Taking a walk on wheels in urban green

Discovering a portfolio of natural places for wheelchair users, employing an environmental justice approach

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Abstract

Equal accessibility to green space for urban residents is not a given. This thesis research has aimed to identify how urban residents that move using a wheelchair organise their visits to various types of green space located at different distances, focusing on the use value and synergy between such green spaces. A qualitative approach has been applied to address this aim, using the yet rather unestablished photo elicitation method to explore the experience of wheelchair users in green space. The data demonstrated that wheelchair users have a standard set of green spaces that are frequently visited, which can be organised in the portfolio of natural places framework. Furthermore, the findings identify the accessibility of green space for wheelchair users as an environmental justice issue, proposing implications for inclusive green spaces of varying type and located at different distances. This study forms a way forward to the integration of disability studies and environmental justice literature, has generated a better understanding of the accessibility and use value of green space for wheelchair users and can serve as a springboard for further studies in urban planning that consider an integrated approach to green space, shifting the focus beyond people’s direct residential environment.

Key words: accessibility, green space, environmental justice, disability, wheelchair, mobility
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1. Introduction

‘Taking a walk in the park’, is that how one would correctly describe how a wheelchair user moves forward in green space, even though the actual act of walking is not literally carried out? It was a question that came to my mind early in the course of this research, in the phase of formulating interview questions. Yes, wheelchair users ‘roll’ as a way to move forward, but ‘taking a roll’ surely does not have any meaning. Later in the research process, this uncertainty appeared to be a relevant issue with respect to the accessibility of green space. There exists a common understanding that nature is essentially experienced by walking through it (Kafer, 2017), wheelchairs and specifically motorised wheelchairs do not fit in such a perception. Furthermore, there is the assumption that the nature experience positively increases the further one moves away from the urban lifestyle. This idea is imperative to the concept of ‘friluftsliv’ (can be translated as ‘outdoor life’), which is established as a self-image sketching the Swedes as nature-loving people (Gelter, 2000). What do these notions infer with respect to the green space experience for Stockholm residents that use a wheelchair? How do wheelchair users experience green space access in ‘The Walkable City’ (Stockholms Stad, 2010)?

Acknowledging the multiple mental and physical benefits that can be enjoyed by exposure to green space (see for example Bolund & Hunhammar, 1999; Maas et al., 2006) as well as the sometimes exclusionary dimensions of nature, “it is important to explore how those considered out of place find ways of engaging and interacting with nature” (Kafer, 2017: 203). It is significant to question the use and access of green space for different groups of urban residents, recognising there is consistently limited availability of (high quality) green space for disadvantaged individuals and groups (Heynen et al., 2006; Barbosa et al., 2007; Wolch et al., 2014). This issue becomes even more compelling since urbanisation puts pressure on the availability of accessible and high quality urban green space (Zhou & Wang, 2011; Bekessy et al., 2012). Respectively, this study applies an integrative, qualitative approach to the perceived unequal access to green space by wheelchair users, exploring the interaction between the fields of disability studies and the spatial environment according to the principles of environmental justice theory. This is accomplished by applying the relatively unconventional photo elicitation interview method, that is reflected on as part of the research.

The thesis is executed under the Green Access project, a project that runs since 2016 and studies green spaces in an urbanising landscape, organising a number of individual investigations and case studies largely concentrated on Järvafältet in Stockholm. The following section will provide an introduction and contextualisation of green space and spatial disability measures in Stockholm, after which I will provide an understanding of the problem statement leading to the thesis objective.

1.1 Background: inclusive green space planning in the Stockholm region

Creating and maintaining green areas has historically been of great importance for city planning in the Nordic countries. In the past few decades, simultaneously while urbanisation saw a major rise, the interest in urban green space increased with facilitating recreation as most important objective (Sandström, 2002). Sandström (2002) points out that urban planners face challenges as people’s expectations for green space opportunities are growing, while at the same time authorities have to accommodate population growth in Swedish urban centres. The municipality of Stockholm recognises this difficulty, as described in the current plan for the Stockholm region (TRF, 2015). The plan declares that green spaces should be both socially and physically accessible, in order to allow all inhabitants to
have proper nature opportunities. However, there is no unanimous perspective on the measures designed to ensure this.

In ‘Stockholm, a City for Everyone’, a participation programme for people with disabilities is designed that aims to support a city without social or physical barriers, based on the UN convention on the Rights of Persons with Disabilities. The document states that everyone must be able to access the City of Stockholm’s indoor and outdoor environments, though the focus is predominantly on the built environment and not so much on green spaces (Stockholms Stad, 2011). Similarly, the visionary city plan ‘The Walking City’, does not in any way take notice of what the idea of walking implies for people with limited physical mobility (Stockholms Stad, 2010). In a collective reply to the Stockholm regional development plan RUFS 2050, three large organisations working for people with a disability (HSO Stockholm, Synskadades Riksförbund Stockholm and Gotland, and DHR Stockholm), have expressed their concerns about the lack of a disability perspective within the current plans. Universal design would, among others, be a key principle to ensure accessibility and usability for all without compromising the opportunities for individuals. Recent years have seen a fair number of amendments to the city’s open space that consider people with limited mobility, still natural areas induce difficulties with respect to accessibility (SRF et al., 2017).

1.2 Problem statement and research aims

From the above section it becomes apparent that urban planners in Stockholm make effort to ensure green space of high quality to be available throughout the whole population, while simultaneously facing challenges when it comes to the uniform access of such places for people with a physical disability. The municipality reports that in 2016, 56 out of 10.000 persons between 0-64 years old have received support according to the Law regulating Support and Service to Persons with Certain Functional Disabilities (LSS). Although this number does not even include elderly, it has been increasing steadily in the past decades (Socialstyrelsen/Sweco, 2017). As lifespans in developed countries rise, the number of physically disabled people is expected to grow.

The increase in physically disabled urban residents requires extended norms of the design for public facilities and urban green as has been demonstrated by Seeland and Nicolè (2006), in order to minimise potential barriers that limit the experience of such spaces for these urban residents. It is important that the provision of accessible green space is high on the agenda of today’s urban planners, since rapid urbanisation processes create challenges to the availability of qualitatively high green space (Matsuoka & Kaplan, 2008; Zhou & Wang, 2011). According to Wolch et al. (2014), the focus is too often on the protection of large-scale pieces of green space while neglecting small tracts of green that offer frequent nature opportunities, an issue that is specifically relevant for physically disabled people that usually have limited mobility options in comparison to able-bodied persons (Imrie, 2000; Jensen et al., 2002). When the aim is to strive for a just availability of green space for the full range of society in order to ensure sustainable communities and cities, there is a need for more extensive research that considers how green space is distributed throughout the population (Heynen et al., 2006; Jennings et al., 2012; Rutt & Gulsrud, 2016). As Johansson (2017) and Kafer (2017) demonstrate, academic knowledge on how to provide accessible green space based on the experience of people with a physical disability is extremely limited and would benefit largely from a more integrated approach to green space use with a critical eye to environmental justice issues. Such an integrated approach is suggested by Bijker and Sijsitsma (2017), who recognise an interaction or synergy between green spaces, suggesting a ‘portfolio of natural places’ framework that organises green space for the urban resident.
located at different distances. The framework allows for a coherent uncovering of the different meanings of green space for urban residents at the full spectrum of distance, instead of being limited to a defined location.

This thesis research evaluates the workability of the portfolio of natural places for urban residents using a wheelchair, aiming to identify how they organise their visits to various types of green space located at different distances. This knowledge is produced with the objective to generate an understanding of the use value and synergy between green space located at different distances and examine the implications of green space use with regards to the environmental justice debate. Furthermore, a qualitative approach is used that applies the relatively unexplored photo elicitation method, which is assessed for its applicability to understand the use of green space for wheelchair users. The outcome of this research has the potential to provide a better understanding of the use value of green space for wheelchair users and can serve as a springboard for further studies in urban planning that consider the synergy of green space located at different distances, shifting the focus beyond green space in people's direct residential environment. The unique research framework that integrates environmental justice theory, disability discourse, and an original approach to one's organisation of green space has the potential to launch a discussion and get an idea of how to move forward on this topic. I hope to contribute to the development of public design for all, creating an inclusive urban environment that is devoted to ensuring the wellbeing of the full range of urban residents.

1.3 Research questions and design
With respect to the problem statement and described aims, the following research questions have been formulated, that allow to systematically uncover individual experiences by means of a deliberate approach. These research questions correspond to the research design demonstrated in figure 1 on the next page, providing a simplified overview of the applied frameworks as well as the used research method.

1. How do urban residents that move using a wheelchair organise their visits to green space, with respect to the use value of and synergy between various types of green space located at different distances?
2. If a certain ‘portfolio of natural places’ applies, what does it look like and what does this imply with regards to the environmental justice debate?
3. Additionally, to what extent is the photo elicitation interview a suitable method for understanding the use of green space for wheelchair users?
1.4 Thesis structure
The thesis builds up gradually, starting with a review of relevant literature and applied bodies of theory in Chapter 2 and 3. Chapter 4 will follow with a thorough description of the study’s methodology. Chapter 5 describes the results through individual portraits of the participants, after which an integration of the results follows in Chapter 6. Then, Chapter 7 will cover a review of the photo elicitation method. In Chapter 8, the results are discussed according to literature. I will finalise with the conclusion in Chapter 9.

2. Literature review
This chapter serves as a starting point of the thesis research, exploring the topic with regards to existing academic research. The literature review covers two research areas: green space leisure activity and the portfolio of places framework in consolidation with the so-called compensation hypothesis. Main findings and common agreements of the research areas are described, while discussing different aspects and the whereabouts of previous studies.

2.1 Green space and green space leisure activity
Literature employs a wide terminology when discussing what I here call ‘green space’. What green space exactly encompasses is open for interpretation: both within the professional and academic world exists a multiplicity of overlapping concepts (Lloyd & Auld, 2002). I will adhere to Kaplan and Kaplan (1989) who underline that nature goes far beyond officially designated sites of green space. It can be anything ‘natural’, from small-scale community gardens to large national parks: the is generally broad and inclusive. This thesis adopts an approach to green space that understands its diverse appearances: it is significant to realise the various settings that can be referred to when discussing the natural environment and in specific what we call ‘urban green space’. In recent years, unconventional forms of urban green space have increasingly been recognised in academic literature: cemeteries, green walls and rooftop gardens demonstrate that urban nature is inherently heterogeneous (Roy et al., 2012; Wolch et al., 2014). Conforming to this inclusive approach, this thesis defines green space as
everything similar to: “parks, sporting fields, bushland, creeks, rivers and bays, plazas, community gardens, bikeways and paths, (...) and ‘green’ links between these various elements” (Byrne et al., 2010).

2.1 Urban green space benefits

There exists an enormous body of academic research that has studied the effects of exposure to green space on people’s health and wellbeing. Where such studies have originally examined the effects of nature in general, the academic literature has in recent decades focused on green space in urban areas (see for example Maas et al., 2006). Green space is promoted as a vital component of healthy cities, for the numerous ecosystem services that are provided, naming for example air filtering, micro-climate regulation, and noise reduction (Burgess et al., 1988, Bolund & Hunhammar, 1999). Furthermore, Bolund and Hunhammar (1999: 298) argue that recreational aspects of urban ecosystems are “perhaps the highest valued ecosystem service in cities”. There is general agreement on the positive relation between the amount of green space in people’s living environment and their well-being and perceived health. It is widely understood that green space allows for physical activity that is of great benefit for urban residents’ health (Sugiyama et al., 2008) and the combination of physical exercise and exposure to nature proved to intensify the beneficial effect of both (Pretty et al., 2005). Beyond mental wellbeing directly resulting from exercise, several studies demonstrate that exposure to green space can additionally foster significant mental advantages. To name a few: green space allows for a relief from daily stress and stressful events (Maas et al., 2006; van den Berg et al., 2010), supports positive emotions and a stable emotional state (Ulrich et al., 1991), and can back mental disorders such as ADD (Taylor et al., 2001). Additionally, it is often emphasized that green spaces allow for social contact (Sugiyama et al. 2008; Maas et al., 2009).

Urban green spaces thus appear to be of great significance to people’s mental and physical wellbeing, though it is yet under discussion what mechanisms play a role and to what extent it is solely green space that exerts a beneficial effect on health (Lee & Maheswaran, 2011). Lee and Maheswaran (2011) criticise green space literature for using a simplified model of green space benefits, while real-world cases seem to be much more complex. They argue that green space might be no more than a mediating factor facilitating physical activity and warn for simplistic spatial interventions that fail to establish urban health goals. There exists a fair number of studies that share this thought, a Danish study for example found how it is mainly outdoor activities and modes of transport in green space such as walking and cycling that have a positive health effect (Nielsen & Hansen, 2007). Similarly, Sugiyama et al. (2008) demonstrate that the health benefits provided by perceived neighbourhood greenness can for a significant part be attributed to the link with walking in green space and social interaction. It is thus important to understand green space benefits as a full package, in which green space has the potential to support people’s wellbeing through a number of different mechanisms that involve exposure to nature, as well as physical activity and social contact.

2.1.2 Green space benefits and physical disability

Not all green space benefits affect urban residents in similar ways. Human needs for nature are to no extent homogeneous: urban residents differing in gender, age, socio-economic status and ethno-racial characteristics use and perceive urban green space in greatly distinct ways and have varying desires when it comes to their nature experience (Byrne & Wolch, 2009; Byrne et al., 2009). Correspondingly – though we should be cautious in making generalisations – people with a physical disability experience green space differently compared to able-bodied persons.
Research shows how physically disabled people do gain satisfaction from engaging in physical activity, since they experience mental and physical advantages from leisure activity just like non-disabled people (Aitchison, 2003; King et al., 2003; Ray & Ryder, 2003), and additionally learn how to cope with their impairment (Blinde & McClung, 1997; Guthrie & Castelnuovo, 2001). Although it is recognised that green space leisure for physically disabled people is desired, there exists a very limited amount of research on the actual experiences of green space and leisure activity for physically disabled people (Fitzgerald, 2005). This is unfortunate, because Aitchison (2003: 956) fairly notes that “although defining disabled people as one group is artificially homogenising and essentialist, it is relevant to note that disabled people often have more time for leisure, but fewer leisure resources than the general population.” Research on the experience of mobility and green space leisure activity is mainly focused on physical activity among children (Brown & Gordon, 1987; King et al., 2003; Von Benzon, 2010), athletes (Smith & Sparkes, 2012), and elderly with a physical disability (Clarke et al., 2008).

Research demonstrates that there are a number of mental, physical, and administrative barriers that prevent people with a disability to participate in green space leisure activity and thus experience the above-described benefits. These studies are limited in amount, though the outcomes correspond well. It is found that such barriers may include the outdoor climate, lack of transport facilities, perceived safety, attitudes towards disabled people and social pressure (Murray, 2004; Ginis et al., 2010), pain and fatigue, lack of motivation and confidence (Brittain, 2004), and lack of information (Semerjian, 2009). In a brief review of existing literature on barriers to leisure time physical activity for disabled people, Smith and Sparkes (2012) note that most barriers can be identified in the socio-environmental sphere. Similarly, Crawford and Godbey (1987), identify three sorts of interlinked constraints for leisure that follow a hierarchical structure as demonstrated in a later text by Crawford, Jackson and Godbey (1991). Intrapersonal constraints encompass the non-stable psychological states of individuals that affect participation and preference, such as depression and concern. Then, interpersonal constraints imply the absence of others preventing participation; particularly in outdoor activities people with a disability may have a greater need for a person to assist them in their daily activities. The third constraint is structural and includes elements that intervene between the individual’s preference and participation such as time, money, information, and accessibility. All different barriers exert pressure on people with a disability, undermining potential benefits to be derived from green space leisure activity.

2.2 A portfolio of natural places and the compensation hypothesis

The relationship between urbanisation and green space is a fluctuating one that has received increasing attention in the past few decades, both in academic literature as in the professional urban planning sphere (Bolund & Hunhammer, 1999). Nowadays more than 50% of the global population lives in urban centres and this number is expected to increase rapidly: urban areas are proportionally the fastest growing type of land cover (UN, 2014). Generally, urbanisation puts pressure on the availability of accessible and high quality urban green space (see for example Zhou & Wang, 2011; Bekessy et al., 2012). This raises questions on how we should manage green space accessibility for urban residents, acknowledging the benefits of exposure to green space to people’s wellbeing.

2.2.1 The compensation hypothesis

There exists the idea that increasing urbanisation leads to a growing interest in the availability of nature, in order to meet human needs in a ‘grey’ environment (Sijtsma et al., 2012). This need for nature is frequently explained by the so called ‘compensation hypothesis’, arguing that the extent to
which people travel to further located green space is dependent on the amount of green space in their
direct environment. At the foundation of the compensation hypothesis are theories of the utility value
of destinations: if a desired facility is some distance away, the utility value of an alternative destination
may increase (Maat & de Vries, 2006). According to this perspective, people visit further located green
space more often when this cannot be extensively found in their direct environment, because “the less
green the residential environment, the greater the utility value of green space that is situated farther
away” (Maat & de Vries, 2006: 2112). Hence, visits to large urban parks, exurban green space, or for
example second homes ‘compensate’ for the lack of satisfactory nature in the direct residential
environment. The compensation hypothesis can also be explained the other way around: when urban
residents have access to a sufficient amount of green space in their direct environment, it is expected
that they travel less often to green space located further away (Hall & Page, 2014).

Empirical evidence for the compensation hypothesis is generally found by applying quantitative
enquiry, using a number of variables that test the relationship between the nearby availability of green
space and people’s travels to further located green space. These studies measure for example dwelling
size, number of building floors and number of private gardens, controlling for income and other socio-
demographic variables such as age and family composition. Outcomes demonstrate for example that
less green opportunities in the direct residential environment lead to more holiday nights spent away
from home (Sijtsma et al., 2012) and that higher urban density is related to more trips outside the city
area (Næss, 2005). There also exist studies that take into account second homes, concluding that the
residential environment is of influence for the ownership and/or use of second homes (Dijst et al.,
2005; Strandell & Hall, 2015). Strandell and Hall (2015) found that dense residential constructions and
a lack of private gardens lead to more long-distance leisure trips to nature and the use of second
homes. The authors call for a need to understand urban residents’ leisure mobility over the full range
of their consumption, suggesting urban planning would benefit significantly from looking beyond
residents’ immediate environment.

However, not all studies testing the compensation hypothesis found direct evidence for the
relationship between a dense residential environment and the extensive travel to further located
green space (see for example Maat & de Vries, 2006; Norris & Winston, 2010). Norris and Winston
(2010) found out that second home use in the Irish countryside cannot be sufficiently explained by
compensation for a dense urban residential environment but is rather related to affluence. Also, when
there does exist a relationship between the residential environment and the travel to further located
green space, this is often more complicated than is though at first sight. Strandell and Hall (2015) for
instance discovered that in Finland a high density of the residential area and lack of a private garden is
positively related to second home use, however the accessibility to nearby green spaces does not
explain second home use. Furthermore, Maat and de Vries point out that the compensation hypothesis
is complicated by the role that residential self-selection plays with respect to urban residents’ use of
green space. This refers to the process in which people try to find a living environment that matches
their needs and desires (Bagley & Mokhtarian, 2002; Van Wee, 2009). In other words, people who like
to go out in nature – and have a certain level of affluence – tend to choose to live in a residential area
with a satisfactory amount of green space and are for the same reason more inclined to visit further
located green space. This finding undermines the assumption that people living in a dense urban
environment with limited green space compensate their visits to nature elsewhere (Maat & de Vries,
2006). Hence, it is relevant to consider more complicated variables as well as residential self-selection
when studying the compensation hypothesis.
2.2.2 A portfolio of natural places

Reviewing the literature on the compensation hypothesis, Bijker and Sijtsma (2017) concluded that the idea of compensating for the lack of green space within one’s direct residential environment does not provide a satisfactory explanation for visiting further located green space. They argue that the extent to which urban residents visit further located green space is not only dependent on the amount of green space in their direct environment. People rather visit green space located at different distances because these places hold different meaning for them. Bijker and Sijtsma accordingly found evidence for a more complementary role of green space located at different distances: “with the natural places at different spatial levels serving different needs, it seems unlikely that it is possible to sufficiently compensate for the more basic and frequent ‘nature needs’ with only an occasional visit to distant nature” (2017: 163). Accordingly, frequently visited green space in one’s residential environment appears to be of great value in daily life, yet green space located further away holds even more appreciated values. Beyond distance, the research differentiates between different types of green space, acknowledging that green space in one’s direct spatial environment often takes different forms and spatial scales (sizes) compared to further located green space. Integrating such green spaces located at different distances and of different sizes, Bijker and Sijtsma (2017) adopt what is by public body Natural England (2009) named a ‘portfolio of natural places’. The idea of a ‘portfolio’ that describes the different types of green space at different distances, is derived from a policy-oriented qualitative study executed by Natural England, advising the English authorities about the natural environment. The study demonstrates that in a rural context, basic nature experiences occur close to home in easy accessible areas. These ‘quick hit’ nature experiences are highly valued and found to be significant for one’s wellbeing. On further distance are those areas located that require more travel, though have higher and more varied aesthetic qualities and offer more diverse activities.

The portfolio of natural places framework as developed by Bijker and Sijtsma allows for a coherent uncovering of the different meanings of natural space for urban residents at the full spectrum of distance and scale, instead of being limited to a defined location. The authors criticise existing research for being too quantitatively oriented, focussing on distance and lacking indicators that reflect the meaning of green space for urban residents’ wellbeing. It is suggested that future research on the relationship between green space and wellbeing in urban areas would benefit from a more qualitative and comprehensive approach to people’s use of green space located at different distances. They conclude that urban planning bodies should consider more than the direct urban context when it comes to green space, since urban residents’ needs for nature are additionally found beyond urban boarders. Yet, some criticism can be articulated with respect to their study’s methodological approach as well, as the use of scale and distance is confusing and the applied distance levels seem arbitrary.

Nonetheless, Bijker and Sijtsma did find substantial evidence for a complementary role of green space at different distances in addition to the compensation hypothesis. The portfolio of natural places framework has particularly proven to apply for urban residents, demonstrating that green spaces at different distances play varying roles, though are at the same time significant in their own right. It thus appears to be a solid framework that allows to integrate the study of green space at different distances, whether or not the compensation hypothesis or the complementary perspective is more applicable.
3. Theoretical framework
This chapter draws attention to the two bodies of theory that have been used to explain and understand the green space experiences of wheelchair users. Together with the literature described in Chapter 3, the theoretical framework shows the relevance of the thesis research and challenges aspects of the phenomenon under study. As has been explained in earlier sections, the thesis integrates fields of research that have not yet been extensively connected. I will discuss the general principles of environmental justice theory and the disability discourse and reflect on the small number of texts that have made initial attempts to link the two in studies with regards to the spatial aspect of disability.

3.1 Environmental justice theory
Environmental justice theory has expanded largely in the past few decades and covers an enormous body of academic research and public debates. This section will give a brief overview of the principles of environmental justice theory and the relevant capabilities approach, to arrive at more specific understanding of the environmental justice of green space.

3.1.1 Environmental justice debate
The environmental justice debate initiated a little more than three decades ago in the US, was triggered by environmental justice movements in reaction to perceived injustice and inequality mainly among racial and socio-economic minorities (Bullard, 1999). Environmental justice theory is nowadays regarded as a subdivision of the overarching (urban) political ecology literature, connecting human beings, non-human nature and culture (Schlosberg, 2013). Political ecology theory assumes the deep integration of humans and the physical environment and describes how the two are of constant influence on each other on various levels (Robbins, 2011). While the political ecology literature is of interest to a great number of academic areas, it was not until recent years that the two seemingly analogous bodies of knowledge of political ecology and environmental justice started to intertwine. Holifield (2015) names the geographical focus of the two as one of the main reasons for this: where the environmental justice has its roots in the Global North and the US in specific, political ecology studies originally mainly circulated in the Global South. The interrelation between environmental justice and political ecology is explained differently by different scholars. Cook and Swyngedouw (2012) claim that though the two concepts are active in the same contextual sphere, they can be separated on the basis that political ecology aims to analyse processes while the environmental justice literature has its focus on the patterns of socio-spatial environmental inequality. Holifield, on the other hand, suggests that “urban political ecology is not an approach distinct from environmental justice, but a distinctive approach to environmental justice” (2015: 591).

The environmental justice literature deals inherently with distribution theory, implying that environmental goods, environmental bads and environmental protection are unequally distributed in society (Schlosberg, 2007). The scope of environmental justice has however largely increased in the past decade, encompassing new notions of environment included in public debates. This involves a greatly expanded environmental justice agenda within political bodies and academics, which is another reason for its close linkage with contemporary political ecology literature (Walker & Bulkeley, 2006; Holifield, 2015). Schlosberg (2013) identifies a horizontal as well as a vertical expansion: horizontal implying the spread of elements of the concept across the globe, and vertical expansion indicating the applicability of the environmental justice framework to a variety of different issues. The gradual expansion of the traditional environmental justice organising frame has led to its applicability to a
slowly increasing amount of inquiries on transportation, food justice (Gottlieb, 2009; Holifield, 2015), land use, and accessibility to countryside and green space (Heynen et al., 2006; Jennings et al., 2012), among others.

In order for environmental justice theory to identify the processes that construct maldistribution, Schlosberg (2004, 2007) calls for a more comprehensive understanding of the concept, encompassing a balance of underlying and interlinked elements of distribution and equity of environmental risk. He adds three elements that are relevant to consider in environmental justice discussions: the recognition of the diversity of affected groups in society, participation in political processes which create and manage environmental policy, and capabilities that can transform goods into potential for a functioning life. Especially the capabilities approach is of relevance for this thesis, as the theory forms an applicable approach to environmental justice from a disability perspective. The rationale behind the theory of capabilities is that individuals have the ability to transform societal distribution into opportunities through individual agency and functioning (Schlosberg, 2007). Sen (2005) explains that while two persons can have the same means in terms of income and primary goods, their opportunities can differ substantially when one of the two is physically disabled. The capabilities approach is relevant with regards to the discussion if impairment is a matter of individual responsibility, considering that it arises from the effect of genes or disease, costs of work, poverty, or from the nature effects of ageing (see section 3.2). Respectively, capabilities are initially distributed by society, recognition of individuals is key, and participation is seen as integral to the understanding of justice (Sen, 2005; Schlosberg, 2007). Furthermore, Rutt and Gulsrud (2016) notice that “understanding what capabilities are required to participate and be recognized helps to explain how power asymmetries, and consequent environmental injustices, are historically and socially constructed and maintained.” Putting attention to capabilities helps to remind that distribution, procedure and recognition cannot be seen in isolation of the social context in which they operate.

Some recent studies apply an environmental justice approach that recognises these different elements, for example studies on the differences for men and women creating environmental injustice (Unger, 2004), the opportunities of minorities to participate in political processes that mitigate environmental health risk (Holifield, 2012), and the unfavourable effects that green space planning can have (Wolch et al., 2014). Such studies acknowledge that the focus on distribution is too simplistic, not the least because a totally equally experienced distribution of environmental goods and bads - if we can even make such a division - is not possible and should not be strived for (Walker & Bulkeley, 2006).

3.1.2 Green space accessibility from an environmental justice perspective

As environmental justice has a key role in ensuring sustainable communities and cities, there is a call for more extensive research that considers how green space is distributed throughout the population (Heynen et al., 2006; Jennings et al., 2012; Rutt & Gulsrud, 2016). It is recognised that green space accessibility varies enormously for different groups in society, implying that there is consistently limited availability of (good quality) green space for disadvantaged individuals and groups (Heynen et al., 2006; Barbosa et al., 2007; Wolch et al., 2014). With respect to the identified health benefits of green space, such accessibility disparity has the potential to deepen urban inequality (Jennings et al., 2012). The great majority of studies discussing environmental justice issues concentrates on disadvantaged groups based on socio-economic status and ethno-racial features (Byrne & Wolch, 2009), and is largely conducted in the United States. Byrne et al. (2009) for example found that United States’ largest urban national park in Los Angeles predominantly attracts white, affluent and local
residents, while its intent was to serve disadvantaged communities of colour and low-income. With respect to green space access, it is concluded that ethnic minorities and socio-economically disadvantaged groups of people have on average less options to enjoy green space in their direct environment (Byrne et al., 2009; Byrne & Wolch, 2009; Vaughan et al., 2013).

The greater part of the research on the environmental justice of green space concentrates on quantitative enquiry to examine green space accessibility, calculating absolute distances to green space or percentages of green coverage in neighbourhoods using for example GIS measures. The significance of qualitative research on green space use and accessibility is only limitedly recognised, by for example Heynen et al. (2006). This is a problematic delimitation of the environmental justice of green space literature: there appears to be a simplistic understanding of green space accessibility and justice that is based on spatial proximity. Such an approach generates a narrow perspective on accessibility limited by spatiality, while perceptions as well as physical, mental and administrative barriers also play a great role in the accessibility of green space, as has been pointed out in section 2.1.

While the uneven accessibility of urban green space has become recognized as an environmental justice issue, the literature has mainly focused on ways to measure urban green space, the access to these spaces by groups based on socio-economic features, and how a lack of access affects public health (Wolch et al., 2014). Furthermore, there has been research done on green space accessibility and use for people with a physical disability (see section 2.1), but the connection with environmental justice is very poor or non-existent (Ray & Sibari, 2017). As far as my knowledge goes, a first attempt to connect an environmental justice approach with the accessibility of green space for people with a physical disability has been done by Kafer (2017, see section 3.2) and Johansson (2017). Johansson’s thesis concludes that the environmental justice perspective is of significance to further develop the right to green space for wheelchair users. Furthermore, he emphasises the central role of the capabilities approach, in order to understand individual wheelchair user’s experiences and wishes when it comes to visiting green space.

3.2 Disability discourse
Disability can be understood in multiple ways, as discussed in professional and academic literature. It is relevant to reflect on these different facets of disability, since the language used to talk about individuals with a disability positions their expectations in society. Common perceptions about green space and leisure appear to shape the experiences of people with a disability with such green space leisure activities (see for example Fitzgerald, 2005; Kafer, 2017). This section introduces disability discourse from a general viewpoint, after which spatial issues and mobility considerations are discussed in more detail.

3.2.1 Disability studies
Disability studies cover an inherently multifaceted body of research that generally defines ‘disability’ as a contrast to ‘ability’ (Oliver, 1996). Two alternative schemes are at stake nowadays, which are expressed by the World Health Organisation (WHO) and the Disabled People's International (DPI). According to the WHO theoretical body, chronic illness is causally related to the disadvantages disabled people experience (Wood, 1980). For those committed to the DPI scheme though, there is no such causal link; disability is exclusively social (DPI, 1982). These contradictory perspectives are expressed in the two models of disability that rule the academic and professional debate on disability: the social model and the medical model (Shakespeare and Watson, 2001). The social model implies that disability
is socially constructed and that it is society that disables people with impairments. It is an emancipatory perspective, though the social model is criticised by disabled people claiming that it does not conform to the actual experience of having a disability. Also, some thoughts are given to its assumed rejection of ‘the pain of impairment’, both physical and psychological (Oliver, 1996). The main focus of the medical model is upon normalisation and adaption of disabled persons to society. Accordingly, the medical model is criticised for its emphasis on treating and curing disability and neglecting the role of society in creating disability (Shakespeare and Watson, 2001). According to Fitzgerald (2005), this model has been highly influential in establishing leisure as a tool for developing normal, healthy bodies.

Despite of the incompatibility of these models, the past few decades have demonstrated a growing interest in social inclusion replacing the previously dominant integration of disabled people in society. Integration implies granting persons with a disabled access to a society designed for the able-bodied. Inclusion, on the other hand, indicates the disregard of common standards and participation in the planning of public space that rejects the relevance of individual disabilities (Oliver, 1996). With respect to this development, there have been progressive attempts to design a more integrated approach within the disability paradigm, rejecting the problematic dichotomy of the medical and the social model. Shakespeare (2013) suggests a critical realism approach to disability that has similarities to the previously discussed capabilities theory, in order to harmonise different perspectives, avoid the drawbacks of the social and medical model, and trigger progressive politics. He acknowledges that while the environment can be made accessible and it is possible to end unfair discrimination on the basis of disability, many disabled people would still be disadvantaged: disability is always an interaction between individual and structural factors. Fitzgerald (2005) similarly reminds us that we should bear in mind that disability is not static. Instead, disability is dynamic as disabled people build competencies and constantly reconstruct their connections with their environment and other people. It is argued that justice demands social arrangements that compensate for bodily impairments as well as socially caused disability: “creating a level playing field is not enough: redistribution is required to promote true social inclusion” (Shakespeare, 2013: 91). The critical realism approach has been found beneficial for this thesis research, as is further explained in section 4.1.

3.2.2 Disability studies and the spatial environment

Perspectives derived from the social and medical models are reflected in public and academic perceptions towards the interplay between disability and the spatial environment. There exists an assumption that the environment can be adjusted in order to suit our needs and desires (Harvey & Brown, 1996). This perspective is initiated by the social model: people are disabled not by their body but by their inaccessible environment. Such a view states that unfortunately “spatial processes can be used to disable rather than enable people with physical impairments” (Gleeson, 2002: 1). Similar concerns are reflected by Harvey and Brown (1996), explaining that urban social and ecological processes are intertwined. According to this view, accessibility issues experienced by people with a disability can potentially be resolved by changing the spatial environment. Other voices within the social model suggest that the connection between disability and environment is much more complex: fixing the environment does not directly address the root cause of the problems. Technology and spatial adaptations such as ramps are rather a short-term fix for an issue that needs large scale cultural transformation through radical political action (Shakespeare, 2013). Respectively, spatial adaptations are rather seen as a reductive frame initiated by the medical model that believes inaccessibility to places is a function of a malfunctioning body that requires technical cures (Imrie & Thomas, 2008).
Furthermore, the social model perspective to the environment is complicated by the heterogeneity between the built environment and the natural environment. Some authors believe that the social model is unable to address the limitations of the natural environment: the natural environment will always express disadvantages experienced by people with a disability (Shakespeare, 2013), similar to other groups such as women and ethnic minorities or people that are disadvantaged because of a lack of resources such as knowledge and money (Imrie & Thomas, 2008). From a medical point of view, there are obstacles in our spatial environment that are just impossible to overcome, as the experienced disability is one of the body (Shakespeare, 2013). This perspective would thus come with accepting that not every individual can have access to the full range of our spatial environment.

Such a view is contradicted by Kafer (2017), suggesting that the natural environment is not so different from the built environment as it is also ‘built’, from both a literal as well as a metaphorical perspective. Hence, the natural environment acts similarly to the built environment as it is shaped by and experienced through assumptions about human classes and traits. Kafer, a wheelchair user herself, demonstrates how it is often assumed that the connection between humans and nature can only be established by an able-bodiedness that allows to experience nature by walking through it. Mobility in green space accordingly appears to be at the root of the discussion (see section 3.2.3), and access to nature is largely dependent on the design of the trails within the area. Ideally, “trails are not longer designed for one single body and that decisions about trails are recognised as decisions, ones that can be changed, extended, modified” (2017: 230). When it specifically comes to wheelchair users’ access to nature, it is suggested to approach this group not as an all-or-nothing category: wheelchair users are, just like non-wheelchair users, individual agents that can define very well themselves what level of trail difficulty they prefer. This is in line with statements by Seeland and Nicolè (2006), who do notice that the design of green space that is intended for recreation should include all potential sorts of users, disabled or non-disabled. Certain measures to increase green space accessibility could result in favouring particular groups of visitors, which is reflected in people’s behaviour, frequency of visits, and satisfaction levels. Their research suggests that the special needs of neglected groups should be taken into account by applying soft complimentary services, to avoid stigmatisation of user groups. Such complementary services can be for example good connections to public transport and better information provision about trail difficulty, leaving the decision to visit to the individual. That is, efforts to make trails more accessible or to provide special services to enter green space are often greeted with suspicion, as it is sometimes thought that such measures have a negative impact on the environment (Seeland & Nicole, 2006; Kafer, 2017).

These final statements form a challenging discussion: on the one hand we should aim for a spatial environment based on social inclusion, though on the other hand it is not desirable to design space in a way that it prioritises particular groups of people – if we can talk about such collectives. This paradox raises the question if it is even possible to design public space in a way that facilitates accessibility for all, especially when considering green space accessibility (see Shakespeare, 2013).

3.2.3 Mobility and physical disability
The above section demonstrates that the experience of green space for people with a physical disability is largely dependent on their level of mobility, allowing them to move around in as well as to such spaces. Mobility often appears to be a given aspect of daily life in modern Western society, and stretches over people, objects, and other flows that go far beyond the scope of this thesis (Urry, 2012). Mobility theorist Cresswell (2006) underlines that mobility can produce and distribute power, it is a
resource that is differently accessed in our society. Accordingly, the term is highly political and often prioritising ‘the mobile body’ (Imrie, 2000). Oliver (1996) describes an ideology of walking, that relates humanity and masculinity to the activity of walking and thus puts not being able to walk as not normal. How walking is equal to progress in modernity is concretely demonstrated in the strategic plan for the city of Stockholm as adopted by the Stockholm City Council in March 2010, prominently called ‘The Walkable City’ (Stockholms Stad, 2010). Open space, including green space, is ideally accessed by walking. Additionally, certain forms of transportation can be problematic for people with physical impairments, as driving a car can be complicated and public transport requires special amendments such as lifts and ramps which highlight peoples’ impairment and difference (Jensen et al., 2002; Imrie, 2000).

Imperative to accessible movement is a smooth spatial infrastructure (Cresswell, 2010). The few studies that have examined the quality of the built environment for people with different levels of physical disability, found that pavements and streets in poor condition exert higher mobility disability, in both the urban and the rural context (Clarke & George, 2005; Clarke et al., 2008; Kirchner et al., 2008). Though lacking a large sample size and representability, a study by Kirchner et al. (2008) reports that problems with sidewalk pavement and puddles or poor drainage were the most frequently mentioned environmental barriers for people using manual and motorised wheelchairs. Unfortunately, and as pointed out by Kafer (2017), the accessibility of the natural environment has consistently not been addressed in academic research. Acknowledging that “mobility and movement are core to people's identities, life experiences, and opportunities” (Imrie, 2000: 1641), it appears highly relevant to study the movement patterns of people with a physical disability and connect these to their experience with different forms of green space. Moreover, the literature repeatedly seems to employ a top-down approach to the spatial accessibility for people with a physical disability that rather reflects the views of experts. There is a lack of academic research that projects the experiences of disabled people themselves (Fitzgerald, 2005). Where policy experts dominate the course of the disability movement, there is a need for “pressing for recognition of the value of the experiential knowledge of disabled people” (Imrie & Thomas, 2008: 482).

4. Methodology
This research follows a qualitative approach employing photo elicitation interviews in order to study urban residents that use a wheelchair. As the thesis links areas of academic research that have not yet been related or only lightly touched upon, the research is of exploratory nature, aiming to uncover critical insights using a bottom-up approach. Stockholm is chosen as study area, but no specific location is identified. A fluid approach is used that ‘follows the problem’, being guided by the participants and their interpretations by a research method that is inherently inductive. The study does not attempt to generalise the findings to a collective group, though rather studies the meanings of individuals in order to launch a discussion and get an idea of how to move forward on this topic. The choice has been made to study wheelchair users since such a delimitation allows for a confined scope within physical disability. This does however not suggest that the interviewees’ realities are assumed to be defined by their physical disability or wheelchair use as such. Following the critical reality approach described below, the research aims to understand individual structures that constitute reality by means of putting emphasis on context.
4.1 Research approach

The topic of the study and the research method require a perspective that takes into account the socially, culturally, and spatially situated position of both the researcher and the participant, though at the same time understands that there is an external reality that we can direct our attention to. This research accordingly follows a critical realist approach based on the theory developed by Bhaskar (1975), allowing to reflect on the social world identifying the structures that generate those discourses. Critical realism understands the conceptualisation of reality within social science as the researcher’s way of knowing that reality: “critical realists acknowledge and accept that the categories they employ to understand reality are likely to be provisional” (Bryman, 2012: 29). Thus, critical realists distinguish between ontology and epistemology, so what exists and our ideas about what exists are different. Imperative to critical realism is the identification of the context that interacts with so-called ‘generative mechanisms’ to produce an observed regularity in the social world (Bryman, 2012). Bhaskar (1975) describes these generative mechanisms as the entities and processes that constitute the phenomenon of interest. Identifying such generative mechanisms allows to introduce innovations that can transform the status quo, making critical realism ‘critical’. The critical realism approach has been found a helpful way to understand the social world when it comes to disability studies, following argumentation described by Shakespeare (2013). Shakespeare acknowledges that existing disability paradigms have strengths and weaknesses and based on cultural disability studies he concludes that dichotomies are unhelpful. He suggests the critical realism approach as a way to harmonise different perspectives, avoid the drawbacks of either biological, social or cultural determinism, and additionally serve as a foundation for progressive politics. This allows for a more transparent and concrete uncovering of the meaning of disability, because “while different cultures have different views or beliefs or attitudes to disability, impairment has always existed and has its own experiential reality” (Shakespeare, 2013: 73). These statements imply that this study seeks to approach individuals with a disability acknowledging that there is a medical substance to their experienced disability, though disability at itself is not static. As described by Blichfeldt and Nicolaisen, “disability is subject to change as disabled people build competencies and reconstruct their connections with both their environment and other people” (2011: 80).

Furthermore, the critical realist approach is reflected in the research methods, that are rather fluid and flexible in both structure and content. The interviews aim to uncover individual contexts relative to external realities in order to understand what is it that structures one’s world, though it is acknowledged that the way that topics are explained, and questions are posed guides the interviewee in their reactions. Similarly, the analytical process through which data segments are selected, linked to one another, reworked into consistent themes and integrated to produce a clear rhetorical style, is representational and requires the researcher’s interpretation. This is comparable to the work of an ethnographer, which implies that presenting social reality is always to some extent influenced by the subjective perspective of the researcher (Denzin, 2000). As a researcher I acknowledge that – while maximum effort is made to allow the interviewee to express what is important – I am irrevocably responsible for whose point of view to present, what is significant about a person or an event, and what is supplementary and what can be left out. To be transparent about how these constructions are of influence on the research process, it is vital to be reflexive and account for the chosen methods, therefore the following sections describe exactly how the data is produced, processed and assembled into texts.
4.2 Methods

4.2.1 Sampling

The sampling process involved a mixture of convenience sampling and snowball sampling, both examples of non-probability sampling methods. While these approaches are criticised for their limited generalisability and representability of the population, they are also identified as suitable methods within qualitative enquiry that is exploratory in nature (Bryman, 2012). There is no accessible sampling frame for the population from which the sample has to be taken and “the difficulty of creating such a sampling frame means that a snowball sampling approach is the only feasible one” (Bryman, 2012: 203).

The priority has been to reach informants which are not necessarily active users of green space, in order to get a balanced group of participants that is not biased towards their use of green space. Accordingly, participants have been reached by contacting organisations that support people using a wheelchair, such as RBU Stockholm and Förbundet Unga Rörelsehindrade. Contact with administration offices followed, but no direct contact information of potential interviewees was provided because of privacy concerns. A few of the organisations made effort to reach their members themselves, others published a short request for interviewees on their Facebook page or website. This indirect approach did unfortunately result in only one participant, which made me decide to expand the search of participants to parasport organisations and personal contacts, several participants were also reached by randomly approaching them at the Stockholm University campus. This direct approach proved to be most efficient, as people directly agreed to participate. The acquired participants were then asked for their contacts using a wheelchair, applying snowball sampling. The sampling process has been a challenging step in the research and unfortunately resulted in slightly less participants than anticipated, though sufficient data was acquired through the six eventual participants.

4.2.2 Photo elicitation

Photo elicitation interviews have been applied as a method that follows the people under study. Photo elicitation is a technique that can be defined as ‘the simple idea of inserting a photograph into a research interview’ (Harper 2002: 13), acting as a medium of communication between the participant and the researcher (Clark-Ibáñez, 2004). The origins of photo elicitation can be found in the field of visual anthropology (Pink, 2013), it was introduced as a valid data collection method in the late sixties by anthropologist John Collier (1967). By the end of the 20th century, it spread out over the research areas social organization, community, identity and culture. In recent years, the method has been increasingly applied within a number of different scientific fields, for example in landscape (Beilin, 2005) and pedagogic studies (Clark-Ibáñez, 2004). The method is more often used for studying children as well people with intellectual disabilities (Beilin, 2005; Pink, 2013), but no specific study has been conducted focused on people with physical disabilities.

The method involves the use of images as a stimulus for both questioning and responding, based on the argument that visual information is processed by a different, older part of the brain than verbal information (Harper, 2002). We thus respond differently to visual representation, making the method especially useful for social research in which the topic of the interview is rather hard to grasp (Bryman, 2012). Also, when personal or sensitive issues are involved, the method can serve as a tool to open up the conversation and it can help interviewees to reflects on things that are usually taken for granted (Harper, 2002; Clark-Ibáñez, 2004). Since the research adopts an inclusive and fluid concept of green space and interviews may address personal experiences that can be challenging to explain, photos thus
form a helpful directory to realise a meaningful conversation. According to Harper (2002), photo elicitation fits an ideal model of research, inspiring a collaboration between the worldviews of different parties, in this case the researcher and interviewee.

There are though a number of challenges involved with the application of photo elicitation research. Clark-Ibáñez (2004) notices that an image is often not research material on its own, it is with the questions asked during an interview that meaning is triggered for the interviewee and new information is generated. She further recognises that the photo elicitation interview can create a more intimate setting then regular verbal interviews, as the researcher is granted a look in the interviewees personal settings. This has implications from an ethical viewpoint and emphasises the fluid line that may exist between the role as a researcher and empathetic feelings that may develop during the interview. This might also cause the recruiting process to be more complicated. Pink (2013) notices that the flexible nature of the interview requires an adaptive approach, it is nearly impossible to predict the course of the data collection process. Criticism has been expressed based on the photographing practice at itself: when cameras are provided by the researcher, participants could lose their camera, or they could be unskilled at photographing (Clark-Ibáñez, 2004).

Harper (2002) notices that photo elicitation studies can appear in many forms, though images are always put in the centre of the research agenda. While photo elicitation can also imply that the researcher introduces the images in the interview setting, this study requested participants to bring their own photographs. Using personal pictures is an effective method to make interviewees talk about individual experiences, without guiding the course of the interview too much (Harper, 2002). It leaves the decision on what images to discuss up to the participant and is thus a method that is inherently open and fluid, following the participant. Since the images are taken or at least brought by the participant, they are familiar with the content which can lessen some of the potential awkwardness of the interview setting (Clark-Ibáñez, 2004). Moreover, as the participants’ photographs play a central role, participants are in a way the ‘expert’ in the interview which can lead to a feeling of empowerment (Rose, 2012). This type of inductive method in photo elicitation is called photo-self elicitation, photo feedback or a photo elicitation auto-driven interview (Clark, 1999). Smith and Sparkes (2012) specifically state the relevance of using participatory visual methods for studies that involve people with a physical disability, because as an example of a ‘method in motion’, photo elicitation embraces people’s social experiences of moving in and between spaces, rejecting people as static and adopting the ‘body in motion’.

4.2.3 Interview process

The data collection process concerned two interviews per interviewee of which the first took the form of a short semi-structured interview, in order to get an idea of the background of the participant and the ways in which the participant does or does not make use of nature in general. The semi-structured interview format was found most suitable, as it commonly follows a fixed set questions though also allows to be flexible and elaborate on certain topics (Bryman, 2012). An interview guide was created covering themes organised in 10 questions, asking for general contextual information such as living situation, career, common means of transport, and leisure preference. All themes were covered for the different interviewees, but the exact form and order of the questions deviated with every interview. The interview started with an explanation of the research and the interviewee’s rights and responsibilities. It was made clear that participation in the research was completely voluntary and that participants are at all times free to end the interview or choose to not answer to a question.
Participants were also asked for their wish to stay anonymous and if their provided pictures could be published in the final paper. In addition, in the first meeting the photo-taking process was explained. The participants were asked to bring photographs to the second interview, taken by themselves of their ‘daily’ green spaces, as well as photographs of more special or highly appreciated green space located further away, which could be either taken by themselves or derived online. The participants were told that pictures could be taken either with a smartphone or digital camera, though that a disposable camera would be available when neither of the first two could be used. No one made use of the option to receive a disposable camera. Effort was made to not guide the participants too much in their conceptualisation of green space, leaving the meaning of nature or natural space open for personal interpretation. Similarly, the ‘portfolio of natural places’ concept was not literally described, rather it was communicated that every type of green space is relevant, independent of aspects such as frequency of visits, activities or opinion about the place.

After a period of about two to three weeks, the second interview followed in which the participant was asked to talk about the photographs following the approach of a deep qualitative interview, that often took a form similar to a conversation (Bryman, 2012). The interviewee was requested to present the photographs that were taken and found and sort them according to the places where they were originally taken. Google Maps was sometimes used to sketch a better image of the places that were named. The organising process most often resulted in a few different groups of pictures. This step was followed by a set of open questions asked with regards to the groups of photographs or a single photograph when this was found useful, based on a handout with aspects relevant to discuss. The interviewee could respond freely, and follow-up questions were asked with respect to statements that appeared worthy to elaborate on. The final step involved organising the groups of pictures according to their meaning for the interviewee, summarising the places that were talked about and in a way following the laddering process as described by Beilin (2005). The photo elicitation interview took into account communicative considerations as defined by Forrester (1989). Forrester makes a distinction between hearing and listening: where hearing is a rather passive endeavour, listening is described as a moral activity that involves active participation and interpretation of the relationship between what is said and what is heard. It is a matter of observing and connecting actions to words, and in the case of images it involves analysing the responses and emotions the come with the photographs in the interview. Such an attentive approach was found useful especially in the light of the content of the questions, which could sometimes provoke emotions based on the interviewees’ personal experiences.

The interviews took place at locations picked according to the convenience of the interviewee, which resulted in meeting at Stockholm University, in cafés, in sports halls, and at interviewees’ homes. Effort was made to find relatively quiet places, in order to minimise distraction during the interview and make sure the recording of the interview would be clear. After interviewees were asked about their consent to record the interview, the interviews were recorded using a smartphone application. Both interviews additionally involved notetaking, aiming to document emotions and non-verbal responses to questions. One interviewee was accompanied by her assistant, occasionally assisting her with language issues and complementing when needed.

4.2.4 Data analysis
Interviews were transcribed verbatim, after which content analysis followed of both the interview data and the photographs presented at the photo elicitation interviews. Analysis of the interview results
proceeded employing thematic networks. Thematic networking is a method for conducting thematic analysis of textual data, using established techniques based on core features in qualitative analysis, such as data reduction and coding practice (Attride-Stirling, 2001; Bryman, 2012). This was carried out according to the steps proposed in foundational work by Attride-Stirling: the reduction or breakdown of the text, the exploration of the text, and the integration of the exploration. Thematic analysis was found beneficial for analysing the photographs as well, working according to the approach used by Loeffler (2004). Accordingly, codes were attached to chunks of varying-sized words, phrases, sentences, entire paragraphs as well as photographs. The codes used were subtracted from elements of the theoretical framework, but also emerged during the practice itself, because of the interpretive nature of this method. This is a common tactic within analysing qualitative data: when we formulate a category, we make decisions about how to organize the data in ways that are valuable for the analysis, we have to take into account how the category will fit into the wider analytic context (Dey, 1993). This also means that the data analysis took place simultaneously with the data collection process, as data, literature and emerging theory where in constant comparison, following the approach of Loeffler (2004). This sort of analysis was appropriate for the current study, as it can be applied across a range of theoretical and epistemological approaches and provide rich and insightful understandings of the qualitative data describing the experiences of individual participants in a collective manner.

4.3 Limitations
The methodological design of the research holds some limitations that affect the validity and generalisability of the thesis results and are thus relevant to be mentioned. The most essential limitations are caused by the sampling method and the choice for convenience sampling followed by snowball sampling, limiting the generalisability of the data. However, generalisability has never been an objective within this research and as such this limitation is not necessarily problematic. Furthermore, initially the idea was to interview wheelchair users under 35 years old and living in central Stockholm, however the very troublesome process of reaching interviewees made me decide to be more flexible: semi-urban areas and all ages were included at a later stage.

Another limitation concerns the language barrier between researcher and participant. Since I speak a limited amount of Swedish, language challenges occurred during the process of reaching participants as well as when conducting the interviews. My assumption is that potential interviewees might have been reluctant to participate in the research because of their finite knowledge in English. Already early in the process this made me decide to start email and phone contact in Swedish, as this would hopefully eliminate initial barriers to participation. In the end all interviewees were non-native English speakers, and some of them were hesitant in expressing themselves in English during interviews. Sometimes a blend of English and Swedish was needed to understand each other, with two interviewees communication even went completely in Swedish. This might have caused some language fallacy or have limited the objective to have a deep narrative interview. Further reflections with regards to the photo elicitation interview can be found in Chapter 7.
5. Personal portraits

This chapter portrays the use and meaning of green space for each of the individual participants, based on the verbal and photographic data derived from the interviews. Each participant is shortly introduced, providing some context to their green space use. Additionally, the personal portrait includes a map that shows the residential area of the participant as well as the green spaces discussed during the interview. This does not mean that these are the only green spaces that are visited, rather that these are a few of the most important ones. The map is meant to visualise one’s green space use in the Stockholm region, of which the details are described in the text. The photos presented in this chapter are chosen for their representability and importance during the interview. The complete set of photos discussed in the interviews can be found in the Appendix.

5.1 Olle

Olle is a 28-year-old male who has a position on the board of a large organisation working with disability rights for children and young adults. Though he would like to have an apartment of his own, he lives together with his mother in the south of Stockholm. He uses a motorised wheelchair and has a personal assistant during most hours of the day. In his free time, he likes to be outside and take a walk alone or with friends. His family has a summer house in the north of the city, where he likes to go in summer. He is an active person, who also enjoys going on weekend trips in order to have a relaxing break from his sometimes demanding job. The photos he brought to the interview were taken by a friend, showing views and images of Olle. Also, he brought a number of photos derived from Google since these places he wanted to show, but did not visit in the weeks between the interviews.

5.1.1 Mobility and transport

Olle considers himself mobile, explaining that his level of mobility is rather dependent on the situation: he is able to go almost everywhere he wants but sometimes he faces challenges related to path quality or steepness. He has to travel to work on a daily basis. Olle likes to make use of the metro and train and there is an easy metro connection from his residential area to his work. However, when it is busy during peak traffic hours he normally avoids the metro, since he feels he takes a lot of space and he is
not comfortable having a lower position compared to people standing. Similarly, he avoids having to rely on public transport when he is in a hurry, because it can be time consuming. In such cases he makes use of the färdfjäns (free taxi service disabled people can use). His choice of transport within the Stockholm region is very dependent on the season and weather conditions. Snow and slippery surfaces make him often decide to use the färdfjäns in the winter months or force him to stay inside at times that he wishes to visit green space.

“They are cleaning the bicycle paths before they clean the pavements. So, the pavements are not clean but the bicycle lanes are. That is very like: ‘oh you should be able to cycle all year round’. But how many are? Yeah, I think it is quite strange. How you prioritise.”

Such infrastructural challenges have an effect on Olle’s use of green space. While he would like to visit green spaces also in winter, his way to nature is challenged by weather conditions and the status of roads and paths.

5.1.2 Visiting green space: use and meaning
Olle likes to be outdoors and visits different green spaces on a regular basis. In the weekends, he often goes out in the accessible green space areas close to his home. Sometimes with friends, but more often on his own, without an assistant. Because of his demanding job, he prefers at least one day in the week during which he is not preoccupied with work. Taking a walk in green space is what he enjoys doing on such days, even when he does not go far.

* "I like to be in the close by nature, because it is somewhere I can go on my own. Get some kind of relief, thought wise, and still be independent. So, I would say it is like an oasis of independence for a while. (...) Since I always have people around me, have personal assistance and need help with almost everything in my life, it is so nice to have sometimes an hour or two or three not having anyone around that I am dependent on."

He appreciates that the nearby located green space allows for a visit on his own and be independent. Those times when he visits green space without company of friends or an assistant, he cannot engage in activities other than walking around. When someone accompanies him during visits to green space, he is able to do more than walking.

Sometimes Olle enjoys green space beyond his residential environment, visiting urban parks located in the Stockholm city centre. He believes Stockholm offers a good amount of nature opportunities throughout the city. When he used to work in the city centre, he often went home walking along the water at Kungsholmen. Figure 3 is how he likes the Stockholm city centre best: a flat and not very busy area that allows to have an easy walk while enjoying the view. Green space thus does not have to be fully green: he very much enjoys such semi-green spaces as well. He would not visit green space as shown in figure 3 to clear his mind, but rather to experience the vibrant urban parks of Stockholm, especially in summer. He notes that these areas are normally busier than the green spaces around his residential area.

* “In these parks [in the city centre] you cannot get rid of [people]. But in the green areas in my neighbourhood I like to be alone, because you can be more thinking of yourself. This is more like a nice walk I would say, it has different meanings I think.”
Occasionally, he and a friend visit green space located beyond his residential environment, such as Judarnskogens nature reserve located north-west of the Stockholm city centre. Figure 4 shows a view observed during one of these trips. Based on the photo, he described a situation that made him feel glad he had company. He and his friend got off the asphalted path around the lake and sat down with some fire and picnic. When it got dark and they decided to go home, it started to rain. Moreover, the battery of his wheelchair was almost empty and his wheelchair got stuck in the mud between the trees. With the help of his friend he managed to get out, though he experienced fear.

* “I was a bit scared: what happens if I get stuck here. But I think it was quite nice, because it is something you do not do so often and it is like... feeling independent. With assistance from my friend I can go out and do things like this, even though I have a quite severe disability in my body.”

This incident is a reason for him to avoid forests and green spaces he has not been before, because he would not know what level of accessibility to expect. Especially when being alone he is more restricted to the green spaces he knows are accessible by wheelchair. Respectively, he acknowledges that there are some types of green space that he is not able to visit, as the paths are not accessible with a wheelchair. He even thinks it is important that such ‘authentic’ nature is preserved: he would not like to see all green spaces in and around Stockholm adjusted for human use, even though that means that it is not possible or at least more challenging for him to experience it.

* “I would not like to see [asphalted paths] at my country house for example. Because it is so much more nature-nature.”

Figure 3 Norr Mälarstrand at Kungsholmen, an urban green space where Olle likes to take a walk when he is in the city centre.
Olle’s family owns a summer house in Norrtälje where he likes to go in summer. As a child he used to spend the summer at this country house, picking berries and mushrooms in the forest. Nowadays, he just goes there for short visits because of his fulltime job.

* “Many Stockholmers have a country house. And ours is in the north of Stockholm. (…) I grew up there walking around in the local forest, picking berries and mushrooms. Since I was like 3, 4 years old. So, it is a part of me.”

He enjoys being surrounded by the forest, it has a nostalgic meaning to him. In the forest one can find wilderness, he refers to it as ‘real’ nature. However, he can only sit and enjoy the forest at the summer house, going for a walk is not possible with his wheelchair. He can regret that going in the forest is not possible but also states that that does not mean that other types of green space are unsatisfactory. He understands green space to have different types, in which levels of wilderness and accessibility vary.

Summarising, Olle visits green space for different reasons. Going into green space in his neighbourhood is an important part of his daily life, but also less frequently visited green spaces are of significance to him and he can long for green spaces that are less accessible. He makes use of different types of green spaces: small as well as large and located at different distances from his home. Although he frequently enjoys these green spaces with friends, he prefers to visit green space to slow down and overthink while being alone.

5.2 Amelie
Amelie is a 32-year-old female who lives together with her parents north-west of Stockholm. Amelie is Greek, but she has been living in Sweden for about 6 years. Though she likes Sweden, she also misses her friends and the weather in Greece. Therefore, she travels to Greece several times a year. She uses a manual wheelchair and has assistance during daytime. Currently she is studying tourism, but she has worked on different positions for several years before. Amelie loves the sun and the sea and likes to go outside whenever she can. She also enjoys photographing, watching movies, shopping and working.
out in the gym. During the photo elicitation interview, Amelie showed a number of photos on her laptop mostly picturing herself.

5.2.1 Mobility and transport
Amelie is satisfied with her level of mobility. When she and her parents moved to where they live now, they deliberately chose a place that allows her to go out of the house and move through the neighbourhood without assistance. Occasionally Amelie makes use of public transport, primarily the bus and the metro. She thinks that the facilities on these modes of transport are well and bus drivers tend to be helpful and understanding. Yet, most often she commutes using the färdtjänst. She enjoys this easy mode of transport, as it is efficient and the car can take you anywhere.

Amelie acknowledges that her level of mobility is much higher in Sweden compared to how it is in Greece. The various transportation facilities allow her to move around in Stockholm rather easily and she thinks that public space is adapted to the use of wheelchairs, strollers, and bikes. Moreover, she has the idea that society is more understanding, giving the example of people directly making place for her in the bus.

5.2.2 Visiting green space: use and meaning
Amelie aims to be around green space on a daily basis and loves to enjoy the sun in a green environment. Exposure to green space makes her feel calm: she appreciates the quietness, sounds of birds and different colours. Thus, she visits green space in order to think and be on her own, but occasionally also to meet friends.

* "Sometimes I want to be alone. I do not want to talk, just look and take photos or just thinking. But sometimes I want to be with someone, it depends on the mood."

The appreciation of green space is rooted in her childhood. The green surroundings of the village where she grew up and the wide availability of accessible green space in her current residential environment, make her feel anxious when being exposed to very grey urban environments.
*“If I travel to for example Athens I feel like I cannot breathe, because I am coming from a small town in Greece, where there is a lot of green and water as well. I think that is very very important. And I am getting used to it a lot, getting out to parks and see the green in Stockholm, even though there is a lot of snow now and it is not yet spring.”*

She lives in a green neighbourhood, with a small yard directly outside of her apartment building (see figure 6), some residential parks a few minutes away, and water located at about 5 to 10 minutes walking. On days that she has not planned to go visit a park or take a walk in green space with friends, she goes out in her neighbourhood either alone, together with her assistant or with her mother. She can have a hard time in winter, when the days are short and snow and ice make it harder to visit green areas.

![Figure 6 Amelie enjoys going out in the green space in her residential environment.](image)

On a less frequent basis, she visits the Kungsholmen island in the Stockholm city centre (see figure 7) or takes a walk from Kungsträdgården to Djurgården. Then she meets friends, hangs in the park, or enjoys some ice cream. Occasionally, she spontaneously heads out to a viewpoint, to enjoy fresh air, a green environment, the view, and take photos, accompanied by her assistant. She thinks that Stockholm is a very green city, with accessible paths everywhere.
Furthermore, she and her assistant sometimes visit green spaces located a little further away: she likes to take a walk in the gardens of some of Stockholm’s castles, visiting for example Hesselby Slott or Drottningholm. The forest does not attract her, as she is not fond of small animals and insects. She enjoys visiting the green spaces described above and does not feel the need to try other places: she likes that she knows what to expect from the green spaces she visits. For example, locating accessible toilets used to be an issue for her when visiting green spaces, but now she knows where to find those she no longer feels stressed about it.

* “There is always a toilet nearby. (...) In the beginning I was a little unsure and wanted to know beforehand. But now at the places I have been, I know when [there is no toilet] near where there would be one around.”

To sum up, Amelie is happy with the green space availability as well as the modes of travelling to these areas in Stockholm. She likes to be in green spaces regularly and can miss this when she does not go out a lot for multiple days, for example when it is very cold outside. As much as she loves her residential environment, she also enjoys being in green spaces within the city that are a little more special. Therefore, she takes regular trips to a number of standard places outside her neighbourhood.

5.3 Peter

Peter is a 22-year-old male who lives with his parents and sister in the south of Stockholm. He alternates between the use of a manual and a motorised wheelchair but uses the latter one the most. Currently, he is doing an internship in the office of a company that sells garage doors. Peter is very engaged with sports, either playing himself, visiting Södertälje SK and Hammarby games or watching sports on the television. He is very active in elhockey, an energetic type of hockey in which the players use an easily manoeuvrable electrical wheelchair. He trains about two times a week and regularly attends international tournaments. He also likes to go fishing. During the summer holidays he and his family travel through Europe with a caravan, enjoying camping on green campsites and swimming in the sea. Peter brought a wide selection of photos to the interview, either taken by himself or derived
from Google when he did not visit the places in the past few weeks. The photos all show green space without people in it.

5.3.1 Mobility and transport
Peter lives in a calm residential area located south of Stockholm, that can be argued to be more rural than urban. The public transport facilities in his area are not extensive, which is why he prefers to use the färdtjänst when commuting to his internship or social activities. Peter’s mobility depends on the assistance of others, which can be particularly problematic during winter when slippery roads and sometimes heavy snowfall cause infrastructural challenges. He criticizes the shovelling of snow, explaining that heaps of snow tend to be placed on the parking lots meant for disabled people. This can lead to challenging situations that can be easily avoided when a little more thought is given to the shovelling logistics.

5.3.2 Visiting green space: use and meaning
Peter’s residential area is surrounded by open green areas and forest. He acknowledges that it is not easy to move around in the forest due to the path conditions but thinks there are enough other possibilities in his residential environment to visit green space. He aims to go out in green space regularly, since it calms him down and releases the pressure of daily life.

* “Yes, [regular visits to green space] are needed. One needs the calmness. In the city things happen all the time: cars are coming, people are talking…”

His visits to green space are very dependent on the weather: slippery paths make visits to green space more challenging and he experiences cold weather as uncomfortable. Such weather conditions cause him to be less often in green space during the winter months. When he is not able to go outside because of weather conditions, he misses his visits to green space. On the other hand, he very much enjoys visiting green space when the sun is out and likes to just sit in the sun in his garden or visit green space near his home. Only when he is in his garden he is outside alone, normally he would be together with an assistant, family, or friends.
* “Often I am inside in winter, watching television or playing videogames. It is very dependent on the weather. The weather very much controls if one is inside or outside.”*

Frequently, he and his family visit royal parks during the weekends, such as Djurgården and Tullgarns Slott. There they normally have a walk and enjoy the weather. Tullgarns Slott also has a jetty where Peter likes to go fishing with his father (see figure 9), in the summer months up to several times a week. He enjoys the tranquillity of the activity, the water, and the green environment. Exposure to green space is of significant importance to Peter, in daily life but also during occasional weekend trips and tournaments.

![Figure 9](image1.jpg)

*Figure 9 “This is the jetty where we usually go fishing. (…) It is close. There is a castle as well and there is a large park where we usually take a walk.”*

In figure 10 Kalmar Slott can be observed, a castle located in the city of Kalmar, where he and his sister went for a weekend in the summer of 2017. He was surprised by the city’s pretty green areas and mainly walked around discovering the castle and the urban parks.

*Figure 10*

In figure 11 shows a photo taken during a tournament weekend in Denmark, demonstrating the view from the back of Peter’s hotel room. Having the possibility to take a relaxing walk in a green environment during an intensive tournament weekend is of great value to him and allows to reload his energy level. Similarly, Peter loves to spend his summer holidays with his family, camping at green campsites in Croatia. These weeks are of great importance to him, spending time with family and being outside in nature all the time.
All in all, Peter thinks parks are for him personally the most important types of green space. While he loves the forest, parks offer more easy nature opportunities. Nevertheless, he believes that it is good that nature is sometimes preserved: he acknowledges that this comes with less accessibility. His desire to experience wild nature is answered by occasional car trips with his father, they drive around in search for moose and wild boar. Close to home green spaces are thus appreciated, but still he finds the most appreciated green space while camping in nature during the summer.

5.4 Maria
Maria is a 26-year-old female who lives together with her assistant north-west of the Stockholm city centre. She has been working before but is now in her first year of studying English at Stockholm University. Language and translating are of great interest to her, probably coming from her love for...
watching movies. She uses a lightweight motorised wheelchair that she can use both indoors and outdoors. In her free time, she likes to cook, watch movies and drink wine with friends. Apart from cooking, wine is one of her passions: she recently passed her exam to be a sommelier. When the weather is good, she likes to enjoy the sun with friends and family at the nearby located summer house that her family owns. Maria showed a number of very different photos during the photo elicitation interview, all taken by herself and showing green space without her in the photo.

![Figure 11 Maria: residential area and green spaces discussed (Esri, 2016)](image)

5.4.1 Mobility and transport
Maria thinks that travelling to school, friends, family, as well as green spaces requires a certain level of mobility that she is willing to strive for. She very much appreciates to travel by public transport and prefers it over taking the färdtjänst. While she acknowledges that the färdtjänst is a great option to have, it gives her the feeling to be treated unequally and being shut off from everything else. Unfortunately, the inaccessibility of public transport can sometimes cause her a lot of frustration. Because of metro elevators being shut down, she has to take alternative routes, use the färdtjänst, or choose to not go out at all. This generates challenges that make her feel exhausted.

*“For me going on the metro is one of my favourite parts of the day, because then I can listen to my music, I can listen to an audio book and can just be one in the crowd and be by myself. So, it is very important for me to have that moment, and now it is taken away. So, accessibility in that aspect determines the whole, my life.”*

While she indicates that she is not easily defeated by existing barriers, it can sometimes feel strenuous to keep fighting established accessibility limits. She aims to not let these barriers restrict her but find a way around them.

5.4.2 Visiting green space: use and meaning
Maria enjoys visiting green space on a regular basis. She likes to have nature close: her balcony is covered with plants which she keeps alive during winter using thermostat heating.

*“I really enjoy having plants, I think this is because I enjoy the feeling of having green around me. Probably more than I realise, since my plants mean a lot to me.”*
As a child she already loved to spend time in nature, going in the forest to pick flowers and mushrooms. As a result, she has a rather nostalgic longing for the wilderness, though acknowledges that she is not able to go to such ‘wild’ types of green space as path conditions are generally not suitable for a wheelchair.

* “I do avoid those places even though I can long for them. In a sense that I would like to go into the forest. So, accessibility wise, I think parks are a bit easier. And I also think that parks are much more accessible since there are a lot of kids with strollers. So, I can go there too since it is accessible for children. Whereas forests and other green spaces that are not angled towards children, I usually avoid because I think I will not be able to access them.”

Maria regrets that there is a lack of green space in her direct neighbourhood. Her apartment building has a yard, but from her window only one tree is visible, as shown in figure 13. It takes about 15 minutes to walk to the nearest park and while there are green lanes, open spaces are limited. While talking about her neighbourhood, Maria realised that there is a park very close to her, but as it is rather hidden next to a school she never really recognised it as a publicly accessible park.

* “Yeah, [the season makes a] huge difference. Both physically and mentally, of course since snow is a major barrier and cold makes my body ache. I get really stiff, everybody does but I have a lot more pain in my body during the winter. The darkness… mentally as well. It is more exhausting. In the summer I have a lot more energy and it is a lot easier to go around.”

She usually takes short walks in green areas in her neighbourhood, as a way of transportation. These walks are more frequent in summer, when she more often opts to walk instead of taking public transport. Slippery roads and cold cause that she is going outdoors to enjoy green spaces much less during the winter months. The season makes a great difference in the frequency of her visits to green space.

* “Yeah, [the season makes a] huge difference. Both physically and mentally, of course since snow is a major barrier and cold makes my body ache. I get really stiff, everybody does but I have a lot more pain in my body during the winter. The darkness… mentally as well. It is more exhausting. In the summer I have a lot more energy and it is a lot easier to go around.”
Also sunny weather is of influence to her mood: she can experience a feeling of pressure, a restlessness when the weather is good and she does not go out to experience it, which is strongly shown in the following quote.

* “I hate the cold and I love the sun. And I am very very dependent on weather. (...) I would get so much anxiety from just being inside. Which I also think is a very Swedish thing: you have to catch the sun when it is there. And that is not always a good thing, because I get really really stressed, feeling that I have to make the most of it when there is good weather. I am very dependent on the weather: if it is very very cold for a long period of time, I get a bit down. But if it is very very warm with a lot of sun, I can also get very stressed because then I feel like I cannot just be inside. (...) It is kind of a pressure.”

During the summer months Maria spends many hours at the summer house that her family owns, where they grow fruits and vegetables and have many flowers, as shown in figure 14. The house is located close to where she lives in an area that hosts many allotment gardens and summer houses. It takes her only 30 minutes to walk there from home, or a short bus ride. She loves to spend time in the nature at the house with her family, going there to relax and sit in the sun.

At the summer house she thus enjoys spending time with family, she has been doing that for years. She does not go there to be alone, then she would rather stroll around her residential area or sit somewhere reading a book or listening to a podcast. With friends she likes to sit on the grass in a park, have a picnic and drink some nice wines. This would more often involve a little travelling by car or public transport, in order to meet at a place that suits everybody’s wishes. While she enjoys being alone in green space to clear her mind, she is also a very social person and likes to spend time in nature together with others.
*“It is very much like... the different places all mean different things to me. They do. When I go to our summer house I go there to enjoy what my family has grown, I go there to sunbath, I go there to talk to our neighbours. But if I take a walk around the lake that is next to it, I go there to be by myself.”*

She believes that it would not be possible to replace any of the green spaces that she regularly visits with one another. For example, her balcony allows her to continuously have green space around, though does not suffice in her longing for a regular nature experience. Her balcony, her neighbourhood green space, the summer house and occasional trips to urban parks with friends all have an individual meaning to her and all play an important role in her life.

5.5 Anna

Anna is 20 years old and the youngest participant in this study. She lives together with her mother and dog in central Stockholm, in a slightly adjusted apartment. During the day she has a personal assistant and she alternates between a manual and a motorised wheelchair. She is studying German at Stockholm University and is in general a very active person. Anna is a great outdoor enthusiast: she goes outside whenever she can, no matter the weather. She loves to take photographs while being outside and to sit in the sun and watch people. In her free time, she also likes to go to concerts and museums and visit animal parks. She enjoys spending her summers at Gotland with her family, where her grandfather has a house. Anna brought photos primarily taken by herself, mainly set in Vasaparken.

5.5.1 Mobility and transport

Anna likes to have a positive outlook on her level of mobility, concentrating on possibilities instead of restrictions. She thinks it is important to try things first before setting limits. She walks around a lot, but for longer distances she likes to take the bus or the metro. Sometimes she experiences challenges when going with public transport, but with assistance she is usually able to find ways around such barriers. Anna is not fond of taking the färdfjärd, only using it when there is no other possibility. This is mainly because she just wants to take public transport like everybody else, she does not like to be treated differently. She prefers to be independent, but also acknowledges that in some situations she just needs an extra hand. Anna agrees with her assistant that sometimes people seem to want Anna
to be more independent than she actually is. It is good that her independence is stimulated, but some things are just a lot easier and efficient with some help.

5.5.2 Visiting green space: use and meaning

When she is not occupied with studying, Anna goes outside every day. Visits to green space form a regular pattern in her daily life. She could not go without her daily walks through green space near her home, it is something she really likes to do. As she is dependent on others to go outdoors, she tends to use the opportunity to visit green space whenever there is assistance available. She feels trapped when sitting indoors too long, yearning for fresh air. She does have a garden where she likes to sit when it is warm, but that does not provide a satisfying nature experience. Her residential area provides sufficient opportunities to enjoy walks through green space, in the form of parks and green lanes.

Though she tends to go to different parks and green areas in Stockholm, such as Kungsträdgården and Djurgården, the park she and her assistant visit most often is Vasaparken, a rather large park in Östermalm in the Stockholm city centre which is located less than 10 minutes walking from her house.

* “I go to [Vasaparken] a lot. Everyday almost. I go when I get home from school, or university, I go around there.”

In Vasaparken Anna likes to walk around, sit in the sun, and watch people. She enjoys views such as shown in figure 16, as there is a lot of green and there are things happening. Occasionally, she uses the outdoor gym that allows her to walk with the help of two railings. She appreciates the amount of green space close to her house: it is an easy getaway and allows her to head back home when she is tired or forgot something.

Bad weather does not restrict her from going outside, though she is much more exited to spend time in green space when the sun is out. Also, she indicates that the winter weather can cause a lot of frustration when paths are not sufficiently cleared from snow or when bad water drainage is inducing deep puddles of water and mud. A wheelchair cannot easily bypass such barriers, which sometimes leads to the wheelchair getting stuck and both Anna and her assistant getting wet. Accordingly, she is generally more outside in summer compared to winter.
Anna loves to take photos, it is one of her favourite outdoor activities. She likes to take photos of everything she sees around her, but mainly of nature, such as flowers and colourful trees. Figures 17 and 18 are examples of the type of photos she likes to take. These photos show that green space does not necessarily have to be entirely green to be satisfying to her.

* "The area and the atmosphere I would say are desirable, but because of movement issues it is kind of hard." – Assistant Anna

Occasionally in the weekends, she visits green space together with family or friends, sometimes taking her dog along for a walk. The green spaces Anna visits are thus mainly in Stockholm, only rarely Anna goes on trips outside of the city or into the forest. While she would like to go there, the path conditions are usually challenging. Anna’s assistant describes this in the following way:

Figure 17 “I like to sit there to relax. See everything. Because they have flowers there too. It is really nice.”

Figure 18 Anna took more than 10 photos of these trees, she thought they were very pretty.
During the summer Anna very much enjoys visiting her grandfather on Gotland, going there several times during the summer months and sometimes for longer periods. These visits are very important to her, as the island holds nostalgic meaning referring to her childhood. Moreover, she loves that the island is so green and that the nature is of a special ‘authentic’ kind.

Anna visits different green spaces for different needs, purpose of the visit, weather conditions, and available time. She misses individual places when she is not able to go there.

* “If I would not go to [these different green spaces] I think about them and be like ‘oh I must go there’. So, it is more comfortable when I can go there and sit there and see the view. (...) I can go to them and see things in the park that have changed.”

All places that Anna regularly visits are part of her life and it appears that with different seasons, different green spaces become more important. Her assistant proposes that these different places are part of a yearly schedule. Although such a yearly schedule would apply to most of us, accessibility challenges induce Anna to have a more standard set of places that she does not often deviate from.

5.6 Henry

Henry is the oldest participant in this study: he is 70 years old and lives together with his wife in the south-west of Stockholm. Indoors he uses a manual wheelchair and outdoors a motorised wheelchair, partly because he operates it in order to drive his car electronically. Henry is retired, he has worked all his life as a youth recreation leader. Engaging in sports is one of his major hobbies, he is still active within youth sports as a volunteer and has been the chairman of a sports association for many years. During the summer months he and his wife move to their summer house in the north-west of Stockholm, where he is active in the allotment association. He very much enjoys being outside and work in the garden, growing fruits and vegetables. Henry only managed to show one photo.

5.6.1 Mobility and transport

Henry uses either his own car, the färdtjänst, or public transport to travel in and around Stockholm. When there is a good connection with public transport, for example from where he lives to the city

Figure 16 Henry: residential area and green spaces discussed (Esri, 2016)
centre, he takes the metro. When he used to work, he would always take public transport to go to his job. While he thus likes to take either the train or metro, he is not a fan of buses for the difficulty of getting on the bus. He is able to drive his car himself, using a smart application that connects his motorised wheelchair to the car system. Less frequently, he uses the färdtjänst.

5.6.2 Visiting green space: use and meaning

Henry very much enjoys being outdoors, he aims to take a daily walk to catch fresh air. He is very fond of green space and loves to spend his summer at his summer house, where he believes one can find real nature. He appreciates being outside in his garden and taking care of his vegetables and plants. When he visits green space, just sitting in the sun or taking a walk, he generally does this together with his wife.

*I like to be in nature, I do. I like that it is spring now, that one sees that everything becomes green. I very much enjoy being outdoors to see that."

Additionally, he often goes into the forest area close to his summer house in Bromma, presented in figure 20. Normally, he does not really like visit the forest, mainly because the paths are not very suitable for wheelchairs. The quality of the paths in that area is however good, at least when there is no snow or ice. During the summer he would visit the forest almost every day. Yet in general, he prefers parks over forest areas.

*I try to be outside as much as possible, so I am out at least every day. But it is not like I go out in the forest, I do not, since it is not easy to move forward."
His experience of green space looks different during the winter months. As he and his wife then live in the south of Stockholm, he does not visit the forest area described above. Because of snow and ice on the paths in parks and forests, he prefers to take walks on the normal roads within his neighbourhood. He does aim to be outside every day, as much as possible, but it is not necessarily in green space. He misses his summer house during the winter months, being forced to spend more time inside the house because he does not like slippery roads and snow on the paths.

* “I enjoy being outside, more in summer than in winter. It is just harder to move forward in winter. But I am outside a lot anyways.”

Apart from the direct environment of both his ‘normal’ residential house and his summer house, he does not often go out to green spaces beyond these areas.

* “We do go out to other places, but not frequently. We like to go to our summer house whenever possible.”

Since there is beautiful green space to be found in the environment of his residential house as well as his summer house, he does not feel the need to travel further in order to experience nature. He rather stays in his familiar environment and does not wish to discover new green spaces. It does not bother him that his visits to green space are limited during the winter months, but is very exited to move to his summer house again to enjoy the sun outside in nature and take care of his garden.

6. Analysis: integrating themes
The previous chapter sketched six individual profiles of green space use and attached meaning to such green spaces. While there is no aim to generalise the findings of this research, it is relevant to integrate the data in order to formulate valuable conclusions. This chapter will draw attention to the most significant themes that emerged from the data, which are: the positive value of exposure to green space and the meaning of single places, evidence of the portfolio of natural places framework, and the environmental justice of green space for urban wheelchair users. The described themes are presented because of their recurring nature in the interviews, as well as originality and relevance with respect to the theoretical framework and thus the research questions.

6.1 Positive value of exposure to green space and the meaning of single places
First of all, green space has a very broad meaning to the participants. The photos that were brought to the interviews showed green spaces of extremely varying types, including gardens, the sea, green lanes, nature reserves and second homes. Being outdoors is for most participants equal to being in nature and different concepts such as ‘nature’, ‘green space’ and ‘outdoors’ were simultaneously used during interviews. Not only urban parks and forests provide satisfying nature experiences, also a single tree or a lake respond to people’s intention to visit green space.

Participants visit such green spaces very frequently, most often to take a walk or to sit down and enjoy the view. Less often, participants go out into green space in order to have a picnic, sunbathe, train, go fishing, and take a swim. Regardless of the type of activities engaged in and the frequency of visits to green space, all participants indicate that visiting green space on a regular basis is very important to them. For Anna this means that she goes out in her neighbourhood green space every day, for Olle this implies taking a few-hour walk during the weekend. Going into green space is a ‘need’, though has individual meaning as described in the portraits in Chapter 5. Still, there are a few corresponding features behind the yearning for green space, found for the different participants: visiting green space
helps to clear the mind, it is also a time for social contact, the second home is of particular meaning and there exists a longing to experience wild types of green space. It needs to be emphasised that the six participants in this study all happen to value nature and thus aim to experience green space regularly. The statements made here do not apply to wheelchair users that do not care about green space and can thus not be generalised to all wheelchair users as such.

6.1. Visiting green space helps to clear the mind
Visits to green space help the participants to relax and clear their minds from the stress of daily life. Both regular walks in green neighbourhoods, as well as more special trips to green spaces located further away contribute to a feeling of rest and relaxation that is described as vital. Olle needs his walk during the weekends to start the week with a fresh mind. Similarly, Maria states how exposure to nearby green space helps her to focus. Daily visits to green space are thus of considerable importance to people’s state of mind. They take a walk or sit in a green environment, enjoying the view, thinking, maybe reading a book, or listening to a podcast.

Yet, participants also indicated that visits to green space located further away, such as day trips or weekends away, add to a feeling of relaxation and a clear mind. This might be attributed to a change of environment that is beneficial for people’s stress level, as not all trips mentioned by the participants necessarily are to green space. Leaving one’s daily environment and being away from school and work helps to clear the mind. Still, the participants do express a desire to visit green spaces when going on such weekend trips and holidays, longing for a feeling of tranquillity that allows to ‘koppla av’, ‘to disconnect’.

6.1.2 Visiting green space is a time for social contact
Participants visit green space alone, with an assistant, or accompanied by friends and family. When the purpose of their visit is to clear their minds and think, they would most often go alone or accompanied by an assistant when needed. Yet, visiting green space can also be a moment to meet with friends and family, to have social contact. When participants go out in green space with friends or family, their activities appear to be a bit different. Though taking a walk is very common, they would not read a book, or listen to music, but rather have a picnic, enjoy some drinks, or take a swim. Trips to green space located further away, such as day trips, weekends, or holidays, are more regularly together with family members. The second home is in addition strongly related to the family.

6.1.3 The second home is of special meaning
Four out of the six participants make periodical use of a second home that is owned by their family. The participants are attached to these places, which they refer to as ‘summer houses’. These are second homes that are unused during winter and frequently, or in the case of Henry permanently, inhabited during summer. Anna visits her grandfather’s house on Gotland several times a year, the other summer houses are located in the Stockholm region. Maria spends a lot of time at her family’s summer house, where she can easily go since it is located so close to her home. Olle visits the second home of his family often as well, though not as frequently as Maria does. Though the use of the second home thus differs for the participants, it does hold important meaning for each of them. The summer house is an example of how green space is understood in a broad way: the nature surrounding the second home is enjoyed very much, but a second home is not a fully green space like a park is.

The second home often generates a feeling of nostalgia that can be retraced to childhood memories, as the houses have been in the family for a long time. When at the second home, one is free from the
obligations of daily life, spending a lot of time in green space and enjoying the weather together with family.

6.1.4 A longing for wild types of nature
Though parks are indicated as preferred type of green space, some participants regret that they are normally unable to access wild types of nature such as forests. The forest brings a feeling of nostalgia and has considerable meaning for a few participants, caused by childhood memories. As a child, they spent long summers at the summer house that their family owns, thus the summer house and the forest reminds of childhood experiences. Picking flowers, berries and mushrooms in the forest has a sentimental connotation, thinking of times when they were able to engage in this. Occasionally, Olle does visit the forest surrounding his family's summer house, but recognises that the paths can be challenging.

The participants believe that it is most often not possible to visit forests because of the ‘wild’ nature and inaccessible conditions of paths. Interestingly, this seems to be mainly based on an assumption they have with regards to the accessibility of forests. The Judarn nature reserve was named by Olle, Henry, and Anna, but they perceived the accessibility of the area completely different: Olle noticed that he goes there very rarely, but that the accessibility is quite good since there is a paved path around the lake. Henry used to go there, but has not been there for years, and Anna thought that the paths in the forest would not be accessible, which is a reason for her not to go there. Some participants do try to go out in some forests, when they know in advance that the path conditions are not too problematic.

Interestingly, it is revealed that participants would not like to see all forest areas transformed into green areas with paved paths accessible for wheelchair users. They accept that green space has varying accessibility, not all types of nature can be accessible for everyone. It is even mentioned by some that it is important to conserve such types of natural forests: it is valuable to have them for the common good. There exists thus a balance between wilderness and the level of accessibility in such green space that is preferably simultaneously encountered but accepted to be varying for different green spaces.

6.2 A variety of green spaces organised personally: a portfolio of natural places?
The interviews covered a large variety of green spaces, expressed verbally and through photographic images. All participants described a few places that they visit recurrently: they appeared to have a standard set of green spaces that they enjoy visiting. The data suggests that these different green spaces can be organised in a personal portfolio of natural places, which will be elaborated upon in the following two sections. A few of the places were discussed repeatedly with different participants, such as Norr Mälarstrand, Djurgården, and Judarnskogens nature reserve. Apart from these, the places were highly diverse. This can be explained by the different residential locations of the participants: although they all live in the Stockholm region, they reside in very different neighbourhoods located in disparate geographical areas of the city.

6.2.1 Daily use of neighbourhood green space versus trips to further located green space
Daily use of green space occurs mainly in the direct residential environment. The participants visit such nearby located green space daily, or at least multiple times a week. Very frequently visited green spaces can also be located close to work or the university, as these are places visited often. Additionally, the participants pay regular visits to a number of green spaces located further away, often staying there longer than they would in the green space in their residential environment. It appears that the places that are visited daily are more often urban parks: structured and well-maintained
nature areas. Planned trips to green space lasting multiple hours or a day are more likely to be to nature reserves or royal parks, places that are not necessarily easy to visit alone but generally well accessible when having assistance. Only seldomly forests are visited, for the limited accessibility of such green space (see section 6.1.4).

Although there is accessible green space located in participants’ neighbourhood, they appreciate to regularly leave their residential environment and experience green space elsewhere. Yet the distances to the green spaces that are regularly visited differ for each individual. Some find the majority of green spaces that they like to visit within the city of Stockholm, for example Maria and Henry who very much enjoy the green environment at their semi-urban summer houses. Others however do not find all of their regularly visited places within the Stockholm region. Olle has to travel an hour to the north to find his family’s summer house, Anna is very fond of the calm nature on Gotland and Peter is every year looking forward to spending his summer holidays on a green campsite in Croatia. Although their daily, weekly, and monthly green space visits take place in Stockholm, their holidays to a green environment out of the city are of special meaning.

Not only the distances are relevant to the participants’ standard set of green spaces, also the type of green space plays an important role and stands in close relation the purpose of the visit to green space. It goes without saying that activities such as fishing and swimming are restricted to a type of green space that offers a lake or the sea, but it appears that also other activities are bound to specific places. Anna has for example standard routes she takes when walking the dog, Olle has a favourite round he takes when going for a walk without assistance and Amanda prefers a few parks in Stockholm where she would meet up for some wine with friends.

6.2.2 People know what places to visit and what to expect there
As has been pointed out in the introduction of this section, participants appear to have a standard set of green spaces that they visit with varying frequency. These green spaces respond to particular needs, that can differ from time to time. This is not necessarily different for non-wheelchair users: when one wants to go to a green space that allows to go swimming, one would logically choose a green space with water. What seems to make the standard set of places more relevant for wheelchair users, is the important role that knowledge about accessibility plays in their visits to green space. The participants cannot unconditionally expect infrastructure to and in green spaces to be accessible for wheelchairs. Thus apart from their portfolio of natural places serving varying purposes of visits, it also covers green spaces that the participants are sure of do not cause accessibility challenges.

Furthermore, there are services that facilitate comfortable visits to green space, such as accessible toilets and parking lots. Maria points out that she does not like to be disappointed, so she would rather go to green spaces she knows or inform about available facilities beforehand. Similarly, Henry is perfectly satisfied with the green space in the areas around his residential house and his summer house. Although he used to visit green spaces located further away, he nowadays does not often feel the need to travel longer distances to enjoy nature. Respectively, preferred accessibility levels and desired services cause the participants to only seldom deviate from green spaces that they are familiar with.

6.3 Factors facilitating and limiting the use of green space
The participants are generally satisfied with the accessibility of urban parks and royal parks and gardens within the Stockholm region. Such parks are well maintained, have wide pathways, and are
rather flat. For these reasons, most participants indicate parks as their favourite type of green space for an easy walk. Visiting other types of green spaces is often a more challenging endeavour and confronts their level of independence, especially when good infrastructure is lacking or winter conditions affect the quality of paths and roads. Mobility plays a large role in the accessibility level of green space: the route to as well as the infrastructure within green space is of great influence. Assistance can support one’s mobility into green space, yet there are limits to the accessibility of forest areas for wheelchair users.

6.3.1 Independence and assistance as a facilitator for green space use
The participants aim for a maximum level of independence, in their daily life, mobility wise, as well as concerning their visits to green space. Yet, this implies something different for each individual. It is possible to distinct between two types of independence experienced by the participants: there is a group that feels independent when going without assistance in green space or by public transport, and there is a group that feels more independent because of the help of an assistant and the freedom of taking the färdtjänst at any time. For example, Maria avoids the färdtjänst and experiences a high level of independence when travelling by public transport, while Amelie enjoys taking the färdtjänst because it allows here to go wherever she wants.

Personal assistance is for most participants a way to maximise independence. Except for Henry, all participants have a personal assistant that supports them for a number of hours during the day or accompanies them 24/7. Though all participants are in a wheelchair, they have varying capabilities that can make going into green space a challenging activity. Amelie, for example, is very happy that her direct residential environment allows her to go out in the nearby park and the shopping mall without assistance, but beyond that area she needs someone to support her. When Anna is home alone, she is not able to go any further then her garden when she wants to go outdoors, her options to enjoy green space are thus very limited when there is no assistance available. Her assistant only works a number of hours a day, hence when none of her family members is available she is restricted to stay at home. Assistants, friends, or family members accordingly act as facilitators for participants’ visits to green space: without them the road to and the infrastructure within green spaces would be a lot more challenging or even impossible.

6.3.2 Seasonality and the effect of the weather
Winter forms a large threat to the level of accessibility of green space for wheelchair users. Ice and snow on the streets, but also gravel that should make the streets more accessible, complicate the road towards the green spaces participants would like to visit, as well as the infrastructure within such places. Respectively, participants feel more limited in their options to go outdoors during winter, particularly criticising the way snow is shovelled within Stockholm. While they acknowledge that it is not always possible to make pathways in green space free from snow and ice, they regret that regular street pavements are often also slippery and covered with snow. This limits their overall mobility and complicates their route towards green space. Furthermore, Anna pointed out that bad drainage in parks causes enormous puddles of water and mud when snow melts, which makes her and her assistant get wet. Also rain and cold bring infrastructural challenges: rain can damage the system of a motorised wheelchair and some participants experience cold as painful. These difficulties cause the participants to choose more often to visit nearby located green space during winter. This is, if they even go out. The participants indicate that in reality they just leave the house a lot less often during winter and thus visit green spaces less frequently.
Meanwhile there is a large pulling factor of sunshine and warmer temperatures: sunny weather is a great motivation to go outside and enjoy the sun in a green environment. For some, photographing in good weather is an underlying factor to visit green space. Interestingly, the desire to enjoy good weather can be experienced as a burden: Maria can for example feel a stressful pressure when it is sunny and she does not go into nature to enjoy it.

Accordingly, participants’ use of green space appears to be very different throughout the year. The places they visit, but also green space activities are dependent on the season and the weather conditions. This is not necessarily different for non-wheelchair users: most people engage in different activities during summer and can encounter difficulties due to snow and ice. However, wheelchair users can adapt less to these issues which puts them in a more marginalised position. During winter, participants tend to opt for green space located closer to one’s residential environment. Winter weather makes it harder to travel around and forest green space becomes less accessible than it already is.

7. The photo elicitation interview as a method to explore the perceptions of wheelchair users

The photo elicitation interview is a yet rather unestablished method within social research. As far I know, the method has not been applied in studies that concentrate on people with a physical disability or specifically using a wheelchair. This is a regrettable, as it is found that participatory visual methods can be of great significance for physically disabled people, embracing people’s social experiences of moving in and between spaces and rejecting people as static, accepting the ‘body in motion’ (Smith & Sparkes, 2012). This chapter reflects on the principles of the auto-driven photo elicitation interview, reviewing the applicability of the method for studying the experience of wheelchair users based on my experiences of the data collection process and participants’ thoughts on the interview process.

Firstly, from a personal point of view, the photo elicitation interviews were highly enjoyable. Having a general interest in photography and images myself made looking at photographs a pleasurable endeavour in itself. For most interviews, the photographs the interviewee took were sent to me beforehand. I avoided looking at them thoroughly to prevent any prejudgements, but glancing through made me feel curious to hear the participant’s story behind the images. The participants brought highly varying photos: while most of them were taken by themselves, there were also a number of photos in which the participants were posing and the photo was taken by a person that accompanied them at that time (see Appendix). Sometimes this was just because the participants wanted to have a photo of themselves or to show how they move around in the place where the photo was taken. Another reason was that not all participants are able to use their hands well enough to take photographs. This was thus of influence on the content of the images. Additionally, some participants brought images derived from Google, when this provided a good indication of the green space that they wished to present. Some of these photos showed the specific place that was discussed during the interview, others pictured green spaces representative of the places the interviewee normally visits.

The photographs generally provided a good tool to structure the interviews. For the participants, it felt logical to structure the pictures according to the locations they were taken, which allowed to talk about the green spaces they tend to visit in an organised way. This system thus provided a structure in an interview that could also have proceeded rather messy because of the inductive nature of the research
process. Furthermore, using photographs to talk about green space revealed interesting information about how the participants define such green space. The photo-taking instructions were deliberately kept rather fuzzy, in order to leave the interpretation of green space open to the users. People brought images of a multiplicity of meaningful places, that would arguably not necessary be identified as valuable green space by officials (Matsuoka & Kaplan, 2008). Planning authorities often appear to focus on the conservation of large parts of nature, neglecting the small pieces of green that offer frequent nature opportunities or places that are only partly green, such as second homes. The photo elicitation method allowed the interviewees to reflect on the broad conception of green space, because people could contemplate about the meaning of green space before the interview and were not too much guided by linguistic delimitations of nature or ‘green’. This demonstrated that places that are only partly green already provide satisfying nature experiences.

While the photo elicitation interview is sometimes criticised for the thought that photographs do not necessarily evoke a conversation (Harper, 2002), this thesis has proved otherwise. Not only did the photos form a relevant guideline throughout the interview, they also operated as a trigger stimulating the conversation between researcher and interviewee. Except for Henry, interviewees expressed satisfaction with regards to the use of personal photographs as part of the interview.

* “I think the photo interview was useful because it made me reflect on things that I probably would not have reflected on otherwise. The photos made things more visual, obviously, and that made it easier to discuss and talk about my experiences. So I liked it.” – Maria

* “I think the photo led interview is a good way of showing in a better way where your favourite places are, without having to go there. It is especially good for some people with disabilities, I think.” – Olle

* “The interview was very interesting and it was fun to find pictures. I thought the layout was good with pictures, sometimes it is easier to tell things with pictures than to explain things with words. Nature is a big topic to talk about, so it is easier to talk with pictures.” – Peter

* “Personally, I enjoyed the photo interview. I think it was useful and it gave the opportunity for the interview to be more ‘personal’, to share thoughts and experiences.” – Amelie

* “I did not think about the photos when we talked, I just tried to describe how I go around in nature and my interest in gardening.” – Henry

Some of the green spaces discussed in the second interview were already touched upon during the first interview. Yet at that point, I did not have images of the places that were discussed. The photographs in the second interview supported visualisation of these green spaces and helped to sketch a better image of the green space use by the participants. Having two interviews with the same interviewee was thus relevant as a triangulation method, checking the results from the two different interviews and additionally helped the participant to overthink the topic and bring new thoughts to the second interview.

While the participants were offered the option to make use of a disposable camera, they all chose to use a smartphone as main photographing device, in addition to earlier taken photos with a digital camera and photos derived from Google. All were in possession of a smartphone, which I believe has proved to be a very workable device to use, since it is familiar to the participants and often carried along all day. It allows the participant to take a number of pictures and select afterwards which ones to bring to the interview, thus giving the participant a leading role in the interview. Essentially, the
interviewee decides what to talk about in the interview. Also, carefully selecting what photos to bring to the interview avoids ethical violation as described by Pink (2013), when the participant feels regret regarding pictures taken with a disposable camera that are directly brought to the interview without the participant making a preselection.

Some challenges are identified with respect to the photo elicitation interview and the procedures that come along, of which some more general and some explicitly related to the physical disability of the participants. As has been described above, some of the photos that were brought by the participants were taken by a person accompanying them, because of limited ability in the participant’s hands.

* “I quite seldom take pictures on my own, since it is hard. I have only one hand and I am driving with it.” – Olle

Though the intention of the photo taking was to show the perspective of the participant, their disability prevents some of them to do so. The photos that were actually taken by the participants themselves very well show the spatial perspective of the participants, viewing the outside world from a point lower than most of us normally do. It would be extremely valuable to study the effect of this perception in a more elaborate way, maybe the instructions could be more clear so that all participants make effort into showing photographs that present their own spatial perspective. Also, it can be clarified better that the photos should represent the different green spaces that the participants visit. Some participants only brought photos from one of the areas they regularly visit or mainly of green space abroad, which can be due to the instructions being unclear.

Another challenge concerns the temporal aspect of the research, it being carried out during a limited period of the year. The initial idea was that interviewees take photos in the two- or three-week period between the first and second interview, in order to bring them to the second interview. However, mainly because of weather conditions it appeared that people did not regularly go out during these few weeks. Accordingly, the instructions were adjusted, and the interviewees were asked to take photos during the period between the two interviews but also look for images online or bring photos that had been taken before, if these were a proper representation of their usual experience in green space. Generally speaking, photo elicitation is a method that takes quite some time and requires to meet at least one time before the photo elicitation interview takes place, in order to provide good instructions for the photo-taking procedure.

Academic literature describes a number of ethical challenges with respect to the photo elicitation interview, mainly regarding the position of the researcher. The method allows for a rather intimate setting, in which the researcher receives a close insight into the personal lives of the interviewees. This comes with issues of confidentiality and requires a firm positioning of the researcher balancing the goal to collect data and the expression of sympathy towards the interviewees (Clark-Ibáñez, 2004; Pink, 2013). I noticed that the interview sometimes tended to turn into a casual conversation: the photos did provide some structure during the talk, but the interview itself was highly informal. It was sometimes challenging to remember my role as a researcher, feeling that I wanted to give content specific comments and express my opinion about the issues under discussion. Furthermore, while the interviews did not necessarily cover evidently harmful topics, talking about personal experiences, showing personal photos and sometimes meeting them in their personal environments could have felt like I was intruding their lives. I aimed to be culturally conscious and reminded the participants that the research was entirely voluntarily, minimising any potential harm. I feel that it is important to have
some empathetic skills for executing the photo elicitation interview: the fluid structure requires a responsive approach, knowing to ask the right questions in reaction to the photos.

All in all, I have experienced auto-driven photo elicitation interviews as highly suitable for exploring the portfolio of natural places for wheelchair users, because it is a very flexible method that triggers thoughts about a rather obscure topic, that might have not come up if only verbal methods were used. Since a great aspect of one’s experience in green space can be attributed to the aesthetics of green space, data in the form of photos brought by the interviewees provided a deep understanding that verbal data alone would have lacked. Its strengths are its responsive nature and wide applicability. Except for the described challenges, I cannot find any criticism. It might however not be a very applicable method when the research topic is more defined, since it appeared troublesome to guide interviewees extensively in their photo-taking and images would not add much in comparison to more conventional interview methods. I thus believe it is a method suitable for explorative enquiry of a loosely defined topic in which the visual experience plays a significant role. The method could be complemented by walk-along interviews as executed by Johansson (2017), see suggestions for further research in section 8.4.

8. Discussion
The results suggest that wheelchair users have something that can be described as a standard set of green spaces and what I will here refer to as a portfolio of natural places, consisting of a personalised set of green spaces that are visited with varying frequency. Visiting green space requires some organisation and is not always a taken-for-granted aspect of the daily life of the participants. Contrarily, visiting green space is a highly valued activity that is longed for when the opportunity to go outdoors is limited, because of snow, cold, lacking assistance, or similar challenges. This section will organise the results while reflecting on the theoretical framework and positioning the research within existing literature, in order to fully understand the study’s findings and academic contribution.

8.1 The value of regular exposure to green space
The participants express strong positive feelings to nature: visiting green space on a regular basis forms an important part of their life. Their frequent visits to green space are typical for what Gelter (2002) understands as a modern concept of ‘friluftsliv’, i.e. outdoor recreation: an escape from the stress of daily life, a contemporary way to get away from the urban environment, get exercise outdoors, connect with nature, and reload. The participants experience regular visits to green space as a need that is relaxing and contributing to a clear state of mind. These findings are not different from what has been found by scholars studying the benefits of green space for urban residents in general: exposure to green space offers a relief from daily stress and stressful events (Maas et al., 2006) and supports positive emotions and a stable emotional state (Ulrich et al., 1991). Participants additionally identified their visits to green space as a moment to interact with friends and family, which conforms to existing studies that connect mental advantages and green space to social interaction (Sugiyama et al., 2008).

In addition, literature usually concludes that physical exercise plays a large role in the experience of mental benefits when being exposed to green space (Lee & Maheswaran, 2011). However, this aspect is of limited relevance in this study, since the majority of the participants use a motorised wheelchair or are pushed by someone when visiting green space. For other wheelchair users the exercise aspect
might be of value, but in this study mental benefits are more often reported as a result of the calmness and quietness of nature, aesthetic beauty, and social interaction.

8.2 Organising green space in a portfolio of natural places

The participants make use of different types of green space, located at different distances from their residential environment. It can be concluded from the data that all participants have a number of green spaces that are standard. This implies that they have a personal set of green spaces that they visit with varying frequency, which I argue can be organised in the ‘portfolio of natural places’ framework as proposed by Bijker and Sijtsma (2017). Green spaces located in to the residential environment are visited more frequently, they are part of a daily or weekly pattern. Green spaces located further away are visited less regularly, though participants seem to have at least one or two places which they visit periodically, for example royal parks or weekend trips to one’s second home. While green space on a neighbourhood level allows for easy and quick getaways, green space located further away is reported to hold higher aesthetic value, is of more special meaning and regularly generates deep nostalgic feelings. This is a logical finding and common from a friluftsliv perspective, as explained by Gelter (2000: 80) “friluftsliv does not require remote untouched wilderness but the more away from the urban lifestyle the greater the experience”.

The data suggests each single green space in the portfolio of natural places holds individual meaning and serves different needs. This is not necessarily different for non-wheelchair users: in both urban (Bijker & Sijtsma, 2017) and rural (Natural England, 2009) environments, people visit different green spaces based on provisional needs and moods. Yet, what makes the portfolio of natural places framework particularly relevant for wheelchair users, are accessibility concerns that add an extra challenge to green space visits. The participants cannot unconditionally expect infrastructure to and in green spaces to be accessible for wheelchairs. Respectively, apart from their portfolio of natural places including varying purposes of visits, it also consists of green spaces that do not cause accessibility challenges. From the portfolio of natural places one knows what to expect, which is an aspect of the portfolio and of green space use that has not been hinted at in academic research. Pursued accessibility levels and desired services cause the participants to only seldomly deviate from green spaces that they are familiar with.

Yet, unlike what Bijker and Sijtsma (2017) propose, the different green spaces within one’s portfolio of natural places are rather fuzzy organised. The majority of studies that examined the interplay of green space located at different distances usually assume a more structured system of green space use (Dijst et al., 2005; Sijtsma et al., 2012; Hall & Page, 2014). Complying with Strandell and Hall (2015) I believe that the relationship between the residential environment and visits to further located green space is more complicated then often is thought. Firstly, there is not always a clear delimitation of one’s residential environment: for most participants the direct residential environment offers green space for daily visits, though some find green space of exceptional value in the same distance range. For example, while the summer house is of significant meaning to both Olle and Maria, it takes Maria only a 30-minute walk whereas Olle has to undertake a drive of about an hour. It is additionally important to consider the temporal aspect that defines one’s portfolio of natural places, meaning that one’s portfolio of natural places looks different over the year. Because of challenges brought by weather conditions, the participants organise their visits to green space differently during the different seasons. Respectively, green space use is limited during the winter months compared to the summer: green space in one’s direct environment becomes more important because of a constrained level of mobility.
due to ice, snow, and cold. There is thus also a seasonal aspect to the portfolio of natural places, that has not been identified by either Bijker and Sijtsma (2017) or the framework’s original author Natural England (2009). It is worth noting that weather conditions in Stockholm differ greatly between the seasons, the seasonal aspect is not necessarily of value in other geographic locations.

I argue that, unlike what is often thought based on the compensation hypothesis as explained by Maat and De Vries (2006), the green spaces organised within the portfolio of natural places of wheelchair users tend to follow a system of complementation. This means: as individual green spaces in one’s portfolio hold distinct meanings and serve different needs, it is fair to say that such individual places are not interchangeable. Yet, the compensation hypothesis may hold value for urban wheelchair users during several months of the year. The utility value of green space (Maat & de Vries, 2006) in the residential environment increases in winter, as weather conditions make further located green space less desirable. Thus, in winter neighbourhood level green space compensates for more distant green space, complying to what Maat and de Vries (2006) as well as Hall and Page (2014) concluded for urban residents in general.

With respect to the above, I concur with Bijker and Sijsma (2017), that there exists a synergy of urban residents’ green space use that cannot be simply explained by either the compensation hypothesis or a strictly complementary role of green space located at different distances. The portfolio of natural places framework proves to be a very useful system integrating green space of different types and located at different distances from one’s residential environment, to understand how these different green spaces form an interconnected body of green space experiences for wheelchair users. These findings hold implications for the distribution and accessibility of green space for wheelchair users, as will be elaborated on in the following section.

8.3 The environmental justice of green space for urban wheelchair users

The accessibility of green space for wheelchair users is an environmental justice issue. There are a number of factors that facilitate as well as restrict visits to green space, affecting the accessibility of different types of green space. Unequally distributed accessibility of green space is managed through individual capabilities that allow to experience the special qualities of those green spaces that are usually perceived to be inaccessible and to visit green space beyond the standard set of places captured in one’s portfolio.

8.3.1 Factors facilitating and restricting green space use

While the participants express to be generally satisfied with their level of mobility and the accessibility of the green spaces they visit, the data also demonstrates challenges that limit their green space visits. Parks and gardens are most favourite, not the least because of the good accessibility of the majority of such green spaces. Forest areas are avoided because this is simply not enjoyed, but mainly because there exists the idea that this type of environment requires a level of mobility that is lacking because of the use of a wheelchair. While some participants indicate that visiting forests is desired, they believe that the path conditions will cause unwelcome challenges. Hence, the participants acknowledge that not all green space can be accessible for everyone. This perspective is shared by a number of academics, arguing that the natural environment will inevitably express disadvantages for people with a physical disability (Imrie & Thomas, 2008; Shakespeare, 2013). Though, it needs to be noted that this is not necessarily different for nondisabled people’s access to some areas, which brings about the
debate to what extent spatial adjustments should be made in both built and natural environments. Such spatial adjustments involve the risk of prioritising and stigmatising groups of people.

Interestingly, the wheelchair users in this study accept the inaccessibility of certain types of green space: while a balance between accessibility and wilderness is desired, people believe that wild types of nature should be kept authentic. Kafer (2017: 220) makes a similar statement: “there simply are hills too steep, creeks too rocky, soil too sandy for a wheelchair; or, rather, ensuring access to some locations would mean so drastically altering those locations that the aesthetic and environmental damage to the area would be profound”. Relying on the principles of critical realism (Shakespeare, 2013) and agreeing with what has been found by Seeland and Nicolè (2006) I argue that social inclusion in spatial arrangements should always be strived for, counteracting the stigmatisation of groups of people. This implies that the inaccessibility of certain green spaces should not be taken for granted but rather critically assessed. Though, since disability is a result of both extrinsic (e.g. environment) and intrinsic (e.g. impairment, personality) factors, it is accepted that not all types of green space can be accessible for everyone.

The barriers that play the most important role in the participants’ green space leisure behaviour are caused by infrastructural issues, weather conditions and available assistance. Smith and Sparkes (2012) made a similar conclusion with regards to barriers to leisure time physical activity for disabled people, stating that most barriers can be identified in the socio-environmental sphere. The results of this thesis show that snow, icy paths, gravel, cold, and a general bad condition of infrastructure are experienced as highly inconvenient, playing a large role in one’s outdoor behaviour. This is similar to earlier findings by Kirchner et al. (2008). Furthermore, without a personal assistant, friend or family member accompanying, the options to go out in green space are limited. This is, some of the participants have a motorised wheelchair or can use their arms to move their manual wheelchair, but this means they are bound to green space in their residential environment and cannot do much else than sitting and walking around. The need for assistance guides participants’ use of green space largely, in line with what Crawford and Godbey (1987) define as an interpersonal constraint. Maria describes her assistant as her ‘arms and legs’, maximising her level of mobility and the potential green spaces she can visit. Assistance is however not always available and occasionally experienced as undesirable when people prefer to be alone. These imposed limitations are particularly problematic when considering the substantial meaning that people attach to further located and more wild types of green space.

Additionally, the participants expressed lack of transport facilities, pain and fatigue, and lack of information as most important barriers to the use of green space, corresponding to research by Ginis et al. (2010), Brittain (2004), and Semerjian (2008) with regards to the barriers to physical activity and green space leisure among people with a physical disability. Respectively, this thesis data shows the significance of the constraints model proposed by Crawford and Godbey (1987). Interpersonal constraints (need for assistance) and structural constraints (time, infrastructure, information and accessibility) are of particular value in explaining the limits to mobility in green space for urban wheelchair users and draw attention to the unequal distribution of accessible green space, as the following section will elaborate on.

8.3.2 Integrating barriers and capabilities: the environmental justice of green space
The above described barriers establish limits that make some green spaces out of reach for the wheelchair users in this study, imposing what Schlosberg (2007) calls an unequal distribution of an
environmental good. However, people adjust their use of green space according to what fits their potential: there are ways in which green space accessibility levels are maximised. Rutt and Gulsrud (2016) emphasise the value of identifying the capabilities required to visit green space, to understand what power relations establish environmental injustice. Similar to what has been concluded by Johansson (2017), the capabilities approach as described by Sen (2005) and Schlosberg (2007) has shown to be beneficial to understand the role of the individual wheelchair user and the context in which distribution of green space operates. Capabilities shed light on the extent to which individuals are given the ability to transform unequal distribution into opportunities through individual agency and functioning. Such a strategy is applied by the participants in multiple ways.

Firstly, they request help from assistants, friends, or family when this is needed to visit the desired green space. When no assistance is available or when they prefer to visit green space without an assistant, they have to adjust their plans and opt to sit in their garden or on their balcony, or when possible to stay in their residential environment. Furthermore, they will have to adjust their activities, anything else than walking or sitting is often not possible. Secondly, malfunctioning public transport or bad infrastructure requires them to be flexible. This means that they sometimes must adjust their route or choose another green area to visit. This is however not a straightforward endeavour, as required accessibility does not allow easy deviation from the green spaces organised in their portfolio of natural places. Finally, during the winter months they tend to reduce their green space use to their direct residential environment or opt for more accessible paths.

The participants thus hold individual capabilities that manage the inaccessibility of green space, though it can be argued to what extent it is their responsibility to deal with the issues that come with the unequal accessibility of green space. Such a perspective would mean that lacking individual capabilities such as limited assistance causes them to not benefit from exposure to green space. With respect to the meaning of individual green spaces organised in one’s portfolio of natural places (see sections 8.1 and 8.2), I argue that it should be a priority to have accessible green space for wheelchair users of different types and located at different distances. This builds forward on conclusions by Johansson (2017), stating that the accessibility of green space for wheelchair users is an environmental justice issue as inaccessibility regularly causes wheelchair users to miss out on the benefits of exposure to green space. Furthermore, the extent to which such places are accessible should not be dependent on individual capabilities. For example, it can be argued that the inability of the authorities to clean streets and pathways from ice and snow induces a violation of the right to accessible green space. As an effect, not only parts of people’s independence are taken away, but also highly valued aspects of their daily life are altered.

Finally, it is clear that a large part of the discussion about barriers and capabilities is organised around mobility challenges: mobility is of great influence on the environmental justice of green space for wheelchair users. Both infrastructure to as well as within green space is vital for good accessibility all year round and good information provision about such infrastructure is essential for wheelchair users to visit all green spaces organised in their portfolio of natural places. Considering that individual green spaces complement each other, I argue that mobility should be at the root of the discussion about green space access for wheelchair users, as recently emphasised by Kafer (2017) and described in earlier texts by Imrie (2000). Bad quality of paths and roads, winter conditions, and malfunctioning modes of public transport have a large effect on mobility, and thus the green space opportunities for
wheelchair users. Such restrictions limit one to utilise individual capabilities, enforcing the unjust accessibility of high quality green space.

Here, I would like to come back to the example that started this thesis: the limited meaning of walking as the movement of the legs as described by Stockholms Stad (2010) in ‘The Walkable City’ illustrates that fully inclusive planning of public space and green space in specific is yet to be established. Respectively, mobility in, as well as to green spaces deserves more attention. To maximise the benefits of exposure to the full range of green space for wheelchair users, it would be extremely valuable to further examine how different modes of transport affect one’s green space use, and how better information and path accessibility can support visits to green space for urban wheelchair users. This has the potential to encourage wheelchair users to use their capabilities and deviate from their standard set of green spaces, expand their portfolio of natural places, allowing them to experience the special qualities of those green spaces that are usually perceived to be inaccessible. Further suggestions for future studies can be found in the following section.

8.4 How to move forward?

What I hope that this chapter shows, is that while some of the conclusions drawn from the results appear somewhat obvious, there is much more to the accessibility of green space than might be thought at first. This study forms a way forward to the integration of disability studies and environmental justice literature and has generated a better understanding of the accessibility and use value of green space for wheelchair users. The findings can serve as a springboard for further studies in urban planning that consider the synergy of green space located at different distances, shifting the focus beyond people’s direct residential environment. This section presents a number of recommendations for planning authorities that aim for inclusive green spaces, as well as suggestions for future research on green space use for wheelchair users and urban residents with a physical disability in general.

The portfolio of natural places framework has shown to be well applicable as a method to organise green space for wheelchair users. Further research applying the framework would be valuable, all the more since it self-evident that not all wheelchair users value green space as the participants in this study do. Firstly, a longer data collection period that covers multiple seasons would be beneficial, as the results show that green space accessibility fluctuates depending on the season. Secondly, I suggest it is highly valuable to talk not only to wheelchair users but also to their assistants. Wheelchair users are usually accompanied by their assistant for a large part of the day: they can reflect on the accessibility of green space from a perspective other than the wheelchair user thus providing external insights. The relationship with the assistant is important and can be elaborated on extensively (see for example Shakespeare, 2013). Thirdly, more attention could be given to the nature of the residential environment, testing the relevance of the compensation hypothesis when one lives in a grey or green neighbourhood. Fourthly, the thesis has shown the relevance of mobility for green space access, which is why I believe that in addition to the highly valuable photo elicitation method, walk-along interviews would be a beneficial method to further understand green space use for wheelchair users. The method, as executed by Johansson (2017), allows the researcher to get a hint of the experience of green space for wheelchair users and would be a suitable follow up on the photo elicitation interview.

This study’s results show that urban wheelchair users visit green space located at various distances. While green space in the direct residential environment is used for quick hits on a very frequent basis,
Further located and less frequent green space appears to be of special meaning. This implies that urban planning bodies should not only consider green space in the direct residential environment, but look beyond the neighbourhood borders to make sure other types of green space located at further distances are also available for urban residents, conforming to what is concluded by Strandell and Hall (2015) as well as Bijker and Sijtsma (2017). Secondly, while it is good to maximise the accessibility level of green spaces for wheelchair users, there are limits to the extent to which spatial design should be facilitating green space use. It has been already found that efforts to make green space more accessible are sometimes greeted with suspicion (Seeland & Nicolè, 2006), and this thesis similarly shows that there should be a balance between accessibility and ‘wilderness’ of green space. Thirdly, the results show the disadvantages wheelchair users experience with regards to snow cover and slippery paths. Thus, simply said, green space accessibility levels during winter would largely increase with better snow shovelling. Acknowledging that urban wheelchair users are individual agents with unique capabilities (Kafer, 2017), they are very well able to judge the accessibility of green space themselves. Accordingly, this group of people would not only benefit from increased mobility during the winter months, but could also gain from better information provision regarding road blocks, maintenance, new facilities, or path conditions that affect this level of mobility. Better information allows one to visit green space beyond the places captured in one’s portfolio. Most importantly, decisions aimed to increase the accessibility of green spaces for wheelchair users should be done in reconciliation with wheelchair users themselves. The results show that individuals have different needs that cannot be captured in general measurements: inclusive planning needs the input of the potential users.

9. Conclusion

This thesis research has aimed to identify how urban residents that move using a wheelchair organise their visits to various types of green space located at different distances, focussing on the use value and synergy between such green spaces. A qualitative approach has been applied to address this aim, using the yet rather unestablished photo elicitation method and building a unique link between disability studies and environmental justice theory. The data has generated an initial understanding of the complex interaction between green space located at different distances and demonstrated some implications of green space use with regards to the environmental justice debate.

It can be concluded that the portfolio of natural places framework is relevant for wheelchair users living in an urban environment. It appears that wheelchair users have a standard set of green spaces they visit on a yearly, monthly, weekly or even daily basis. These green spaces are of varying type and are located at different distances from one’s residential environment. Having this standard set of green spaces seems to be important for wheelchair users, since preferred accessibility levels and desired services cause the participants to only seldom deviate from green spaces that they are familiar with. The green spaces in their portfolio hold individual meanings, that cause the users to think that it is not possible to replace the different green spaces they tend to visit.

The accessibility of green space for wheelchair users has been identified as an environmental justice issue. Visiting green space is dependent on different factors that either facilitate or restrict one from going outdoors in nature, such as weather conditions, available assistance and quality of infrastructure. Individual capabilities support them to maximise their mobility in green space. Still, some green spaces are not accessible for wheelchair users: they prefer to avert them to avoid unnecessary challenges. Yet, they can long for them. While it is acknowledged that not all types of green space can be and should be made accessible for everyone, it is important to reflect on relevant adjustments that can
support wheelchair users into increasing their potential in green space. All the more, since it appears that while daily visits to accessible and near green space are much appreciated, it is often those less accessible places that are of exceptional value. Organising green spaces in a portfolio of natural places demonstrates that when contemplating the accessibility and justice of green spaces, one should consider green spaces at the full range of distance and type, instead of focusing on nearby located and clearly defined green space.

Finally, the photo elicitation interview has been found to be a valuable method to understand the use of green space for wheelchair users. Using images sparked a discussion and supported the visualisation of the interviewees portfolio of natural places.

10. Reference list
Byrne, J., Sipe, N., & Searle, G. (2010). Green around the gills? The challenge of density for urban greenspace planning in SEQ. *Australian Planner, 47*(3), 162-177.


APPENDIX: Images brought to the photo elicitation interview
Photos Olle
Photos Henry