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Uncovering Mechanisms for Resilience: Strategies to Counter Shrinkage in a Peripheral City in Finland

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ABSTRACT *In order to theorize the phenomenon of urban shrinkage, the paper draws from resilience theories that focus on the ability of communities to react to abrupt as well as slowly occurring disturbances. Mechanisms for resilience are defined and identified. The empirical case study is a peripherally located small city in Finland. It is a specific feature for shrinking cities in Finland that many of them, now facing the challenge of population decline, have grown to be economically dependent on the utilization and processing of natural resources, most importantly timber and minerals. Recent transformations in the global division of labour have caused employment opportunities to decline, resulting in out-migration and ageing. Due to lack of a general regional policy dealing with this issue, these cities and settlements now have to find individual strategies to adapt to these wider-scale transformations. Nevertheless, these communities have faced such situations previously and, therefore, it is possible to learn from their former adaptation strategies. The conditions under which the case city has been able to adapt to change in the past are analysed as well as the preconditions for future adaptation, thereby making it possible to refine theories of resilience and adaptability from the perspective of industrialized Northern Europe.*

1. Introduction

Although there are similarities in the processes that shrinking cities across Europe are experiencing, there are also contextual differences. In terms of Finland, a specific feature is that many small cities, communities and settlements, now facing the challenge of population decline, have grown to be economically dependent on the utilization and processing of natural resources, most importantly timber and minerals. Recent transformations in the global division of labour have caused employment opportunities to decline,

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resulting in emigration and ageing. Due to the lack of a general regional policy dealing with this issue, these cities and settlements now have to find individual strategies to adapt to these wider-scale transformations. Nevertheless, these kinds of cities have faced such situations previously and, therefore, it is possible to learn from their former adaptation strategies.

There is also a need to add to the theories related to urban shrinkage. This paper draws theoretically from discussions on resilience and adaptability that focus on the ability of communities to react to external disturbances. Based on long-term research utilizing quantitative and qualitative methods, the paper scrutinizes the example of Lieksa, a municipality with 12,800 inhabitants, where the means of livelihoods have been built on the needs of the forest industries, which are today undergoing dramatic changes (Kotilainen & Eisto, 2010). Lieksa is a relatively peripherally located small city in Eastern Finland, bordering the Russian Federation (in absolute terms 528 km from Helsinki, the national capital, and 93 km from the regional centre of Joensuu; Figure 1). It has a status of a city in contrast to rural municipality in the Finnish municipal system. The paper explores the situation and history of this small city and the impacts that regional policy has had on its development in the past decades. The aim of the paper is to analyse the conditions under which the case city has been able to adapt to change in the past and might be able to do so in the future. This will enable to refine the theories of resilience and adaptability from the perspective of industrialized Northern Europe. While the case is specific in its own way, we suggest that the analysis of transformations we provide has repercussions for other shrinking cities with strong connections to the extraction of natural resources.

We aim to unravel these research questions: What are the particular strategies through which the city has sought to react to population loss and economic decline since these started? On a more abstract level, can an analysis of the mechanisms that contribute to

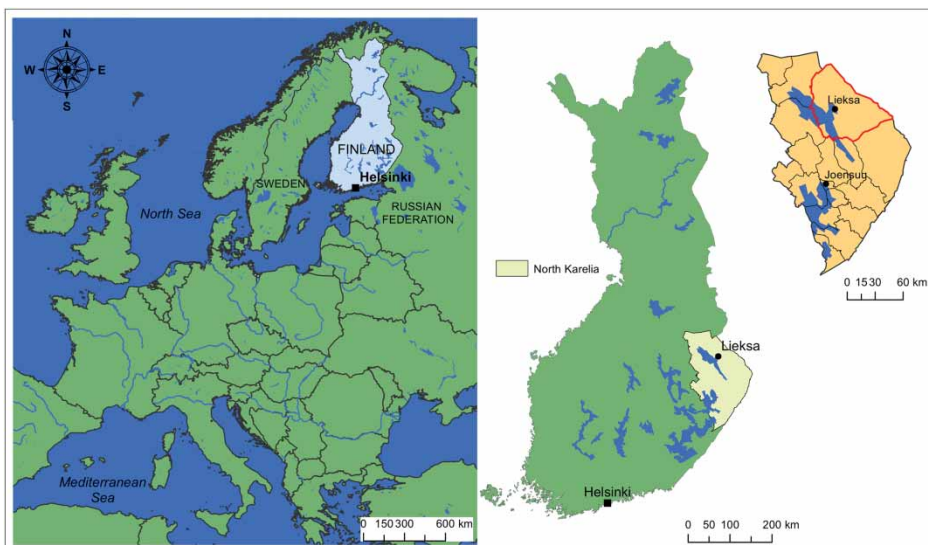


Figure 1. The location of Lieksa, Finland.

the resilience of the city be identified? We see these mechanisms in a broader sense than particular development strategies; the mechanisms that add to resilience are constituted of constellations of social transformations, economic development and ecological conditions that are all multi-scalar. While the strategies are intentional attempts to deal with what is seen as an adverse situation at the local scale, the mechanisms are the crucial forces that lead to a change in the socio-economic situation at the local scale. Mechanisms are formed from structures and dynamics of social, economic and ecological conditions at multiple scales, including, but certainly not confined to the local. They condition the successfulness of the local strategies through various networks, such as the links of industries to and from the local.

The data and methods used for the study consist of analysis of quantitative and qualitative research materials collected on a long-term basis (Eisto, 2009; Kotilainen & Eisto, 2010; Vatanen, 2011), which has been further analysed for the purposes of this paper. The material includes statistical data on population and the regional and local economy from official sources, such as Statistics Finland and the Population Register Centre of Finland, documents and plans dealing with local and regional development (e.g. Lieksan Kaupunki, 2010; Pikes, 2010), 24 interviews carried out between 2003 and 2010 with key informants representing the local administration and local businesses in the research location, as well as fieldwork observations.

2. Urban Shrinkage as a Phenomenon

Obviously, shrinkage as a phenomenon is linked to population decline. Whether other characteristics are included in a definition of a shrinking city is a matter of debate; most often such characteristics may include a downturn in the local economy. Other issues that can be debated concern the size of the urban agglomeration, as well as the density in which the inhabitants dwell within the urban area. For example, Wiechmann (2008, 2009) defines a shrinking city as a densely populated urban area with a minimum population of 10,000 residents that has faced population losses in large parts for more than 2 years and is undergoing economic transformations with some symptoms of structural crisis. Focusing on shrinking mining communities in Canada, Leadbeater (2009) emphasizes the development of demographic structures, and the process of shrinkage in a given urban area or region refers, therefore, to a long-term population decline, either as a continuous trend or a short-term reduction to a lower, relatively stable level. Population decline, in turn, is typically associated with an absolute and relative decline in employment, living standards and opportunities, and increases in poverty and insecurity.

Although urban shrinkage in inner cities and urban hinterlands seems to be empirically verified in many cases, there is no general theory focusing on the phenomenon. Older and newer approaches to studying shrinkage have been identified. Shrinkage is a widely noticed phenomenon in cities of European industrialized regions and single-resource communities, and Uffer (2008, p. 2) relates the older debate concerning shrinkage mainly to restructuring in post-socialist cities in Eastern Germany during the late 1990s. A more recent discussion on the phenomenon has sought to develop a clearer conceptualization of the causes of shrinkage, relating processes of shrinkage with the negative impacts of globalization. In their review on literature, Martinez-Fernandez and Wu (2009, p. 30) separate five conceptual frames for studying urban shrinkage: economic growth based on industrialization with a centre-periphery model; debates concerning deindustrialization

or post-industrialization; globalization; population transitions and climate change. The first three frameworks relate to accumulation and centralization of economic and human capital, investments and innovation capabilities as well as global competition between city regions. The latter two frames are linked to social and environmental factors causing shrinkage. Distortions of age structure, including ageing, as well as natural hazards or environmental degradation, causing changes in people's physical living environments, can accelerate out-migration. As all these research perspectives emphasize different explanations for urban shrinkage, one can come to a conclusion that a variety of context-dependent adaptation strategies for the management of shrinkage should be identifiable.

In this paper, we focus on a relatively small shrinking city that can be seen to be peripherally located with regard to global centres of power. The city can be seen as a community that grew to become a small city during the twentieth century, yet the size of its population has (regarding the shrinkage debate at large), for five decades, been in a decline. The community has, in all phases of its development, drawn heavily from locally existing natural resources for the basis of its economy. There are, however, significant differences from some other northern cases of Canadian shrinking resource-dependent communities, as its history is a continuum from an agrarian society to the industrialization starting in the nineteenth century, and the community was not originally established by a clearly definable decision for the purpose of extracting a specific natural resource but rather the existing community was exploited and expanded for that purpose. As a result of regional policies, moreover, the local economy has been consciously diversified in recent decades.

We suggest that there are reasons for exploring such a case through the lens of theories of resilience and adaptability, as these theoretical perspectives help pay attention, first, to the linkages that the city has to natural resources and, second, the adaptation strategies of the city facing inevitable transformations due to changes in the global economy. In what follows, we first examine these theories in order to provide a theoretical framework from which to analyse occurrences in one particular shrinking city, in the hope that the theoretical perspective could also be adopted for an analysis of other similar shrinking cities. After the theoretical section, we investigate the situation in our case city, and we then differentiate various strategies for adaptation which could contribute to the development of mechanisms for resilience.

3. The Benefits of the Concept of Resilience for Understanding Regional Change

Our focus is on demographic and economic transformations in shrinking cities in which the industrial utilization of natural resources forms the basis for the local economy as well as the strategies to deal with these transformations. In our definition, such a shrinking city consists of the spheres of housing, sectors of the local economy, natural resources and ecological connections. All these are in important ways, but not only, local in character. First, inhabitants of a place form the core of any city or settlement, yet it is known that the phenomena of commuting, part-time dwelling, and second housing are currently on the rise globally, not least in situations in which natural resources are extracted (e.g. Spies, 2009). Second, the means of livelihoods for the local population could be found in the place in question, as would be the case with an industrial production plant, but, as with housing, commuting breaks the place-bound character of making one's living,

and local inhabitants may travel ever longer distances to find jobs. Third, the kind of cities that we are focusing on are utilizing natural resources in their immediate vicinity. They have often been formed and grown for the sake of extraction and—often but not always—the processing of local raw materials, yet there are recent developments, resulting from diversification of local economies, that have led raw materials to be transported to these places for manufacturing.

Fourth, the cities are dependent on the functions, structures and dynamics of ecosystems. While this is of course a vast issue including the material basis of human societies, our focus here is in a more narrow sense on the ways in which the local ecosystem have been harnessed to produce the kinds of natural resources desired by the human community or the society at large. An appropriate example is a local forest ecosystem that has been modified by humans during the past century by selecting a few tree species that are allowed to grow in the ecosystem and heavily intervening in the age structure of the forest in order to maximize the production of desired raw materials for industries (Radkau, 2008; Kotilainen & Rytteri, 2011). Nevertheless, the local ecosystem is not only a local product, but very much a result of larger processes that have imposed an impact through the global markets or the transnational circulation of ideas such as those guiding the principles of forest management.

In effect, we wish to argue that an interlinked human-ecological community can be seen to have enough qualities of an open human-ecological system that it is feasible to adopt certain notions derived from the analysis of social-ecological systems in order to better understand its structures and dynamics. Such notions include, most importantly for the aims of this paper, the concept of resilience. We argue that in this type of resource community, local development is steered by the system's interaction with other systems at other scales and it is dependent on the system's capability to regenerate itself after economic and ecological disturbances. The concept of resilience offers a promising analytical tool because it raises the questions of why and how some shrinking cities that have grown to become dependent on the industrial exploitation of natural resources have succeeded in regenerating their economic base and sources of income while others have not.

Increasingly applied by social scientists and related disciplines analysing societal transformations (Christopherson *et al.*, 2010; Pendall *et al.*, 2010), the concept of resilience originally evolved within the discipline of ecology, where it has referred either to the ability of a system to recover from unforeseen disturbance, the time that a system needs to recover from disturbance, or the magnitude of disturbance that a system can absorb without a need to undergo foundational transformations (Holling, 1973; Berkes, 2002). These perspectives have also taken their place in recent debates concerning the effects of environmental hazards related to climate change, which has increased the usefulness of the concept of resilience in the field of urban planning (Berke & Campanella, 2006; Campanella, 2006).

Studies on how communities and cities respond to disasters or natural hazards tend to embrace a version of resilience with a strong bias towards engineering science. Much of this research focuses on the question of whether a city or region can recover its previous state, with a higher level of population, thriving economy, or built infrastructure (Vale & Campanella, 2005). The concept has also been used in a forward-looking sense with a focus on a system's ability to learn and reorganize itself, and diversity within a system has also been identified as a component of resilience (Holling, 2000; Gunderson & Holling, 2002). Approaching the issue from a regional science perspective, Foster

(2007, pp. 11–12) distinguishes between resilience as preparation and resilience as performance. Performance resilience refers to a system's capability to navigate successfully out of a state of shock, and preparatory resilience is composed of the two stages of regional assessment and readiness. Preparatory resilience is especially interesting from the point of view of urban shrinkage since it points to a city's capability to generate a successful analysis of its own situation as well as its ability to invest in building up capacities of resilience. These two issues are difficult to execute in a situation of urban shrinkage because the decline can occur gradually over a long period of time, which complicates the possibility of analysing the situation. Moreover, resilience applies to different elements of a system, such as infrastructure, information, the physical environment, civic organizations, governance and economic systems, and a system that is resilient on one element may not necessarily be resilient on another.

Generally, the theoretical framework of resilience research presupposes that a system that has run into internally or externally driven difficulties has the following options. First, the system can resist the shock and hence remain unchanged. Second, it can adapt to the challenges caused by the shock by organizing changes in so-called non-essential systemic features. An example could be a single-industry city with engineering works succeeding in avoiding employee lay-offs during economic depression by getting orders from a new market area. The third option is that the system becomes vulnerable, which would be the case if the engineering works dismissed its employees. Finally, the shock can have such a severe effect on a system that it gradually transforms to a foundationally different system. As an example, in a shrinking city a sharp decline in the main sectors of the local economy would cause a loss of population down to the limit of the city barely continuing to exist.

Quite often cities that have undergone some unexpected shock or long-lasting negative development trend try to seek ways to achieve a new growth path for their economies. A resilient city, in this view, would be one that has resumed its previous growth trajectory after a lag (Pendall *et al.*, 2010). Nevertheless, given the myriad factors shaping regional or local socio-economic and even cultural impacts and responses, the resilience of a city is a highly complex phenomenon. We suggest that for shrinking cities, other types of development paths also which are not based on economic growth brought about by industrially organized production activities could exist, and these paths could be seen as a version of resilience.

For the purposes of the analysis in this paper, we define resilience as the capacities of a system to maintain its core functions. Such capacities are multilayered and consist of, first, the capacity for resistance to pressures to change; second, adaptive capacity, that is, immediate reactions to shocks on a short time span; and third, the capacity to transform non-essential functions and structures on a longer time span. It has been identified as a general problem with the concept of resilience that its abstract and multidimensional nature makes it difficult to operationalize, and hence to define the variables that should be empirically measured (Cumming *et al.*, 2005). Although scholars in the field of regional sciences have recently offered operational frameworks for an empirical analysis of resilience (Chapple & Lester, 2007; Foster, 2007), these are still quite abstract for the analytical needs of transformations in cities with the natural resource sector dominating the local economy. Cumming *et al.* (2005, p. 976) point out that a priori defined variables that seem to lead to system resilience also lead to conclusions that are driven by the initial selection of variables. We aim to avoid this problem by focusing on long-term develop-

ment nodes in our case city. By analysing these nodes of development and change we seek to investigate the key mechanisms of resilience for the city in the long run. Slowly occurring processes of urban shrinkage can gradually create thresholds that are crucial points for the future development of a community, since crossing a certain threshold can trigger a swiftly accelerating vicious circle. Such a threshold can, for example, be created by long-term negative net migration or an ageing demographic structure. Mechanisms for resilience consist of those institutional setups, actor networks, internal analytical processes and incentive structures that help a system to combine its various sources of resilience. Before turning to an empirical analysis of our case study, we briefly discuss the characteristics of this particular shrinking city in relation to the shrinking cities debate.

4. What Type of Shrinking City?

We are dealing with a specific case of a shrinking city here, and it is necessary to discuss briefly the nature of the city that we are analysing. First, we are faced with the issue of the diversity of the local economy. Research on resource peripheries has sought to locate places that are based on natural resource exploitation in a wider context (Hayter *et al.*, 2003; Lehtinen *et al.*, 2004), and as part of this research, communities where a direct link to natural resource extraction is important have been analysed, for example, in Canada (e.g. Randall & Ironside, 1996; Hanlon & Halseth, 2005) and Russia (e.g. Kortelainen & Kotilainen, 2003). Among others, the term single-industry resource community has been in use (Leadbeater, 2009), and path dependency, that is, dependence on a single industry, resulting in structural restrictions in freely choosing development options for the future, as well as negative changes in population structure caused by ageing and negative net migration, can be said to be the main causes of shrinkage in such shrinking cities.

For our case in Finland, the characteristics of a single-industry resource community can be identified in the history of the community, but, perhaps typically for the European Nordic countries, strong regional policies have led to an intentional diversification of the local economy. Therefore, we are not quite dealing with a single-industry resource community undergoing urban shrinkage here. We can also discuss whether the term natural resource-dependent community (Adger, 2000) is applicable for our case. Definitely, certain dependence relations on local natural resources do exist, but we have to understand these dependencies as foundationally mediated through the industrial system of production. The dependency on local natural resources has also diminished over the years with the diversification of production activities, as imported raw materials have been utilized for the new products. However, although the industrial structure has diversified, we have to emphasize that forests have had a central role in local development for several decades and still form the foundations of local identity; in this sense, we can see the essential core functions in this case, as given in our above definition of resilience, to be found in forest-related activities. Moreover, related to these core functions, as we will see later, post-productivist forest use has recently been gaining a stronger role as one of the main development options for the future.

There is, furthermore, the urban question itself. Our case city grew from an area with predominantly rural communities into a city during the twentieth century. There are two sides to the urban question, the administrative one and that concerning settlement structures. The municipality has been granted the status of a city in the Finnish municipal system in 1973, a decision that was based on the number of inhabitants and the scale of

industrialization locally. There have been municipal mergers over the years, and area covered by the municipality is, today, large, with a land area of 3500 km², but the urban core area has about 10,000 inhabitants. Due to the sprawl of the core area and the question of which areas in the vicinity of the urban centre are to be counted, the limits of this area are not easily demarcated. Nevertheless, we can say that there is an urban core area and vast rural areas with scattered settlements within the municipal boundaries. We next turn to the transformations that turned this particular city into a long path of shrinkage. These transformations illustrate more generally the situation in peripheral settlements and cities in Finland, although our case city is, today, the one with the sharpest population decline.

5. Growth, Shrinkage and Causes of Population Decline

Throughout its history, forest utilization has had a central role in the development of the city of Lieksa. Today, the share of the forest-sector enterprises among the 20 largest enterprises is notably high, 24%, together with 480 employees. However, although the role of the forest industry and wood processing in the local economy is significant, the largest employer is the city administration, with 820 employees, and in recent years engineering works, tourism and public-sector actors have increased their share of the total employment. Prior to the by-now lengthy period of shrinkage, starting from the peak year of 1959, Lieksa grew steadily for five decades (Figure 2). The European demand for wood and paper products increased the value of the forests, and the procurement of timber required increasingly more workers in logging and transportation. In addition, the manufacturing of wood and paper products started in Lieksa in the beginning of the twentieth century while, at the same time, ironworks that had operated there for 70 years were closed down. The extensive growth in the demand for labour in the labour-intensive timber procurement and factory works maintained the growth trend of the population until the end of the 1950s. After the Second World War, evacuees from areas ceded to the Soviet Union as well as the post-war baby boom accelerated the growth of the popu-

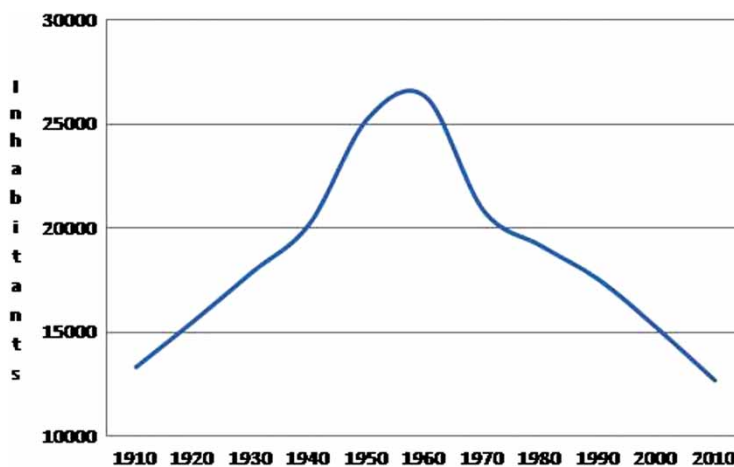


Figure 2. Changes in the number of inhabitants in Lieksa, 1910–2010.

lation, that peaked in 1959 with approximately 27,000 inhabitants. Subsequently, the population has halved to today's circa 12,800 inhabitants (Vatanen, 2010).

In contrast to most parts of Finland, where private forest ownership is common, much of the forest lands in Lieksa are in state ownership. Large forest companies also own forests there (Björn, 2000), and Lieksa can therefore be characterized as a resource periphery, part of the region in Eastern Finland from where companies have transported raw material for industrial usage in the southern parts of the country. There is, nevertheless, a cardboard mill and sawmill, that have thus far remained in operation during the heavy restructuring of the Finnish forest industry sector. It has been estimated that in the 1950s, forestry employed up to 5000 people in Lieksa in wintertime, and the peak in employment in the factories within the forest industry was in 1980 with over 1000 employees. Since then, the use of chain saws, forwarders and harvesters has considerably reduced the number of jobs in forestry, and the employment figures of the timber product factories were reduced sharply after technological improvements in the mills in the 1980s. The number of jobs in forestry and agriculture has come down over 90% since 1960, and about 450 persons are employed in forestry and agriculture today (Figures 3 and 4).

Overall, the population decline can therefore well be explained by transformations in the structures of the economy. The mechanization and reorganization of forestry and agri-

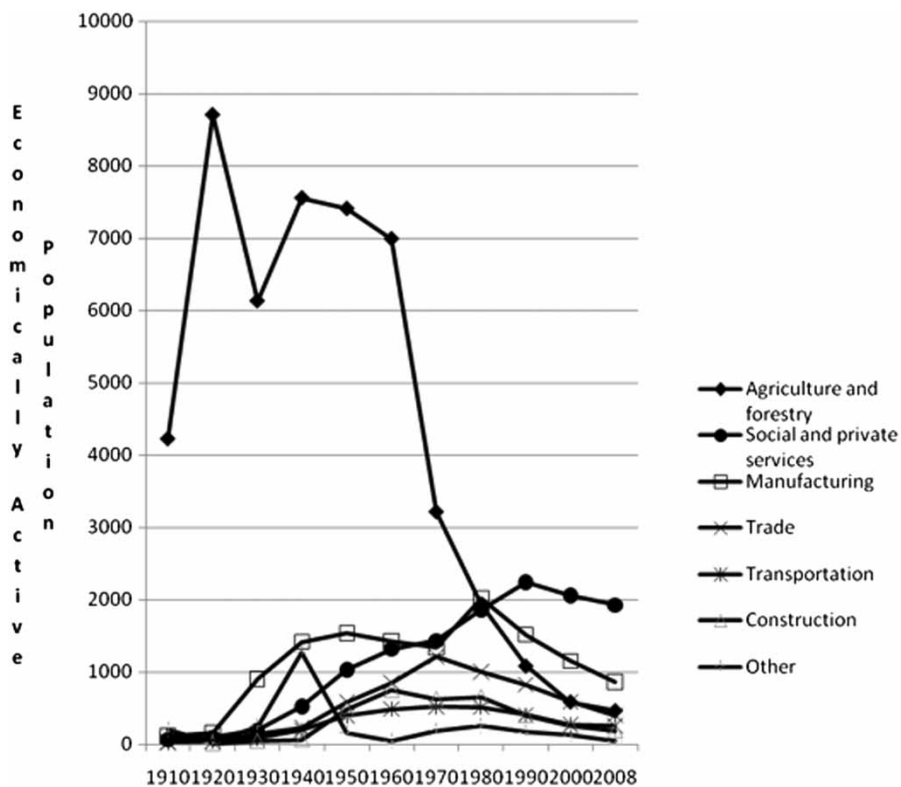


Figure 3. Changes in the share of economically active population in different sectors of the local economy, 1910–2008.

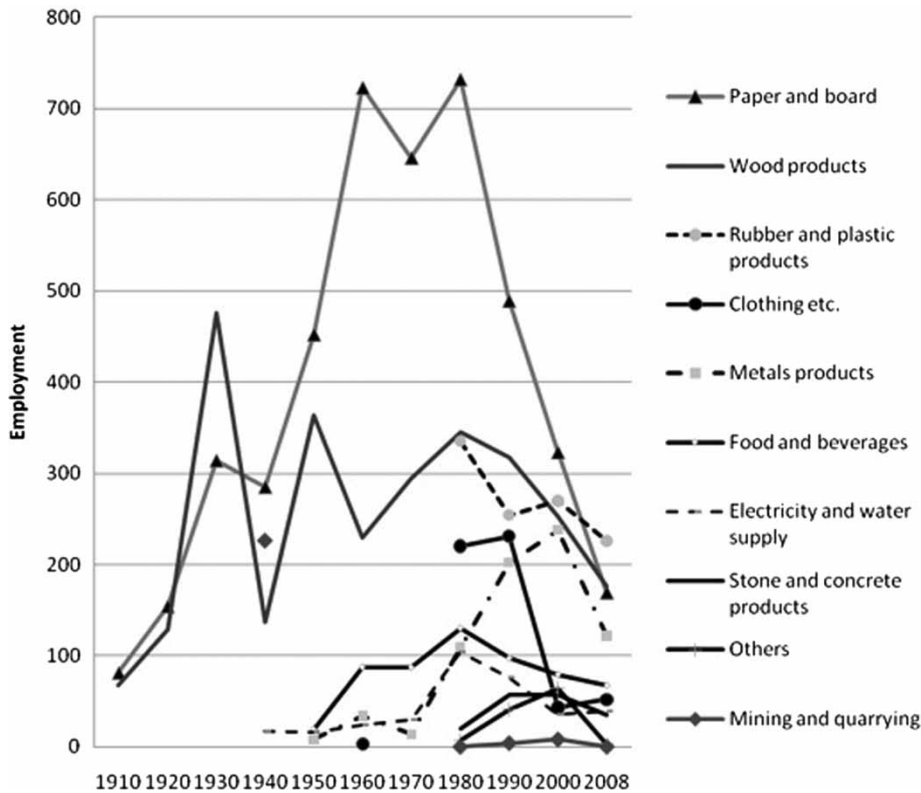


Figure 4. Changes in employment figures of different industries, 1910–2008.

culture caused total employment figures in these fields to continuously decline since the 1960s, and the economic recession in Finland during the 1990s accelerated the negative local economic development. With the exception of private services, all means of livelihood have showed a negative trend. Today, the total employment of Lieksa is only one-third of that in 1960, and the employment figures in manufacturing are now less than half of that in the peak year of 1980. As an effect of diminishing workplaces, younger people started to move out, and the population is ageing, now with a median age of 51 years, while the median age in Finland as a whole is 41 years. The relative ageing of the population has also been affected by a negative natural population change.

6. Strategies to Counter Shrinkage

We can identify various strategies through which the city in question has sought to fight shrinkage. These strategies vary from economic policies that would turn the local economy from decline to growth, to policies to bring in more inhabitants. These policies are all forged by actors at the local scale, but they are not confined to the local, as an important aspect of top-down policy formulation and political cooperation from the national scale is associated with local development. Moreover, the strategies are responses to effects from global economic transformations, and, more recently, some of the strategies

have been seeking to draw benefits from global trends such as post-productivism. The strategies to counter shrinkage are, therefore, multi-scalar. Moreover, in line with the resilience debates, one aspect of these multi-scalar strategies is that they seek to promote diversity. We discuss next these strategies and their success in finding solutions to dealing with the long-lasting downward population trend and economic decline.

In retrospect, the post-Second World War policy that emphasized rural housing and means of livelihoods as a strategy to re-settle refugees, turned out to be a misstep. Within two decades from this re-settlement, the mechanization of agriculture and forestry led to rising productivity and declining employment rates in rural Finland. In this situation, starting in the 1960s, major and minor regional policies were introduced by the national government. The major regional policy consisted of the construction of the Nordic welfare state, and various industrial subsidies to firms that would decide to locate their production in peripheral municipalities formed the minor regional policy. In effect, there were attempts to diversify the local economy by national and local regional policies since the 1970s (Vatanen, 2010). The construction of the social welfare state in the local conditions continuously created workplaces in education, social services and the city administration until the 1990s. The minor regional policy in particular, aimed at finding suitable workplaces for former loggers and small-scale farmer smallholders.

Combined national and local scale regional policies resulted in an industrial park in 1973. This strategy aiming at further industrialization and diversification of the local economy was first successful. Firms with manufacturing of rubber and plastic products as well as clothing industries decided to relocate their production units in Lieksa and the workforce strength employed in factories almost doubled between 1970 and 1980. Nevertheless, though successful at first, there was a downside to the industrial park strategy. The newly created manufacturing units refined imported raw materials (textiles, rubber, steel and plastic) and were based on capital loans and subsidies. The benefits turned out to be temporary, as changes in the global markets, production technologies and the strategies of firms have caused manufacturing units to decrease their production figures, relocate again to other regions and countries, or close down for good. The remaining industries include manufacturing of composite construction elements for boats and trains and packaging products for the food industry.

While the idea of the industrial park in the 1970s was largely based on imported raw materials and investments, combined with the abundance of local work force, a more recent industrial strategy has turned the attention back to local natural resources, as there is a quest for innovations regarding novel industrial forms of forest use. Despite large-scale technological transformations in this field, it can be stated that the trajectory of utilization of forest resources still dominates the local economy; it has been estimated that the utilization of local natural resources today provides about 25% of all local jobs, which is high in Finnish comparison, and the forest industry provides about half of all manufacturing jobs. However, the potentials of industries drawing from the forest are much more diversified today than they used to be. It is likely that the production of cardboard and sawn timber will continue in the foreseeable future, and glued laminated timber, the newest timber product, has been in production for more than a decade. One of the most important issues in terms of the use of local natural resources is the potential for the exploitation of wood as a source of bio-energy. In addition, production of wood chips and chopped firewood by new technologies may bring economic benefits from the local timber resources. Unfortu-

nately for the local employment opportunities, however, the application of the new technologies requires a smaller work force than the use of the previous technologies.

There are two distinct strategies related to the service sector. First, improvements are sought in the services for tourism. Tourism has a relatively long history within the municipal boundaries, as the hilly and forested Koli National Park is one of the oldest and best-known sceneries in the country. As a legacy of former development, there is a hotel and a ski lift—the oldest in Finland, in operation since 1939—in the park, where the development of tourism is continually brought into contradiction with the aims of nature conservation. Furthermore, the municipality includes a part of the marshy Patvinsuo National Park, and, while not with a park status, but owned by the state and administered by *Met-sähallitus* (The Finnish Forest Service), the forested Ruunaa area is an important site for recreation. It has been estimated, however, that the employment opportunities in tourism services are not likely to reach the level provided by processing industries in the past. Second, the establishment of new services provided through the internet and telephone can also be seen as a strategy to overcome the structural problems of the local economy and counter shrinkage. A few call centre firms have been relocating their operations to Lieksa in recent years.

Finally, we can identify a strategy that aims at attracting inhabitants on the basis of housing conditions. It is hoped that spacious living conditions would attract inhabitants who would prefer the relative benefits of the area in comparison to more densely populated places in the country. Wealthy and healthy senior citizens are desired returnees, but there are also some foreign immigrants from the neighbouring Russian Federation and the EU countries as well as refugees from outside Europe. All migrants are in the short run beneficial to the local economy because they bring with them income from external sources, and their consumption has a positive economic effect on the revenues of the local economy. In the long run, however, a large number of elderly newcomers may cause budgetary problems for the local administration through their need for public services that are subjective citizen rights according to the national legislation, and their in-migration makes the demographic structure ever more biased towards older generations.

7. Mechanisms for Resilience

Based on the analysis of the approximately 40 years of transformations, the above-mentioned strategies can be said to be distinguishable efforts by which the case city has tried to renew its social and economic structures and develop new sources of income. From the perspective of resilience theory, we can differentiate specific mechanisms for resilience. We define these mechanisms as combinations of various multi-scalar efforts that succeed in improving the capacities for reorganization in situations in which the local socio-economy is being hit by external or internal adverse occurrences. For the case city, we can distinguish certain concrete mechanisms for resilience. First, the implementation of local and regional development policies in the 1970s that were successfully connected across scales and well-timed in terms of being able to draw from the innovations in the national regional policies can be identified as one such mechanism. Second, the construction and maintenance of the welfare state took place during the 1980s, again drawing from the national scale. And third, the post-productivist turn in forest use during the early twenty-first century provides novel opportunities to try to see the local development in a new light. Each mechanism offers a different insight into the relation of resilience and

shrinkage. It has to be emphasized that these mechanisms for resilience have not been strong enough to stop the population decline or turn it into growth, but it can be argued that without these mechanisms the resulting decline might have been much sharper. Furthermore, as is the case with the last mechanism, they may open up new avenues for seeing opportunities where they have not been seen before; instead of turning shrinkage into population growth, there might well be opportunities to stabilize the situation on a lower population level and balance the local economy with that population size by utilizing new employment potentials.

There were two issues related to local human resources and work force behind the short-lived success of the industrial park strategy in the 1970s. The turn of the 1960s and 1970s saw the emergence of large-scale unemployment among forest workers as a consequence of mechanization of wood processing and intensifying logging methods. These unemployed people formed a local capacity to be utilized by the new enterprises. On the other hand, local administrators and politicians wanted to prevent the out-migration caused by the labour force needs in the labour markets of cities in Southern Finland. Local re-employment activities were materialized by joining forces with the national re-industrialization policy. We can see that the population decline slowed down somewhat in the mid-1970s (Figure 2). The linkage of development policies drawing resources for development from both the local and national scales can be conceived of as a mechanism for resilience.

The second mechanism for resilience—the realization of the national welfare state during the 1980s—offers another example of the partial resilience mechanism. An important outcome from the implementation of the national welfare state policy was the establishment of new jobs, especially for women, in public administration and health-care services. Because these new employment opportunities serve merely the local demand for services and promote the maintenance of existing production structures rather than aim at diversifying local production, the creation of this policy has had a central role in the emergence of a mechanism for adaptation. It helped to slow down the effects of out-migration, but it did not bring with it deeper structural changes.

The third mechanism for resilience, the post-productivist turn in forest utilization, is currently in an early phase of development. The formation of this mechanism consists of three elements: long-term development of local nature tourism businesses, a high rate of state-owned lands suitable for nature conservation purposes and reconciliation of conflicts in nature conservation. Together, these three elements have created a new situation that has diversified the local utilization of nature and changed the ways of exploitation of natural resources to a more sustainable direction. In this sense this option seems to be quite a promising phenomenon as a mechanism for resilience. The important question, however, is how effective this mechanism could be for halting the process of shrinkage. At present, this question remains essentially open. Most probably this option would not lead to a new growth path of the local economy, but might offer Lieksa a new role within the national and global economies as a smaller but nevertheless viable city. This might lead to an outcome in which Lieksa has a clearly smaller number of inhabitants than in its peak days, but it could provide valuable environments for housing and tourism businesses.

In principle, the future development of the post-industrialized lines of business related to forest use is quite promising. In Lieksa, one can find many environments which offer the environmental, cultural and social values that stand at the core of responsible nature tourism businesses. New forms of forest-based products are also developing. However, although nature tourism has its own clearly visible structure of livelihoods, this structure

is quite thin and vulnerable. For this mechanism to have an impact on shrinkage it would require recreational activities and nature tourism business efforts to be reconciled with the intensified ways of exploitation of natural resources.

8. Conclusions

In this paper, we have discussed the potential of resilience as a concept to help analyse regional transformations with shrinkage of cities as a major phenomenon. We have introduced the notion of a mechanism for resilience that as a middle-level concept would help operationalize research on regional resilience. In terms of the future, an important question for the shrinking city in question here is how the local and non-local actors will exploit forest resources. As the forest industry sector in Finland is undergoing a transformation with production relocating to cheaper locations, such as China and South America, and closer to the markets, the re-establishment of former industrial linkages at the local scale is ever-more unlikely. The alternative might be the development of tourism that draws from the qualities of nature, and the potential of nature tourism has been debated among the locals. However, it has been estimated that its economic importance would not reach the level that the forest industry sector used to provide. Although the future of the city is much open, on the basis of the findings it can be said that Lieksa should find a new nationally and transnationally recognizable role that is based on a combination of industrial and post-industrial forest use, reinforced by processing and refinement of non-local resources.

We can say that resilience should be developed as a concept that includes situations in which there are multiple conditions for resilience of a single system or community. As our empirical example shows, there can be partial resilience of a system or community in the short term. Partial resilience is in force for a certain period of time, and, with a change in external or internal conditions or both, this type of resilience is replaced by another type of short-term resilience. Partial resilience can, for example, be manifest in the way in which a community is able to create conditions for maintaining its industrial base in hard times caused by external economic conditions. In our case, this type of adaptation and re-organization has taken place among local forest enterprises in recent years.

The above-mentioned process raises a question concerning the relation of resilience and shrinkage. In our case city Lieksa, this relation has been tied strongly to the development of forestry and wood processing. Although some examples of successful strategies can be found that seek to counter undesirable processes of decline in the short term, the city is continuously losing its population. Shrinkage seems to be, therefore, a consequence of the earlier extraordinary growth phase based on labour-intensive industrial utilization of local timber resources, which further accelerated the increase in the size of the population. As a change in technologies and productivity followed, the peak in population numbers was demolished. Nevertheless, new forms of organizing local economic activities have been emerging that are not as labour intensive as before, and, therefore, a combination of a lower population level and small-scale businesses seems to be evolving in which these two aspects stimulate each other. Generally speaking, we could come to the conclusion that a shrinking city can be resilient if it succeeds in finding a new role within the global and national economies by developing new viable means of livelihoods for its diminishing population.

For a community to retain its functions on a longer time scale there should be resilience that does not have to change into another form when the conditions at other spatial scales change. Such resilience should be applicable to the community in question on a longer

time span. It should also indicate that there is ability in the community to take advantage, not only adapt to, transformations that are occurring at other spatial scales, and also to prognosticate transformations at other scales so that they could be taken into account early enough, before the community is faced by a foundational disturbance. This would mean that a community or system that possesses resilience in the long run would have succeeded in balancing contradictions in its different forms of partial resilience that exist within it in the short run. It is essential to such overall resilience that it allow and stimulate the community or system to gradually transform some of its non-essential characteristics—those that are deemed not to be the core of that system or community by the system or community itself—so that it will be better prepared to counter or adapt to future shocks or disturbances.

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