On the Use and Experience of a Health Garden

Exploring the Design of the Alnarp Rehabilitation Garden

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Cover: View from the traditional glass house towards the main building at the Alnarp Rehabilitation Garden.
(Photo: C. Tenngart Ivarsson)

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Abstract

During the last decades an increasing amount of research suggests that a stay in a natural environment could reduce stress and help people restore. Furthermore, several decades of horticultural therapy have shown good outcomes in treating for example post-traumatic stress symptoms. Aiming at developing a new kind of therapy that combined the use of restorative natural areas, with therapies such as horticultural therapy and traditional occupational therapy, the Alnarp Rehabilitation Garden was designed and built in 2001. The intention is that the garden, with its combination of possibilities for experiences and the different activities conducted within the therapy, should be considered a supportive environment and a health promoting part of the therapy.

The main objective of this thesis is to contribute to the knowledge of health garden design, which can be used by, for example, landscape architects commissioned to design gardens with the intention of being used to promote health. The aim is to explore how the Alnarp Rehabilitation Garden is used and experienced in order to develop a deeper understanding about this kind of mixed built and natural environment.

The theoretical framework in the thesis is presented with a focus on the relation between health and the surrounding natural or built environment as well as gardens and their relation to health promotion. A multidisciplinary approach is used, where case study methodology is the overarching methodology, and the Alnarp Rehabilitation Garden is a single-case. Within the case study other methods, for example interviews and participant observation, have been used as sub-methods.

The mixed built scene type of gardens is perceived as restorative, and the findings about the experience are discussed in relation to preference, safety, refuge, compatibility and rootedness. Regarding the use, the results are discussed in relation to the findings of introvert and extrovert walks and also in relation to the mechanisms behind a restorative experience. When comparing the results, refuge, safety and walking are notions that stand out as important. This case study broadens the discussion on the significance of this scene type and how designers can work with health design.

Keywords: case study, environmental psychology, healing garden, landscape architecture, nature, restorative, scene type, supportive environment, walking.

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Dedication

To Jon, Alfred and Tage.
For trusting in a life together, after all my…
… *"Jag ska bara…"*

To family, friends and colleagues who have helped me think about, and when appropriate, *not* think about the progression of this thesis.
The dearer the more!
You know.

Pleasure for one hour, a bottle of wine. Pleasure for one year, a marriage; but pleasure for a lifetime, a garden.

Chinese proverb

Contents

List of Publications

This thesis is based on the work contained in the following papers, referred to in the text with Roman numerals:

I Grahn, P., Tenngart Ivarsson, C., Stigsdotter, U. & Bengtsson, I-L. (2010). Using affordances as a health promoting tool in a therapeutic garden. In: C. Ward Thompson, P. Aspinall & S. Bell. (eds.), *Innovative approaches to researching landscape and health: open space: people space 2,* pp. 116-154. New York: Routledge.

II Tenngart Ivarsson, C. & Hagerhall, C. (2008). The perceived restorativeness of gardens – Assessing the restorativeness of a mixed built and natural scene type. *Urban Forestry & Urban Greening, 7*(2), 107-118.

III Tenngart Ivarsson, C. & Grahn, P. (2010). Patients' experiences and use of a therapeutic garden: from a designer's perspective. *Schweizerische Zeitschrift für Forstwesen, 161*(3), 104-113.

IV Tenngart Ivarsson, C. & Grahn, P. (In press). Differently designed parts of a garden support different types of recreational walks – Evaluating a healing garden by participatory observation (accepted for publication in Landscape Research).

Carina Tenngart Ivarsson's contribution of to the papers included in this thesis was as follows:

I Took active part in writing the paper, mainly focusing on the background, the main structure of the chapter and on the interaction between patients and the garden.

II Planned the study and was responsible for data collection. The statistical analyses were done by the co-author, and the interpretations were done jointly. Responsible for writing the paper.

III Planned and carried out the preparations and interviews. Performed the analysis, which was examined critically by the co-author. Responsible for writing the paper.

IV Planned and carried out the preparations and observations. Performed the analysis which was examined critically by the co-author. Responsible for writing the paper.

1 Introduction

1.1 The need for restoration

It is most probable that all people, at some point, find themselves in stressful situations. Stress per se need not be negative. However, a growing proportion of ill health is related to a lifestyle entailing chronic physiological stress and an increasingly sedentary life with physical inactivity and more people staying indoors. At the same time we seem to take fewer opportunities to recover and be restored from stress, since due to modern technology we are more prone to mix our work and spare time (Währborg, 2009). Overburdening oneself, and not having opportunities for restoration, can lead to a health crisis resulting in severe illnesses such as heart attack, fatigue, depression, pain or burnout syndrome (Perski, 2002).

Since stress is connected to excess mortality and affects over 120 million people yearly - a number that is rapidly increasing, the World Health Organization (WHO) has made pain and depression due to stress a priority area. Depression is also the leading cause of disability as measured by years lived with disability (WHO, 2008).

In the 1980s, some interesting research findings started being published in the US. It appeared that nature, gardens, parks and areas of natural greenery had beneficial effects on people's stress recovery and capacity to focus their attention (Kaplan, 1995; Kaplan & Kaplan, 1989; Ulrich, 1984; Ulrich, Simons, Losito, Fiorito, Miles & Zelson, 1991). These effects, which the researchers called "restorative" were connected to restoration from either "mental fatigue" (Kaplan & Kaplan, 1989) or symptoms of stress (Ulrich, 1999). Accordingly, the results suggested that a stay in a natural and restorative environment could reduce harmful stress and help people restore. Furthermore, in the US, several decades of horticultural therapy have shown good outcomes

in treating post-traumatic stress symptoms (Davis, 1998). Recent research has also shown that for people living in the greenest communities, the risk of premature mortality is lower - in particular with regard to cardiovascular diseases. These associations are strongest for those with the lowest socio-economic resources. The authors interpret the results as green environments promote physical activity and relieve people from stress (Mitchell & Popham, 2008). Another study is confirming that access to close natural environments is expected to reduce obesity and increase vitality by buffering stress (Björk, Albin, Grahn, Jacobsson, Ardö, Wadbro, Östergren & Skärbäck, 2008).

Figure 1. The sign next to the entrance to the Alnarp Rehabilitation Garden.

1.2 The Alnarp Rehabilitation Garden

In 2001 the Alnarp Rehabilitation Garden (see Figure 1 and, for a definition, see Section 2.2) was designed and built in a corner of the university campus. The aim was to develop a new kind of therapy that combined the use of restorative natural areas, see Figure 2, with horticultural therapy and traditional occupational therapy, physiotherapy and psychotherapy and create a garden design that merged theories on horticultural therapy with restorative environments. It was hypothesized that this garden environment, with its combination of possibilities for experiences and the different activities conducted within the therapy, see for example Figure 3, would be able to help people restore from stress and promote health.

Figure 2. A part of the welcoming, restorative entrance area.

Patients who come to the garden all suffer from stress-related illnesses such as mental fatigue or exhaustion disorder. The first patients arrived in July 2002, and today approximately 200 patients have been treated. A clear definition of mental fatigue and similar conditions is lacking in the International Classification of Diseases (WHO, 1992/2007), which is a problem for patients and physicians as well as researchers. According to Kaplan & Kaplan (1989) mental fatigue is defined as a worn-out state that occurs after an intense workload. One feels the need for a break or respite. Generally it is not a physical worn-out state, instead, one might even complain of a lack of physical activity. People can become so mentally fatigued that they can hardly function, even if there is an emergency or if something they would normally find very interesting happens. Mental fatigue is not merely a traditional stress reaction, which is a reaction to something that has been evaluated as threatening or harmful, but can also be a reaction to hard work one enjoys.

Figure 3. A birdbath, from an activity within the rehabilitation program.

In Sweden, Socialstyrelsen (The National Board of Health and Welfare) decided to investigate the scientific foundation and evidence of mental fatigue and/or burnout, with an aim of defining a clear diagnosis that could be added to the ICD-10 classification system (Socialstyrelsen, 2003). They have labeled the condition *exhaustion disorder* (utmattningssyndrom in Swedish), which is characterized by having experienced the following problems every single day for at least two weeks: A marked lack of energy, manifested in a general feeling of being fatigued, lack of attention and involvement in everyday activities and a reduced capacity and efficiency in everyday activities, owing to low endurance and a greater need for long periods of restoration after strain. For a more extensive description of the patient group, see Paper I in the thesis.

Patients have been referred to the garden at Alnarp from hospitals, social insurance offices, insurance companies, the industrial health service and the Skåne Regional Council. Each group contains a maximum of eight participants. The staff consists of an occupational therapist and a curative educational teacher working 100% in the garden, a physiotherapist is working 50% and a psychotherapist working 30%. The therapists working in the garden part-time work at ordinary hospitals and care institutions the other days of the week. A landscape architect, also working as a gardener, is responsible for the garden and was during the time for the studies within this thesis working 100%.

According to Kearns and Gesler (1998), within medical/health geography there is an ongoing transformation from space as a container to space as an active agent in the shaping of human health. A partial reorientation in medicine has also occurred, whereby our lifestyle-related diseases have forced a development into a more holistic, humanistic and socially aware medical practice. This has been identified as, for example, the transformation from disease to health, from cure to prevention, and from patient to person (Nettleton, 1995, in Kearns & Gesler, 1998).

Accordingly, those who take part in the rehabilitation program at Alnarp are called therapy participants, not patients. The intention is to strengthen their image of themselves as non-patients. In the thesis, both terms are used. *Patient* is perhaps the most obvious term for a reader and is thus used here in the binding text and in Paper IV. *Participant* has been used to some extent, e.g. in Papers I and III, but always in connection to the therapy.

1.3 The use and experience of the garden

There are numerous examples of how people experience and relate to nature, and of using it in their own way to self-regulate. The attentive reader can find examples in almost any newspaper, TV program or book. In his autobiography Johnny Cash (2007) shares his thoughts on restoration and experiencing nature:

> At a very early age I looked forward to all that, to the seasons turning and nature taking its course. And while I didn't put such words to it at the time, I was very aware that I was part of nature – that I sprang from the soil, and as long as I followed the natural order of things, I'd be okay.
>
> I remember just how the earth felt under my bare feet, even the rocks in the road. I didn't wear shoes year-round, until I was about fifteen, and the soles of my feet were like leather. I remember the taste of green peas straight from the plant, the tantalizing difference between the peas themselves and their sweet, crisp shells. I remember raw ockra – I'd pick pieces off plants as I passed through the fields. I remember how wonderful it felt to sit down in the tomato patch and eat the ripe ones straight off the vine.
>
> In Jamaica I can come close to those days and those ways. Here, you can depend on the ackee trees to put out their fruit each year. During the rainy season you can count on runoff from those mountains rushing over the waterfall near my house, just as you know it will slow to a trickle come January and February. Any night of the year you can walk out any door and look up, and there above you will be all the brilliance and beauty of the stars; I've looked through a telescope here and seen as many as five of the moons of Jupiter. From here I can get in my car and go down to one of the local markets and buy tomatoes with their stems on, potatoes still flecked with dirt from the fields. I can pick bananas from the trees in my own yard when they're perfectly ripe, just exactly right, and no banana in the world ever tasted as good. I can go barefoot, even if my sixty-five-year-old soles aren't nearly as tough as that Arkansas country boy's. I can feel the rhythms of the earth, the growing and the blooming and the fading and the dying, in my bones.
>
> My *bones*.
>
> When we clasp hands around the dinner table every night and I ask God to grant us rest and restoration, that´s the kind of restoration I am talking about: to keep us as one with the Creator. To rest in nature's arms (pp. 14-15).

In her writing, Bodil Malmsten (2009) describes how she gets caught up in a gardening activity and the creativity it gives her:

> I don't usually sing while I'm digging, in the seven years I've been digging in my garden in Finistère I've never sung while digging, I'm not the type to sing while I dig, I don't like people who sing while they dig unless they're prisoners on a chain gang in Mississippi, and now I stand here myself digging and singing.
>
> I sing songs from Snow White, I get lost in the digging, forget time, forget space.
>
> The hole gets deeper and deeper, pretty soon my head is at ground-level, I'm digging like an excavator, a team of moles.
>
> I forget why I'm digging, I dig for the sake of digging, for the rhythm, and the power in the scooping of the shovel, for the lift from below and up, for the moving of the dirt and the moving of myself – I'm moved from reality and over to the heightened level of consciousness that can be achieved through physical labor, the endorphins rush and suddenly it's as if someone's turned on a circuit breaker in my head, suddenly I have access to all the creative juices I haven't been able to muster, they run, they stream (pp. 41-42, translation by Judith Rinker).

1.3.1 Aim and objective

The aim of this thesis is to explore how the Alnarp Rehabilitation Garden is used and experienced in order to develop a deeper understanding about this kind of mixed built and natural environment and how it is perceived. The overarching objective is to contribute to the knowledge of health garden design, which can be used by, for example, landscape architects commissioned to design gardens with similar intentions. The thesis should be able to be used as a source of information for those interested in how nature and gardens can be formed, used and studied, primarily in cases when the intention is that the environment should promote health.

The first thoughts were to compare the Alnarp Rehabilitation Garden to some other gardens where patients participate in similar kinds of therapy. But as it turned out there was not much consistency between these gardens that could actually be compared. Type of patients, staff, therapy and environment all differed, as described by Abramsson and Tenngart (2003). One of the gardens, *Sinnenas rum* in the city of Umeå, was designed with the same intention as the garden in Alnarp, but for different reasons no therapy was being conducted there and it thus contained neither patients nor staff.

Although many studies have been carried out on the association between environments and human health, only a few have been strictly defined when it

comes to therapy or intervention (Annerstedt & Währborg, 2011). No clear and precise description of the nature-assisted therapeutic intervention or the fundamental definitions of health benefits of the nature experience has existed until recently (Hartig, van den Berg, Hagerhall, Tomalak, Bauer, Hansmann, Ojala, Syngollitou, Carrus, van Herzele, Bell, Podesta & Waaseth, 2011; Stigsdotter, Palsdottir, Burls, Chermaz, Ferrini & Grahn, 2011). As exhaustion disorder was a quite new diagnosis when the rehabilitation program started, it was not easy to decide how to measure it accurately. Hence, medical practitioners from different fields discussed how to measure the therapy's effectiveness.

Also, as discussed by Hartig et al. (2011), the combination of a therapeutic program in an environment where one wants to understand the beneficial effects of the nature experience per se is problematic, as it is hard to evaluate the possibly salutary influences of staff or activities.

Even though it would naturally be interesting to compare the Alnarp Rehabilitation Garden to other gardens and to the healing process, the reason it was so difficult to find anything to relate to was the fact that the Alnarp garden is unique. With regards to landscape architecture, merely the fact that there had been two papers published describing the thoughts behind the design, made it very special and interesting to explore for its own sake (Stigsdotter & Grahn, 2002, 2003). This resulted in the use of case study methodology, and a mix of qualitative and quantitative methods within the case study.

The thesis is a compilation of this binding text and four papers that have all either been previously published in journals or books or are accepted for publication. The binding text starts with this introduction, Chapter 1. In Chapter 2 the theoretical framework, and some of the most important definitions, for the thesis are described. Possible health benefits of the environment, whether it is natural or built, are described in general, and theories on preference and restorative environments are referred to on a more detailed level. The historical connection between gardens and health, and related therapies, is also presented. Chapter 3 describes the research questions, the case study methodology and the various strengths and weaknesses of the methods that have been used. The main results of the thesis are presented in Chapter 4. In Chapter 5 the results are discussed, also in relation to suggestions for future research. The project has been reviewed and approved by the Regional Ethics Review Board in Lund, and the handling of personal information has been approved by SLU.

2 Theoretical framework

2.1 The relation between health and natural or built environments

The connection between stress, a life crisis, ill health and premature death mentioned in the introduction, can be seen in the light of WHO's definition of health: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 1948).

According to Frumkin (2005) a paradigm shift in environmental health has occurred in recent years, with a broadening of focus from the chemical environment to the built environment. Many factors have contributed to this shift. Some examples are the architectural changes following the oil shocks of the 1970s, the rapid urbanization around the world and the sprawling expansion of cities in the United States, as well as the obesity epidemic in developed nations. Disparities in the built environment can be identified in at least five arenas: housing, transportation, food, parks and green spaces, and squalor.

2.1.1 Salutogenic experiences of nature

WHO's definition of health includes not only the subjective aspects of well-being but also points to the importance of preventive as well as curative measures. Health encompasses an individual's entire life situation: housing, friends, work, recreation, etc. Still, as it encompasses physical and mental as well as social conditions, a person can simultaneously be healthy in some regards and ill in others. Thus, it is both a relative and a subjective definition. This opens up for the salutogenic orientation, which refers to the circumstances that help promote health through salutary factors (Antonovsky, 1987; Antonovsky, 1996; Hartig et al., 2011; Stigsdotter et al., 2011).

Nature can affect human health in a number of ways, the most obvious perhaps being physical (e.g. weather-related phenomena like storms, flooding, etc.) and biochemical (providing nutrition, medical or poisonous substances, etc.). But positive health effects, or salutary effects (Frumkin, 2001), can also be obtained through processes dependent on the way people react to nature on a behavioral and experiential level. These processes include environmental preferences, psychological restoration and personal development (Hartig et al., 2011). It is also stated that in a socio-cultural context, "[p]eople are continuously engaged in perceiving, evaluating and assigning meaning to the events and conditions in the world around them. Their perceptions and evaluations, the meanings they assign, and their actions can all be seen as contributors to processes through which the environment becomes linked with health." (Hartig et al., 2011, p. 129).

Health is also improved through contact with nature, as a natural environment encourage physical exercise (Engström, Ekblom, Forsberg, von Koch & Seger, 1993; Health Council of the Netherlands and Dutch Advisory Council for Research on Spatial Planning, Nature and the Environment, 2004; Schantz, 2003, 2005; Bell, Hamilton, Montarzino, Rothnie, Travlou & Alves, 2008; Björk et al., 2008) and facilitates social contact (Health Council of the Netherlands and Dutch Advisory Council for Research on Spatial Planning, Nature and the Environment, 2004). De Vries (2010) also points out that the design of the green space is important since it encourages different kinds of activities such as exercise or more passive forms of recreation.

According to literature reviews on health effects related to contact with nature, (Annerstedt & Währborg, 2011; Maller, Townsend, Pryor, Brown & St Leger, 2006; Velarde, Fry & Tveit, 2007) the health effects found can be divided into short-term recovery from stress or mental fatigue, faster physical recovery from illness, and long-term overall improvement in health and well-being.

2.1.2 Pristine or urban nature?

According to Hartig et al. (2011) the term "natural environment" can be used interchangeably with "natural landscape", or even "landscape", with the interesting difference that, unlike "natural environment", the word "landscape" can encompass human involvement and artifacts. "Landscape" as defined by the European Landscape Convention is "an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors" (Council of Europe, 2000).

In most previous investigations within environmental psychology on the recovery effects of outdoor environments, only a coarse categorization of

landscapes into either natural or urban environments has been used (Ulrich, 1991; Velarde et al., 2007). According to Ulrich, this is because 1) visual environments tend to be categorized broadly as "natural" by American and European groups if the content is predominantly vegetation and/or water, and if human-made features such as buildings and cars are absent or inconspicuous, 2) the different theories (cf. following section) of human-environment interactions support this distinction, and 3) evidence from many studies indicates that natural vs. human-made visual properties elicit different patterns of affective responses in unstressed individuals, and play a central role in influencing the perception and categorization of outdoor settings.

There are examples of environments people consider to be natural, that are in fact thoroughly designed, as well as environments people know are deliberately designed but still appreciate as representations of natural environments (Hartig et al., 2011). Accordingly, "nature" as used by Kaplan & Kaplan (1989), on which this thesis as well as many of the investigations referred to above are based, intentionally has a very broad denotation. It includes parks, open spaces, meadows, abandoned fields and street trees as well as backyard gardens. It can be a place near or far, managed or unkempt, big or small, grown with plants by human design or not. Kaplan and Kaplan (1989) also clearly state that their expression of "natural environment" is *not intended to mean purely natural elements*, and that built environment does not exclusively refer to constructed elements. Much of their discussion is about nature that can be found in the urban and in the rural context, not merely in pristine places with little human intervention.

Kearns and Gesler (1998) point out that, from a cultural geographic perspective, when discussing the connection between landscape and health it is important to bear in mind that landscape involves as much what is *ex*cluded as what is *in*cluded in view or perception. People may believe a place to be healthy when, from their point of view, it contains no unhealthy elements (Kearns & Gesler, 1998). "Nature" can also be seen as a human idea, where the objects, creatures and landscapes we label as natural are deeply entangled with our cultural history and the words, images and ideas we use to describe them. Thus nature is both real and imagined, with a palpable presence and autonomy on the one hand and projected human ideas on the other (Cronon, 1995).

2.1.3 Beneficial psychological processes

As regards the health benefits that might be provided by psychological processes due to encounters with natural environments, science has no uniform way of explaining these. Focusing on three areas of research (environmental

preferences, psychological restoration, and learning and personal development) it is possible to relate the current theoretical perspectives to three different kinds of influences on behavior: innate, cultural and personal (Hartig et al., 2011). Still, as some studies show (Bourassa, 1990), one perspective does not necessarily exclude the other, and more publications are likely to come forth in which there is a theoretical synthesis. And, one thing everyone can agree on is that nature - whether the explanation is innate, cultural or a combination of the two - is a very useful resource for people (Knopf, 1987). Some of the most common theories will be mentioned below. For more thorough reviews of these theories, and other complementary theories, see e.g. Hartig et al. (2011) or Bell, Greene, Fisher and Baum (2001).

Theories on environmental preference

Theories on environmental preferences are based on the evolutionary assumption that people still have adaptations to the kind of environment that was present during early human evolution (Hartig et al., 2011). According to Kaplan & Kaplan (1989) humans, like other species, are likely to prefer a setting in which they can function effectively. Preferences are thus an expression of underlying human needs, and the aesthetic reaction is an indication of an environment where effective human functioning is more likely to occur. Natural environments have an aesthetic advantage as they are preferred over many other types of environments, which can indicate that they are relevant for well-being and enhancing health (Hartig et al., 2011; Kaplan & Kaplan, 1989).

According to Kaplan and Kaplan (1989) environmental preferences focuses on information processing. They argue that preferences reflect an innate human need for and sensitivity to information, and our survival depends on our ability to process it. Humans' relationship with information is far from neutral. We assess situations, current and future, in terms of whether they are or will be good or bad, pleasant or painful. An anticipation of future situations can influence current feelings; e.g., "people whose conditions are extremely painful can feel much better if they anticipate a hopeful future" (p. 5).

The experience of landscape concerns understanding and exploring. Understanding, or making sense of, the scene is predicted by legibility and coherence. Exploration, which is done based on the notion that more information can be acquired about the setting, is predicted by complexity and a sense of mystery. According to Kaplan and Kaplan, people are also extremely sensitive to spatial properties, and the way space is organized provides information about what one might be able to do in that space or the affordances offered there. Favorable spatial properties of areas are that they are open and at

the same time defined; i.e. have a smooth ground texture and trees that define their depth. These are called parklike, woodlawn or savanna, and generally receive very high preference ratings. Factors that account for preference in natural settings include both content (particular kinds of natural elements) and patterns (the organization of the setting).

Another theory on environmental preference, the Prospect-Refuge theory, was introduced by Appleton (1975). Here landscapes are analyzed based on the opportunities they offer for seeing without being seen, which is an evolutionary need in order to avoid predators. For this reason, there is a distinction between landscapes that are prospect-dominated (offering views), refuge-dominated (shelters or hiding places) and hazard-dominated. Attractive landscapes have open spaces that provide opportunities to detect hazards, with low shrubs and clumps of trees that provide places to hide, or refuge. Gibson (1979) argues that people immediately apprehend the functionality of an environment, and which possibilities for different kinds of activities and experiences it offers. Affordances are in the cross section between environment and behavior, objective and subjective (Gibson, 1979) and can be defined as "the functional properties of an environmental feature for an individual" (Heft, 2010, p. 20). Thus, the Prospect-Refuge theory, according to Hartig et al. (2011), can be viewed as describing the affordances of prospect and refuge. Kaplan and Kaplan (1989) compare preference judgments to affordances on a more general level, stating that "a preference judgment is an evaluation of the scene in terms of presumed possibilities for action, as well as potential limitations. (…) Gibson's (1979) concept of 'affordance' is similar" (p. 32).

The Savannah theory is another theory on preferences. Here our environmental preferences are explained with regard to how suitable landscapes are as habitats in relation to the habitat of early humans, which is the semi-open and savannah-like landscape (Orians, 1986).

The last theory to be mentioned here within the field of environmental preferences is The Biophilia Hypothesis. It describes our tendency to focus on life, its processes, and the connections human beings seek with the rest of the living world (Kellert & Wilson, 1993; Wilson, 1984). It proclaims a human dependence on nature and encompasses the human craving for aesthetic, intellectual and cognitive as well as spiritual meaning and satisfaction (Kellert & Wilson, 1993). Although it can be severely criticized for a lack of evidence (Joye & De Block, 2011), it has been very influential as a theoretical construct.

As stated previously, all theories listed above are based on evolutionary assumptions. Preference studies have shown that savanna scenes are preferred over other types of biomes, but also that this decreases with increasing age when instead preferences for familiar scene types rise (Balling & Falk, 1982; Falk & Balling, 2010). This can be seen as support for an evolutionist interpretation, whereby experience and culture change people's judgments over time. The study published by Falk and Balling in 2010 was a replication of the study published in 1982, but with Nigerians residing in the rainforest belt. Otherwise, the majority of studies, with one or two exceptions, have been carried out in North America, Europe or Australia. Another criticism is that, even though subjects might be from different cultures, almost all studies concern urban or suburban residents who presumably have had highly similar experiences with nature. Therefore, much can in fact be a result of cultural learning processes (Joye & De Block, 2011).

Theories concerned with psychological restoration

Natural scenes or experiences may have a restorative effect (Bell et al., 2001; Kaplan & Kaplan, 1989). Preference for a natural environment might lead a person into circumstances that are beneficial because they support restoration (Hartig et al., 2011), and some studies have shown a strong relationship between perceived restorativeness and preference (Nordh, Hartig, Hagerhall & Fry, 2009; Purcell, Peron & Berto, 2001; Van den Berg, Koole & Van der Wulp, 2003 and Paper II).

According to Hartig et al. (2011, p. 148), "the term restoration covers processes through which people recover resources they have diminished in their efforts to meet the demands of everyday life". Restoration can occur either as a deliberate strategy whereby one puts oneself in a restorative environment or incidentally, such as having nature near one's residential area. According to Velarde, Tveit & Hagerhall (2010), "[b]ridging the gap between preference research and restorativeness can provide knowledge about the particular qualities of a landscape that enhances its positive effects on human health" (p. 236).

The two most prominent explanations of restorative effects are based on recovery from attention restoration and psychophysiological stress respectively (Kaplan, 1995; Ulrich, Simons, Losito, Fiorito, Miles & Zelson, 1991), and the theories appear to complement each other with regard to the antecedent condition from which one is restored (Hartig, Evans, Jamner, Davis & Gärling, 2003). Ulrich's psycho-evolutionary theory (Ulrich, 1999; Ulrich et al., 1991) asserts that a partly genetic or biological capacity for a restorative response to

certain nature settings would have held major advantages for survival. The theory predicts that visual properties in the surroundings elicit an affective response. Natural and human-made environments have different properties and thus elicit different responses.

According to Ulrich (1999), humans "have a biologically prepared capacity for acquiring and retaining restorative responses to certain nature settings and content (vegetation, flowers, water) but have no such disposition for most buildings and their materials" (p. 52). The positive effects can be measured in physiological parameters as lower levels of blood pressure, heart rate and muscle tension when viewing nature. Nature settings that include "verdant plants, calm or slowly moving water, some spatial openness, park-like or savanna-like properties (scattered trees, grassy understory), unthreatening wildlife (e.g., birds), and a sense of security or low risk" (p. 52) tend to be especially effective in promoting restoration.

The concepts of restoration and restorative environments are also described by Kaplan & Kaplan (1989). The idea behind their Attention Restoration Theory (Kaplan 1995; 2001; Kaplan & Kaplan, 1989) is that people process information through two types of attention: directed attention and fascination. Directed attention is largely under intentional control, and makes it possible to sort out important from unimportant information among the vast quantities of stimuli an individual normally encounters in daily living. As such, directed attention allows people to focus both their thoughts and perception, but it is also a mechanism that is susceptible to fatigue.

When mental fatigue (or directed attention fatigue as it is called later) occurs, one's mental competence is impaired and thus restoration is needed. Fascination, on the other hand, is an automatic rather than an intentional kind of attention, and has no capacity limitations. Instead, it is possible to restore a diminished directed attention capacity when one experiences fascination. Settings that facilitate recovery from directed attention fatigue are labeled restorative environments.

There are four central aspects of a restorative environment. For each of these, it is possible to identify environmental configurations that are likely to contribute to a restorative experience (Kaplan 2001; Kaplan & Kaplan, 1989):

1. *Fascination*. The environment contains patterns that hold one's attention effortlessly; i.e. fascination allows one to function without using directed attention. But fascination is not sufficient. The other aspects, listed below, are also important.

2. *Being away*. The person is distant, physically or conceptually, from one's everyday environment.
3. *Extent*. The environment has sufficient scope and coherence to allow one to remain engaged. (Scope: The place you visit should be large enough that you can move around in it without having to be careful about going beyond its limits. Coherence: The various parts of the environment must be connected or perceived as belonging to a larger whole.) More important than actual size is that there is more to explore than is immediately evident.
4. *Compatibility*. The environment fits with what one wants to do and supports intended activities.

Kaplan and Kaplan (1989) base parts of the thoughts behind their theories on previous studies that have included gardening. When it comes to the four aspects of restorative environments, these are all exemplified in referrals to these studies on gardening. Fascination stands out as a very important aspect. According to the Kaplans, one of the reasons for this is that "Research on the satisfactions people obtain from gardening points to the central role of fascination here, too. In the presence of such fascination people are able to rest their minds in a way that allows them to recover their effectiveness" (p. 7) and "The attention-holding power of the garden was one of the most highly rated benefits in both garden studies" (p. 193).

When it comes to being away, a kind of mental distance can be as important as literal distance. "In other words, even if one goes no farther than one's backyard, making the round to find new buds and to be sure that all is well can feel to the gardener like being quite distant from the world of pressures and obligations" (p. 191).

Gardening also "provides various means of connectedness, thus enhancing the sense of extent. Some may experience in gardening a historical connection, a tie to former times and generations past. Certainly, many gardeners feel a relationship to a force or system that is larger than they are and that is not under human control" (p. 191). The "feeling of partnership with the larger forces of nature" that gardening might lead to, a kind of relatedness, can also be viewed as compatibility (p. 195).

In summarizing their thoughts, Kaplan and Kaplan (1989) conclude that there are three benefits that people experience in nature. First, aesthetic natural environments are preferred and satisfying to experience. Second, these settings support human functioning. Because people can manage the information they receive in these environments they are able to move about and explore with

comfort and confidence. And, third, natural environments foster recovery from mental fatigue and allow a person to regain their effective functioning.

There are also four deepening levels of restorativeness, or different functions within the restorative experience. The first is "clearing the head", whereby random thoughts are allowed to pop up and gradually fade away. The second is the "recovery of directed attention" whereby one's directed attention capacity is restored and the third concerns being able to face matters on one's mind that one has not previously "heard" that now can be dealt with due to the "cognitive quiet" that arises. The fourth, and last, function is the most demanding and requires the most of both duration and quality of environment. A deep restorative experience is likely to include reflections on one's life, and on one's actions, possibilities, goals and priorities.

The Perceived Restorativeness Scale, PRS, used in Paper II, was developed in order to measure differences in perceived restorativeness between different environments (Hartig, Korpela, Evans & Gärling, 1996; Hartig, Kaiser & Bowler 1997a; Hartig, Korpela, Evans & Gärling, 1997b) and builds on the aspects of a restorative environment as defined in Attention Restoration Theory (described above).

Attention Restoration Theory was developed in the context of natural environments, particularly gardening and wilderness experiences, and it is stated that "the natural environment might play a special role in the restorative environment" (Kaplan & Kaplan, 1989, p. 187), but it is also applicable to other environments where restoration might occur. Different environments have different information content and therefore place different demands on us. Thus, different settings can also stimulate restoration to varying extents.

Even if restorative effects can be achieved in a multiplicity of environments, natural environments have proved to be the most effective (Kaplan, Kaplan & Ryan, 1998). But museums, cafés and attractive built settings with panoramic and historical features have also been found to have restorative qualities (Fornara, 2011; Kaplan, Bardwell & Slakter, 1993; Rosenbaum, Sweeny & Windhorst, 2009; Staats, 2008).

Theories on learning and personal development

A cultural level can be added to the evolutionary theories. According to Kellert (2008), biophilia became biologically encoded because it proved instrumental in enhancing human physical, emotional and intellectual fitness during human evolution. But, "[b]iophilia is nonetheless a 'weak' biological tendency that is reliant on adequate learning, experience, and sociocultural support (…) As a

weak biological tendency; biophilic values can be highly variable and subject to human choice and free will" (p. 4).

Differences in cultural and ethnic background can be reflected in different preferences for kinds of natural settings (Kaplan & Kaplan, 1989). The Kaplans also state that these differences are important to note if one is to take the notion of preference seriously. Understanding both the common themes and their variation is considered essential to be able to make responsive and humane environmental decisions. One study supporting this view is the one by Balling & Falk (1982), mentioned earlier, in which the preference for the savannah-like environment changes over time and becomes less and less powerful as one grows older.

Other researchers argue that perception and experience of landscapes are mainly dependent on the cultural and personal background of the observer (for a review see Tveit, Ode & Fry, 2006). One example is Tuan (1974) who, in his topophilia hypothesis, focuses on personal attributes like gender, age, occupation and familiarity etc., as being important for forming landscape preferences. Some common effects in studies within this field are related to changes in behaviour or views of the self. The natural environment is looked upon as a setting for personal growth and opportunities for reflection as well as changes in self-concept, self-esteem or body image (Hartig et al., 2011).

2.1.4 Variance among different groups

Literature reviews on the links between health and viewing landscapes (Velarde et al., 2007) as well as health and nature-assisted therapies (Annerstedt & Währborg, 2011) have shown that there are positive health benefits for different groups of subjects, for example participants in therapy programs, patients, elderly, children and the general public. Also differences in gender have been found when studying the effect of green neighborhood environments on health (Björk et al., 2008). But since the studies are not possible to compare, little is known about why there are differences in health benefits between groups and how to design and manage outdoor environments to accommodate these differences (Hägerhäll, Ode, Tveit, Velarde, Pierce Colfer & Sarjala, 2010).

According to Kaplan & Kaplan (1989) there can be variations of preference depending on people's previous experiences and some studies on preference suggest "that human influence, neatness, and openness are far more vital to some groups than to others" (p. 103). It is also known that individuals who are professionally trained in design-related fields may show distinctly different

preference patterns and focus on different physical attributes (Gifford, Hine, Reynolds, Muller-Clemm & Shaw, 2000; Kaplan & Kaplan, 1989).

People living with an illness often have a heightened sense of awareness, noticing details around them (Gerlach-Spriggs, Kaufman & Warner, 1998) and having an increased sensitivity to insecurity (Ulrich, 1999, see also Paper I). This is especially important to note in healthcare settings, where differences between patients' and designers' views on what is aesthetically pleasing might even lead to environments having a negative effect on the care recipients (Ulrich, 1999).

A series of experiments has shown that the difference in preference expressed for a forest walk over a walk in the city was greater when there was a need for restoration (Hartig & Staats, 2006; Staats, Kieviet & Hartig, 2003; Staats & Hartig, 2004). It has also been shown that the relation is stronger between supplied green space in the neighborhood and the groups of people who are most dependent on its supply (children, elderly etc.), than for other less dependent groups (de Vries, Verheij, Groenewegen & Spreeuwenberg, 2003; Maas et al., 2006).

Previous studies at Alnarp indicate that nature experiences affect people to varying degrees depending on their life situation, and that some people will be more affected than others by therapies in a nature context (Grahn, 1989, 1991; Ottosson, 2007; Ottosson & Grahn, 2006, 2008; Stigsdotter et al., 2011). The nature experience as such is affected by how much of the environment a person is able to take in and how great one's mental powers are (Ottosson & Grahn, 2008). There are also differences in how we are able to relate to demanding surroundings; stones and water are the easiest to relate to, followed by plants and animals and the most difficult are other humans (Ottosson, 2001; Ottosson & Grahn, 2008, see also Figure 4). This is described further in Paper I, as the Scope of Meaning/Scope of Action Theory. Later, this has been developed into the Supporting Environment Theory (SET) that explains peoples need of supportive environments to develop physically (senses, muscles, locomotion) and mentally (being able to feel and think). A supportive environment is regarded as an important part of salutogenesis and the content and quality of the environments should be seen in relation to the individual's function and state of mind (Grahn, 2011).

Figure 4. The pond, a part of the Alnarp Rehabilitation Garden with both water and stones.

Besides these individual differences, there are also cultural ones. According to Sundberg and Öhman (2000), in Sweden we are traditionally very concerned with and interested in nature. As a result of the Swedish urbanization at the beginning of the 1900s, outdoor life became more prominent. City dwellers' need to venture out into the wilderness quickly came to be pedagogically arranged by organizations like 4H, the Swedish Outdoor Association and the Swedish Guide and Scout Association. One of the most important motives for this was that outdoor life was considered to contribute to better physical and mental health. In 1942 obligatory "outdoor days" were implemented in primary school, and the 1994 curriculum states that sport, exercise, recreation and outdoor life are greatly significant for public health.

2.1.5 Responses to a mixed built and natural scene type

Since natural environments have been found to be most preferred and have the most restorative qualities they have consequently received the most scientific attention. Still, some interesting aspects on the mixed built and natural areas are apparent in the extensive work by Kaplan and Kaplan (1989), although they have not been examined further to the same extent. In the beginning, when examining how environments are perceived, one question to answer was how scenes were grouped. Even though this say nothing about preference levels, it is interesting to note that, as it turned out in one of the studies referred to by the Kaplans (1989), it was not as anticipated size, maintenance, tidiness or even functional aspects that could explain the grouping. The results instead suggested that the grouping was related to two factors: *the balance between the buildings and the natural areas* and *the arrangement of the natural area itself*. Kaplan and Kaplan conclude that this balance between the built and the natural is a consistently dominant theme in the experience of the environment. Human

influence, even though there are distinct categories within it, is said to be a salient attribute.

The unpredictable behavior of the human-influenced content categories is also evident when it comes to preference judgments. Categories that reflected the clearest human influence were relatively lowest in preference. But not all such categories are low in preference. On some occasions they receive midrange or even almost the highest ratings. Common to some of them, according to Kaplan & Kaplan (1989), is that "human influence is central to the content, but the built component is in keeping with the setting and does not dominate the natural elements in the scenes" (p. 44).

2.2 Gardens and health promotion

2.2.1 Historical perspective

According to van Erp-Houtepen as cited by Turner (2005), a garden is "a piece of ground fenced off from cattle, and appropriated to the use and pleasure of man: it is, or ought to be, cultivated" (p. 1). This definition has good etymological support, as the words garden, yard, garten, jardin, giardino, hortus, paradise, paradiso, park, parc, parquet, court, hof, kurta, town, tun and tuin all originate from the act of enclosing outdoor space (Turner, 2005). Depending on the current ideas and beliefs about nature, it has sometimes been important to tame nature through geometrical or mathematical shapes in formal gardens, and at other times there has been a romantic longing for and imitation of wild nature, resulting in different garden aesthetics like informal gardens and open landscapes (Gerlach-Spriggs et al., 1998; Turner, 2005). For centuries, even millennia, people have ascribed healing qualities to clean air and water as well as stimulating environments. As early as 400 B.C, for example, Hippocrates wrote about the influence of winds, seasonal changes and water on public health (400 B.C./1996).

One of the world-famous landscape architects, Frederick Law Olmstead, is known for both designing places experienced as nature and including outspoken health concerns in his design. Central Park, Niagara Falls and Yosemite are such places, with constructed and built landscapes designed by Olmstead. At Yosemite, for example, paths and prospects shape the visitor's experience by directing movement and gaze. Olmstead purposely created a "natural setting" in order to enhance human health, safety and welfare by reintroducing a sense of the wild. His vantage points, as described by Whiston Spirn (1995), were that a contemplation of natural scenes with impressive character would have lasting beneficial physical, mental and moral effects, especially if combined with a relief from ordinary cares, a change of air and a

change of habits so the mind could be occupied without purpose. He also believed this kind of contemplation would increase people's capacity for happiness, and that a lack of it could instead lead to depression and mental illness.

Healing places

For more than two thousand years Bath, England, has been considered a healing place, very much due to its mineral springs and architecture. Visitors have sought cures and, in time, more and more have sought pleasure. Different baths were spread across the Roman Empire and they were also, for example, centers for rest and recreation for the Roman army and middle-class Roman citizens (Kearns & Gesler, 1998).

According to Gesler, (2003, p. 18) "place matters to health". Studying historical places that have achieved long-lasting reputations for healing, he claims that four environments contribute to a healing sense of place: natural, built, symbolic and social. A number of common features seem to persist among these healing places. According to Kearns & Gesler (1998) these features include characteristics like:

> [M]agnificent scenery, water, and trees; human constructions such as healing temples or spa baths; contributions to sense of place such as feelings of warmth, identity, rootedness, or authenticity; symbolic features such as healing myths; the incorporation of familiar, daily routines into the treatment process; sensitivity to cultural beliefs; and an atmosphere in which social distance and social inequalities are kept to a minimum (p. 8).

Although the places Gesler (1998) bases his studies on have not been empirically tested, the perception that they heal is an "understood truth", a cultural construction shared by many and arising from experiences, perceptions, ideologies, attitudes, and feelings. According to Gesler (1998), this can "have a strong influence on actual behavior" (p. 17).

Restorative or healing gardens for the sick have been part of healing in European landscapes since medieval times, in connection to hospitals, rehabilitation centers, etc. (Gerlach-Spriggs et al., 1998).

Therapeutic settings for treating illnesses

In the 1400s, for instance, the Ottoman sultan Bayezi II founded a hospital in the city of Edirne, specializing in mental illness. Aquatic therapy, musical treatment and aromatherapy were some of the hospital's treatment strategies (Stolt, 2002). Since the 1700s, nature has been used as a more or less

therapeutic tool for socially burdened groups. The field of medicine began to note an association between high mortality, poverty and poor hygiene, and accordingly regarded daylight, fresh air and greenery as beneficial to humans (Gerlach-Spriggs et al., 1998; Sundberg & Öhman, 2000). This is one of the reasons sanatoria and hospitals during the period from the end of the 1700s to the beginning of the 1900s were built in scenic natural surroundings, with beautiful parks and gardens around the buildings. Current ideas and nature ideals had an impact here as well, and during the nineteenth century planners placed mental asylums in rural settings based on the romantic notion of the healing powers of nature (Gesler, 2003).

The advent of effective psychopharmacological drugs during the shift from the 1950s to the 1960s changed treatment and rehabilitation possibilities, and patients' prognoses improved (Brenner, 2010). At the same time the entire hospital environment came to be highly technocratized in the space of a couple decades, focusing more on cure than care, and the design emphasis shifted from caring about patients' environments to saving steps for nurses and physicians (Gerlach-Spriggs et al., 1998; Schmidtbauer, 1999). Gardens disappeared and parking lots appeared, and landscaping was seen as mere decoration (Cooper Marcus & Barnes, 1999; Gerlach-Spriggs et al., 1998).

Still, Gesler concludes that efforts to create therapeutic settings in hospitals appear to come in cycles (Gesler, 2003). According to Qvarsell and Torell (2001), more scholars today are broadening their perspective from a detailed level to a more holistic view, and there are indications that a paradigm shift might be under way (Brenner, 2010; From, 2010; Gerlach-Spriggs et al., 1998; Nettleton, 1995 in Kearns & Gesler, 1998).

2.2.2 Nature-assisted therapy

As there are many varied states of health and illnesses, as well as a wide array of different treatments that utilize nature in one way or another by a means of achieving health goals, a couple of publications aiming at defining and categorizing this field have recently come forth. "Nature-assisted therapy" (NAT) is defined by Annerstedt and Währborg (2011) as:

> [A]n intervention with the aim to treat, hasten recovery, and/or rehabilitate patients with a disease or a condition of ill health, with the fundamental principle that the therapy involves plants, natural materials, and/or outdoor environment, without any therapeutic involvement of extra human mammals or other living creatures (p. 372).

Stigsdotter et al. (2011) define "nature-based therapies" as "a time proven practise that includes many different types of programs and settings, serving various clients groups" (p. 332). Nature-based therapeutic interventions, on the other hand, can be seen as processes in which clients are exposed to demands and where a certain setting, specially designed or specially chosen, is used for therapeutic intervention.

Sempik, Hine & Wilcox (2010) use the concept of "green care" which is broader than nature-assisted or nature-based therapy and includes social rehabilitation, health promotion and animal-assisted therapy (AAT). In their review of nature-assisted therapy, Annerstedt and Währborg (2011) conclude that a "rather small but reliable evidence base supports the effectiveness and appropriateness of nature-assisted therapy as a relevant resource for public health" (p. 371). Significant effects on symptoms of disease were found concerning psychological, social, physical, and intellectual therapeutic goals for diverse patient groups. Even though it is a relatively small base, compared to other methods in healthcare the evidence of benefits from nature-assisted therapy is often of a higher quality.

Horticultural therapy

According to Steven Davies, former president of the American Horticultural Therapy Association, in Hewson (1994, p. 1), "Horticultural therapy is the use of plants and gardening activities as a vehicle in professionally conducted programs in therapy and rehabilitation". Horticultural therapy has a strong link to occupational therapy and focuses on the healing effects of activities in the garden, such as growing, cultivating, harvesting, weeding, raking and sowing (Davis, 1998; Hewson, 1994; Relf, 1999). The design of the environment has focused mainly on the tools and functional areas to support these activities, such as raised flowerbeds, and not on the surrounding context.

Horticultural therapy has long been used in treatment mental illnesses (Davis, 1998). First there was a focus on the benefits gained from "working the soil" (p. 5). Then, in 1817 at Friends Hospital in Philadelphia, which was the first private psychiatric unit in the USA, a park-like setting was created where the calming effects of natural environment were included as a passive form of therapy. In the 1880s, patients at St. Lars hospital in Lund, Sweden, planted 37,000 trees and bushes to create the lush, framed-in park that still exists today. The basic idea was that the patients should be treated humanely, take part in a health promoting activity and also contribute to the hospital's sustenance (Schmidtbauer, 1999). And from the start of the Menninger Foundation in Kansas, USA, in 1919, plants, gardens and nature study were made integral parts of patients' daily activities (Davis, 1998; Jernberg, 2001).

After WW I, many veterans suffered from post-traumatic stress disorder. Physical and occupational therapy were used together with garden work, in order to help the veterans turn their minds to creation instead of destruction (Gerlach-Spriggs et al., 1998). After WW II, these good experiences were used to a greater extent and horticultural therapy became an important part of therapy and rehabilitation programming, and was used in the treatment of both mental and physical disabilities (Davis, 1998). In the 1960s it was considered that patients were being used as cheap garden labor, and the tradition of using parks in the care of the psychologically ill ended (Schmidtbauer, 1999). In the USA a profession-oriented movement began, and in 1973 a professional organization was formed. In England a society was formed in 1978, which provided a national forum for and coordinated the programs in horticultural therapy (Davis, 1998).

The thoughts behind horticultural therapy starts from the idea that human beings like to be *active*, to perform meaningful activities that interest them and give them the energy to exert themselves (Kielhofner, 1997). If a person has the opportunity to use his/her body and mind in the pursuit of pleasurable and meaningful occupations, he or she will feel rewarded (Kielhofner, 1997). Working with plants in a garden can be particularly rewarding (Relf, 1992). This is because horticulture has four distinct values that support human well-being and quality of life (Relf, 1999):

1. *Physical dependency on plants*: Our entire existence and survival is based on plants, for food and for curative reasons.
2. *Aesthetic pleasure*, which leads to beneficial psychological and physiological responses. Observing the beauty, form and existence of plants and animals.
3. *Nurturing and caring for plants*: our need to care for and foster a life outside ourselves. Fascination for nurturing life brings peace of mind and an understanding of the cycles of life.
4. *Social interaction*: Working together in a safe environment like a garden, can help one overcome feelings of helplessness and induce a feeling of control. The plant world is universal and non-threatening, and allows gentle relationships with others.

In her writing about point two, Relf (1999) is referring to Ulrich's psycho-evolutionary theory and Kaplans' Attention Restoration Theory (Kaplan & Kaplan, 1989; Ulrich et al., 1991). Point three, although not stated, shares

obvious similarities with the Biophilia Hypothesis regarding the focus on the processes of life.

The Concept of Green Care

Within the European Union funded research network COST Action 866, Green Care in Agriculture, a theoretical framework and a conceptual model for green care have been established. Sempik et al. (2010) define green care as "a range of activities that promotes physical and mental health and well-being through contact with nature. It utilises farms, gardens and other outdoor spaces as a therapeutic intervention for vulnerable adults and children" (p. 122).

They point out that it is important to remember that green care is not purely a passive experience of nature but rather includes an intervention, i.e. an active process intended to improve or promote physical and mental health and well-being. Thus, "everything that is green is not green care" (p. 11).

According to Sempik et al. (2010) there is a broad understanding of care within green care. Thus, the care can be on different levels. Some interventions have clearly stated patient-oriented goals within a structured therapy program (like at the Alnarp Rehabilitation Garden) while others focus more on a broader and less clearly stated range of benefits. The "green care umbrella" is described as a diverse green care movement, linked together by an ethos to use nature to produce health, social or educational benefits. The green care activities listed under the umbrella are social and therapeutic horticulture, animal-assisted therapy, care farming, facilitated green exercise as treatment, ecotherapy and wilderness therapy/nature therapy.

In the framework a number of different theories, models and constructs used in relation to different green care initiatives are briefly reviewed. It is stated that "It is likely that several mechanisms may be operating, either simultaneously or sequentially, representing different ways in which nature positively impacts on human health and well-being" (p. 71), and that there might be psychological and social as well as physiological benefits.

2.2.3 Design of supportive environments

Design frameworks

Not many people are aware of the possibilities that emerge from having a garden in connection to a healthcare facility. A well accomplished design, based on informed decision, might facilitate recovery and the healing process. But, as mentioned before in Section 2.1.4, differences in designers' as opposed to patients' views of what makes an environment pleasing could also lead to

negative reactions. Thus, deciding more exactly how a garden should look and what it should contain is also important. Even though the understanding is growing, very few people, neither healthcare facility managers nor landscape architects, actually develop their knowledge and take responsibility in this regard.

Gesler (2003) puts it this way: "One could come away from this book with the impression that all one has to do is implement a specific design feature such as plant a garden in a hospital and all will be well. Of course that is not true. There is much more to healing than a garden. (...) Let us implement design features and evaluate them" (p. 110).

Cooper Marcus and Barnes (1999) argue that it is normally enough for an architect to design a place. But when dealing with environments that are supposed to facilitate healing this is not enough; here, the design has to encompass and support the user through the healing *process*, (which Paper I is an example of).

A number of design theories and frameworks have been presented as means to guide designers in creating the intended positive effects on health and well-being, and these will be briefly described in the following sections.

A theory of supportive gardens

Based on previous findings, Ulrich (1999) proposes that a garden in a healthcare setting is important as a stress-mitigating resource as it fosters a sense of control and access to privacy, social support, physical movement and exercise, and access to nature and other positive distractions. Consequently, he calls this *a theory of supportive gardens*.

When designing to provide a sense of control, the concepts of wayfinding and access are important to consider. A garden should be located close to areas that many people visit, and it should be easy to understand how to get there. If one experiences difficulties getting to the garden, this might instead cause further stress. Design considerations for social support include providing spaces suitable for larger groups or extended families to meet, as well as smaller more enclosed spaces for more intimate meetings. It is important that the social aspect not be taken too far; if privacy is denied the garden will be less used. Wayfinding is an important design consideration for physical exercise as well. It is also possible to facilitate possibilities for group exercise by providing areas for this, as well as movement by making walking loops or areas for play. Ulrich gives no design considerations for nature or other positive distractions. Instead he stresses that viewing nature can reduce stress levels and that settings dominated by foliage, flowers and water can have restorative influences.

Biophilic design

Kellert (2008) calls for a new design paradigm, "restorative environmental design", which should, instead of alienating humans and nature, aim at both a low-environmental impact strategy (traditional sustainability measurements like energy and resource efficiency, etc.) and a positive environmental impact. The latter can be achieved through "biophilic design", which fosters contact between people and nature in modern landscapes and buildings.

There are two basic dimensions to biophilic design: the organic or naturalistic dimension and the place-based or vernacular dimension. The first is defined by shapes and forms in the built environment that directly, indirectly or symbolically reflect the human affinity for nature. Direct experience refers to contact with features such as daylight, plants, animals or habitats. Indirect experience refers to contact with features that need human involvement, such as potted plants, water fountains or aquariums. Symbolic experience is vicarious, involving no contact with real nature but rather pictures or metaphors.

The second basic dimension, place-based, is defined by buildings and landscapes that connect to the geographic area. This includes a sense of home, the spirit of a place, meaning, identity and attachment, which contribute to people assuming responsibility and care for sustaining buildings and landscapes. The two basic dimensions are related to six biophilic design elements: environmental features, natural shapes and forms, natural patterns and processes, light and space, place-based relationships and evolved human-nature relationships. Each of these elements can be divided into a dozen design attributes, like color, sunlight, botanical motifs, information richness, fractals, spaciousness, order and complexity to mention a few.

Healing gardens, health gardens and restorative gardens

Depending on a garden's intention - what kind of users it is designed for and what their specific needs are - there are different kinds of gardens within the scope of those aiming to create positive effects on well-being.

In their book *Healing gardens: Therapeutic benefits and design recommendations*, Cooper Marcus and Barnes (1999) state that gardens can be healing and restorative via a number of different mechanisms. The healing effects can be "enhanced by how it is designed to support other sought-after activities beyond just being in a plant-filled space" (p. 4). In the book, healing gardens encompass a space that can be experienced by viewing and used for passive or quasi-passive activities such as observing, sitting, exploring, listening or strolling. More direct activities, like horticultural therapy, are not

included. In the design of a healing garden two conceptual concepts should be intertwined: the *process* of healing and the *place* at which this is supported.

According to Gerlach-Spriggs et al. (1998), restorative gardens are meant for the healthy as well as for the sick. A restorative garden is defined as a healing landscape and as an "environment beyond the building. This environment may be a vast, exquisitely planned arboretum (…) or it may be merely a view from a patient's window that has been subtly planned for the patient's aesthetic pleasure and contact with nature" (p. 1). It is also intended by its planners to enhance the recuperative powers of its users and provide an ordered place where one can experience a sense of well-being and wonder that will alter one's mood. Sociability can be encouraged, relaxation and contemplation promoted and a sense of community created.

Still, a restorative garden should not be considered an alternative mode of therapy; it is no cure or replacement for medical interventions but rather complement medical encounters. It can help staff and patients as well as visitors. Restorative gardens derive from the context of monasteries and other religious places of healing, where onlookers were offered highly ordered and selected views of nature. The place for horticultural therapy is not an essential part of a restorative garden, and is not included in the context of a healing landscape (Gerlach-Spriggs et al., 1998). Instead, though definitions overlap, settings for horticultural therapy have sometimes been called therapeutic gardens (Stigsdotter & Grahn, 2002; Stigsdotter et al., 2011).

In Sweden, gardens within the context of care have developed to encompass both the place for horticultural therapy (or nature-based therapy setting as described by Stigsdotter et al., 2011) and the concepts of healing gardens and restorative gardens.

As the term *healing garden* might be somewhat burdened with notions of alternative lifestyles, and as healing gardens, restorative gardens and the settings where therapeutic programs are run seem to be combined to a greater extent in Sweden than elsewhere, the researchers involved in the development of the Alnarp Rehabilitation Garden have used *health gardens* (hälsoträdgård) instead of *healing gardens* as an umbrella term.

The Alnarp Rehabilitation Garden

The term *rehabilitation garden* is no well-recognized concept but rather a term chosen to describe work done within the scope of the garden. To be clear, concept-wise a rehabilitation garden can be said to be a health garden, where experiences of parts of the garden are more dependent on the presence of therapists and activities, in which cases it can be said to be a therapeutic garden

- while other parts of the garden are intended to give the patient opportunities for restoration by offering a restorative environment (Figure 5).

But as there has been no established terminology to rely on in this field, the terminology is not consistent throughout this thesis. This is because knowledge has developed during the work on the thesis, and the papers have been written in collaboration with different colleagues and have also been written slightly differently as they are published in different contexts. In some papers, for example, it has been important to discuss the differences between the restorative and therapeutic parts of the garden while in other papers it has not. Thus, there is no consistency in the English texts about the Alnarp Rehabilitation Garden; sometimes the American term *healing garden* is used, sometimes *therapeutic garden* is used and sometimes it is simply called a *rehabilitation garden*.

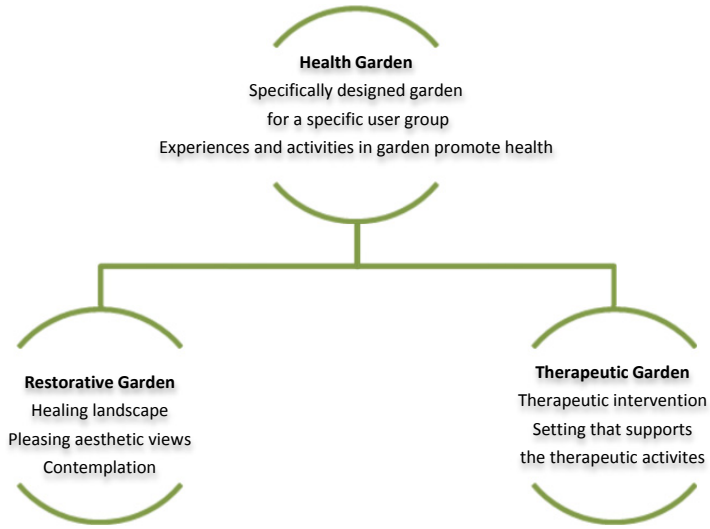

Figure 5. The Alnarp Rehabilitation Garden is a health garden that includes a combination of both a therapeutic garden and parts that are intended to be a restorative garden. (Developed from Abramsson & Tenngart, 2003.)

Since patients have different life situations, and different strength levels, the intent has been to design the Alnarp Rehabilitation Garden to suit participants at all levels (Stigsdotter & Grahn, 2002, 2003, see also Figure 5.15 in Paper I: the Pyramid of executive functioning that relates to the Scope of Meaning/Scope of Action Theory). The first objective was to create environments that are less demanding and that focus on a more nature-oriented

and restorative function. Secondly, there should also be environments that are more demanding and focus on cultivation and horticultural therapy. There are also transition stages between very demanding areas and undemanding ones (see Figure 6). The intent is to be able to illustrate the more orthodox manifestations of horticultural therapy and healing gardens, and simultaneously point to interesting transitions and intersections (Stigsdotter & Grahn, 2002, 2003, see also Figure 7). Put together, the intention has been to create a health garden that is a supportive environment for people suffering from stress-related diseases.

Figure 6. In the so called Forest garden, an area where edible plants are placed in an organic shape as opposed to a traditional kitchen garden.

Figure 7. A place for both rest and cultivation, inside the glass house called the Grow Point.

Earlier research at the Department of Landscape Planning at Alnarp studied why certain parks are frequently visited, while other parks hardly attract anyone. The conclusion was that there are eight main dimensions (Table 1), that constitute the fundamental building blocks of parks and gardens

(Berggren-Bärring & Grahn, 1995, Grahn, 1991; Grahn & Berggren-Bärring, 1995; Grahn & Stigsdotter, 2010; Hedfors & Grahn, 1998), and that some dimensions are more popular than others. A park or green space where many of the dimensions are represented seems to attract more visitors than one with just one dimension (Berggren-Bärring & Grahn, 1995). All eight dimensions have been included in the design of the Alnarp Rehabilitation Garden.

Table 1. *The eight main dimensions of parks and gardens (Stigsdotter & Grahn, 2003).*

The eight main dimensions of parks and gardens
1. Serene – A peaceful, silent, and caring room
2. Wild – A room facilitating fascination with wild nature
3. Rich in Species – A room offering a variety of species of animals and plants.
4. Space – A room facilitating a restful feeling of entering another world; a coherent whole
5. The Common – A green, open place allowing vistas and visits
6. The Pleasure Garden – An enclosed, safe and secluded place
7. Festive – A meeting place for festivity and pleasure
8. Culture – A historical place facilitating fascination with the course of time

A recent study has investigated how both people in general, and people reporting high levels of stress, rank the different dimensions (Grahn & Stigsdotter, 2010). Here, the dimensions have slightly different names, but people in general prefer the dimension Serene. It is followed by, in order, Space, Nature (i.e. Wild), Rich in Species, Refuge (The Pleasure Garden), Culture, Prospect (The Common) and Social (Festive). For people who have indicated that they have high levels of stress the dimensions Refuge and Nature are the most important. The results also confirm previous findings where the social dimension has been found the least preferred by people with high stress levels (Berggren-Bärring & Grahn, 1995; Grahn, 1991). A more extensive description of how the dimensions are used as design elements in different parts of the garden can be found in Paper I, and is also elaborated on in Paper III and IV.

3 Methodology

3.1 Demarcation and research questions

As stated before, in Section 1.3.1, the aim of this thesis is to explore how the Alnarp Rehabilitation Garden is used and experienced in order to develop a deeper understanding about this kind of mixed built and natural environment and how it is perceived. The overarching objective is to contribute to the knowledge of health garden design, which can be used by, for example, landscape architects commissioned to design gardens with similar intentions.

Determining what might constitute a feasible study in the complex context of a rehabilitation garden, as described in Chapter 1, has presented the greatest challenge. I decided that the assessment and selection of methods within medicine were outside my area of expertise, and therefore wanted to find a method that would allow me, without the help of medicinal experts, to evaluate the garden in a way that would contribute new knowledge that would be useful to landscape architects. I have thus considered it important to focus on information relevant for landscape architecture and avoid venturing too far into medicine, work science or psychology (see Figure 8).

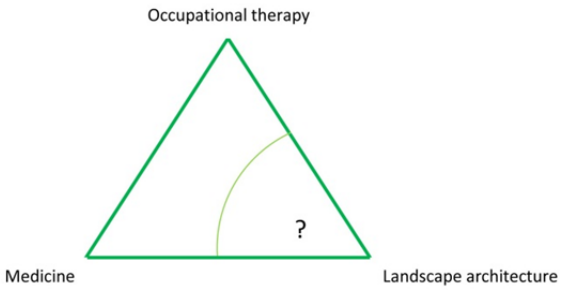

Figure 8. Which is my professional area, and what should be covered together with other disciplines? Here are just two of many possible others.

According to Hartig et al. (2011), research today "does not so much describe novel phenomena as approach familiar phenomena with current scientific concepts and methods". This, together with the insight that the Alnarp Rehabilitation Garden is unique, made it interesting to use case study methodology in an explorative manner. In order to gain information that could contribute to the knowledge about health garden design, but without steering the case toward preconceived conceptions, the research questions were stated as plain as:

- How is the Alnarp Rehabilitation Garden used?
- How is it experienced by its users?

3.2 Case study methodology

In this thesis case study methodology has been used as the overarching method. Within it other methods have been used as sub-methods (Gillham, 2000), to shed light on different aspects of the case, and the results have been published in one paper each. Here, in Section 3.2 the case study methodology is discussed. A discussion of the different sub-methods can be found in Section 3.3, but it can be mentioned already that Paper I is a descriptive and theory generating paper based on a literature review and an interpretation of the experience gained when building and running the Alnarp Rehabilitation Garden, Paper II is based on an assessment scale, Paper III on interviews and Paper IV on participant observation.

3.2.1 Single-case methodology

The case, the Alnarp Rehabilitation Garden, can be described as unique as it is the only health garden in the world where the design intentions and the kind of nature-assisted therapy (as described earlier), have been combined in this way. The Alnarp Rehabilitation Garden is also a revelatory case, as the phenomenon has been previously inaccessible to scientific investigation. Thus a single-case approach is justified (Yin, 2003).

Also, as a number of subunits of analysis are incorporated in the case (the patients as well as students as subjects in Paper II) a more complex design was developed, called embedded single-case design (Yin, 2003). According to Yin (2003) it is important in case study methodology to begin constructing a preliminary theory before conducting any data collection. This is done in order to be able to establish the case's boundaries and ensure that the data collected will be relevant. In this case, no preliminary theory was developed. But the first year of doctoral studies were spent attempting to understand the thoughts and theoretical basis behind the garden as well as how nature-assisted therapy

is planned, and reading all that could be found on the topic in the press and media. Thus, this way of developing the objective, as I see it, can be equivalent to the preliminary theory.

Yin's definition of case study methodology draws on a positivistic tradition, and there are other approaches to case study methodology that are based on qualitative research traditions that differs, for example, in the attitude towards the need for a preliminary theory (Johansson, 2002; Stake, 1995). For reasons of clarity, the thesis is structured in a way put forth by Yin (2003), as in the case study protocol and database described below, but a combination of approaches has been used.

3.2.2 Methodological triangulation and crystallization

According to Yin (2003) it is important to use multiple, not just single, sources of data. Those most commonly used in case studies are literature documentation, archival records, interviews, direct observations, participant observations and physical artifacts. The strength of this multi-methododological approach Yin (2003) recommends is that it is possible to obtain a number of answers to the same question or regarding the same object. Another strength of the case study is that the sub-methods have different strengths and weaknesses that, together, can complement each other (Gillham, 2000; Merriam, 1994) and that the different methods can provide answers to different research questions. If the results converge one can be reasonably confident that they describe the true picture (Gillham, 2000). Taken together, this also offers a more multifaceted picture of the case.

Case studies can, according to Yin (2003), be based on any mix of qualitative and quantitative data. In this thesis both qualitative and quantitative methods are used. Paper I explains how the Alnarp Rehabilitation Garden was designed and developed, describes the various stages of patients' rehabilitation process and develops a theory to explain the therapeutic process in the garden. A quantitative assessment scale, Paper II, answers the question whether the garden is perceived as a restorative environment. Qualitative interviews and observations have been used to gain a deeper understanding of the phenomenon. Hence, participant observation in the garden has provided answers to how the garden is used (Paper IV) and interviews with patients have provided insights into how they experience the garden and the activities (Paper III). The binding and comparative analysis is normally conducted in the case study report, but here this binding text serves as the meta-interpretation, or synthesis, of the different studies.

In methodological triangulation a combination of different methods are used to study a single problem (Patton, 2002). Here, multiple methods have been used to approach the case from various angles and with slightly different question formulations. Writers of postmodern, qualitative texts sometimes use the concept of crystallization instead of triangulation as, according to Richardson (2000), there are far more than three sides to approaching the world. Depending upon our angle of repose we see different things, and neither the world nor validation is something as rigid, fixed and two-dimensional as the triangle. Considering that, the concept of *crystallization* better describes the way the different methods are used in this work. The data from the different methods illuminate the case like the shape of a prism, whose different surfaces are at varying angles to each other but nonetheless belong to the same unit.

3.2.3 Case study protocol

It is very important that a case study protocol be kept during the entire period of a research project (Yin, 2003). The protocol contains documents describing how one intends to conduct the research and why. Many documents are created before the data collection begins, for instance the research plan, policy document, contract, etc.

The purpose of a case study protocol is to lend transparency to the research work and thus facilitate insight and possibilities for review. The protocol should thus contain a documentation of field procedures, which in my case involve practical documents such as observation schedules and guides, interview guides, etc. (see Appendix). It should also contain an outline of the case study report. I have chosen to deviate a bit from the traditional way of writing case studies. Instead of writing a report documenting the research as a whole, as previously mentioned I have chosen to write papers on the different sub-studies and instead use this binding text as the report that links the different parts. The protocol also contains an overview of the entire case as well as documents that have contributed to an overall understanding of the case. These include, for example, previous publications in the field as well as literature reviews and assignments I have done that have in various ways contributed to my understanding of both the Alnarp Rehabilitation Garden and its social context. (Abramsson & Tenngart, 2003; Tenngart & Abramsson, 2005, 2006; Tenngart & Johnson, 2005).

3.2.4 Case study database

The data collection itself and the researcher's comments on it comprise the case study's database (Yin, 2003). This entails principally everything produced during the research process – the protocol, reports, daily notes etc. Here it is

important that the reader can always distinguish between the actual facts and reflections or thoughts. I therefore developed a system, in accordance with Gillham (2000), using different colors for my observation notes. I always wrote my personal thoughts in dark green, and when I wanted to expand on the text or a thought I used red.

3.2.5 Validity and reliability within case studies

Primarily when it comes to single cases, validity is a relatively difficult issue. Many of the evaluation criteria we are accustomed to using do not work in studies like this. In accordance with case study methodology as described by Yin (2003), there were a number of factors I had to take into account to ensure, as satisfactorily as possible, that I was studying what I intended to study. These were:

a) Avoiding bias:

This has been done by using the aforementioned crystallization or methodological triangulation, and partly by asking critical colleagues to participate in the work. Since this is a thesis, it has been natural to let my supervisors review the work. This is also the reason why I am not the sole author of any of the papers.

b) Construct validity

To ensure construct validity it is important that there is a "chain of evidence". I have tried to satisfy this need to the extent possible by using multiple data sources, having someone familiar with the subject review paper and report drafts, and dating and documenting everything that happened. This can, for example, allow the ruling out of possible cause-effect relationships as the date order of occurrences has been recorded.

c) External validity and generalization

The external validity, that is the area to which the study can be generalized to, is incredibly difficult when it comes to the single case. As regards generalization, Yin (2003) asserts that case studies, like experiments, are generalizable to theoretical propositions and not to population or universal levels. This can be seen as "analytical generalization" as opposed to "statistical generalization". According to Stake (1995), "naturalistic generalization" is appropriate to single cases. People form naturalistic generalizations from a mix of their own experience and explicated generalizations they receive from others (authors, authorities, etc.) People might be familiar with similar cases and when they add another one, their basis on which to generalize is slightly

transformed and modified. This way, people can learn much that is general from a single case. The way I see it, naturalistic generalization is highly applicable in this research as I find it very similar to the way architects work in preparing for a new assignment. When it also concerns unique single-cases, generalizability is not relevant as the case has been chosen precisely because there are no others like it.

According to Flyvbjerg (2006) it is possible to generalize on the basis of a single case, and "formal generalization is overvalued as a source of scientific development, whereas 'the force of example' is underestimated" (p. 228). Generalizability is replaced with uniqueness, which then becomes important to ensure. This is similar to the concept of trustworthiness, which Bryman (2008) refers to, together with authenticity, as an alternative to validity and reliability in qualitative research.

d) Reliability

Reliability concerns whether the scientific method has been used accurately. In case study methodology, this is supported by a well-developed case study protocol and database, with the purpose of providing as much insight and as many reproduction possibilities as possible for later researchers. It is also important that adaptivity and flexibility be maintained throughout the case study. It might happen that the research questions need to be reformulated during the course of the work and as the case develops. The focus on the walks in Paper IV is a result of this. There can also be a need to gradually modify the case's boundaries. The aim should also be reflected on as the case develops.

In my case, others often presumed that I was studying how the patients felt. Instead, my first priority has been to observe how they experienced and used the garden and thereafter, if possible, relate this to how they felt. And, even though my intention has been to arrange my studies to provide results that could be used in design, throughout the project it has been the case that the restoration or rehabilitation process has risen up through the data. Paper I is a result of enlarging the case, also encompassing the rehabilitation process in a more direct way. This is also in line with what Cooper Marcus and Barnes (1999) describe as the need for the designer to understand that in a therapeutic context it is not enough to design only a place – the designer must understand the healing process to be able to incorporate it into the design process and to design environments supportive of this.

3.3 Sub-methods

The different sub-methods used will be more thoroughly described in this section. When it comes to qualitative research based on methods like interviews and participant observation, there is more to describe than normally is possible to include in the papers. Thus, although this sections includes all sub-methods it will focus mainly on these two methods.

3.3.1 Review with theory generation

Paper I is a descriptive and theoretical paper based on previous literature and research as well as the authors' experiences. The paper is describing how the authors' experience that the rehabilitation process is linked to the experience and interpretation of both the setting as well as the activities in this kind of nature-assisted therapy. Since there is no author presentation in the paper it can be of interest to mention that in addition to me the other authors are Patrik Grahn, Head of Research and Development as regards evidence-based health design in landscape architecture and in nature-assisted therapy at the university at Alnarp, Inga-Lena Bengtsson, medical doctor, general practitioner and psychiatrist as well as registered psychotherapist, Ulrika K. Stigsdotter, landscape architect whose thesis is based on the development of the design of the Alnarp Rehabilitation Garden (Stigsdotter, 2005).

This need to summarize our experiences and write this paper emerged during the case study, and can be viewed as a development of the research questions. In the discussion of the theoretical framework of Green Care, it is stated that there is a need to:

> [D]escribe the processes involved in order to define the intervention; to show how the different dimensions and processes are related; and to show how the different approaches within green care are interconnected and how they all relate to existing theories and frameworks (Sempik et al., 2010, p.11).

This is exactly what Paper I strives to do. In describing what has been seen, interpreting it within the rehabilitation process, and relating it to theoretical constructs, the aim is to define this kind of nature-assisted therapy to enable both us and others to understand it, and to be able to put it in a larger context.

Defining the demarcations for the study is important: what is included and why? Research has revealed a strong interdependence between the environment and the behaviors performed there (Barker, 1976; Bell, 1999; Heft, 2010). We define the Alnarp Rehabilitation Garden as a behavioral setting which, according to Barker (1976), can be composed of several ecological units in which the physical environment and behavior are

indissolubly connected. The structure of a behavioral setting is determined by how it is positioned in time and space and its composition in terms of entities and events (garden activities involving people, objects, environment and behavior), processes (sounds, sun, scents, etc.) and outcomes (effects on pain, mental fatigue and other healing processes). The boundaries should be possible to identify, and components should be arranged in a functional way and as part of a whole. Here, a garden's boundaries and components are both identifiable and functional and the patients are part of the behavioral setting, as are the events they bring about.

Since it is a kind of state-of-the-art article with theory generation this paper should be read as a contribution to the discussion on health gardens, and preferably be treated as a living document that will be further developed by us as well as others.

3.3.2 The Perceived Restorativeness Scale

Paper II is based on a quantitative study. We used The Perceived Restorativeness Scale (PRS), which is developed to measure differences in perceived restorativeness between different environments (Hartig et al., 1996, 1997a, 1997b). In this study two different health gardens were compared. One, in the city of Umeå, is small and completely surrounded by buildings. The second is the Alnarp Rehabiliation Garden, which is much larger and contains areas that are more nature-like in character. Still, both gardens have been designed with the intention of being restorative and include horticultural therapy.

Participants and procedures

A total of 74 students participated as subjects. They viewed photographs of the gardens in groups, (n = 3–12), of either landscape architecture or psychology students. Thirty-nine subjects viewed the garden in Umeå first and 35 subjects viewed the garden at Alnarp first. The procedure took approximately 30 min.

Methods for data collection

Twelve photographs of each garden were shown. The photographs of the first garden were initially shown one at a time for 15 s, with respondents told to just view the photos and try to get a feeling of the place. Then, all photographs of this garden were shown simultaneously. This overall picture stayed on the screen while subjects made their judgments. Judgments were made on a 0 to 10-point Likert scale with 0 = not at all and 10 = completely, with every second number labeled. In addition to the 27 PRS items, one question on preference was included.

As the main focus of the study was to examine the perceived restorativeness of the gardens, the preference question was judged after the PRS items. When all subjects had completed the questions, using as much time as they needed, the same procedure was repeated for the second garden. The presentation order of the two gardens was rotated between the nine rating sessions. A within-subjects design was chosen, as it eliminates subject variability and thus has a greater ability to detect an effect concerning differences between the two gardens and the PRS ability to discriminate between them. To control for the problems that can occur in a within-subjects design, such as order or learning effects, the environments were presented and rated in a balanced design.

Data analysis

Multivariate statistical analyses were used to analyze the data. To establish whether or not the overall PRS score could be used as a single valid value representing the contents of the PRS scale, a factor analysis was performed on the 27 PRS items, for all subjects but for each of the two gardens separately. Continuing the examination of the scale's performance, a reliability analysis of the internal consistency of each a priori sub-scale was performed and showed high consistency with previous studies. Thus, the reliability was generally high. The significant correlations and the result of the principal component analysis, as well as the reliability analysis, all indicate that the use of the overall PRS score would be sensible and valid for our purposes of investigating the perceived restorativeness of the gardens.

In order to analyse the effect of the gardens, based on the overall PRS scores of each respondent for each garden, a repeated-measures analysis of variance was conducted with student group and image presentation order as between-subjects factors, and garden as the within-subjects factor. To analyze whether different garden designs affect the results on sub-scale level, profiles with the sub-scale scores for the two gardens were made.

Method discussion

Clearly, the use of pictures as stimuli is partly due to its experimental advantages. It increases the control over the experiment and the properties of the stimuli. It is also possible to use more and other environments than if subjects have to be on-site. Still, there are also many studies that indicate that there is great similarity in response to a two-dimensional representation and the real environment (Kaplan & Kaplan, 1989 and references therein). Also, the scale has shown consistent results regardless of how the sites were presented – on-site or with visual media like video or photographic slides (Hartig et al., 1996, 1997a, 1997b).

Multivariate statistical analyses provide a sorting of variables into categories. What the variables in a category actually have in common is a matter of interpretation by the researcher (Krzanowski, 1988), and can thus be used for hypothesizing.

3.3.3 Participant observation

Paper IV is based on participant observation. Kvale (1997) writes that if you want to study people's behavior and their interaction with their surroundings you can normally achieve a more well-grounded study in the field than through interviewing them about their behavior. According to Gillham (2000) there is a well-known and common discrepancy between what people say and what they actually do.

Participants and procedures

To find an answer to the question of how the garden is used, I conducted participant observations from 4 March through 27 September, 2004. On a total of 62 occasions, I participated during the time set aside for garden activities. In practice this meant that I arrived after the morning gathering and often left when it was time for the coffee break at the end of the activities, meaning that I was there approximately two hours each time. The reason I did not participate in the gatherings was that, according to the staff, they involved a good deal of therapeutic but not much garden-related discussion. And since my focus was on how the garden was used and experienced, for ethical reasons we determined that it would be an unnecessary encroachment on the participants' rehabilitation process if I participated in the gatherings as well.

Methods for data collection

The starting point for the observations was an ethnographic approach (Kullberg, 1996). All the participants' choices of place and activity in the garden were studied and entered each day in the field notes. During the days I conducted observations in the garden, I made notes in a small notebook I kept in my pocket. I did not hide the fact that I had the notebook, but I also tried not to take it out directly in front of anyone. Back in my room at the end of the day, I transferred my notes to a field note table (see Appendix 1).

The headings in my field note table (see Appendix 1) were Person, Time, Place, Activity, Physical object, Goal, Feelings/moods and Other. Thus, at the end of each day I recorded what each person had done, when they had done it and where they had done it, as well as whether anything particular happened or was said at the time. I also recorded the places in question on a site plan of the garden every day, see Figure 9. Days when I did not have the opportunity to sit

down and write my notes on the computer, I recorded everything on a dictaphone and transferred it as soon thereafter as possible.

I also followed Gillham's (2000) recommendation to separate what I had actually seen or heard and what was might own reflections or thoughts, by writing my personal thoughts in dark green and things I wanted to return to/develop in red. In my writing, I also tried to both have a broad perspective and operate through introspection and a constant questioning, which Kullberg (1996) stresses the importance of.

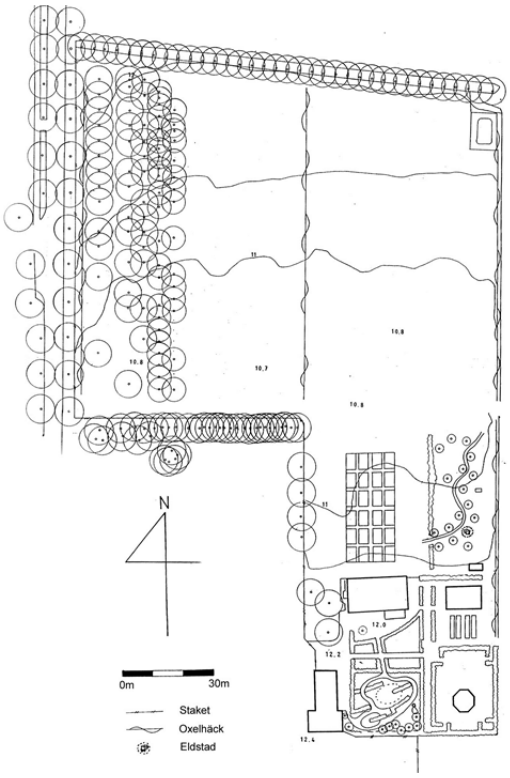

Figure 9. The site plan of the garden, used in both the observations and the interviews.

In participant observation, one often tries to become a part of the social context and the observer is known to be a researcher. My role was something between participant, staff and researcher, and can thus be characterized as "participant-as-observer" (Gold, 1958 as cited by Kullberg, 1996, p. 68).

The observations were based on my wish to understand and be able to describe what I saw descriptively, through what is called "thick description" (Geertz, 1973; Gillham, 2000). At the same time, my observations were what Gillham calls detached or structured observations, which compared to participant

observations are more structured in data collection; also, my focus was more on observed behavior than on meaning/interpretation. According to Yin (2003), ethnographic studies attempt to meet two criteria: a) a near and detailed description of the natural world by the observer and b) an avoidance of a priori ascribing oneself a theory model.

As regards confidentiality and access, all participants at the rehabilitation garden were given a form containing information about the study and that an observation of the use of the garden would be taking place, as well as a question whether they wished to participate. They were informed that the material would be anonymized and that they would be able to cease participation, even during an observation, or ask the researcher to exclude certain parts. All participants except one chose to participate in the study.

According to Gillham (2000), it is better to be open about what one will be studying than to try to withhold information. On the other hand one should not tell participants what it is one expects to see, as this might affect the results. Openness leads to greater trust from the study subjects, which in turn increases the chances that they will be more cooperative and willing to talk about their experiences. It was my experience that most of the rehabilitation garden participants were quick to accept me. One woman even approached me after a couple weeks and said that she no longer thought about the fact that I was not a participant and that she missed me when I was not there. Kullberg (1996) discusses two types of access: requested and received (i.e., getting under someone's skin), and there were naturally other participants who were more distanced, about whom I could sense that I had requested access but had not truly achieved received access.

Data analysis

An ethnographer looks for patterns of behavior, and these patterns constitute ethnographical reliability (Fetterman, 1998). According to Kullberg (1996), the analysis phase entails reading through all collected material, looking for main components, and constructing a type of mind-map based on what is found. The first step in the analysis was to read all material and make a thematic analysis, or mind map, of what I had actually been writing down in my field protocols. The mind map turned out to consist mostly of the different kinds of activities the participants had carried out.

According to Gillham (2000), detached or structured observations are more likely to lead to a quantitative than a qualitative analysis. And indeed, in a count of the different occasions for different activities, the walks turned up as

one of the most frequent activities and was by far the most unexpected. As I became interested in this phenomenon I chose to continue my analysis by looking more closely at the walks alone. Thus, I went through the protocols and maps and sought the key events, i.e. gathered all information on occasions and activities related to walking. The walking occasions were defined as a movement in a direction or area without a primary goal to pick, collect or bring anything back. These walking occasions were then analytically systematized into themes. During the next step of the analysis the different types of walks were related to the purpose of the study and interpreted in terms of where they occurred, how the environment was spatially organized and what character they had.

Method discussion

The fact that I kept a field note table affected what I observed; I thus more or less consciously excluded things to look at, which has resulted in a bias, a distortion. I have been aware of this, and that my choices must be well motivated, for instance based on the research questions. A researcher's approach as an observer can also be problematic. The concept of aesthetic distancing is used within ethnography in cases of participant observation (Kullberg, 1996; Scheff, 2007). The distance to what is being observed should be neither too great nor too small. The observer should place him/herself as a person within parentheses to maintain the possibility to discover something new. This encourages one's sensitivity to impressions and increases one's ability to sort information.

Discussions with subjects during the observations – the informal interviews – should be of an open character, which means that questions and statements that can be answered with yes or no should be avoided. Kullberg (1996) also discusses the issue of getting into the daily routine, getting too close, becoming too well-known, which can result in a loss of the ability to distance oneself and see "newly" or analytically. In my case I feel it is a strength that the observations are so structured, as this helps me resist the influence of the everyday. Generalizability in ethnographic studies is not indisputable. Kullberg (1996) writes that within ethnographic studies one often chooses to highlight the non-random character of regularity, and that the results are linked to theory.

3.3.4 Interviews

Participants and procedures

Paper III is based on ten interviews, held with participants during the period when the observations were being conducted. The interviews were performed

using a qualitative approach – chosen with the aim of, to the degree possible, seeing or expressing events, actions, norms and values based on the subjects' own perspectives, which according to Bryman (1997) is the most distinguishable feature of qualitative research. The goal of the interviews was to find answers to the question of how the garden is experienced as well as how the participants themselves experience that they have used it. Asking questions is often the easiest way to obtain information on how a person experiences or feels about a phenomenon we are interested in studying (Lantz, 1993). The strength of the interview is that one only asks what one wants an answer to, which makes the interview highly targeted and focused directly on the topic. Interviews can be both hypothesis testing and theory generating. My aim has been to conduct the analysis in a theory generating way; I then take the result and compare it with the theoretical background of the garden.

In most parts of the interviews, I tried to satisfy the necessity to create a good climate between interviewer and respondent to reflect the source as accurately as possible. As a participant observer I had been at the garden before the interviews were conducted and had gotten to know the respondents a bit; the interviews were voluntary; through background knowledge and participation in the daily rehabilitation work, I had a good deal of insight into the subject; and the interviews were held at a place chosen to allow the respondents to feel a closeness to the garden without necessarily being in it.

Additionally, parallel with the data collection I attended a course in qualitative methods in which we analyzed our way of conducting interviews. This means that I have contributed to the validity of the interviews and that I have tried to do what I could to satisfy what Lantz (1993) refers to when writing that both knowledge and skill are needed in order to conduct interviews professionally.

The interviews can be said to be a mix of an open and a structured type. I used a pre-designed question guide, see Appendix 2, but encouraged open answers. The question guide was necessary as I was interested in a certain phenomenon: how the participants experienced the garden and its various parts. At the beginning of the interview I explained that I had a number of questions with me, but that it was not at all mandatory that they be answered one after another. Instead, I asked the respondents to see the interview more as a conversation and said we would continue based on that.

Besides the questions, my interview guide also contained both prompts (points/topics I wanted to ensure would come up in answers) and probes (follow-up questions to obtain expanded answers to my prompts when

necessary) for all questions (Gillham, 2000). The conversations often tended to be about the rehabilitation in general, the staff, etc. – which was not at all uninteresting – but it was necessary to ask questions about the garden so we could again focus on it as I intended. At the same time, I tried to consciously stay open to new perspectives, ideas and information I had not previously considered (Alvesson & Deetz, 2000). According to Lantz's definitions of different interview forms, I regard my interviews as primarily "directed open" and to some degree "semi-structured" (Lantz, 1993).

Methods for data collection

Each interview lasted approximately an hour. I had initially intended to use some form of stratified selection, but when I had just started my observations a greater number of participants completed their rehabilitation at Alnarp than the number of new participants starting there. The selection was thus not especially large; instead, all participants at the rehabilitation garden during my time there were asked to participate. Those who wished to participate, and had the energy, were allowed to. The total number of participants was two men and eight women, which is a result of the fact that generally more women than men undergo the program at the Alnarp Rehabilitation Garden as well as more women than men are diagnosed with exhaustion disorder.

I chose the location for the interviews, with the intention that we would not be in the garden but would be so close to it that the surroundings would feel familiar and safe to the respondents. I felt that sitting in the garden might create a distortion of the respondents' answers, as they would obviously be closer to one of the garden's environments than the others. We instead sat either in an adjacent building (the physiotherapist's treatment room) that all the participants were familiar with or, if the weather allowed, outside in this building's garden.

As regards confidentiality, the respondents were informed that the material would be anonymized, that they would be able to cease participation, even during an interview, or choose not to answer certain questions. All interviews were recorded on dictaphone after consent had been obtained. In addition to the dictaphone the question guide was also placed on the table, so it would not seem as if I were hiding it. I also had with me a simple site plan of the garden, see Figure 9, which we looked at when questions concerned various parts of the garden. This made for a very creative situation with the participants, having often sat leaning back in their chair and somewhat passive, leaning forward and really taking on their task when the site plan was presented. I experienced this as interviewer and respondent getting closer to each other through this task, as it was palpable that we were leaning in over a common topic.

Data analysis

All interviews were transcribed in full and verbatim – i.e., exactly what was said. When an interview had been transcribed it was listened to an extra time to ensure that all sudden silences, tone changes, comments, etc., had been transcribed. Processing from colloquial speech to the written word was done after the analysis. In accordance with Alvesson and Deetz's opinion (2000) I have chosen not to assign the respondents titles, partly because I wish to maintain their anonymity and partly because it easily happens that readers have preconceived notions and expectations regarding different work categories.

The analyses of the interviews were done thematically in line with content analysis (Gillham, 2000) and meaning condensation (Kvale, 1997), which is an empirical phenomenological method for analyzing qualitative interviews. First, a structural analysis was done. In the next step the themes were condensed into themes based on content and meaning. A third step in the analysis was to relate the emergent themes to design, i.e. to describe the environments that seemed to support these phenomena.

Bryman (1997) asserts that more and more researchers are of the opinion that theoretical interests should drive qualitative research in a more conscious way. My intention was to consciously interpret the emerging themes with the eyes of a landscape architect in order to contribute to the architectonic understanding of this phenomenon, but also to coordinate the crystallized themes with the theories behind the design of the garden.

In the descriptions of the various themes that emerge, I have highlighted quotes that seemed important to note. These quotes thus come to serve as support (Starrin & Svensson, 1996) and can function as a type of check for the reader to confirm that the thematizing is relevant.

To check the results' reliability, another reviewer has repeated major parts of the process and read through the thematized texts in their entirety. This reviewer, according to Lantz (1993), had to have the same understanding and conceptual frame of reference as I do, so my main supervisor conducted this work.

Method discussion

In an interview context there are always influential factors that cannot be minimized or controlled (Alvesson & Deetz, 2000). Things that can also affect the results of an interview study is whether the questions are presented in a good way, whether leading questions are asked, and whether the respondents can handle the interview situation itself. I dealt with these aspects by trying to be conscious of them and thus having an openness to the issue during the course of the work. For example, after every interview I wrote down a number

of comments about things that had happened during the interview. This could be that we had been disturbed in some way, a phone had rung, another person had entered the room, or the respondent had seemed stressed about the time passing too quickly.

In the interviews I used a small dictaphone, which I placed on the table. I asked if the respondent consented to my recording the interview, and explained that it was nice to be able to go back and listen to what had actually been said instead of just having short notes to refer to. All respondents gave their consent. Nonetheless, the tape recorder's impact on the interview situation cannot be completely disregarded. During one interview the respondent even looked at the dictaphone and grimaced. However, after just a short time the majority did not seem bothered by it.

Many people who suffer from mental fatigue are "key-seekers", i.e. in life they generally try to be and answer in the way they believe is expected. It has therefore been extremely important to be very watchful for response bias and reflexivity, which is a respondent answering in the way they think the interviewer wants them to (Yin, 2003). At one point I had the feeling that a respondent was using words that were not her own, and was instead using those of the researcher or staff. This happened at the very beginning of the observations, when this person wished to get to know me. At later occasions, however, this person used her own words to express what she did and how she experienced the garden.

An additional aspect that required attention in the interview analysis was the fact that the respondents can have been acting under a type of distortion/bias (Alvesson & Deetz, 2000) through a possible positive attitude about the work at the garden. After all, they have all chosen to give this rehabilitation method a chance. At the same time, however, this was a precondition for the study; additionally, the staff experienced that the participants often did not have especially great expectations as they had previously tried many other programs on the rehabilitation market. The respondents were therefore encouraged to think critically during the interviews.

4 Summary of the Papers

4.1 Paper I. Using affordances as a health-promoting tool in a therapeutic garden

In this descriptive and theory-generating paper, four authors together describe the background of the Alnarp Rehabilitation Garden, the patient group, the development of the garden and the therapeutic program. We also describe our experiences in relation to both the predefined and the new theories we, as a result of our experiences, feel are important to incorporate into explanations of the rehabilitation process theoretically.

We claim that there are four phases of rehabilitation to be observed when looking at how patients interact with one another, the garden and the therapists. Phase 1 – contact – concerns how patients, by merely being in this peaceful and secure environment, are able to find new ways to make contact and re-learn how to interact with the social and physical surroundings. In Phase 2 – breaking the shell – patients realize this often existential crisis and, with the help of meaningful activities, start to re-evaluate their situation. The garden should contain plants that can start and facilitate a process of curiosity and interest. During Phase 3 – the opening – participants increase their physical capacity and improve their underlying mood as well as their ability to concentrate. Through work in the garden and soft treatment of body awareness, participants' strength gradually increases but they also show more feelings and irritability. The participants are now in a phase in which all their senses are involved. Nature and the garden are full of metaphors and symbols, and may here be used on a more symbolic/therapeutic level, such that nature becomes an arena for the person to come into contact with and give shape to his/her own unique symbolic language. In Phase 4 – growing – the participants start to accept the situation and reconcile with their life history and illness. At this stage, when the shell is finally broken, the desire to communicate grows

rapidly. At the end of the therapy, participants can take initiative in starting things and carrying them out; they set about their own, creative projects.

The observations seem to support that the four phases of rehabilitation involve a decrease in stress reactions and an increase in attention power, which would be in accordance with Attention Restoration Theory (Kaplan & Kaplan, 1989) and the psycho-evolutionary theory by Ulrich (Ulrich, 1999; Ulrich et al., 1991). However, the patients also interacted with the garden in ways that are not suggested by these theories. Natural environments seem to activate sensorimotor functions and trigger memories through the activation of all the senses. In the last section of the chapter this is put into a theoretical context, by linking it to different aspects and theories on communication and, in line with this, also developing the concepts of Scope of Meaning/Scope of Action.

A first draft of this paper was presented at the conference Urban Forestry for Human Health and Wellbeing in Copenhagen, 28 June-1 July, 2006. A more developed concept was then presented at the OPENspace conference Innovative Approaches to Research Excellence in Landscape and Health in Edinburgh, 19-21 September, 2007, before being finally published.

4.2 Paper II. The perceived restorativeness of gardens – Assessing the restorativeness of a mixed built and natural scene type

The aim here was to determine whether gardens, primarily the Alnarp Rehabilitation Garden, are experienced as restorative environments. The paper is based on a picture study using the Perceived Restorativeness Scale (PRS) (Hartig et al., 1996, 1997a, 1997b), created by environmental psychologists, to compare how restorative two different health gardens were experienced as being. The two gardens were the Alnarp Rehabilitation Garden and Sinnenas Rum in Umeå. We compared the gardens not only with each other but also with data (PRS scores) from previous studies on other types of environments, for instance industry and water areas. The study focuses on the unique nature of the garden environment as a mix of built and natural. Both gardens are also designed with the intention of being health gardens, both restorative and therapeutic, which makes this assessment especially interesting.

The results show that the gardens are perceived to be restorative, and the PRS also discriminated between the two gardens. This points to the PRS being a useful tool and emphasizes the shortcomings of broad scene type definitions. The results also show that one scene type can include environments that are significantly different in perceived restorativeness. This underlines the need to

collect data on a greater number of different scene types and examples within each type, as well as to have more controlled definitions of content and scene types, to understand the relationship between the physical expression of a place and its potential for being restorative.

A first version was presented at a conference, Open Space People Space, in Edinburgh in October, 2004.

4.3 Paper III. Patients' experiences and use of a therapeutic garden: from a designer's perspective

Ten of the patients have been interviewed qualitatively on how they use and experience the Alnarp Rehabilitation Garden. The analyses of the interviews were done thematically. The study resulted in two main themes with two and three sub-themes, respectively. Each theme is described both as a phenomenon and with regard to the setting where this phenomenon occurs.

This first theme is called "to escape, observe and get sensory stimulation" and concerns experiencing peace and quiet, escaping into yourself. The sub-themes are "an escape from reality" and "getting sensory stimulation". The refuge needed to escape into can be a place to sit or lie down in or somewhere to wander, and the environment is preferably lush, with trees, and has three-dimensional, rather small, rooms instead of open areas. A non-demanding atmosphere is a prerequisite for being able to rest, and is created by the attitude of the staff. Caring about the environment is much more important than a specific style (see Figure 10).

Figure 10. One way of showing that the environment is cared for.

The second main theme is called "to achieve satisfaction, socialize and re-evaluate" and concerns being more social and more attentive to the

surroundings. The sub-themes are “fascination and satisfaction”, “social contacts” and “time and symbolism – an evaluation of life”. Sensory stimulation is now not only gained through observation but also through activities. Patients carefully choose whether they want to be alone or watch, or even talk to, others. Animals are also seen as part of the social network. The processes in the garden, and the variability expressed in nature, make it easy to draw parallels to one’s own life. The existential questions this evokes might result in a complete re-evaluation of one’s life.

The fence and the gate surrounding the garden were experienced as very positive. When the gate is closed the rest of the world is shut off and it is all right to be just as you are. It was also evident that more places for escape are needed. The open areas are not appreciated at all, and there is a lack of trees. Thus, the dimension of refuge needs to be increased, as well as the dimension of the peaceful. The dimension of prospect, instead, needs to be decreased as it is too vast and lacks trees, see Figure 11. It needs to be transformed from a two-dimensional field into three-dimensional rooms. The animals in the garden are considered very important creators of symbolism, an area in which the garden’s design could be improved.

A first draft was presented at a conference, Health and Recreation in Forest and Landscape, in Birmensdorf, Switzerland, 1-3 April, 2009.

Figure 11. The pile of boards and part of the area that is considered too vast and in lack of trees.

4.4 Paper IV. Differently designed parts of a garden support different types of recreational walks – Evaluating a healing garden by participatory observation

This paper is based on data gathered in an ethnographically influenced participant observation and concerns patients’ use of the Alnarp Rehabilitation

Garden. The role of the researcher was 'participant-as-observer' (Gold, 1958 as cited by Kullberg, 1996, p. 68), i.e. the patients were informed that the observer was a researcher but the researcher participated in the garden activities on equal terms with the patients.

An observation guide, including a map, was used and after each field day this protocol was filled in. In an initial analysis of the observations, the occurrence of walks was striking and was considered interesting. This led to further analysis, with the topic emerging from the data, concentrating on where and when these recreational walks occur.

The analysis of the walks resulted in two main themes, introvert walks and extrovert walks, each with three sub-themes. The two main themes indicate where the focus of one's attention is – on oneself or in the surrounding environment. The theme of introvert walks consists of three sub-types: walking therapy session, cooling down and exchanging experiences. The second theme, extrovert walks, is divided into the sub-themes catching up, looking for entertainment and guidance. The types of walks occur in different parts of the garden, and thus seem to be supported by surroundings with different types of environmental stimuli. The results are discussed in terms of how green spaces might promote physical activity and restoration, and how it might be possible to plan for introvert and extrovert walks. One part of the garden is used very frequently. It is interpreted as a spatially well-defined part, with gravel as ground cover and beech hedges as walls along the paths, making it possible to experience this environment as a safe place and to dare to let one's attention be turned inward.

A first draft was presented at the EDRA conference (Environmental Design Research Ass.) Design for diversity in Vancouver in 2005. A second draft was presented at the IAPS conference on Environment, Health and Sustainable Development in Alexandria, Egypt, 11-16 September, 2006. A presentation was held at the conference True Urbanism: Cities for Health and Well-Being, in Portland, Oregon in 2009. An extensive version was submitted to *Landscape Research* in November 2009 and was accepted in March 2011 for publication.

5 Discussion and future directions

In this chapter the results are first discussed in relation to the experience and use of the Alnarp Rehabilitation Garden. Then, the results are related to the design of health gardens, and especially health gardens with the same user group as in Alnarp (i.e. stress-related mental disorders, see further in Paper I). Lastly, the results are elaborated on in terms of what future implications there might be, and what can be interesting to consider also in the larger context of public green spaces.

5.1 Discussion of the results in relation to experience

5.1.1 Preference and perceived restoration

In Paper II the Alnarp Rehabilitation Garden is ranked very high in perceived restorativeness. Also the garden in Umeå is placed very high in relation to other more natural scene types, and both gardens are defined as a mixed built and natural scene type. Could it be that the human influence in nature actually affects the ratings in a positive way?

Regarding how human influence affects preference, Appleton (1975), Kaplan and Kaplan (1989) as well as Falk and Balling (2010) all propose that we have innate preferences for landscapes, natural environments and the savannah-like scene type. Still, they all assert that this is then overlain by cultural and personal factors. So what happens if we combine the natural environments with cultural and/or personal preferences?

Much of the previous research upon which the theoretical construct lies has actually been carried out with natural environments that include visual human influence to varying degrees. Appleton bases much of his argument on paintings of different cultural landscapes, Kaplan and Kaplan (1989) look at studies with many scene types that are “mostly natural” (p. 45) and conclude that in the most preferred scene types nature has been dominant. Ulrich uses a

view of only a small grove of trees outside the hospital in his often-cited study (Ulrich, 1984), where patients recovering from gall bladder surgery having a window view of nature were shown to have considerably better health outcomes compared to patients without a window view.

Falk and Balling (2010) state that they are "[s]truck by the prevalence of human-created parklands in widely disparate societies" (p. 482), and actually begin their paper on the evolutionary influence on landscape preference by referring to cultural expressions like gardens and landscape design. They argue that when analyzing historic patterns of landscape design, it is possible to find striking parallels in the use and organization of some landscape elements. They refer to large gardens and estates, "where aesthetic preferences could most easily be expressed, park-like settings of short grass and scattered trees have consistently emerged" (p. 479). They also refer to research showing that Japanese landscape designers have modified native tree-forms to resemble those found in the savannah environment.

According to Bourassa (1990), it makes sense to speak about both biological and cultural modes of aesthetic experience. Even if experiences of landscapes normally not involve both these dually independent systems, there are findings that suggest that biological responses (based on innate patterns of emotional behavior) could occur separately from cultural responses (based on learned cognitive patterns of behavior). Bourassa states: "It seems likely that natural landscapes are experienced largely in the biological mode, whereas urban landscapes are experienced primarily in the cultural mode" (p. 806).

Given the numerous examples of the popularity of mixed built and natural scene types, like gardens and other settings where the human influence is obvious, it is not very bold to argue that scene types that are experienced simultaneously in both the biological and the cultural mode might actually be the most preferred by humans. In research on preference and restoration this combination of nature and culture would be interesting to give more attention.

Cultural aesthetic pleasure is gained when there is a good fit between form and context and thus an experience of cultural identity and stability (Bourassa, 1988 referring to Alexander, 1966). As mentioned, Kaplan and Kaplan (1989) have concluded that the balance between the built and the natural is a consistently dominant theme in the experience of the environment and that when these settings receive high ratings "the built component is in keeping with the setting and does not dominate the natural elements in the scenes" (p. 44).

Paper III showed that patients were very sensitive to the surrounding environment and that they sought balance, both between sensory stimulation and peacefulness in opposition to activity, and between natural parts and more cultural parts of the garden. So what can be said about this balance?

According to Kaplan and Kaplan (1989), a desire for order may reflect a shared pattern of culture, but it may also be the case that a higher preference for the orderly and controlled is a reflection of one or more several concerns. "It may be especially salient when other aspects of one's life are less orderly" (p. 114).

Balance, in terms of ordered or disordered forms, might be important in the Alnarp Rehabilitation Garden. In Paper III, the patients express their aversion to the kitchen garden and other places where there are straight lines and squares. They prefer a more organic shape (Paper I and III, for a picture of such an example see Figure 5.11). Whether or not this is a consequence of their lives having been too orderly is not known, but an interesting thought to follow up.

5.1.2 Experiences of safety and refuge

According to Kaplan and Kaplan (1989, p. 114) "[t]here are times when exploration is exciting, and there are times when one wants to be sure the ground beneath one´s feet is firm and safe with as little excitement as possible." Thus, both exploration and safety are needed at different times. Could there also be a balance relation between exploration on the one hand and refuge and safety on the other?

The walks in Paper IV can be viewed as a kind of soft exploration of the environment, and this exploration was a common element in the use of the garden and surrounding park. But also safety has been found to be of great importance. In Paper I and III the garden is referred to as a fenced off and thus safe place, offering psychological peace and a possibility for relaxation. A possible future investigation could be to see if the four different phases of rehabilitation can, at least in relation to the use of the environment but maybe also on a personal level, be interpreted as signs of this balance between the need for safety (beginning in phase 1) and the need for exploration (which then should be most evident in phase 4).

The notion of the garden as a fenced off and safe area shows similarities with the concept of refuge. In the Perceived Restorativeness Scale (Paper II), one of the items measuring Being away is concerning the need for refuge: "This place is a refuge from unwanted distractions". Actually, in Paper II, the aspect of Being away seems to be a characteristic of the gardens.

In Paper II, one of the items measuring Scope also stood out as important. The item was formulated as “This place has the quality of being a whole world to itself”. So, according to Paper II, the most important elements of a garden that is perceived restorative seems to be a place that physically is something else than the usual every day environment, and mentally it is functioning as a refuge from unwanted distractions.

5.1.3 Experiences of compatibility and rootedness

In order to get well one has to *want* to get well (Gesler, 2003), and coordinating one´s inner resources; thoughts, spirituality, emotions, and social support in an effort to get better. The themes in Paper III, see Section 4.3, are very similar to the above mentioned resources, making it reasonable to think the garden might facilitate such coordination.

According to Kaplan and Kaplan (1989), as mentioned earlier, people can feel much better if they anticipate a hopeful future. The patients in the rehabilitation program at Alnarp have all decided themselves to come here, they self-selected it. Compatibility, which according Kaplan and Kaplan (1989) is one of the key aspects in a restorative environment, can be described as that the environment should fit with what one wants to do and support intended activities. The self-selection could be viewed upon as a kind of compatibility. Then it becomes important that the garden can meet these expectations, which then can be seen as a more practical kind of compatibility.

Another interesting aspect regarding health gardens is the attachment to gardens, and its possible role in the rehabilitation process. In writing about restorative gardens, Gerlach-Spriggs et al. (1998, p. 41) state that gardens have a unique potential for promoting healing since “they are savannah brought home”. A garden is a pre-selected habitat, pure refuge, laden with biological symbolism of safety. Also, according to Gerlach-Spriggs et al. (1998) gardens induce a sense of connectedness with the surroundings, and a sense of comfort. Gardens are also told to provide patients with a center, a sense of rootedness and connectedness to the surrounding.

According to Gesler (2003, referring to Godkin, 1980) one of the reasons for mental illness can be rootlessness. Therefore, psychiatric patients benefit from rootedness to certain places. I would expect there to be similarities between rootedness and attachment. In Paper III one respondent is even describing how she finds that she, by lying down, is physically connected to the ground. Could it be that attachment to gardens is a good thing when included in a therapeutic program, since many things in a garden are possible

to take with you home, both literally and figuratively on a more symbolic level in terms of nature and natural processes?

5.2 Results in relation to use

Could it be possible that Being away plays a more important role in a restorative experience than has previously been found? In Paper IV it is described that while taking an introvert walk, the focus is not on the environment but on solving something or sorting something out in one's mind. People are walking slowly looking just in front of their feet. An environment supportive of introvert walks is subtly keeping you on a secure track without letting you get lost or having to reflect upon where you are or which way to go. This, to me, is very similar to how the restorative component of Being away has been described. In Section 2.1.3, Being away has been described as "The person is distant, physically or conceptually, from one's everyday environment". And, in Paper II the component of Being away stands out as a very important aspect of perceived restorativeness and the gardens seem to induce a strong feeling of Being away. Thus, my hypothesis is that there is a connection between the introvert walks in Paper IV and the need for the component of Being away in order to have a restorative experience. This would be very interesting to explore further.

Kaplan and Kaplan (1989) do, as mentioned earlier, consider fascination as the most important aspect of a restorative experience, and the other aspects as important but additional. Fascination is considered as lending an invitation for the mind to wander, which enhances the aspect of Being away. We also know, as mentioned in Section 2.1.3, that cafés and museums have restorative qualities, but the active ingredients for restorative experiences, and how they relate to each other, are not yet completely known.

5.2.1 Restoration and physical activity simultaneously?

If there is a connection between Being away and introvert walks, this implies that it is possible to experience restoration while being physically active. In an analysis on the relationship between green space and health (de Vries, 2010, see also de Vries et al., 2003), it is concluded that four types of mechanisms can be discerned: 1) improved air quality, 2) reducing stress and restoring people's power of concentration, 3) stimulating physical activity, whether in a recreational context or otherwise, and 4) facilitating social contacts and social cohesion among residents. Thus, restoration and physical activity are treated as separate mechanisms.

But previous research also supports the notion of restoration occurring during physical activity (Hartig et al., 2003). It has also been shown that possibilities for taking walks in nearby areas is a strong predictor of satisfaction for residents (Grahn, 1989; Kaplan & Kaplan, 1989) When designing the Alnarp Rehabilitation Garden it was believed that the patients would sit down and reflect or contemplate. But as it turned out the seating places were not as used as predicted. In Paper IV, related to the result of the different kinds of walks, it is discussed that green spaces seem to facilitate physical activity.

Historical descriptions also seem to support the notion of restoration occurring while being physically active. According to Lewis (1976 in Davis, 1998) court physicians in ancient Egypt prescribed walks in palace gardens for royalty who were mentally disturbed. Romantic gardens and landscapes were based on what the visitor might take in at a glance, as seen from an overlook, as contemplated while sitting down or as observed while walking through it (Gerlach-Spriggs et al., 1998). At the end of the eighteenth century it is also known that some hospitals provided the patients opportunities to see gardens through their windows and to walk in the gardens, but there was no direct link between patient welfare and the use of garden beyond the commonsense notion that sitting in the sun and walking about feels good (Gerlach-Spriggs et al., 1998).

The tradition with baths, or spas, as healing places where mineral springs and architecture offered a recreational experience, as described in Section 2.2.1, has lived on. In Sweden, the first spa was established in the late 1600s (Jakobsson, 2009). According to Jakobsson (2009, p. 3) “the doctors argued that the design of the landscape affected the health of the patients and that a ‘moderate mental agitation’, i. e. sensory aspects, and movement were crucial for the cure”. That is to say, there was a very deliberate connection between the garden design, the sensory experience and walking.

In Paper I there is support for this connection. Here it is stated that the patients interacted with the garden in other ways than we would have thought. It was not just a matter of being mentally engaged in the natural surroundings, their involvement was far more sensual and motoric than was anticipated.

5.2.2 Using walks to experience “elsewhen”?

In Paper IV, during the walks, the environment is used as a setting for reflection. Though, it does not necessarily have to be on a conscious level at all times. This can be viewed as a kind of self-regulation behavior (Korpela, Hartig, Kaiser & Fuhrer, 2001). During the introvert walks people were often

looking down, in front of their feet, and they referred to it as “just wander”. It is likely that many would describe it as they were thinking of nothing.

In a three-part series originally broadcast on PBS (Public Broadcasting Service) in January 2010 called The Human Spark, Alan Alda is trying to find an answer to the question “What is the nature of human uniqueness?” It is believed that part of the answer is found within brain research on social cognition. Unlike other animals, humans are able to think about the future. Perhaps the most startling discovery made yet about the brain, is that during moments of apparently doing nothing, the brain is actually anything but idle. The same regions of the brain are the most active when we are simply doing nothing as when imagining or thinking about the future. As presented in the program, it seems humans have adapted the ability to use all these idle moments when we're just left to think to ourselves to prepare for the future.

Every minute that you’re not busy doing something in the present, you've got to be somewhere else in time. A professor at Harvard, Dan Gilbert, has coined the term “elsewhen” to describe how we humans roam in our minds to other times. This ability to think about the future, and the responses of others, creates social bonds and makes you want to plan for the future. This is even considered to be what builds our society. The possible connection between restoration, walking and “elsewhen” would of course be interesting to explore further.

5.3 Results in relation to health design

In the same manner as we try to make tailor-made therapy programmes, I think we should try to have custom-made green environments as well. However, we then need to start always discussing and describing these “green” environments, in a better and more detailed manner! Although there is a growing knowledge and understanding of the possibilities for using nature and green environments in different ways to promote health, the specific kind of environment needed to accomplish this is often not described or discussed.

This has also been noticed by Sempik and colleagues (Sempik et al., 2010) who in their book “Green Care: A Conceptual Framework”, summarize the status of Green care in a number of bullet points, of which one is stating this very clearly: “Description of the environment is lacking”. Still, what their book does *not* encompass is as interesting as what it does encompass. A definition of ‘green’ and a discussion on what this ‘green’ should look like and how this ‘green’ should be designed to support these positive effects of Green care is lacking completely.

Health design is, according to The Center for Health Design (an international community aiming at improving the quality of healthcare facilities worldwide) defined as design used to improve patient outcomes in healthcare environments (CHD, 2011).

To me, and in line with what Cooper Marcus and Barnes discuss (1999), health design should also include an aim to design in a way that facilitates the healing process. As I see it, this focus on the healing process allows the designer also to include elements that are not always, and not by all users, seen as positive. By placing these more ambivalent elements where the user can choose for her- or himself if they want to go there, these elements can actually be used as stepping stones in the healing process. This way design is used as a medium to stimulate experiences and encourage reactions that can be used in a therapeutic context.

So, when relating this to the Alnarp Rehabilitation Garden, where some participants, just as an example, expressed an aversion for straight lines and squares (see Paper III) I would say that it is important not to take the lines and squares away, but maybe put them in place where one can choose not to go.

A couple of initiatives for interpreting knowledge into frameworks for design have been presented in Section 2.2.3, Design of supportive environments. But since research on gardens for health promotion actually is scarce, these frameworks are based on theories and research on health-related fields, such as in behavioural psychology, behavioural medicine, environmental psychology and health psychology. Still, they do not discuss how the design can facilitate the healing process. That is, they do not relate to the specific needs or different phases of the therapeutic process for specific user groups. In my opinion, this makes the frameworks difficult to use since they are actually more listing features than guiding design.

According to me, each of the papers included in the thesis provide some information that can be useful when designing health gardens. But, since there are also findings that seem to overlap and relate to each other, I find it interesting to compare them. For this comparison I have chosen to take the results from Paper IV as a starting point. This is due to two reasons. Firstly, the two types of walks, the extrovert and introvert, are useful as concepts in a design situation, i.e. can be used conceptually by designers whose intention is to design environments that supports these walks. Secondly, in order to be able to make comparisons with the other findings, which are based more on experience and perceptions of the garden, I also find it quite possible to make a transformation where the use of the different walks also can be seen as an expression of an introvert and extrovert attention towards the surroundings.

There are clear similarities between my notion of introvert and extrovert attention and the inwards and outwards involvement that is included in the Pyramid of executive functioning (see Paper I). Still, they are findings from quite different studies, where the Pyramid of executive functioning stems from a study on the meaning of green open spaces (Grahn, 1991) and the different kinds of walks from my participant observations (Paper IV).

Summarizing across all papers, these are the main findings I argue can be related to the use of extrovert walks or extrovert attention:

Paper I: Own creative projects, construction, desire to communicate, reactions, memories, increase of strength, use of metaphors in nature, artistic creativity, time, gardening activities, process of curiosity and interest of e.g. plants starts.
Paper II: Fascination; curiosity and interest. Compatibility; possible to carry out wanted activities. Scope (physical aspect); exploration, size. Coherence; organization, structure, order.
Paper III: Starting to be fascinated, experiencing satisfaction while meeting others. To start being attentive to time and symbolism, re-evaluation.
Paper IV: Extrovert walks; focus on the environment, activities or social events.

Of course, single elements are important in a design, but before dealing with the particular elements, I think the overall concepts should be clear. Thus, instead of listing elements, as I criticized other of doing above, I will instead categorize these findings into a few concepts. These I think are important to work with as theoretical constructs when designing environments supportive of an extrovert attention:

- Meeting places, arenas for social interaction and communication.
- Activities and elements that stimulate fascination, curiosity and creativity.
- Elements that generate thoughts on symbolism and metaphors between one's life and nature. Time is important. (In line with the processual thought, here it is important to encompass both the good and bad, beautiful and ugly, alive and dead, but placed in a deliberate manner.)

These are the main findings that, according to me, can be related to the use of introvert walks or an introvert attention:

Paper I: Contact and interaction with surrounding world is about to start. Feelings, senses, muscles are used to experience the environment.

Paper II: Being Away; refuge from unwanted distractions. Scope (mental aspect); being a whole world to itself

Paper III: Experiencing peace and quiet, escaping into oneself and understanding one's own appropriate level of stimulation.

Paper IV: Introvert walks, focus is not on the environment but on solving something or sorting something out in one's mind. A safe environment, dare to let go.

Thus, these concepts I think are important to work with when designing environments supportive of an introvert attention:

- Refuge, places for just being. Small rooms, with surrounding lushness and trees, providing shelter.
- Escape, somewhere to let go, to wander, to escape into.
- Safe and unpretentious, non-demanding, indicating a care for the environment. Sensory and peaceful.

If I, as a short summary, were to list the findings that I now know are more important in the design of this kind of health garden than I would have thought before, I would choose three things: the notions of refuge, safety and walking, and how they are connected. When looking at the findings it seems as the aspects of refuge and escape are very important, and it has been more or less evident in all the included papers. Some of the findings even suggest there is a lack of places for refuge (Paper III). The importance of places for seeking refuge is supported by both the Prospect-Refuge theory (Appleton, 1975) and by the findings that the dimension of Refuge is one of the two most important to people who indicate they have high stress levels (Grahn & Stigsdotter, 2010; see also Section 2.2.3).

Safety can be found on many levels, of which the surrounding fence and the gate is one. But as I now see it the smaller places, the refuges are part of the same experience, but in a smaller and maybe more personal scale. The walks are used for escapes, but not to different places, since the walks do not end in particular places. They have their own function. But, I now think, that the walks themselves can be viewed as kinds of refuges. That is, if we look at the garden at a larger scale, and instead look at the areas where the walks are used, these can be different kinds of places for refuge. Especially the environments containing the introvert walks, where one needs to be able to let go of the extrovert attention without getting lost, can easily be thought of as a refuge area.

The argumentation above can also be seen as an example of how I think the results in the different studies, and from the different sub-methods, converge in a very good way. All in all, I think the case study methodology, and especially the crystallization (see Section 3.2.2) has proven to be a very useful tool for this kind of context and research questions. It has also opened up for many interesting questions and possible future research projects.

5.4 Future implications

In the discussion above I have already put forth some possible future research questions. Just to summarize, these were:

- Could it be that the human influence in nature actually affects the ratings in a positive way?
- Could there also be a relation between exploration on the one hand and refuge and safety on the other?
- Could it be that attachment to gardens is a good thing when included in a therapeutic program, since many things in a garden are possible to take with you home, both literally and figuratively on a more symbolic level in terms of nature and natural processes?
- Could it be possible that Being away plays a more important role in a restorative experience than has previously been found?
- Is it possible that there is a connection between restoration and physical activity?

Another question this has led to is whether the differences in judgments of preference and perceived restorativeness might relate to the interpreted possibilities for different activities within those environments? Restorativeness is maybe more dependent on an environment where one can find peace and quiet, and a possibility for a more personal and introvert attention, while preference might be more related to environments also suitable for activities with family and friends and extrovert attention? If so, this would probably also include differences in the ratings when it comes to how these environments are categorized into natural, mixed or built scene types.

For me personally, Paper IV has been the most interesting to work with. It was probably the most unexpected result, and it has also been the one that has been most interesting to think of in my current position as a city planner.

As elaborated on in Paper IV, the need for introvert and extrovert walks might very well be quite common. This would be very interesting to analyse in a city planning perspective, analysing whether these kinds of walks occur in

urban green spaces, and if so, can they be found in all sorts of urban green spaces? Presupposed there is a connection between walks and restoration, it is an interesting challenge to provide people with arenas for this experience.

In my view, an important and interesting challenge of future research and work with urban green spaces is to develop measures of qualities also encompassing intangible needs like, for example, an introvert attention of the environment. At the same time, this would create a need for questioning the definition of "urban green space". Normally urban green space in a planning context is more or less only encompassing public spaces categorised as parks, while excluding for example privately owned areas in a city and water areas. Still, private areas are accounting for large parts of the greenery and water is well known to be a scene type with high preference. In line with this argumentation, Lövrie (2003) is emphasizing the importance of a morphological perspective on green structure in opposition to the traditional object focused approach in the municipality planning today.

These environments also constitute a great proportion of our everyday environment, i.e. the nearby nature that we see, pass through, and take part in. Kaplan and Kaplan put it this way (1989, p. 151): "Looking out the window is rarely included under 'recreation,' yet it can constitute an important opportunity for experiencing natural elements". They also state that community satisfaction is closely related to the view of gardens, one's own, and others'. And, because it is not physically accessible does not mean it is not psychologically important.

Also, an introvert attention of the environment does probably not occur exclusively in a designed green space like the Alnarp Rehabilitation Garden or even a health garden. Maybe this kind of restorative experience often occurs in pathway systems in nature like areas or in urban parks - that would be interesting to know more about. It is dependent on a safe and secure environment, but these kinds of refuges or places for retreat can most certainly be both green or blue, or even something quite different in a comprehensive plan. If they are common and important experiences to citizens, how do we know that we take care of this need?

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Alnarp, October 2011.

Appendix

1. Observation guide

Observationsguide

Datum, veckodag:
Grupp:
Väder:
Antal deltagare:
Personal:

Pre-trädgård:

Post-trädgård:

Föreslagna aktiviteter:

Pers	Tid	Plats, rum	Aktivitet	Objekt Fysiska ting	Mål	Känslor, sinnesstämningar	Övrigt
K2							
K3							
K4							
K6							
K9							
K11							

2. Interview guide

Att göra innan:

- Kolla vilket (fingerat) namn.
- Lägga till specifika frågor som uppkommit under observationerna.
- Skriva ut guiden
- Kontrollera diktafonen.
- Anteckningsblock & penna.
- Situationsplan (med övriga Alnarp antytt el med pilar.)
- Aktivitetslista

Anteckna:

- Sinnesstämning, kroppsspråk, miner etc.
- Saker som sägs mellan raderna.
- Speciella saker i omgivningen.

Använda ”upprepningstricket”:
Du säger att *trivs* bäst där, vad menar du med trivs?
Du menar att … Svar: Ja el nej.

Tillvägagångssätt själva intervjun:.

- Presentera informationspunkterna.
- Placera fram situationsplanen över trädgården. Förklara att den ligger där som hjälp för minnet.
- Börja med frågorna.
- Vara lyhörd för ”response bias” eller reflexivity – d v s att deltagarna svara det de tror att jag vill höra.

Intervju
med deltagare i Alnarps rehabiliteringsträdgård

Datum: _____

TACK för att du ställer upp. Jag hoppas att du ska tycka att frågorna är intressanta och kul att svara på.

Jag tänkte börja med lite generell information kring intervjun.

- Jag ser det här mera som ett samtal egentligen, än som en intervju. Jag kommer att presentera ett par huvudämnen och så tar vi och diskuterar kring dem.

- Jag vill också att du ska veta att det ju totalt fritt fram för dig att säga nej om det är ngt som du känner att du inte vill svara på. Känn dig inte pressad av frågorna.

- Jag kommer också att spela in detta på band. Det är för att jag ska slippa sitta och anteckna så mycket och för att jag ska kunna gå tillbaka och kolla hur det var du sa, så att det inte blir min version utan din. Är det OK med dig att jag spelar in det?

- Jag kommer sedan att skriva ut intervjun på papper. Efter det tänkte jag skicka den till dig för att du ska få möjlighet att läsa den och eventuellt komplettera innan jag börjar använda den i forskningen.

- Så då tänkte jag börja med att berätta att ditt fingerade namn i den här intervjun är _____, men det är inget du behöver komma ihåg utan det är för att jag ska veta vem det är jag pratar med.

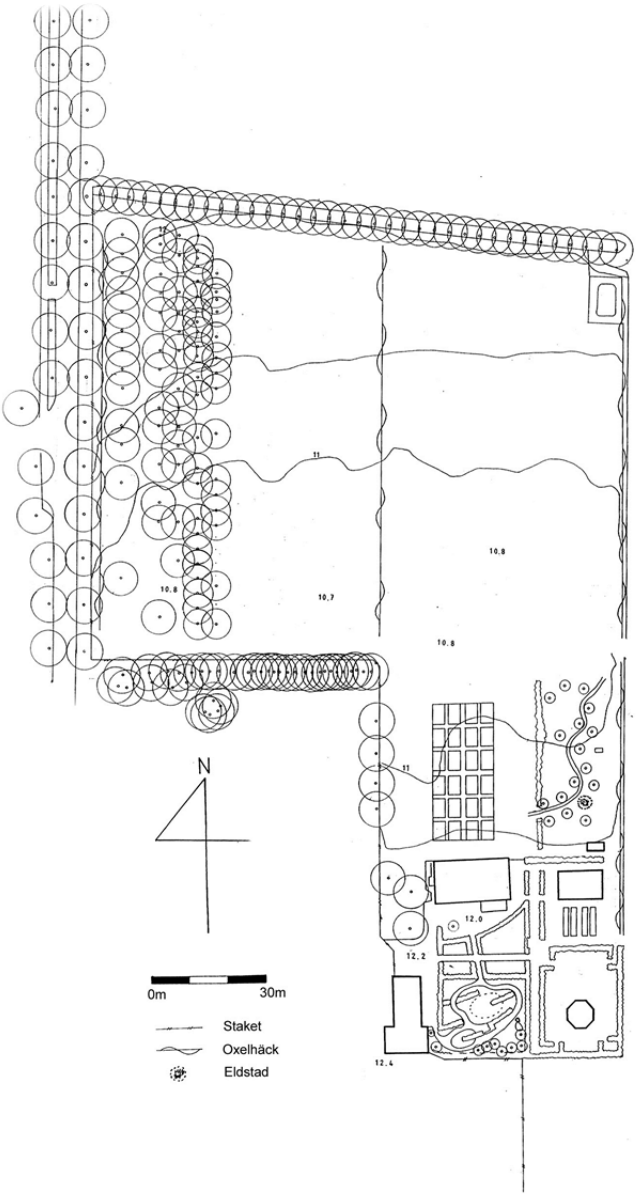
HUVUDFRÅGOR **ämneskategorier**	**PROMPTS** **påminnelser, subämnen som jag vill ha med**	**PROBES** **följdfrågor/preciseringar** När?, Vem?, Var? Vad?, Hur?
1. Hur länge har du varit här i Alnarps rehabträdgård?	Trivs du?	
2. Varför valde du just Alnarps rehabiliteringsträdgård?	Trädgårdsterapi Trädgårdsintresse Egen trädgård Eget yrke	Hur fick du höra talas om?
3. Vad tycker du om den här terapiformen som har trädgården i fokus?	Frekvensen, varje dag i trg Relationen inne/utomhus Årstidernas inverkan Det växande, det trg ger	Vad tyckte du om anv av trg? Har du några tankar om inomhus/utomhus? Har du några tankar om årstidernas inverkan?
4. Finns det delar av trädgården som betytt mer än andra för dig? TITTA PÅ PLAN	Övriga Alnarp, parken… Vilken aktivitet Enskilt el flera Speciella fysiska element Känslan där	Med vem var du där? När var detta mest? Varit så hela tiden? Fastnat för ngt speciellt där? Varför betyder så mkt?
5. Finns det några delar av trädgården som inte faller dig i smaken?	Övriga Alnarp Vilken aktivitet Enskilt el flera Speciella fysiska element Känslan där	Med vem? När var detta mest? Varit så hela tiden? Fastnat för ngt speciellt där? Varför betyder så mkt?
6. Finns det någon aktivitet i trädgården som betytt mer än andra för dig? TITTA PÅ LISTA?	Enskilt el flera Nämna ett par stycken Var gör man det?	Varför? Varit så hela tiden? Varför betyder så mkt? Var sker den?

HUVUDFRÅGOR **ämneskategorier**	**PROMPTS** **påminnelser, subämnen som jag vill ha med**	**PROBES** **följdfrågor/preciseringar** När?, Vem?, Var? Vad?, Hur?
7. Finns det någon aktivitet i trädgården som inte fallit dig i smaken?	Enskilt el flera Nämna ett par stycken Var gör man det?	Varför inte tycka om? Varit så hela tiden? Var sker det?
8. Och min nästa fråga är om du har någon favoritplats i trädgården?	Årstidsrelaterat? Förändrats? Ngt sett i observationer?	När kände du att detta var din favoritplats? Hur ser den ut? Varför din favplats?
9. Har du använt olika delar av trädgården när du vart på olika sinnesstämning?	Rörlig/aktiv–begrundande/lugn Stressad – tillfreds Promenader	Var? Hur ser det ut där? När går du dit? Har du vilat någonstans? Har du promenerat någonstans?
10. Hur skulle ditt ideal- eller favoritlandskap se ut?	Landskapsnivå trädgårdsnivå	Vad finns där? Var ligger det?
11. Hur såg ditt barndomslandskap ut?		Vad finns där? Var ligger det?
12. Om du funderar på trädgårdens innehåll, de saker som finns i den, finns det något som du upplever varit förvånande bra?	Djuren Olika växter: blommor, plantor, buskar, träd Sittplatser Vatten Detaljer	Har du ngn uppfattning om djuren? Hur ser du på olika växter eller plantor, sittplatser etc?
13. Hur tycker du att trädgården skulle vara? Finns det något som du skulle vilja förändra?	Djuren Olika växter: blommor, plantor, buskar, träd Sittplatser Vatten	Hur ser du på vatten i trädgården?

14. Avslutningsvis, hur ser du på den här miljön vi har här i Alnarps rehabträdgård?	känsla jämfört med annan rehabmiljö omtänksamhet i detaljer	Vad tycker du att miljön signalerar? Hur gör den det?

Finns det något jag sett under observationerna som jag vill passa på att fråga om specifikt? Lägga till i så fall!

Tack så väldigt mycket för hjälpen. Det är av stort värde för mig.
Vad tyckte du? Hur känns det nu?


N
0m
30m
Staket
Oxelhäck
Eldstad

Aktiviteter

Bara vara
Promenera
Pausa, Sitta stilla och begrunda
Vara utomhus i sol/skugga
Fikapaus

Trädgårdsarbete
Skörda bär och frukt, grönsaker etc.
Så och sätta
Plocka och sortera frön
Gräva
Klippa bort plommonskott
Beskära äppelträd
Plantor och sticklingar
Rensa ogräs
Göra nya planteringsbäddar

Förädla det trädgården ger
Baka
Göra äppeldricka
Göra äppelgelé
Göra pesto
Göra hudsalva

Skapande aktivitet
Bild
Lera
Fläta pil
Tova

Avslappning
Avslappning
Ge massage

Utflykt

Annat
Sopa
Städa
Prata om planeringen av trädgården