Chapter 1

Introduction
1.1 Problem statement

Imagine that your favourite cafe, sports club or the last facility in your neighbourhood closes. Even if you have not experienced this, you have probably heard stories or read about local protests against facility decline. The closure of a local shop, school or even an ATM can cause upheaval, and emotions sometimes run high, especially in rural areas (Westlund and Pichler, 2012). Rural unrest and critique against ongoing consolidations of local facilities is steadily growing (Rodríguez-Pose, 2018), and right-wing political parties are utilizing the narrative to win ground in rural areas (e.g. de Ven, 2021). A recent example is the collective action to preserve the sports complex and swimming pool ‘De Hardenberg’ in Finsterwolde, a village in the north of Groningen (De Veer, 2023). This example is from the Netherlands, but resistance to closure of local facilities¹ and declining service-levels resonates among scholars and residents around the world. It is often assumed that such resistance to place-change is caused by rational arguments such as loss of access. Therefore, policy responses are also often focussed on ‘rational’ solutions (Olejniczak, Wolański and Widawski 2018). In the example of Finsterwolde, the staff and clients of the swimming pool were suggested to move to a nearby pool in Winschoten (Mat, 2023). This is less than 8 km from Finsterwolde, but residents and staff were outraged and felt ‘ignored’ by the decision to close the pool. The truth of the matter is that human behaviour is ultimately the result of a complex interplay of various socio-psychological processes (Kahneman, 2011; Stone, 2002).

Previous studies have shown that rural facilities have important social value for communities (Amcoff et al., 2011; Cabras and Bosworth, 2014; Kearns et al., 2009) and that facilities can be considered ‘third places’ (Finlay et al., 2020; Rosenbaum, 2006). Oldenburg (1999) initially defined third places as public places that host social interactions outside of home and work, in both urban and rural contexts. Nowadays places such as coffee shops, hair salons, and malls are acknowledged as third places where people meet to socialize and interact, and are as such important for people’s mental health and wellbeing (Finlay et al., 2019). We know residents can also feel emotionally attached to such locales (Rosenbaum et al., 2007), however, there is very little scientific research on the emotional processes related to facility decline.

¹ Throughout this thesis I use the term ‘facility’, referring to a spatial location, rather than ‘service’ or ‘amenity’. A local facility can host several services. In section 1.2 I elaborate on the choice of terminology.
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Knowledge gaps and challenges
Planning for decline in general, and responding to emotional sentiments of residents in particular, is not an easy task. To adequately respond to the protective behaviour that occurs after place-change with evidence-based strategies, we need to better understand what drives these protective behaviours. When it comes to facility decline, there are many assumptions, but few studies investigated the underlying socio-psychological processes behind people’s perceptions of facility decline. The main social and scientific contribution of this thesis lies in understanding the mechanisms that lead people to negatively perceive facility-decline and drive communal coping responses. There are many relevant theoretical concepts from different fields in the social sciences (such as planning, sociology, psychology and human geography), but there is a lack of connection between these concepts. Moreover, with the exception of some scholars that study disruption of bonds to public places (e.g., Di Masso, Dixon, and Pol, 2011; Di Masso and Dixon, 2015; Moulay et al., 2018), facilities are hardly ever studied as the object of attachment and the disruption of place bonds due to facility-decline is underexposed in various fields. Scientific insights into mechanisms like these can inform policy responses in rural areas and inspire governance processes that can reduce place disruption (Clarke, Murphy and Lorenzoni, 2018). To do this, governance and planning strategies should challenge their traditional rational orientation, since value conflicts cannot easily be resolved by logic and persuasion on

Figure 1.1: protest against closure of sport complex ‘Harderberg’ in Finsterwalde. Hart van Nederland (2022)
rational grounds (Stone, 2002). To reduce the disruption of place-bonds during and after facility-decline and to support the collective coping process it is necessary to empower residents, which can be achieved by certain forms of citizen participation (Manzo and Perkins, 2006). However, there is a lack of empirical research into the conditions for successful *implementation* of participatory approaches (Voorberg, Bekkers and Tummers, 2015).

In this thesis I aim to address various scientific knowledge gaps, develop practical tools for policy makers, administrators and planners and offer insights into why facility-decline is so often negatively perceived, especially in rural areas. I combine insights from different academic disciplines, and use a mix of qualitative and quantitative methods in order to investigate this topic from different angles. Essentially, I’m responding to DeLyser and Sui’s (2013) call for “engaged pluralism” in Human Geography to bridge methodological and disciplinary divides. Interdisciplinary work that engages with practitioners is called transdisciplinary research, but unfortunately many transdisciplinary studies still fail to really empower communities (Brandt et al., 2013). Collaborating with people outside the academic world offers greater scientific and social value of research (Bernstein, 2015). The challenge in transdisciplinary studies is to maintain critical distance as a researcher, and create meaningful societal impact, and integrate interdisciplinary theory and practice at the same time (Wickson, Carew and Russell, 2006). I work in a semi-transdisciplinary fashion, by collaborating with local practitioners for part of the research, and aiming for direct societal impact.

While interest in mix method place-based studies is steadily increasing (e.g. Yeager and Steiger, 2013), there is still quite a divide between qualitative and quantitative studies in prevailing research practices (Philip, 1998; Strijker, Bosworth and Bouter, 2020). With regard to facility-decline, there is a plethora of quantitative spatial ‘objective’ studies on access to health care (e.g. Shah, Milosavljevic and Bath, 2017) and fresh food (e.g. Yeager and Gatrell, 2014) that do not relate to the additional functions, symbolic meaning and social value of local facilities for a rural community. This neglect within the positivist approach has been criticised for health services (Farmer et al., 2012). Spatial and regional studies on access to education do, however, pay more attention to social meaning of schools for communities (e.g. Talen, 2001) and in rural geography there is ample attention to the multiple functions and important social value of local facilities (e.g. Higgs and Langford, 2013; Svendsen 2010). There is, however, still a lack of mix method studies with a rural focus (Strijker,
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Bosworth and Bouter, 2020), and in both scientific research and planning policies there seems to be an ‘urban bias’ that favours urban issues (Hibbard and Frank, 2021). This thesis addresses rural issues without ignoring rural-urban relations, by investigating residents’ experiences of facility decline in the north of the Netherlands (see figure 1.2). Before I explain why the Netherlands makes for a good case study, I will first zoom out and set the scene of rural facility-decline from an international perspective.

Figure 1.2: Countryside in northern Netherlands. Photo S. Christiaanse, March 2023

Setting the scene of rural facility decline
Facility decline occurs in both urban and rural contexts throughout the world, however, it seems to generate a different type of discussion. In urban settings the discussion is often centred around economic vitality (Rosentraub, 2014), whereas in rural settings the effects are mostly discussed in the context of perceived ‘quality of life’ or ‘subjective wellbeing’ (e.g. Brereton et al., 2011; Cabrera-Barona et al., 2016; Woods, 2005). This thesis was initiated from a rural perspective, but it does not strictly focus on rural areas. The first reason for this is that closure of facilities seems to lead to protests and protective behaviour in both rural contexts (Egelund, and Laustsen, 2006; Farmer et al., 2012; Kroismayr, 2018), as well as urban contexts (Brown, 2003; Good, 2017; Mooney and Fyfe, 2006). Secondly, in today’s society, flows of goods and people do not abide to ‘rural-urban’ boundaries (Tacoli, 1998). It is therefore
necessary to consider the bigger picture in which smaller villages, towns and cities are all part of an integrated landscape. Thirdly, what is considered ‘urban’ and what is ‘rural’ is not universal, and the concepts are not spatially segregated as black and white. What is considered a rural area in the Netherlands, is actually labelled semi-urban by the OECD (OECD, 2016). It can be argued that ‘rurality’ is essentially in the eye of the beholder (Woods, 2005). Moreover, many of the drivers of facility decline are the same in both urban and rural contexts. Facility decline all over the world occurs due to various combinations of depopulation, a changing composition (ageing) of population, increased levels of mobility, changes in consumer behaviour and ‘economies of scale’ that drive scale enlargement at the cost of smaller local shops (van Dam, 1995; Paddison and Calderwood, 2007; Stockdale, 1993; Terluin, 2003). However, while the drivers of facility decline are similar in urban and rural areas, the impact can be different.

In rural settings throughout Europe and northern America, decreasing numbers of small local facilities, such as schools, shops, post-offices, pubs, libraries and supermarkets, are a common topic of discussion (Oldenburg, 1997; Paddison and Calderwood, 2007; Woods, 2005). This is partly due to concerns about a lack in access to basic services that residents need to maintain a certain standard of quality of life (Brereton et al., 2011; Neumeier, 2015). However, the Netherlands has a relatively densely populated countryside and a well-developed road network (Steenbekkers and Vermeij, 2013). It is likely that facility decline results in a loss of choice rather than significantly worsening accessibility.

What is considered ‘rural’ and ‘far away’ in the Netherlands, is actually very different from many other countries. A Frisian study found that residents consider 6 km to be ‘far’ to access basic facilities and services for health care, education or food access (de Vries et al., 2016), whereas international studies report distances up to 2.5 hours on a school bus (Talen, 2001), and distances up to 10 miles (16 km) to food retailers (Yeager, and Gatrell, 2014). A recent dissertation by Felix Pot (2023) shows that perceived accessibility is largely associated with individual needs, desires and abilities. He also showed that car-ownership is an important factor in perceived accessibility. In the Netherlands, 90-94% of rural households own a car (Steenbekkers and Vermeij, 2013). Nevertheless, it is right to be concerned about people without a car, low-income groups and the elderly, since these groups are potentially more vulnerable to be affected by facility-decline (Higgs and Langford, 2013; Hine
Regardless, a lack of access to local facilities in the Netherlands is only an issue for a relatively small group of people lacking motorized transport. But then why is rural facility decline perceived as a problem by a majority of residents, policy makers and politicians, even in a relatively densely populated rural area? There are likely other factors that influence public perceptions, and this makes the Netherlands an interesting case to study experiences of facility decline.

Figure 1.3: map of the Netherlands showing the case study areas

Case: northern Netherlands.
For this thesis I collected data in the northern provinces of the Netherlands. Groningen and Fryslân² are often considered the most rural provinces in the Netherlands (Haartsen, Huigen and Groote, 2003). Two chapters in this thesis

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² The Province of Friesland (in Dutch) is spelled as Fryslân in the local Frisian language.
investigate facility-decline in a ‘village’, and two others focus on a whole province (see figure 1.3). In these northern provinces the distance to basic services for education, health care, food and sports is almost never more than 10 km (Steenbekkers and Vermeij, 2013). Nevertheless, facility-decline is still perceived as a threat (Bos, 2023). In the Netherlands, local policy responses and planning strategies for facility-decline are largely influenced and funded by a national strategy for rural population decline (Ritsema van Eck et al., 2013). The *Population Decline Action Plan*, which was initiated in 2009, identified three major areas that were expected to suffer from population decline: housing, facilities and economic vitality (Rijk, VNG and IPO 2009). At the time, the demographic prognosis was that the total population of the Netherlands would decline from 2040, and that most of the decline would occur in the peripheral regions (Haartsen and Venhorst, 2010). The prognoses have since been adjusted upwards (Groenemeijer, 2022). In subsequent years the *Population Decline Action Plan* was revised accordingly, but it still offered much of the foundation of rural policy at a national and local level (Rijk, VNG and IPO 2011; 2012). A key characteristic of this policy-focus, is that it is rooted in the assumption that population decline causes facility decline. The first step towards more evidence-based strategies for facility decline, is to address a few popular assumptions and misconceptions about a phenomenon known as the ‘downward spiral’ of rural decline.

**Assumptions related to facility decline: the downward spiral**

A common assumption regarding rural regional decline is that this can occur in a downward spiral of decline in population, facilities, general liveability and subsequently out-migration (see figure 1.4). It is easy to poke holes in this theory, since we already know that the relationships between the presumed causes or consequences of rural facility decline, are actually not that straightforward (Thissen et al., 2021). First of all, not all depopulating areas also experience facility decline, and not all areas that are experiencing facility decline are depopulating (PBL/CBS, 2022). In the Netherlands, rural depopulation is mild compared to other more extreme cases of depopulation in Europe where the provision of services is clearly influenced by the decline in potential users (OECD/EC-JRC, 2021). However, many international studies have re-iterated that facility decline is mainly influenced by economies of scale and increased levels of mobility and changes in consumer behaviour (Findlay et al., 2001; Higgs and White, 1997; Hine and Kamruzzaman, 2012). This is also the reality in the Netherlands (van Dam, 1995; van Dam, de Groot and Verwest, 2006). Economies of scale refer to the cost advantages of companies (and
services) when output and consumer thresholds are increased, which drives businesses to grow (O’Sullivan and Sheffrin, 2003). This means that a small company requires relatively more operational cost than a larger company. Public facilities for health care and educational services are also subject to economies of scale, since neoliberal influences in many western countries have led to privatisation and cost optimisation (Brereton et al., 2011; Kearns et al., 2009; Westlund and Pichler, 2012). Increased levels of car-ownership have made it possible for people to travel further to visit these larger scale facilities (Pot, 2023).

Figure 1.4: Research focus.

While at the start of this thesis there were concerns about rural depopulation, the prognoses of population decline have since been adjusted to be milder than expected in the Netherlands (Groenemeijer, 2022). This is not to say that out-migration or shifts in demographic structures do not influence facility and services-levels at all. For example, the number of pupils in smaller Dutch primary schools are affected by declining birth rates (Haartsen and van Wissen, 2012) and an ageing population might increase the demand for certain health care services (Amundsen, 2015; OECD/EC-JRC, 2021). However, the presumed direct relationship between population decline and facility-decline in the
Netherlands was debunked well before the *Population Decline Action Plan* was initiated (van Dam, 1995).

This brings us to the second assumed relationship in the theory of the downward spiral (see figure 1.4). It is a common public perception in the Netherlands that facility decline in rural areas negatively impacts 'liveability' (Steenbekkers and Vermeij, 2013; Thissen et al., 2021). This somewhat ambiguous concept refers to the quality of life in a region based on physical and social dimensions (Namazi-Rad et al., 2016) and the degree to which this living environment fits the needs of its residents (Antognelli and Vizzari, 2017). The concept of liveability is a popular in Dutch lay discourse, but not so much in academic discourse. It can be considered a subset of more general concepts such as 'wellbeing' and 'quality of life' because it specifically relates to the quality of the living environment (e.g. street, neighbourhood, village, town etc.). Liveability is dependent on an array of local values such as satisfaction with one’s home, neighbourhood, safety, cost of living, transport, job access and the availability of facilities and services (Davern et al., 2017; Howley, Scott and Redmond, 2009; Namazi-Rad et al., 2016; Ruth and Franklin, 2014). Availability of facilities only plays a partial role in this construct, next to many other "tangible" and "intangible" aspects (Lloyd, Fullagar and Reid, 2016). This could explain why, in the Netherlands, villages without any facilities or services can still be perceived as very liveable (Gardenier et al., 2011; Steenbekkers and Vermeij, 2013), and facility-decline has little impact on subjective wellbeing scores (Rijnks, 2020).

Despite this evidence, there is a stubborn belief in the Netherlands that facility decline negatively influences liveability. It is very interesting that this belief is not only held by ‘outsiders’ such as politicians and policy makers, but also by residents themselves. This could be related to the persistence of a traditional image of an ‘autonomous’ village in which local business activities make for a lively village (Thissen et al., 2021). The perception of liveability-decline is likely muddled by an overall loss of liveliness after local facilities close (Elshof and Bailey, 2015). However, many people make a conscious choice to live in a quiet residential village (Bijker, Haartsen, and Strijker, 2012). It is possible that people’s perception of reality is also altered by the continued repetition of the *message* that facility decline influences liveability, also referred to as the ‘illusory truth effect’ (Hassan and Barber, 2021). Studies into third places, for example, found that the mere fact that residents *believe* they have access to these locales, enhances their perceptions of the quality of life in their community (Jeffres...
et al., 2009). Essentially, not enough is known about the exact role of local facilities for subjective quality of life (Finlay et al., 2019; Iversen, Fehsenfeld, and Ibsen, 2023), but evidence from the Netherlands does suggest that good quality of life is not solely dependent on facilities such as shops, schools and sports facilities (Gardenier et al., 2011). The perceived quality of life in the Dutch countryside is actually rated higher than in many urban areas (Steenbekkers et al., 2017; Thissen and Content, 2022). The Frisian Social Planning Agency (FSP) even coined the term ‘the Frisian Paradox’ to describe how Frisians are not well off, but happier than the rest of the Netherlands (Middel, 2023).

The third assumed relationship in the downward spiral of decline, is an expected out-flow of people after local facilities close. There are many studies that show the absence of a ‘depopulation effect’ despite it being a popular sentiment (Amcoff, 2012; Amcoff, Möller, and Westholm, 2011; Barakat, 2015; Elshof, Haartsen and Mulder, 2015). Consumer behaviour varies for different age groups, and thus changes in facility-decline or subjective liveability, might influence migration decisions of specific demographic groups (Ruth and Franklin, 2014). For instance, older people may move out of smaller villages or towns to bigger towns with more health care services and higher educated young people might look for jobs and education outside of rural areas (Elshof, van Wissen and Mulder, 2014; Stockdale, 2002), but the process is “messy” (Stockdale, 2016). While some people might want to move after a community has lost its local facilities, we also know that many people can still be happy in the face of depopulation and facility decline, and choose to stay (Elshof et al., 2017). The nightmarish vision of ghost towns, void of residents, was once a feared scenario for rural areas in north of the Netherlands (Bedreigd Bestaan, 1959). Luckily, a follow-up study proved the northern regions to be resilient (Gardenier et al., 2011), although most smaller villages have changed from autonomous self-sufficient geographical units into more residential commuter towns (Thissen, 2013).

To summarise: previous studies have indicated that population decline is not the main driver of facility decline in the Netherlands, and liveability decline is not a predetermined outcome. Moreover, while facility decline might fuel perceptions of the deterioration of a rural community, and this might motivate some people to move, it is definitely not a straightforward relationship. Nevertheless, the ‘downward spiral’ of decline is still a popular and widely used concept. Perhaps this is because we still don’t really understand the mechanisms that drive the prevailing negative perceptions of facility decline.
in situations where it should *rationally* not be an issue. In this thesis I will therefore study the experiences of people that live in relatively densely populated rural areas in the north of the Netherlands, by zooming in on the socio-psychological processes of dealing with facility decline.

### 1.2 Research aim

**Research aim and research questions**

This thesis aims to understand the *mechanisms* that may explain negative perceptions of facility decline. When local facilities close, it changes the living environment, and is therefore experienced as a form of ‘place-change’. I use research on place-change to theorise how the mechanisms work, however, studying the mechanisms that drive negative perceptions of facility-decline can in turn also provide more generic insights into how communities deal with *place-change*. Investigating the socio-psychological processes of dealing with place-change can help to understand common perceptions and assumptions surrounding facility decline. However, this thesis does set out to understand common perceptions about facility decline in the *context* of concerns about rural depopulation and liveability, without getting side-tracked by the assumptions related to the downward spiral of decline that were discussed earlier.

In this thesis I ask why facility decline is often negatively perceived, even in rural areas where there are alternative services within reasonable distance or in cases where very few people *use* the service. To understand this phenomenon, I study experiences of facility decline in the north of the Netherlands, and translate these findings to other international contexts. Reactions to facility-decline vary from vocal community protests to a silent yet disgruntled acceptance of change in various contexts and for various types of public facilities. Previous studies document protest to the closure of schools (Good, 2017), hospitals (Brown, 2003), swimming pools (Mooney, and Fyfe, 2006), health services (Farmer et al., 2012), and community centers (Svendsen, 2010). Moreover, other studies comment on the social role of public facilities and private facilities such as small stores (Broadbridge and Calderwood, 2002; Clarke and Banga, 2009). However, to this day little is known about what precedes reactions to the closure of these facilities. People eventually either accept, resign or do something about change, but regardless, the period in-between disruption and resignation can be quite turbulent. This thesis aims to produce insights that can be used to inform policy, challenge the ‘rational
choice’ paradigm that often still dominate spatial planning, and support local residents in coping with place-change. The chapters in this thesis examine different novel scientific angles in order to answer the **main research question:**

**What mechanisms influence (negative) perceptions of rural facility decline?**

The sub-questions, that will be answered in successive chapters, are:

1. How did the spatial distribution of local facilities in Fryslân change, and did changes in access to basic facilities predominantly occur in areas that experienced population decline?
2. Which factors (including place meanings constructed through dimensions of sense of place) influence negative evaluation of closure of a local supermarket?
3. How do residents of a village community collectively interpret, evaluate and cope with the disruption of place bonds caused by the closure of local facilities?
4. Does the endowment effect influence perceptions of facility decline?
5. How can a co-creative planning tool mitigate negative experiences of facility-decline?

**Clarification of the terminology**

Before I continue to explain more about the theoretical backbone of this thesis, I need to clarify a few terms that are relevant to understand the research aim and research questions. Throughout this thesis I differentiate between the term ‘facility’ and ‘service’. In Dutch, ‘voorziening’ covers the meaning of both these terms and relates to anything that allows the use of attractions and services, or supports you in your everyday-life. The term ‘voorziening’ can refer to basic services that everyone needs such as health care, education and social (public) services. However, in the context of rural depopulation it often refers to the spatial locality of public facilities such as schools, playgrounds, town halls, police stations and hospitals, or private facilities such as shops, banks and sports clubs. In English the term ‘facility’ refers to a fixed geographical location where a certain service is offered. Since I study the role of place attachment, I will use the term ‘facility’, because people can feel emotionally and cognitively attached to these localities based on more than the functional service that is offered there. Services such as public transport (e.g. Stockdale, 1993), mobile services (e.g. Higgs and Langford, 2013), online services (e.g. Hodge et al., 2016) and digital hubs (Rundel, Salemink and Strijker, 2020) are very interesting and important in the discussion about rural population decline. However, I am primarily interested in how people can experience a sense of attachment and
collective ownership over the fixtures in their community. The term ‘amenity’ is also often used in rural settings. Amenities can concern the above-mentioned facilities, but also often refer to a broader spectrum of available attractions (e.g. lakes, parks and walkways). While living near nature is a proven indicator for well-being (Daams and Veneri, 2017), this aspect is largely absent from the political discussion about rural decline in the Netherlands. This thesis therefore focusses on the closure or amalgamation of local facilities as a form of place-change.

The aim of this thesis is to understand the prevailing negative perception of facility decline in rural areas by investigating the experiences of facility decline of residents in the north of the Netherlands (such as the village in figure 1.5). Perceptions relate to how people interpret changes in their living environment, but also to the popular thoughts, beliefs, or opinions that are held by residents themselves, and ‘outsiders’ such as policy makers, politicians, journalists or researchers. These perceptions may include popular beliefs about the downward spiral of decline, and may not be rooted in people’s own experience. Experience refers to how local residents undergo, or have undergone, an event or occurrence by doing, seeing, or feeling. Investigating people’s (past) experiences can help to understand how certain mechanisms influence common perceptions in the here and now.

A mechanism refers to the natural or established process by which something is brought about. This thesis finds several mechanisms that influence the socio-psychological process of dealing with place-change. Before any protective behaviour occurs, people make sense of place change by interpreting and evaluating change, and then and coping with this change. Interpretation refers to how people make sense of what is going on around them and form an opinion of what it means. To ‘evaluate’ means to subjectively judge the quality, importance, amount, or value of something in various shades of positive or negative. To ‘cope’ means to deal with problems or difficulties to a certain degree of success, but Devine-Wright (2009) translates this to how people believe they might respond to place-change. This clearly precedes individual or collective action, since we know that behavioural intentions do not necessarily translate into action (Blake, 1999). To be able to take collective action people need to enter into a discussion. In a discussion people talk about something to reach a decision, consensus or work towards an action, rather than the more open-ended ‘debate’ or ‘dialogue’.
1.3 Theoretical underpinning

Now that the main concepts that are relevant to the research aim are introduced, I will present the theoretical underpinning. This thesis focusses on the experiences and perceptions of facility decline in the context of perceived rural decline in the north of the Netherlands. It employs an interdisciplinary approach by relating the ‘senses of loss’ triggered by facility decline to concepts that have footing in the fields of human geography, planning, environmental psychology, sociology, and behavioural economics. I have organised several relevant concepts by field, but they are not limited to this field and I used them in congruence throughout this thesis. This section will end with introducing a theoretical framework (figure 1.6) in which all the concepts come together. This framework is the result of the various research cycles I went through, including theoretical explorations in different academic disciplines and the related empirical work that form the basis of the upcoming chapters.

Figure 1.5: Grijpskerk - a village in Groningen. View from the Molenstraat. photo S. Christiaanse, march 2023
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Concepts from Human Geography

Human geography studies the interaction between people and places. For this thesis, this concerns the interaction between people and local facilities, in particular focussing on the experiences of residents of villages, embedded in the sub-field of Rural Geography. In Rural Geography there is a lot of interest in the spatial interaction between the countryside and the city, which is especially relevant when it comes to the use of facilities and services (Woods, 2007). For example, Christaller’s central place model has been used to illustrate rural-urban relationships when it comes to spatial consumption patterns (Meijers, 2007). The introduction of the facility-landscape by Christaller (1933) and Losch (1941), showed how facilities function in a hierarchal system where villages with few inhabitants only have local facilities for daily needs, and higher order towns offer both local and more regional services with larger services areas (Christaller 1933; Meijers 2007). While the models overly assume ‘rational’ behaviour, they can still be relevant in understanding rural-urban relations and spatial hierarchy (Burger, Meijers and van Oort, 2013; Taylor, Hoyler and Verbruggen 2010). Even though technological advances such as the refrigerator, car, and more recently online shopping have obviously completely transformed the consumer-landscape, certain aspects of settlement hierarchy can still be distinguished.

The main pitfall of these rational spatial models is that they build on the traditional conceptualisation of ‘place’ in geography as more or less a ‘fixed’ spatial container. In the current age where people are increasingly mobile and connected, places are shaped by flows of people and processes (Di Masso et al., 2019; Massey, 2005). People give meaning to the places in their living environment, causing spatial changes to be perceived in different ways by different people. This process is very much related and intertwined with the notion of (rural) communities, which are themselves constructed through a set of meanings, practices and spaces (Liepins, 2000). A Sense of Community (SOC) can be defined as the feeling of belonging to a group, and a shared belief that they can have their needs met through a common commitment (Mcmillan and Chavis, 1986). The concept of SOC actually comes from community psychology, but it is now commonly used in human geography, along with various concepts from the field of environmental psychology such as place meaning or ‘Sense of Place’ (Cuba and Hummon, 1993; Relph, 1976; Shamai, 1991).
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Concepts from Environmental Psychology
This thesis heavily relies on insights from the field of environmental psychology, and most importantly on the concept of place meaning, or Sense of Place. Sense of Place can be divided into three processes according to attitude structure (Fishbein and Ajzen, 1975). Cognitive processes that lead us to identify with a place can be called ‘place identity’ (PI), affective processes that make us feel attached to a place are commonly referred to ‘place attachment’ (PA) and behavioural processes that influence how we perceive our use of places called ‘place dependence’ (PD) (Jorgensen and Stedman, 2001). These dimensions are strongly related, but the distinction between them is debated (Anton and Lawrence, 2014; Lewicka, 2011; Korpela, 2012). While many scholars define PA (e.g. Scannell and Gifford, 2010) or PI as a multifaceted concept (e.g. Knez and Eliasson, 2017), the general consensus is that PA concerns affective bonds between people and places (Jorgensen and Stedman, 2001; Pretty et al., 2003). In this thesis I see Sense of Place (place meaning) as being connected to a place based on various place bonds, whereas Sense of Community relates more to the sense of belonging to a group of people in a certain place.

One of the struggles in navigating place-based research is the plurality and overlap between different concepts and associated theories and methodologies (Williams, 2014). The concepts are, however, very useful to understand that when people feel emotionally or cognitively attached to a place, a change that alters this place can be perceived as a disruption (Brown and Perkins, 1992). The disruption of place bonds can cause people to feel upset, and even experience grief, for instance when people lose a local facility that is regarded as essential to a community’s identity, or that has important social value (Kearns et al., 2009; Rosenbaum, 2006). The spatial sciences are increasingly paying attention to concepts from environmental psychology such as place attachment (e.g. Buffel et al., 2014). For example, place bonds are believed to impact liveability and social cohesion (Lloyd, Fullagar and Reid, 2016). However, there is little research about facilities as the object of attachment, nor how affective, behavioural and cognitive place bonds influence the negative perception of facility decline.

Concepts from (Social) Psychology
Many scholars borrow concepts from social psychology to explain place-based behaviour, since the focus lies more on collective processes (Di Masso and Dixon, 2015). For instance, Devine-Wright (2009) and Belanche, Casaló and Flavián, (2017) use Social Representation Theory to explain how a combination
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of values, ideas, metaphors, beliefs and practices are shared among members of groups and communities, and thus form a ‘social representation’ of place. Since it relates to meaning, many scholars use this framework in congruence with Identity Process Theory (Jaspal and Breakwell, 2014). **Identity Process Theory** (IPT) can be used to conceptualise reactions to place-change when places become part of people’s identity (Twigger-Ross, Bonaiuto and Breakwell, 2003). The four principles of IPT are distinctiveness, continuity, self-efficacy and self-esteem (Breakwell, 1993). The concept of **self-efficacy** itself is rooted in Bandura’s (1977) **Social Cognitive Theory**, and refers to the conviction that one can successfully execute the behaviour required to produce a desired outcome. This perceived behavioural control is an important component in explaining place-based behaviour, including community responses to place-change. Mihaylov and Perkins (2014) illustrate how concepts such as efficacy, place bonds and various aspects of a community’s social capital influence place-based behaviour of a community.

Another theory that has shaped the research on psychological responses to place-change is the **Theory of Planned Behaviour** (TPB) (Ajzen, 1991; Fielding, McDonald and Louis, 2008). TPB states that an intention to display certain (spatial) behaviour is shaped by an attitude towards the behaviour, subjective norms and perceived behavioural control (efficacy). However, a meta-analysis showed that these aspects only predicted 39% of the variance in intended behaviour, and 12% of the actual observed behaviour (Armitage and Conner, 2001). Various scholars have gone on to study the many social, cultural and spatial factors influence what Blake (1999) calls the ‘value-action-gap’. For example, we know that people with strong place attachment are more likely to take part in oppositional behaviours (Anton and Lawrence, 2016).

**Concepts from Behavioural Economics**

As a reaction to the traditional economic models that assume rational behaviour, Prospect Theory aims to model people’s real-life, often non-rational, choices (Knobloch, Huijbregts and Mercure, 2019). While **Prospect Theory** is mainstream in behavioural economics, it is rarely applied in fields of human geography or environmental psychology (Strauss, 2008). **Loss aversion** is a central concept in prospect theory, and refers to how changes for the worse (losses) have a larger influence on the decisions people make than changes for the better (gains) (Kahneman, Knetsch and Thaler, 1991; Kahneman and Tversky 1979; Novemsky and Kahneman, 2005). Traditionally, it is believed that a psychological preference for the status quo (reference
dependence), together with loss aversion gives rise to the ‘endowment effect’ (Morewedge and Giblin, 2015). The endowment effect, introduced by Thaler (1980), refers to a behavioural tendency to value goods more once they are owned, because once owned, people start to consider the pain of losing them. Loss aversion and the endowment effect were initially studied with the same choice experiments for tradeable goods such as pens and mugs. Both concepts have since been widely studied and applied to many different topics. In this thesis we use the endowment effect to understand how the value of local facilities increases, simply by people being used to ‘having’ these facilities in the community. While it has not been applied to study facilities, there are studies that show that there can be ‘collective psychological ownership’ of spatial entities such as neighbourhoods (Verkuyten, Martinovic, 2017), countries (Nijs et al., 2021), hang-out places (Nijs et al., 2022) and also non-material services (Morewedge, 2021). Perceived or expected ownership sets a reference point from which people consider change a gain or loss (Marzilli, Ericson and Fuster, 2014; Novemsky and Kahneman, 2005).

While we know that self-efficacy (feeling in control of events) influences reactions to place-change (Anton and Lawrence, 2016), psychological biases such as the endowment effect, and other insights from behavioural economics, have been overlooked in place-change research (Kahneman, Knetsch, and Thaler, 1991). Insights from this field teach us that much of behaviour is not rational (Kahneman, 2011). Emotion also plays an important part in loss aversion (Ariely, Huber, and Wertenbroch, 2005; De Martino et al., 2010; Lerner, Small, and Loewenstein, 2004; Novemsky and Kahneman, 2005). Attachment may actually be a mechanism that influences the reference points of what is considered a loss or gain (Marzilli Ericson and Fuster, 2014). While there are relatively few studies that address the disruption of attachment to public places (except Di Masso, Dixon, and Pol, 2011; Di Masso and Dixon, 2015; Moulay et al., 2018), it is highly likely that place attachment influences the sense of loss communities can experience after a local facility closes. Morewedge (2021) states that attachment (affective) and object as extension as the self (cognitive) likely leads to psychological ownership (PO), which could in turn lead to an endowment effect. There are many cross-field connections that are unexplored, while transdisciplinary insights into facility-decline can result in useful recommendations for planning, policy and governance.
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Concepts from Planning and Public Policy

Most policies and planning strategies are traditionally based on the misconception that (spatial) behaviour is rational, and people make well calculated decisions (Olejniczak, Wolański and Widawski 2018). Rational models and top down planning approaches were also the norm in the Netherlands (Van der Cammen et al., 2012). In the 1980s and 1990s Dutch national spatial policy was partly based on Christaller’s (1933) central place model, in which hierarchies and size of settlements decided the level of service provision (Steenbekkers, Simon and Veldheer, 2006). Nowadays the theory is criticized because it does not account for increased mobility-levels and the complexity of modern society (Meijers, 2007; Taylor et al., 2010). Nevertheless, concentrating facilities in ‘regional central places’, is still a common policy response to rural facility decline in many places (Hospers, 2010; Tacoli, 1998). Neoliberal policies throughout Europe have actively incentivized rescaling and privatization of public services such as schools, post-offices and local health services (Brereton et al., 2011). The decades of rational economic growth-mindset and market-style reforms completely ignored the emotional and cognitive bonds between people and places, as well as the participatory planning approaches that were introduced by the likes of Jane Jacobs in the 1960s and Elinor Ostrom in the 1970s (Brandsen, Steen and Verschuere, 2018). However, there has been an international revival of enthusiasm and attention to community-based planning. Politically, the Netherlands has experienced a paradigm-shift towards bottom-up planning and citizen participation (Bouma et al., 2023). In many international contexts, participatory approaches are used to improve services provision because this approach is believed to strengthen collective capacities (Ohmer, 2010), and build social cohesion and resilience (Berkes and Ross, 2013; Witten et al., 2001).

The term ‘resilience’ is applied in various fields including ecology, geography and psychology, and describes the capacity of a system, or in this case a community, to absorb shock and difficult circumstances (Berkes and Ross, 2013; Weichselgartner and Kelman, 2015). Resilient communities are able to cope and adapt to challenging experiences (Steiner and Markantoni, 2014), and bounce back from disruptive (social or spatial) changes (Weichselgartner and Kelman, 2015; Wilson, 2018). To be resilient in the face of facility decline, it is important for rural communities to have or build social capital (Li, Westlund and Liu, 2019). The term ‘social capital’ was first used by L. J. Hanifan, a state supervisor of rural schools in West Virginia, emphasizing the importance of community involvement in education back in 1916 (Putnam, 2000). Pierre
Bourdieu (1972) famously used social, economic, symbolic and cultural capital in his ‘Outline of a Theory of Practice’. It was Robert Putnam, however, who popularised the term in 1995, in his work ‘Bowling Alone’ where he defines social capital as “networks and norms of civic engagement”, and studies the massive decline of memberships in traditional civic and social organisations in the USA. Perkins and Long (2002) distinguish 4 dimensions of social capital: sense of community, neighbouring behaviour, formal citizen participation, and informal collective efficacy. Collective efficacy relates to residents shared beliefs in their power and capacity to take collective action against issues that affect their lives (Bandura, 2000; Collins, Neal, and Neal, 2014). All these aspects of social capital are useful in understanding the interpretative processes of how a community makes sense of place-change (Mihaylov and Perkins, 2014).

Local facilities and services have proven to be essential to build and maintain social capital (Elshof and Bailey, 2015; Foster et al., 2015; Svendsen, 2010). While participatory planning approaches can build social capital, collective efficacy and social capital are also a requirement for successful participation or co-creation (Bandura, 2000; Voorberg, Bekkers and Tummers, 2015). The idea of the ‘participation society’ is dependent on everyone being capable to take initiative, but unfortunately this is not always the case (Bouma et al., 2023; Steen, Brandsen and Verschuere, 2018). There is increased attention in the fields of public policy, planning and public administration to the pitfalls and conditions of successful citizen participation (Steen, Brandsen and Verschuere, 2018). There are many forms of citizen participation ranging from informing or even manipulation, to actual collaboration in partnerships and delegation of control (Arnstein, 1969). For participation to be effective it needs to go beyond tokenism or democratic legitimization, but rather support an actual shift in power (Itten et al., 2021). An increasingly popular way to engage citizens and stakeholders to collaboratively find solutions for restructuring facilities and services, is with co-creation (Farr, 2013), co-production (Voorberg, Bekkers and Tummers, 2015) or co-design (Blomkamp, 2018; Evans and Terrey, 2016). These concepts are often used interchangeably, but Chapter 6 will pay attention to the differences and explain how these type of participatory governance processes can give people a sense of control over their living environment (Carrus, Bonaiuto and Bonnes, 2005; Buffel et al., 2014) and reduce place disruption (Clarke, Murphy and Lorenzoni, 2018; Di Masso et al., 2019).
**Concepts in the theoretical framework**

The theoretical framework in figure 1.6 illustrates the mechanisms that are relevant in the socio-psychological process of how residents interpret, evaluate and cope with place-change as a result of the closure of local facilities. It is partly based on Mihaylov and Perkins (2014) three-stage framework for community responses to an ‘environmental disruption’ (disruption, interpretation and response) and Devine-Wright’s (2009) five-stage model of psychological response to place-change.

The different chapters in this thesis all shed light on the experience of ‘rural’ facility decline in different stages in the model (see figure 1.6). I will focus mainly on the middle stages in order to address the gap in scientific research, and produce insight on how individual and collective responses to facility-decline are preceded by the interpretation and evaluation of place-change. This thesis will shed light on the drivers of place-protective behaviours, but protective behaviour is not the direct object of this study. Chapter 2 starts with mapping the changes in numbers and distribution of local facilities, to illustrate ‘objective’ place-change (stage 1). Chapter 3 focuses on how people subjectively interpret and evaluate place-change (stage 2 and 3). Chapter 4 further investigates these place meanings, interpretation of change but also collective coping mechanisms to deal with facility decline in a village (stage 4). Coping responses may include denial, acceptance, resignation or anger and by sharing their emotions with the people around them, they might actually re-interpret place-change (Devine-Wright, 2009). This stage overlaps with Mihaylov and Perkins (2014) model, in which they refer to a secondary stage of interpretive processes, in which various aspects of social capital play a part. Chapter 5 goes on to show that in addition to place bonds, a psychological bias called the ‘endowment effect’ also influences how people value local facilities, and subsequently how they evaluate closure of these facilities as something negative (stage 2 and 3). Chapter 6 focusses on coping responses and introduces a co-creative planning tool that could mitigate negative experiences facility-decline and facilitates a discussion (stage 4).
Figure 1.6: Theoretical framework

5-STAGE FRAMEWORK FOR COMMUNITY EXPERIENCE OF PLACE-CHANGE
adapted from Mihaylov & Perkins 2014 & Devine-Wright 2009

Stage 1: becoming aware

Assessing spatial reality

Stage 2: interpreting

PLACE CHANGE

Assessing place value and meaning.
Are place bonds disrupted?

Sense of Place
place identity, place attachment, place dependence

cognitive, affective, behavioural

place characteristics
physical, social, economic and symbolical

psychological ownership + endowment effect

Stage 3: evaluating

ATTITUDE TOWARD CHANGE (pos/neg?)

Stage 4: coping

does context allow for participation?
is there agency? inclusive planning?

INTERPRETIVE PROCESSES II
Assessing possible ways to respond

Social Capital

collective efficacy, sense of community, neighbouring participation

place-based social interactions

Stage 5: acting

COMMUNITY RESPONSE

of influence to all stages:

Individual, cultural and communal characteristics: incl. age, gender, mobility, income, practices, norms, beliefs, traditions, language, habits, local heritage

Global, national, regional and local processes: incl. cultural, societal, economic, environmental, technical and political developments

Introduction
1.4 Methodology and research outline

The prevailing negative perceptions of facility decline in the north of the Netherlands is investigated by a mixed method interdisciplinary approach. The various chapters reflect on different theoretical angles that have footing in various fields, using different research methods and a different data-set. Moreover, some parts of the research can be considered transdisciplinary, due to the direct collaboration with local practitioners. In particular, the research in chapter 3, 4, 5 and 6 were part of larger studies that did not only aim to scientifically contribute to the body of knowledge in various fields, but also directly benefit local residents and inform local or national governments. In the paragraphs below, I outline the research methods, data collection and case per chapter.

Chapter 2: Rural facility decline: a longitudinal accessibility analysis

- Quantitative research method: Network analysis in GIS.
- Case: Province of Fryslân
- Datasets: LISA data with address locations of ten type of local facilities in Fryslân, and CBS data on population density, from 2000 to 2012

Chapter 2 introduces a comprehensible longitudinal method that can be used by policy-makers to spatially determine where distances to basic facilities are not within an acceptable range, and where funding is most needed. Accessibility of facilities and spatial choice behaviour have been extensively researched from a retail-(business) point of view (Reutterer and Teller, 2009), but there are very few longitudinal studies that show changes in access over time (van Lenthe et al., 2005). This chapter addresses this gap of longitudinal studies into facility decline, and at the same time offers a simple method that is very accessible for local governments or policy makers to use in various rural and urban contexts. In doing so, it questions the focus of the Dutch depopulation policy, with regards to local facilities and services. The aim of this paper is to assess the spatial reality of distribution and access to basic facilities against the backdrop of depopulation, because it is the ‘rational’ reference point from which many people (policy makers and residents alike) experience place-change (stage 1 in figure 1.6).

This study first investigates the distribution of ten types of local facilities according to settlement size, and shows facility decline against the backdrop of general depopulation (RQ1). Secondly, the study visualises changes in
the accessibility for three facilities for basic needs (primary schools, general practitioners and supermarkets) between the years 2000 and 2012 (RQ2). The maps that visualise changes in access are then put into overlapping layers, to see if these changes in access to all three basic facilities coincide with the geographical boundaries of the expected depopulation-regions or areas that already experienced depopulation. This map-overlay method allows to visualise changes in access to facilities without using aggregated data, thus avoiding aggregation errors. This method makes it possible to do research with only a street network and address points for the facilities, it does not matter if municipal borders or postal code zones change and it is suitable for rural areas. This is a simple, but novel way of conducting longitudinal spatial analysis. The method can lead to interesting results, when it is reviewed in relation to depopulation policy. This visualisation method makes it possible to show were accessibility has declined, and of this coincides with areas that experienced population decline in this period.

Chapter 3: The symbolic and emotional meaning of rural facilities: closure of a village grocery store

- Quantitative research method: linear regressions of survey-data
- Case: Grocery store in Ulrum, a village in Groningen (see figure 1.3)
- Dataset: survey data consisting of closed and open questions.

In Ulrum, a village in the province of Groningen, many facilities have closed over the years, and at the time of this study one of the last local facilities was about to close. The local grocery store (in Dutch called a supermarket) hosted several functions at that time: it was a small shop, post-office, atm and pick up point for parcels. A survey was conducted (n = 312) to examine reactions to the impending closure of the supermarket. To question the different meanings the supermarket had for people and the community we used the concept of sense of place and its three dimensions: place attachment, place dependence and place identity. The aim of this chapter is to investigate how people interpret and evaluate the closure of the local supermarket and why they might perceive closure to be negative. The data is analysed in two sections. In the first section, descriptive analyses explore answers to an open question on initial interpretation of closure, answers to a closed question on evaluation of closure, as well as the various possible factors that might influence negative evaluation such as personal characteristics, place dependence, the role of liveability and different functionalities of the shop. The second section presents a linear regression on evaluation of closure to investigate the factors that
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influence the negative evaluation of closure of the local store. A two-stepped linear regression offers the opportunity to investigate if adding variables on place meanings is useful in understanding negative attitudes to closure of the supermarket. The data-collection for chapter 3, was part of a Dutch longer study on the effects of facility decline, requested by ministry of internal affairs. Prior to the scientific publication, broad insights relevant for policy were shared in a Dutch report (Haartsen, Christiaanse and Puister, 2016).

Chapter 4: Experiencing place-change: a shared sense of loss after closure of village facilities

- Qualitative research method: thematic analysis of focus group-data and participatory mapping
- Case: Local facilities in Tzummarum, a village in Fryslân (see figure 1.3)
- Dataset: Three focus groups were filmed, transcribed and analysed and we produced three maps on A1 format, which were combined in 1 illustration.

This chapter discusses the results of three focus group discussions in Tzummarum, a village in the north of Fryslân, just after the impending closure of a local sports hall was announced. The closure fuelled a community response, which led to a study by consultancy firm Partoer³ into the possibility exploiting of the sports hall as a community-led enterprise. I drafted and analysed the survey that formed the basis of Partoer’s study, and volunteers in the village promoted the survey and helped people that struggled to fill out the digital format. I used the survey to find participants for the focus groups. Four focus groups were conducted and the findings were reported back to the community. The aim of this chapter is to investigate the interpretive processes that precede community responses. Focus groups are particularly useful to identify community norms, views and behaviour (Hennink, Hutter and Bailey, 2011) but also to observe the interaction between group members (Cook et al., 2007). The focus groups were analysed using a thematic analysis (Vaismoradi, Turunen, and Bondas, 2013) that allowed patterns to emerge from coded transcripts, while later theorizing them. This chapter explores the role of place meaning and different functionalities of village facilities, and hypothesizes that various place bonds might be disrupted, thus shaping the perception of local facility closures. To understand community responses to facility decline it is important to study the socio-psychological process that

³ Partoer is a Frisian consultancy agency with local expertise at the interface between government and citizens. It was once the same organisation with FSP, but is currently a commercial company without public funding.
drives these responses. The process of how a community copes with the disruption of place bonds due to facility decline is underexposed in various fields. This chapter aims to address this gap, by investigating how residents of Tzummarum interpret, evaluate and cope with the disruption of place bonds caused by the closure of local facilities.

Chapter 5: Aversion to loss of place: the endowment effect for local facilities
- Quantitative research method: chi-square and logistic regressions of survey-data
- Case: The Province of Fryslân (see figure 1.3)
- Dataset: survey data from Frisian Social Planning Agency (FSP)

Chapter 5 introduces the concept of the ‘endowment effect’ to explore if this psychological bias influences the negative perception of facility decline. The endowment effect is widely used outside of its original field (behavioural economics), but still uncommon in place-based research (Strauss, 2008). To address this gap, this chapter employs prospect theory to theorise if the closure of local facilities can give rise to the endowment effect. The data-collection for chapter 5 was part of a broader study on ‘liveability’ in Fryslân, done by the Frisian Social Planning Agency. Results from this study were used to inform local policy and society, and shared on the FSP website and reports. An online survey was conducted (n = 1790) among the ‘Panel Fryslân’, which is based on a random probability sample by written recruitment. We added three questions to this survey on the availability, value and evaluation of closure of eight local facilities: grocery store (supermarket); primary school; general practitioner (GP); community centre; ATM; café (pub); sports facilities; church or other religious buildings. These eight facilities are often considered to be important for local residents in Fryslân to have ‘in close proximity’, meaning within 5 km and are often perceived as ‘assets to the community’ (De Vries et al., 2016).

The aim of this chapter is to investigate if there is an endowment effect for local facilities, and if this endowment effect influences the negative perception of facility-decline. For the first research question, a Pearson’s chi square test is conducted to show the relationship between ‘availability’ (yes, no, not any more) and ‘importance’ (ranging from very unimportant to very important on a five points scale) for eight local facilities. This shows if residents significantly

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4 the ‘Fries Sociaal Planbureau’ (FSP), is an independent research institute funded by the Province of Fryslân
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value local facilities more based on the reference point of current availability within the neighbourhood or village. The second research question, ‘does this endowment effect hold up when controlling for other variables that can influence positive valuation of local facilities’, is explored by eight binary logistic regressions to investigate which variables influence a positive valuation. The third research question concerns negative evaluation of (potential) closure. To study if availability also influences how participants evaluate the potential loss of local facilities, another set of eight logistic regression is conducted while controlling for the same variables. Current availability is used as an explanatory variable and ‘closed’ as a reference category, since potential or ‘imagined’ closure is often evaluated more negatively than actual closure. This chapter offers insights into how the endowment effect influences the socio-psychological process of dealing with place-change (see figure 1.3).

Chapter 6: Facility-Wise: a serious game as co-creative tool for planning rural facilities and services

- Qualitative co-creative method: interactive workshops in a focus group-setting for prototyping a serious game
- Case: six test cases in the Province of Fryslân, 5 real cases and 1 simulation
- Datasets: participant observations, feedback forms, observation of implementation of the serious game after completion and interview with a practitioner.

This chapter describes the development and implementation of the co-creative planning tool ‘Facility-Wise’, and explores how this tool could mitigate negative experiences of facility-decline. Facility-Wise is an analogue serious game that can support a collaborative planning process in cases where levels of facilities and services are declining. It was developed by the author (University Groningen) in collaboration with Partoer, through a design-led participatory approach, using input from local Frisian governments, local social enterprises, civic, social and fraternal organizations and the Frisian ‘Mienskip’ (the local community). Five real cases, and one fictional case, were used for prototyping, varying from consolidation of primary schools to the possible expansion of a community centre. After each test session the prototype was adapted according to participant feedback and observations. The result is a serious game as a tool for co-creation, which was developed through an abductive participatory process with local administrators and local communities. A participatory development process lowers the risk of the final product being poorly applicable (Ampatzidou and Gugerell, 2019) and prototyping is a good
way of applying this principle (Sanders and Stappers, 2014). However, it does not guarantee that this tool could be used to mitigate the sense of loss that often occurs after local rural facilities close.

The aim of this chapter is to explore under which conditions this co-creative planning tool could mitigate negative experiences of facility-decline. To this end I evaluate the written and visual report of the test-sessions, participant feedback, observation of implementation of the final serious gaming format, and an interview with a practitioner that currently uses the planning tool in the Netherlands. This chapter reflects on both the development and implementation of Facility-Wise, to learn from the experience and better understand the collective coping process of dealing with facility-decline. This paper concludes with six potential benefits of this serious game for co-creation and six conditions under which negative experience of facility-decline could be mitigated using co-creation.

**What is to come?**
In this chapter I introduced the context, case, theoretical backdrop and methodological approach for this thesis. The following five chapters will detail the empirical evidence that is needed to understand perceptions of facility-decline from different angles. Since the chapters are all stand-alone scientific papers that have been published or submitted to various peer reviewed journals, they will re-introduce the context, case and literature that is relevant for that chapter. Chapter 2–6 will introduce and discuss novel findings, which are summarised in the final concluding chapter. Chapter 7 will discuss all the results, reflect on overarching insights, directions for future research and practical recommendation for spatial planning and policy purposes.