustain the feeding centers and co-operative-based infrastructure. Moreover, the demise in production - caused by the closure - jeopardizes the ownership-based structure, which led to the dissolution of Copenhagen Fur (Andrew and Nielsen, 2020). In the absence of such political power, many did not see the future in the industry as feasible. Compared to the study by Cinner et al. (2009), which emphasizes how socioeconomic factors in Kenya compel artisanal fishers to exit the industry due to inadequate economic returns, the mink farmers left the industry due to the breakdown of its essential infrastructures. Concerning the above, it is difficult to imagine the return of the Danish mink breeding industry to its previous state, especially within the current political climate where many EU states are progressively moving towards banning fur breeding practices (Fur Free Alliance, no date).

4. Methods

The aim of this paper is to analyse the adaptation processes of individuals in rural regions to both frequent adversities and the most recent crisis by looking at the cross-scalar networks they formed as an adaptation strategy. To analyze these networks, thirteen semi-structured interviews were conducted with Danish mink farmers from nine different municipalities from the regions of Nordjylland and Midtjylland. The interviews were carried out by the first author from October 2021 to January 2022. Twelve of our respondents were male, and one was female. Four respondents were in the age group from 25 to 35, four

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**Fig. 1.** The average price for a mink skin pelt in DKK, in Denmark from 2010 to 2020. Source: Statistics Denmark.
from 35 to 45, and five were between 55 and 62. We strived to achieve a balance in terms of geography, gender, and age in our respondents, although the gender dimension could not be fulfilled. It was a requirement that the respondents be both the owner and the user of the farm, as opposed to managing the farm from a distance and only engaging minimally within mink farming practices.

To find participants, we used social media platforms, such as Facebook groups for mink breeders in Denmark. We also used the Danske minkavliere (Danish Mink Breeders) webpage to access the contact information of mink farmers and contacted them directly. Once we had established contact with a few, subsequent snowballing sampling took place. All respondents were informed about the aim of the research as well as the usage and storage of data prior to the interviews. We have received verbal consent to record and process the interviews. The names of the respondents were replaced by unique interview numbers to protect their identities.

The interviews lasted from 45 min to two hours. Seven interviews were face-to-face and took part at the respondents’ farms. These seven interviews were also complimented by a tour of the farm during which respondents shared memories, described, and explained farming practices and communicated their emotions post farm-closure. The remaining interviews took place online due to COVID-19 cases rising at the time of data collection.

The interview guide aimed at encouraging respondents to share their experiences, ranging from their earliest memories of working with mink to contemplating their future plans within the industry after 2020. This was done to bring forth day-to-day experiences (social reproduction) of the respondents associated with mink farming. First, respondents were asked to reflect on their history and experiences of becoming and being mink farmers. The next stage of the interview concerned the event of November 2020, when the Danish government issued an order to kill all the mink. Finally, respondents were asked to reflect on their future plans in light of the closure of the mink farms.

We were interested in studying the networks as the adaptation practices (resilience by what means) that mink breeders engaged with to protect and maintain the important social structures to them (resilience to what end). As such, Cox’s (1998) concepts of spaces of dependence and spaces of engagement served as a theoretical lens through which we carried out abductive coding (Vila-Henninger et al., 2022). We used the concept of spaces of dependence to understand and highlight the social and material attributes that mink farmers associated with their immediate geographies. We identified everyday habits, routines, materiality, and relationships that, first, made these places meaningful to the farmers and, second, they sought to reproduce and protect. Moreover, we also identified everyday practices that had served as a resilience source for the economic production on the farms.

Through the concept of spaces of engagement, we identified informal and institutionalized networks of associations that the farmers engaged with to address incremental adversities and crises (resilience by what means). Based on these, our analysis indicated extensive changes to economic practices over time, and the social reproduction of a new generation of farmers. Growing up in a mink farmer’s family and imagining and realizing a future where one follows the footsteps of their parents could ensure the continuation of mink farming (Strauss, 2020).

The mink breeders’ children also helped and assisted their parents at the farm from a very early age by carrying out various tasks depending on the age of the children. The activities and the conversations that the family had during their leisure time are part of the maintenance of economic practices over time, and the social reproduction of a new generation of farmers. Growing up in a mink farmer’s family and imagining and realizing a future where one follows the footsteps of their parents could ensure the continuation of mink farming (Cox, 1998).

My parents have mink and I have always enjoyed being with my dad in the farm since I was a little guy. When I became older, I helped more and more because, first, I got big enough, and second, because I liked it. And somehow it has always been my plan to work with mink.

The farm could also be seen as a tangible asset that facilitates the coming generations to keep becoming farmers. Practices of being a farmer and a family within a farm highlighted how material and social features of spaces of dependence collided (Cox, 1998). It becomes evident that mink farming was not a practice that was easily confined to one particular person, time, or place. Arguably, being part of the farming industry within rural areas that exhibit slow decline, having children, and involving them into the farming life was a resilience strategy that ensured the continuation of not only the production but also a lifestyle. As such, spaces of dependence are not only produced through need to secure the place right now, but rather their social reproduction is an ongoing relational process informed by past experiences and future imaginings (Massey, 2005).

The spouses of the farmers had full-time jobs in the area that were not connected to mink farming. However, all partners’ lives were affected by the cycles of the mink farm, and they were involved directly or indirectly in the maintaining of the farm. During busy periods e.g., pelting, or rearing period, some partners helped at the farm, otherwise they took a more active role with reproductive labor, such as, house chores and childcare. This can be thought of as a source of resilience as it gave the farmers more time and energy for farming responsibilities in these heightened periods. Furthermore, spaces of dependence for mink farmers were also constructed through the networks with the mink farmers and book groups for mink breeders in Denmark. We also used the Danske minkavlere (Danish Mink Breeders) webpage to access the contact information of mink farmers and contacted them directly. Once we had established contact with a few, subsequent snowballing sampling took place. All respondents were informed about the aim of the research as well as the usage and storage of data prior to the interviews. We have received verbal consent to record and process the interviews. The names of the respondents were replaced by unique interview numbers to protect their identities.

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Spaces of dependence constitute both social and material attributes that are connected to the interplay between economic production and social reproduction (Katz, 2004). The materiality of these spaces makes them vulnerable to mobility (Cox, 1998). The farm is their home as well as an economic and social resource. The farms and the farming equipment owned by mink farmers represented capital investments that tied them to the physical space where they were operating. The spaces of dependence are vulnerable to mobility not only due to the material investments but also due to the social commitments connected to the family dynamics, as well as the everyday interaction with the surrounding environment.

I built this house here in 2012. I’m a nature guy. I’m living in the middle of the nature. I have a big lake out here and we’re going there swimming every day, so, no, I am never going to move from here.

And our children have a really good school here. My wife has a really good work here in the town. [19].

The farms were the places that shaped and were shaped through the family life course and everyday interactions. All of which created habits and routines that contributed to the place production and attachment which in turn made it unimaginable to relocate. Hence, the strong link to the place is related to habits and practices performed by the farmers and their family in the past connected to the physical landscape. The materiality of these farms was not only an economic resource but a source for upholding the social reproduction of the economic activities – the practices of being a farmer.

It becomes clear how the materiality of the farmer’s work and the social and family life were closely intertwined. Working on the farm during the day shaped the conversations the family had in the evening:

When we were in the season when we selected [the mink] and when we were eating dinner, maybe we could talk twenty minutes about one male mink and what quality he had. You know, you can do it with children, you can talk about football, but it is just so special to talk about something that you have on your own farm. [110].

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My parents have mink and I have always enjoyed being with my dad in the farm since I was a little guy. When I became older, I helped more and more because, first, I got big enough, and second, because I liked it. And somehow it has always been my plan to work with mink.

The farm could also be seen as a tangible asset that facilitates the coming generations to keep becoming farmers. Practices of being a farmer and a family within a farm highlighted how material and social features of spaces of dependence collided (Cox, 1998). It becomes evident that mink farming was not a practice that was easily confined to one particular person, time, or place. Arguably, being part of the farming industry within rural areas that exhibit slow decline, having children, and involving them into the farming life was a resilience strategy that ensured the continuation of not only the production but also a lifestyle. As such, spaces of dependence are not only produced through need to secure the place right now, but rather their social reproduction is an ongoing relational process informed by past experiences and future imaginations (Massey, 2005).

The spouses of the farmers had full-time jobs in the area that were not connected to mink farming. However, all partners’ lives were affected by the cycles of the mink farm, and they were involved directly or indirectly in the maintaining of the farm. During busy periods e.g., pelting, or rearing period, some partners helped at the farm, otherwise they took a more active role with reproductive labor, such as, house chores and childcare. This can be thought of as a source of resilience as it gave the farmers more time and energy for farming responsibilities in these heightened periods. Furthermore, spaces of dependence for mink farmers were also constructed through the networks with the mink.
breeders that were within close geographical proximity. When we had the farms, every Friday at 12:00 o’clock we had the meeting. Maybe five, six, seven mink farmers. We were sitting together and eating every Friday and when we had minks we were, of course, talking about minks. How the breeding was? What were we doing now? How can we do it better? [19].

Apart from collegial companionship and social value that mink farmers assigned to those reoccurring meetings, they also served as platforms for sharing knowledge benefiting and improving their economic production. The knowledge that was applicable and relevant to the farming practices in their spaces of dependence. As such, these networks, conversations, and sharing culture were a constitutive part of spaces of dependence, as they would be redundant in a different setting and among different actors that were not related to mink farming practice.

The above demonstrates the diversity of roles that our respondents embodied within their spaces of dependence, as, for example, discussed by Coe and Jordhus-Lier (2011). They were farmers, parents, children, spouses, and friends. Consequently, securing the survival of spaces of dependence cannot be reduced to ensuring the continuation of the production of mink skin pelts alone. Instead, it must also account for social reproduction, understood as the maintenance and preservation of existing practices, relations, values, and identities within and between spaces as well as over time (inter-generational). Only when we have a more comprehensive understanding of the relations individuals (actors) have to the spaces of dependence while acknowledging their diverse roles it becomes possible to answer the question “resilience to what end?” In this case resilience, indicates the continuity and reproduction of the social structures (family life and habits as well as embeddedness in larger social networks connected to mink farming) alongside the economic production.

5.2. Spaces of Engagement

Social resilience literature suggests that people learn from their past experiences, meaning the strategies they have employed in the past to address threats will also be applied to deal with present and future adversities (Keck and Sakdapolrak, 2013). Mink farming as an industry has been exposed to multiple adversities that caused mink farmers to create adaptation strategies through networks to overcome them. In what follows, we first look at the networks of associations (Cox, 1998) that mink farmers engaged with before the closure of the farms in November 2020, followed by an analysis of how these networks served to cope with the sudden industry closure. There are two types of networks of associations we identified within Danish mink farming industry: informal and institutionalized. The informal networks unfolded directly among Danish mink breeders through social media or personal ties and the institutionalized networks developed between the mink farmers and the national DFBA. The nature of informal cross-scalar networks of associations among Danish mink farmers nurtured a culture of information sharing and collaboration. Such collaborations could take the form of, for example, visiting each other’s farms, participating in exhibitions, enrolling in a thematic knowledge group. Such platforms allowed mink breeders to share knowledge, discuss issues, as well as maintain and strengthen relations with mink farmers in more distant locations. These networks of associations that mink farmers engaged with also represent habitual, used practices aimed at ensuring the reproduction of spaces of dependence.

The rearing season is a critical period for mink breeders as mink kits are susceptible to stomach diseases which can be difficult to cure and could have a potential significant effect on the size of the livestock. I was using it [mink breeder’s Facebook group] a lot in the time when we had small puppies in the springtime. Because they are so small, you know, like a small finger. And then you must do it the right time and the right way. And we were dealing a lot also locally, but also on Facebook about what people were doing. Because you can get, in that time, some stomach disease and then if they are small puppies, you can’t do much about it. [18].

Here, the farmer discusses their habitual use of Facebook during rearing time to receive advice from other farmers that are located in more distant to them locations. Social ties to other regions thus allow access to unstandardized sector-specific knowledge that could otherwise be difficult to access in their immediate spaces of dependence (Eriksson and Lengyel, 2018).

Some groups are national, some are only local. Mostly it’s local but also sometimes, you know, the farmers in the other end of the country are perhaps bigger and it’s really good to speak with them to see how they do it, because here locally we nearly all do the same. The same way, but down in Holstebro, maybe they do it differently [15].

Cox (1998) discusses jumping geographical scales through networks of associations without assigning a higher hierarchy to regional and national levels over local. Similarly, the above quote demonstrates how a mink farmer related to an area in terms of networks and farming practices, not as superior or inferior but simply as different. The national Danish Fur Breeders’ Association (DFBA) handled and assisted with issues that concerned the entire industry. Due to the cyclic supply and demand imbalance, it was difficult for mink breeders to plan the livestock, not knowing the pelt prices. In such instances, mink breeders relied on the DFBA for market research.

Copenhagen Fur made some estimates. They had the finger on the pulse on how many skins are being produced in the world. And they had an idea of how many minks there are. But China they can make five million or maybe ten million, nobody knows. But Copenhagen Fur they knew, they were traveling a lot and they were talking to people, you know. They made estimates every year [19].

Based on the information provided by the DFBA on the mink fur market globally, the mink farmers could adjust their spendings and savings. For example, when the supply would grow and prices subsequently fall, the mink farmers would plan their investment in farms accordingly. This information was directly communicated to mink breeders via online communication tools from Copenhagen, where the DFBA was situated. Similarly, a farmer shared their experiences of borrowing money from the DFBA when faced with high costs and a lack of means for production.

When I get the puppies, we have this thing at Copenhagen Fur called hvalpe-forskud [kit advance]. I can call Copenhagen Fur and tell them I have such number of puppies and I want to borrow money and depending on how the skin price is and how much money I can borrow per puppy... So, it’s actually Copenhagen Fur that can give us the first money to take the next steps [in production] [14].

The DFBA also handled the issues concerned with animal welfare and bad animal treatment practices. For long, animal activist groups have advocated for the ban of fur farming on both the national and international level (Fur Free Alliance, 2020). Copenhagen Fur then took it upon themselves to make sure Danish mink breeders were up to animal welfare standards. When asked why Danish mink farmers were concerned about the animal welfare outside their own farms, one response was:

You know your PhD... if it’s perfect that’s no problem. But if the university finds out that 98 others in your class are cheating then when you say that you come from this university people will say: ‘Yeah... everybody in that university is cheating!’ So, we had to make sure that everybody was perfect... Copenhagen Fur was good in taking care of the ones that didn’t take care of their mink or didn’t take mink breeding seriously. [110].
While DFBA assumed the formal role of making sure Danish mink breeders complied with the animal welfare standards to improve the public opinion on fur farming practices, a few farms opened up for school and tourist visits.

As far as I can remember, we always had schools and kindergartens coming and it was always fun to have them. And we also had all the tourists, that came to look. And some of them thought it was terrible to have mink and they came in their big Mercedes with leather seats and everything. [19].

Creating collaborative networks of associations with local schools and kindergartens was an example of micro-practices that mink farmers employed to alleviate public opinion on fur farming. This highlights how networks of associations do not necessarily have to be carried out at a different scale – defined by administrative borders – but draws attention to relations and networks across space that serve to address certain issues. Additionally, this recurring generational tradition of opening farms for visitors illustrates how such habitual practices serve as a source of resilience, contributing to the reproduction of spaces of dependence.

Consequently, during small-scale adversities, farmers’ engagement in informal and formal networks seems to have played a key role in maintaining and protecting their space of dependence. Below, we continue by focusing on how the farmers describe these networks and the role they played in dealing with the crisis that followed the Danish government announcement on November 4th, 2020. During this time, the DFBA assumed the role of advocating for mink farmers’ needs and informing them of the progress of the situation.

After the press conference [announcing the governmental decision to cull off all the mink] we had a Zoom meeting with Copenhagen Fur, where the chairman talked about things we have to do and what we could look forward to, also the prices for the skin and what we looked at that time was 199 DKK per skin… Copenhagen Fur they wanted to be sure we know what was going on.[14]

By having the power to talk to the government directly, the DFBA strived to provide some information to minimize the uncertainty and confusion that the crisis caused among the farmers. The above illustrates that in times of sudden shocks, such as the abrupt closure of the entire industry, the farmers benefited from having a centralized organization that acted on their behalf at the national level. As pointed out by Cox (1998: 15), spaces of engagement are used to “…create links with those that can exercise some leverage over the decision making…”. Particularly, the DFBA negotiated the compensation plan with the government to ensure that farmers received a good deal to cover the financial losses. Similarly, Copenhagen Fur ensured that the guidelines under which mink farmers had to cull off their livestock were feasible.

At that time, if you had a big farm or a small farm there were two dates. The first date was the 9th of November for the small farms and for the big farms 16th of November for when you have to be done with killing mink. That was the first big question a lot of breeders called me about if they have a small farm why they should do it faster because, maybe small farmer has one wagon to kill and big farmer has five. Why shouldn’t they get the same time? Then the Copenhagen Fur got it changed. [i4].

The above illustrates that by having a good communication with the DFBA in Copenhagen, the mink breeders could transmit their needs from the periphery, which also resonates with previous research that highlights the benefits of institutionalized cross-scalar networks in addressing certain challenges (Hoogsteger and Verzijl, 2015).

Our interviews indicate that the power of negotiation and the agency to influence decision-making regarding the situation remained within the DFBA, in Copenhagen. This, in turn, highlights the power asymmetries between core and peripheral regions. While these farmers were well-connected through their networks, they were located in geographical, but also economic and political peripheries. During the crisis, this became evident, and they experienced a loss of control and power to affect matters that were central to them, and their family’s lives. The informal networks were not as effective during the handling of the crisis, because the crisis affected all the farmers simultaneously, hence there was a need for a centralized and institutionalized power to deal with the consequences.

Despite these spaces of engagement, only one of our respondents stated that they were willing to start up again, the rest said that they would leave the industry, with the main argument being that they could not imagine being mink farmers after the entire industrial infrastructure (breeding stock, feeding centers, closure of the Copenhagen Fur) was gone. Furthermore, a lot of emphasis was put on how their competitiveness came from their unique, high-quality genetic pool bred for generations, which was destroyed during the radical culling.

None of us saw a future where we were able to have mink the way we wanted to have in these big farms and big productions. [i13].

Also, with the loss of industry-specific infrastructure, which induced many to leave the industry, many felt grief in also becoming detached from a social network, that over time had become a deeply embedded and instrumental part of the farmers’ lives.

When everything is closed down, I miss… Of course, I can just call my colleagues, but we don’t have the same things to talk about. So, that I miss today, just to grab the phone and say, “hey how is it going today?” because all of us, we are going different ways now. We don’t have the mink that is holding us together [17].

After the ban is lifted, farmers can return to producing mink skin pelts again, they however cannot return to the industry as they knew it. With only a handful of farmers willing to restart highlights that being part of the mink farming industry was not just about production. It was also about being part of a community that to a large extent designed lives, produced space, and decreased detachment through an increased sense of proximity.

6. Concluding remarks

So far, most of the literature on adaptation processes and resilience has privileged regional economies and their firm-level responses to a crisis. The objective of this paper was to assess the adaptation process at the micro-level to understand how individuals engage with different spaces, or networks, to reproduce their spaces of dependence. To address this objective, we conducted thirteen semi-structured interviews with mink breeders in Denmark from nine different municipalities in Nordjylland and Midtjylland. By engaging with individual cross-scalar adaptation strategies, we first addressed previous calls to highlight the diversity of micro-practices at different scales through which regional actors seek to secure their livelihoods and to what end (Bristow and Healy, 2014; MacKinnon, 2017, Lemke et al. 2023). To this, we draw from the theories of social reproduction (Katz, 2004; Strauss, 2020) to incorporate the everyday in understanding adaptation practices and to underscore the political dimension of resilience. Secondly, we approached resilience from a relational perspective, shifting our focus from bounded regions to the spatial networks of individuals. This aligns with recent calls to emphasize a more relational and scale-sensitive approach to regional change (Chu and Hassink, 2023), attuned to the lived experiences of people in these spaces, which we explored through the concept of resilience.

To the former, we have incorporated social reproduction in our work - understood as everyday practices among the farmers’ families. Farming as a highly localized activity is a prime example of how the distinction between economic production and social reproduction is not always sharp, but these material and social attributes in spaces of dependence overlap. For example, when looking at spaces of dependence, certain everyday practices (e.g., farmers’ partners taking on a more active role
in childcare during busier periods, opening farms to visitors, or passing down knowledge to their children) can be perceived as sources of resilience aimed at ensuring the continuity of economic production. Concurrently, it also becomes clear that the farm was a proxy for farmers to sustain and reproduce their daily routines, traditions, and family life. Therefore, the decline of the industry signifies more than just negative economic implications, it also means the erosion of networks and spaces of dependence that empowered them to shape their lives in “left behind places”. This highlights that social reproduction should also be part of regional economic resilience discussions. Thus, the resilience of individuals in “left behind areas” can be amplified through a focus on social reproduction and the reinforcement of core everyday practices rather than relying solely on investment in economic production.

To the latter, our findings indeed indicates that individual adaptation strategies are informed by and embedded within, the socio-spatial networks of associations and when the networks of associations change or are disrupted by a crisis, the spaces of engagement and dependence will also change. The farmers could, for example, seek information and support through more distant networks of associations (spaces of engagement), which also corresponds to the findings of Greene et al. (2022) on ranchers’ experiences in dealing with multi-scalar changes or Hoogesteger and Verzijl (2015) results on the importance of cross-scalar practices as a form of political agency in advocating for water management needs. Additionally, to the findings on incremental adversities and cross-scalar networks, our work also highlights the role of networks during crisis period. During this time, mink farmers felt confusion and lack of control and, hence, benefited greatly from having a centralized agency that could advocate for their needs in the periphery at a national level. However, the solution would always have to be implemented within their space of dependence, ranging from family, friends, and other neighboring breeders.

Most spaces of engagement consisted of networks within the mink breeding industry, which proved effective in addressing adversities and hence securing and reproducing the social structures of the spaces of dependence. While such networks proved beneficial in dealing with the consequences of the crises, they proved less effective in averting the crisis. For example, the resistance to the national plan in the face of the crisis from the spaces of engagement was different in comparison to the incremental adversities. During the incremental adversities, the spaces of engagements were active in contesting ideas and discourses that threatened the spaces of dependence for the mink farmers, as well as shaping farming practices (e.g., animal welfare standards in the face of bad publicity) and reshaping the linkages with other parts of society (e.g., school, and touristic visits). However, in the face of the crises, the aim became less about securing the spaces of dependence and continuation of economic production through having a mink farm. Instead, the focus shifted towards securing resources that would enable farmers to restart and sustain their lives in these rural areas. This highlights that individual resilience extends beyond mere economic production and encompasses the reproduction of livelihoods. Arguably, the informal networks became less effective during crisis as it affected all the farmers simultaneously, making the whole network weaker, highlighting the importance of institutionalized networks.

An important reflection in this regard concerns how networks of association produced by individuals to overcome adversity and crisis inform spatial power relationships and peripherality. By engaging with geographical scales as networks to elucidate a more relational understanding of resilience and adaptation processes draws attention to how conceptualizing space and scales differently in regional economic resilience studies leads to distinct discussions. By focusing on a relational approach as opposed to regarding regions as administrative units highlights how detachment from networks leads to an amplified process of peripheralization of the actors who are occupied in declining activities and already find themselves located in geographically peripheral spaces. Our findings demonstrate that during crisis, having a central advocacy unit in the capital city served as an important source of political, financial, and social leverage for actors relatively far away from the economic and political core, hence contributing to less of a perception of being peripheral. With such centralized power gone, a sense of detachment and reinforced emotional peripherality is shown, aligning with relational theorizations on the constant change of networks that re(produce) spaces (Massey, 2005). Furthermore, losing informal networks among the farmers further deepened the sense of alienation from familiarity and connectivity. Consequently, most farmers can’t imagine being able to practice mink breeding again, which in turn draws attention to the formative consequence spaces of engagement have for the future of an industry and of rural areas in general. This implies that the industry’s viability, and hence the resilience of local communities, is not only contingent on the physical (farming) infrastructure (which remains intact) but also on the presence of these networks.

The sudden rupture of the industry and the adverse effects on its social and material infrastructures caused most mink farmers to exit the industry and engage in different economic activities. This also implied a detachment from their established networks of associations, which necessarily will have to be redefined both socially and spatially. Consequently, the possibilities for adaptation and the micro-foundations of resilience, are clearly confined by evolving local and extra-local networks. This also resonates with previous research that studies cross-scalar networks as a means of agency among communities (Hoogesteger, 2013; Hoogesteger and Verzijl, 2015). A relational perspective on space and on scale in resilience studies underscores the need to regard networks as valuable resources in crisis among individuals in both research and policymaking.

As exemplified here, the entangled economic and social spheres influence local adaptation strategies and the scope for change. In this sense, spaces of dependence - production as well as reproduction - need to be considered to fully grasp the micro-processes related to the question ‘resilience to what end?’. Answering this question will also lead to more informed policy implications targeting rural development, ones that are more aligned with the habits, routines, and values of the people that constitute regional economies.

While we limited our study to spatial networks of individuals when adapting to adversities and severe crisis, there are, of course, multiple ways through which one can address micro-adaptation in research. Future research could engage more with age, gender, or education and how these attributes shape individual adaptation strategies and embeddedness in the networks of associations, as well as consider the sector-specific linkages and dependencies within regions better grasp the regional dimension.

CRediT authorship contribution statement

**Sania Dzalbe:** Conceptualization, Methodology, Data curation, Formal analysis, Writing – original draft, Writing – review & editing.

**Rikard H. Eriksson:** Conceptualization, Formal analysis, Writing – original draft, Writing – review & editing. **Emelie Hane-Weijman:** Conceptualization, Methodology, Formal analysis, Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The authors do not have permission to share data.
Acknowledgements

We would like to thank the mink farmers for taking their time to share their stories with us. The paper also benefited greatly from the constructive comments of the anonymous referees and the editor. This research was funded by the Swedish research councils Forte (grant number 2019-00152; SD and EHW) and Formas (2019-00664; RHE). The usual disclaimers apply.

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